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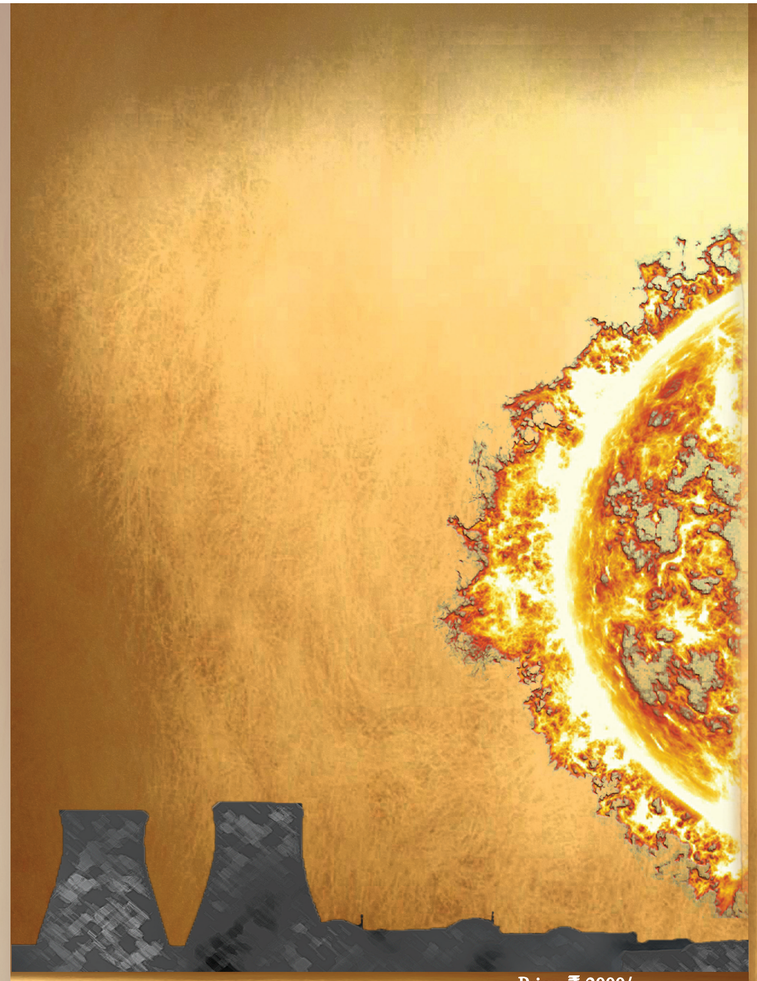

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ENERGY LAW AND POLICY IN INDIA

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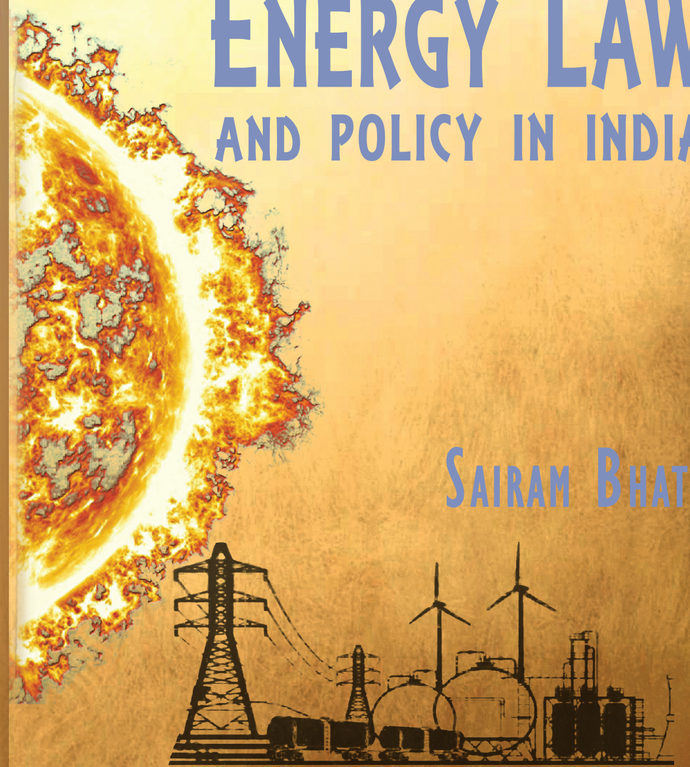
ENERGY LAW
AND POLICY IN INDIA

SAIRAM BHAT



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This book is the second in the NLSIU book series, the first being "Contracts, Agreements and Public Policy in India". It is an attempt to address the need for comprehensive literature on the energy sector in India, and deals with the various legal and policy challenges posed by this sector. It covers critical aspects of renewable and non-renewable sources of energy, energy security, and the interface between energy, environment and trade. This books aims to serve as a ready reckoner for research, teaching, and reference, in this vital and emerging area of law.

Titles:

- The 'Fundamental' Right to Access Energy
- Access To Clean Energy
- The Electricity Act, 2003 – Liberalizing The Power Sector
- Electricity Act and its Implementation in India
- Role Of Regulatory Mechanisms In Energy Sector
- Power Sector Contracts in India
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- Fallacy in Prudence of Energy Audit
- WTO law and trade in energy debate
- Rationalizing Global Trade Agreements

Energy Law & Policy In India

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FOREWORD

National Law School of India University, Bengaluru is one of the premier law institutions of India, established with the aim of imparting to students, researchers and faculty members, the knowledge, skills and ability to overcome upcoming challenges in the legal arena. The university encourages quality publications on cutting edge legal issues, which demonstrate not only the traditional principles of law taught in classrooms, but also 'law in action' and the various challenges in implementation.

An illustrious example of this commitment is the book titled **"Energy Law and Policies in India"** published under the editorship of Dr. Sairam Bhat.

This epoch-making work on **"Energy Law"** showcases a holistic perspective on the emerging issues in Energy Sector and the Legal Regime thereof in the contemporary world.

It should be remembered that India is the first Country in the world to have a separate **Ministry of New and Renewable Energy** (**16th October 2006**). In India, in the year which started a journey towards **"Year-Round Power for All"**, the release of this book, containing a mosaic of articles on access to energy and the various dimensions of the legal and regulatory regime in the energy sector, without losing the focus of Ecological and Environment perspective, speaks about the commitment of National Law School of India University to promote the Sustainable Development Goals as defined in **"Transforming our world – the 2030 Agenda for Sustainable Development".**

One should recall that the 7th Goal is **"Affordable and Clean Energy"**- ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL.

As Kunal Bose states, "Renewable obligation has got to be universal, going beyond commissioning large wind and solar electricity projects. Installing solar panels on the rooftops of large commercial buildings and homeowners should be seen as a badge of honour."

It is indeed gratifying to note that all the writers have manifested their consummate skill in conducting in-depth research of each of these emerging areas of Energy law. I sincerely hope that this book would commend itself to the entire academic community, including students, researchers, policy makers, and general readers.

The contribution of all the authors is praiseworthy. I congratulate **Dr. Sairam Bhat** and his entire team for their sincere efforts in the publication of this work, and wish them all success.

Prof. (Dr.) R Venkata Rao
Vice Chancellor
National Law School of India University
Bengaluru, 2016.

PREFACE

The NLSIU Book series was an honest and sincere attempt to forge ahead the research and publication leadership of NLSIU, Bengaluru. In our first attempt we published Book Series-1 on Contracts, Agreements and Public Policy in India, which was released on 30th August 2015. Book Series-1 had major contributions from the NLSIU family members. This book, on Energy Law, is the NLSIU Book Series-2. We decided to open contributions for this book series from law teachers, practitioners, researcher and students, so as to broaden our horizon in fulfilling the objectives set out for the book series publication.

This publication is in continuation of the mandate that was proposed during the two day National Seminar on Energy Policy and Law in India, conducted by the Centre for Environmental Law Education, Research and Advocacy (CEERA), NLSIU, on 9th and 10th July, 2015, the National Law School of India University. CEERA is delighted to come up with this book titled "Energy Law and Policy In India".

In recent times, the shift from non-renewable energy to renewable energy has brought about a paradigm shift in the energy sector. Security and self-sufficiency, as regards energy, has led to a situation where in the role of new and renewable energy has become important. Governments, across the world are giving significant thrust to the research, development and induction of energy technologies in different sectors. However, a distinct coverage for and in the energy sector in India is not provided for by the legal regime. At the same time there are a number of statutes, supplementary laws and policies that have a significant bearing on the Energy sector in India.

As the adage goes, it is not the presence of laws that bring out the very best in governance, but a proper implementation of the same. Laws aplenty, would be of no avail and would serve no purpose, unless properly implemented. This calls for and accentuates the need of having properly trained and efficient personnel. Lack of such a group has always been a bane for India, in many a sector and renewable energy sector too, is no exception. More importantly, conceptualization, visualization, planning and bringing into effect a robust policy and law, and to equip the personnel to put it into application in the Renewable Energy Sector is an imperative need.

The objective of this publication is mainly to educate and equip the target groups mainly consisting of personnel who are involved in the energy sector of government, energy regulators, industrialists, researchers, teachers who invest and bring about development in this sector and practitioners of law. The book will provide an outline of law and policies involved in the Energy sector, the procedure of implementation of the same and the various incentives, options for investment within the framework of law.

The book contains articles on access to energy, electricity law, the role of the regulatory mechanism in the energy sector, contractual issues and power purchase agreements, renewable and clean energy, law and policy in the thermal, oil and natural gas and nuclear energy sector; energy security, nuclear liability, ecological and environmental perspective in the energy sector, climate change, energy trade and the role of WTO.

The entire credit of this publication must go to our Vice Chancellor, Prof (Dr) R Venkata Rao. He has always been a pillar of strength to me personally and each time I venture into any activity, he has generously supported with all enthusiasm and guidance. His dynamic leadership and swift, yet precise academic vision has resulted in our Book series publication. The true inspiration for us in the energy law area is Prof (Dr) MK Ramesh. His relentless direction and ingenuity keeps us going further in pursuit of excellence in legal education. We also thank our Registrar Prof (Dr) OV Nandimath for his motivation and endorsement of our activities.

I must specially thank Ms. Ashwini Arun, who has displayed exemplary dedication in this current publication. Her sincerity and hard work is noteworthy and must receive special praise. The team of Editors included Ms. Anita Yadav, Mr. Manjeri Subin Sunder Raj and Mr. Pratham Guthi. I also thank Ms. Baba RS, for coordinating and facilitating the publication of this book. I compliment and thank all of them for the sublime teamwork in successfully publishing this book.

Dr. Sairam Bhat
Associate Professor of Law
National Law School of India University
Bengaluru, 2016.

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Right To Access Energy

The '*Fundamental*' Right to Access Energy: Issues, Opportunities and Challenges in India

*Sanjit Kumar Chakraborty**

Abstract

Right to access energy plays an extremely significant role in realizing the 'basic human needs', the lack of which causes poverty and hinders the process of overall economic development of a nation. People's aspiration to have a decent quality of life, and the growing demand for energy for commercial use make it mandatory to have uninterrupted and qualitative energy access for all. The last three decades of Indian history have seen remarkable change from a once-rural India to a fast-paced industrial economy. The demand for energy is increasing due to increasing industrialization and population. With an impressive rise in economic growth and promising trend in FDI in recent years in India, it is expected that the demand for energy will increase further. In such a situation, national energy shortages and an inadequate energy infrastructure could perpetuate national energy poverty. The critical analysis of the indispensible relationship between access to energy and the rights recognized by numerous international human rights documents including the fundamental rights under the Constitution of India strengthen the recognition of right to access energy as a basic human rights as well as fundamental right.

However, access to energy and its efficient use raises many challenges both politically and technically, from traditional exploration and production of fossil fuels to more recent mining extraction methods, renewable sources, and environmental protection. While ensuring the creation of more and reliable energy it is also important that the energy created does not pollute the environment, considering the imminent danger of climate change and environment pollution. The rapidly increasing energy demand and growing concern about economic and

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** This paper is a modified and updated version of the paper presented by the author in the National Seminar on "Energy Law and Policy", held on 9th – 10th July, 2015 at NLSIU Bangalore.

environmental consequences call for effective and comprehensive energy governance in India.

The objective of the present study is to analyse the 'right to access energy' within the framework of fundamental rights and the challenges faced by India's energy sector in this regard. The paper will also deliberate upon the effective and comprehensive energy governance in view of the existing laws and policies regulating the energy sector in India.

> "*Access to energy is crucial to economic and social development and the eradication of poverty. Improving accessibility of energy implies finding ways and means by which energy services can be delivered reliably, and affordably, in an economically viable, socially acceptable and environmentally sound manner.*"[1]

Introduction

Energy, though fundamentally a physical variable, plays a very significant role in all facets of the social world including satisfying basic human needs, socio-economic development, and human welfare of a country. Development aspirations of its people to have a decent quality of life and the growing demand of energy for commercial use make it mandatory to have uninterrupted and qualitative energy access for all. The demand for electricity and other form of energy has increased multifold with the continuing growth of population, demographic shift from rural to urban areas, and large scale industrialization, and the demand is expected to more than double by 2030.[2] The term *energy access*[3]

1 Commission on Sustainable Development (CSD), Report: *Ad Hoc Open-Ended Intergovernmental Group of Experts on Energy and Sustainable Development* (New York, March 2000) available at http://www.un.org/documents/ecosoc/cn17/2000/ecn172000-12.htm (last accessed on September 14, 2015).

2 India ranks high in terms of energy consumption; however, the per capita energy consumption is significantly lower than the global average, indicating significant growth potential of the energy demand in the country.

3 In absence of a single internationally-accepted definition, it could broadly be defined as the physical availability of modern energy carriers and improved end-use devices at the household level at affordable prices. It includes access to less polluting and efficient household energy for cooking and heating, or energy from renewable sources such as solar, electricity for powering appliances and lights in households and public facilities and mechanical power from either electricity or other energy sources that improve the productivity of labor. *See generally*, Welcome Note to Energy Access Programme, Ministry of New and Renewable Energy, Government of India, http://www.energyaccess.in/welcome-energy-access-programme (last accessed on June 29, 2015).

has been defined to mean access to clean, affordable and reliable energy services which has been shown to facilitate other development indicators. Access to energy plays a vital role in realising the 'basic human needs', the lack of which causes poverty and hinders the process of overall economic development of a nation. Access to energy in terms of 'provision of affordable, reliable and socially acceptable energy services' has been identified as a major challenge,[4] which is a prerequisite for achieving sustainable development and the Millennium Development Goals.[5] The critical analysis of indispensible relationship between access to energy and the rights recognized by numerous international human rights documents including the fundamental rights under the Constitution of India strengthens the recognition of right to access energy as a basic human right as well as fundamental right.

In the backdrop of all of these, the purpose of the present study is to analyze the right to access energy within the framework of fundamental rights and its importance in realizing the other fundamental rights guaranteed under the Constitution of India. It also evaluates the role of the Indian judiciary in recognizing the right to access energy as fundamental right and a constitutional mandate. The present study attempts to make a brief study of energy governance in India highlighting the major policy changes in this regard. An attempt has also been made to provide brief details of the challenges faced by the India's energy sector and to evaluate the existing legal mechanisms and government initiatives taken to provide energy access for all.

Right to Access Energy[6] and its Significance

Energy is a fundamental physical concept, plays an important role to satisfy basic human needs and to achieve the goals of social welfare and country's

4 Subhas C. Bhattacharya, "Energy access problem of the poor in India: Is rural electrification a remedy?" 34 *Energy Policy* 3387 (2006).

5 The goals are: End of Poverty and Hunger, Universal Education, Gender Equality, Child Health, Maternal Health, Combat HIV/AIDS, Environmental Sustainability, Global Partnership.

6 In many international documents the term 'energy services' has been used instead of 'access to energy'." It has been argued that it is not a particular source of energy or energy itself that society requires, as energy has no intrinsic value, but rather the access to the products and lifestyle changes that the availability of adequate modern energy services provides (*i.e.* energy services). *See generally,* Adrian J Bradbrook, "Access to Energy Services in a Human Rights Framework" available at http://www.un.org/esa/sustdev/sdissues/energy/op/parliamentarian _forum/bradbrook _hr.pdf (last accessed on July 28, 2015).

economic development.[7] The report of the UN Advisory Group on Energy and Climate Change breaks down energy access into incremental levels of basic human needs; productive uses; and modern society needs. 'Basic human needs' is the level that is used for forecasts of costs for universal energy access. This includes "electricity for lighting, health, education, communication and community services (50-100 kilowatt hours per person per year)" and "modern fuels and technologies for cooking and heating (50-100 kilograms of oil equivalent of modern fuel or improved biomass cook stove)."[8] Access to energy is essential for the basic amenities required for sustenance of life including clean water, shelter, sanitation and healthcare and for the provision of reliable and efficient lighting, heating, cooking, mechanical power, transport and telecommunications services. It is an alarming fact that today billions of people lack access to the most basic energy services: as *World Energy Outlook 2014* shows nearly 1.3 billion people are without access to electricity and 2.7 billion people rely on the traditional use of biomass for cooking, which causes harmful indoor air pollution. *The report estimated that around 304 millions of people do not have access to electricity.*[9] *As per* Census of India, 2011 Report more than a third of the country's households primarily rely on sources other than electricity for their lighting needs. The Census Report also indicates that nearly two thirds of the households in the country use fuels such as firewood, dung-cake, charcoal and agricultural residue for their cooking needs. As a result of this lack of modern energy provisions, a large portion of household demand is met through energy sources which do not form part of the formal energy accounting process. The total non-commercial energy consumption in India (firewood, animal dung, agricultural reside, etc.) is estimated to be more than 150 MTOE, nearly 20%-25% of the total purchased energy consumption.[10]

7 For the purpose of the present study the term 'energy' has been used to cover all forms of energies which affordable, reliable and socially acceptable and not limited to mean access to electricity only.

8 UN Advisory Group on Energy and Climate Change, "Energy for a Sustainable Future: The Secretary-General's Advisory Group on Energy and Climate Change (AGECC) Summary Report and Recommendations," New York: April 28 2010, available at http://www.un.org/wcm/webdav/site/climatechange/shared/Documents/AGECC%20summary%20report% 5B1%5D.pdf (last accessed on June 26, 2015).

9 According to *World Energy Outlook (2014)* in India urban electrification rate is 94%, rural electrification 67% and National Electrification Rate is 75%. The report also reveals that 815 million population relying on tradition use of biomass for cooking which constitute of 66% of the population. Available at http://www.worldenergyoutlook.org /resources/energydevelopment/ (last accessed on July 27, 2015).

10 Karthik Ganesan and Rajeev Vishnu, *Energy Access in India- Today, and Tomorrow* 16 (CEEW Working Paper, 2014/10, New Delhi, India).

In September 2010, the United Nations Secretary General Ban Ki Moon while launching the target of universal energy access by 2030 described the importance of energy access in poverty reduction and the role of energy services in meeting the Millennium Development Goals (MDGs):

> "Universal energy access is a key priority on the global development agenda. It is a foundation for all the MDGs... Without energy services, the poor are cut off from basic amenities. They are forced to live and work in unhealthy, polluted conditions. Furthermore, energy poverty directly affects the viability of forests, soils and rangelands. In short, it is an obstacle to the MDGs."

Without access to energy service, the poor will be deprived of the most basic of human rights and of economic opportunities to advance their standard of living. Energy use is closely linked to a variety of social issues, including poverty alleviation, population growth, urbanization, and a lack of opportunities for development. Access to energy is integral to overcoming poverty is nowadays widely accepted and recognized in the international community, as without energy access people are destined to live in poverty.[11] Recognizing the positive link between modern energy services and employment the World Energy Assessment 2004 Update noted that, "productive uses of energy provide employment opportunities and reduce the necessity to migrate to urban areas for employment. Productive uses allow income-generating opportunities that can help pay for the energy service, thus making them more affordable and sustainable."[12] From energy perspective the concept of sustainability calls for utilization of available resources to improve quality of life of people without harming the interest of the future generations, both from the point of availability of resources as well as degradation of the environment beyond the inherent corrective capability of natural processes.[13] It is generally accepted that population growth tends to increase energy demand; however, there is also evidence that the availability of adequate energy services can lower birth rates.

11 Adrian J Bradbrook, "Access to Energy Services in a Human Rights Framework", available at http://www.un.org/esa/sustdev/sdissues/energy/op/parliamentarian_forum/bradbrook_hr.pdf (last accessed on July 28, 2015).

12 World Energy Assessment 2004 Update.

13 Ramanand N Garge, "Energy Security of India: Growing Nuclear Energy Sector" 4(2) *GNLU Journal of Law, Development and Politics* 85 (July, 2014).

Adequate energy services can shift the relative benefits and costs of fertility towards a lower number of desired births in a family.[14] Although these issues affect energy demand, the relationship is two-way: the quality and quantity of energy services, and how they are achieved, have an effect on social issues as well.[15] Rebeca Grynspan, UNDP Associate Administrator and Under Secretary General, while delivering her introductory remarks in *Bloomberg New Energy Summit*, Roundtable Day on Energy Access and Climate Finance on April 7, 2011 observed:

> "Expanding access to energy means including 2.4 billion people..... We need smart and practical approaches because energy, as a driver of development, plays a central role in both fighting poverty and addressing climate change. The implications are enormous: families forego entrepreneurial endeavours, children cannot study after dark, health clinics do not function properly, and women are burdened with time consuming chores such as pounding grain or hauling water, leaving them with less time to engage in income generating activities. Further, it is estimated that kitchen smoke leads to around 1.5 million premature deaths every year, more than the number of deaths from malaria each year. After gaining access to energy households generate more income, are more productive and are less hungry further multiplying the MDGs progress."[16]

14 Thomas B Johansson and Jose Godemberge, "The Role of Energy in Sustainable Development: Basic Facts and Issues", in Thomas B Johansson and Jose Godemberge (eds), *Energy for Sustainable Development: A Policy Agenda* 30 (UNDP, New York, 2002).

15 World Energy Assessment, Energy and the Challenge of Sustainability, (UNDP, Bureau for Development Policy, New York, 2000), available at http://www.undp.org/content/dam/aplaws/publication/en/publications/environment-energy/www -ee-library/sustainable-energy/world-energy-assessment-energy-and-the-challenge-of-sustainability/ World%20Energy%20Assessment-2000.pdf (last accessed on July 2, 2015).

16 Introductory remarks by Rebeca Grynspan, UNDP Associate Administrator and Under Secretary General, *Bloomberg New Energy Summit, Roundtable Day on Energy Access and Climate Finance in Association with UN-Energy* (April 7, 2011) available at http://www.in.undp.org/content/undp/en/home/presscenter/speeches/2011 /04/07/grynspan-/ (last accessed on September 17, 2015).

'*Fundamental*' Right to Access Energy

The term 'right' or in its plural form 'rights' a generic, abstract, and comprehensive term, having a wide scope of meaning in its various legal applications, and it has no satisfactory definition or explanation, except in connection with some concrete conception of thing out of which it grows. It may mean any legal right as the word is normally used, or it may be limited to some specific one of the large class of recognized 'rights'.[17] The above argument clearly highlights that in modern society energy does not remains as another luxury of life. It is important for individual's advancement and overall development of the economy as well. The report of the WEHAB Working Group stated:

> "Although energy itself is not a basic human need, it is critical for the fulfillment of all needs. Lack of access to diverse and affordable energy services means that the basic needs of many people are not being met."[18]

Energy as an important aspect of sustainable development was recognized for the first time in the Report of the World Commission on Environment and Development (the Brundtland Report) published in 1987, which dedicated a separate chapter to energy. It stated that energy should be at the cutting edge of national policies for sustainable development.[19] The issue of energy however, was brought to centre stage in 2000 in the report entitled *World Energy Assessment: Energy and the Challenges of Sustainability*,[20] which called for world

17 T.M. Prakash and Ors. v The District Collector and The Superintending Engineer, Tamil Nadu Electricity Board, (2014) 1 MLJ 261.

18 A Framework for Action on Energy, 7 (World Summit on Sustainable Development, Johannesburg, 2002, WEHAB Working Group, August 2002). available at http://www.un.org/jsummit/html/documents/summit _docs/wehab_papers/wehab_energy.pdf (last accessed on July 1, 2015).

19 Report of the World Commission on Environment and Development: Our Common Future, *available at:* http://www.un-documents.net/our-common-future.pdf (last accessed on July 2, 2015) Brundtland Report/Chapter 7 Energy: Choices for Environment and Development, available at https://en.wikisource.org/wiki/Brundtland _Report/Chapter_7._ Energy:_Choices_for_Environment_and_Development (last accessed on June 26, 2015).

20 The report was prepared by the United Nations Development Programme (UNDP), the United Nations Department of Economic and Social Affairs (UN-DESA) and the World Energy Council.

action to provide access to energy services for all highlighting the indispensible nexus between energy, poverty and other social issues.[21] Article 21 of the Constitution of India mandates that "no person shall be deprived of his life and personal liberty except according to procedure established by law." Article 21 has both negative and affirmative dimension, has become an exhaustible source of many other rights[22], which has been given widest possible interpretation by the judiciary. The term 'life' under Article 21 has been interpreted by the judiciary in its widest possible magnitude in order to give a purposeful meaning to the term 'life' itself. In *Francis Coralie v. Union Territory* of Delhi the Court observed that right to life which is the most fundamental of all certainly cannot be confined to a guarantee against the taking away of life; it must have wider connotation. The Court held that the right to 'live' is not merely confined to physical existence but it includes within its ambit the right to live with human dignity. It means something more than just physical survival. Bhagwati, J. held:

> "We think that the right to life includes the right to live with human dignity and all that goes along with it, namely, the bare necessaries of life such as adequate nutrition, clothing and shelter and facilities for reading, writing and expressing one-self in diverse forms, freely moving about and mixing and commingling with fellow human beings." [23]

In a plethora of decisions the judiciary has held that 'life' more than mere animal existence and includes 'finer graces of human civilization' which makes human life more dignified, qualitatively more meaningful, complete and worth living.[24] In *Chameli Singh v. State of U.P.*,[25] the court held that the right to

21 It is not a particular source of energy or energy itself that society requires, as energy has no intrinsic value, but rather the access to the products and lifestyle changes that the availability of adequate modern energy services provides (*i.e.* energy services). *See,* Adrian J Bradbrook, "Access to Energy Services in a Human Rights Framework" 2 available at http://www.un.org/esa/sustdev/sdissues/energy/op/parliamentarian_forum/bradbrook _hr.pdf (last accessed on July 28, 2015).

22 Bhagwati, J. in Maneka Gandhi v. Union of India, AIR 1978 SC 597, 620.

23 AIR 1978 SC 597.

24 Kharak Singh v. State of U.P., AIR 1963 SC 1295, Sunil Batra v. Delhi Administration, AIR 1978 SC 1675, Olga Tellis v. Bombay Municipal Corporation, AIR 1986 SC 180, Paramananda Katara v. Union of India, AIR 1989 SC 2039, D.K. Yadav v. J.M.A. Industries, (1993) 3 SCC 258.

25 (1996) 2 SCC 549.

shelter is a fundamental right under Article 21 of the Constitution. Right to shelter is not a mere right to roof over one's head but right to the entire infrastructure necessary to enable them to live and developed as a human being. Right to shelter therefore, includes adequate living peace, safe and decent structure, clean and decent surroundings, sufficient light, pure air and water, electricity, sanitation and other civic amenities like roads etc. The Court observed;

> "Shelter for a human being, therefore, is not a mere protection of his life and limb. It is home where he has opportunities to grow physically, mentally, intellectually and spiritually. Right to shelter, therefore, includes adequate living space, safe and decent structure, clean and decent surroundings, sufficient light, pure air and water, electricity, sanitation and other civic amenities like roads etc. so as to have easy access to his daily avocation. The right to shelter, therefore, does not mean a mere right to a roof over one's head but right to all the infrastructure necessary to enable them to live and develop as a human being. Right to shelter when used as an essential requisite to the right to live should be deemed to have been guaranteed as a fundamental right."

In *Molay Kumar Acharya v. Chairman-cum-Managing Director, W.B. State Electricity Distribution Co. Ltd. and Ors.*[26] the Court held that no one, in the modern days can survive without electricity, and therefore, the right to electricity is also a right to life and liberty in terms of Article 21 of the Constitution of India. Similarly, in *Bihar State Electricity Board v. The Bihar State Human Rights Commission*[27] the Court held that electricity is an absolute requirement of life and deliberate failure to supply electricity is a violation of 'human rights', cognizable by the appropriate forum under the Protection of Human Rights Act, 1993. In *T.M. Prakash and Ors. v. The District Collector and The Superintending Engineer, Tamil Nadu Electricity Board*,[28] the Madras High Court observed that lack of electricity supply is one of the determinative factors, affecting education, health, causing economic disparity and inequality in the

26 AIR 2008 Cal 47.
27 AIR 2013 Pat 11.
28 [2014] 1 MLJ 261.

society and consequently leading to poverty.[29] Thus, the Court recognized access to electricity, one of the modern energy services, as a basic facet of 'right to life' under Article 21 of the Constitution, which enables and facilitates the fulfillment of other fundamental rights.

The Court has, innumerable times, interpreted the provisions of the Directive Principles of the State Policy along with the fundamental rights in order to make 'right to life' meaningful and 'culled out' number of rights not mentioned in the Constitution expressly. Articles 39(a) and 41[30] of the Constitution mandate the State to direct its policy towards ensuring that the citizens have right to adequate means of livelihood and right to work. In *Olga Tellis v. Bombay Municipal Corporation*[31], a five-judge bench of the Supreme Court held that the word 'life' in Article 21 includes the 'right to livelihood' also. Article 39(e) casts a duty on the State to ensure that the health and strength of its citizens is not abused. Article 39(f) directs the State to ensure that the children are given opportunities and facilities to develop in healthy manner. The goal of Article 39(f) has further been strengthen with the inclusion of Article 21A[32] of the Constitution. Realization of the goals set out in the Directive Principles of the

29 The Court observed: "Electricity supply is an aid to get information and knowledge. Children without electricity supply cannot even imagine to compete with others, who have the supply. Women have to struggle with firewood, kerosene, in the midst of smoke. Air pollution causes lung diseases and respiratory problems. Electricity supply to the poor supports education and if it is coupled with suitable employment, disparity is reduced to certain extent. Lack of education and poverty result in child labour. When right to education up to the age of 14 years is a fundamental right, when right to health is also recognized as a right to life, under Article 21 of the Constitution of India, access to electricity supply should also be considered as a right to life, in terms of Article 21 of the Constitution of India. The respondents ought to have addressed all the issues, instead of banking on the Committee's decision, which in the humble opinion of this Court, is not in aid of human right, but inapposite to the need for, providing the basic amenity, electricity. The authorities ought to have considered, whether it would be effective enforcement of Article 21 or Article 21-A of the Constitution of India, while denying the petitioners, access to electricity supply." (T.M. Prakash and Ors. v. The District Collector and The Superintending Engineer, Tamil Nadu Electricity Board, MANU/TN/2091/2013, Para 64-69).

30 *Article 41:* Right to work, to education and to public assistance in certain cases.- The State shall, within the limits of its economic capacity and development, make effective provision for securing the right to work, to education and to public assistance in cases of unemployment, old age, sickness and disablement, and in other cases of undeserved want.

31 AIR 1986 SC180.

32 *Article 21A*: Right to Education. - The State shall provide free and compulsory education to all children of the age of six to fourteen years in such manner as the State may, by law, determine.

State Policy and the rights recognized as fundamental rights depends upon the access of modern energy services. Without recognizing the right to energy access, it is difficult to achieve the other rights guaranteed under the Constitution.[33] It is also important to note that the goals contained in different international human rights document such as Covenant on Economic, Social and Cultural Rights cannot be achieved without access to energy services. Therefore, it has been argued that the right to access to modern energy services is already implicit in a range of existing human rights obligation.[34] Energy is the indispensable requirement for living a life with human dignity and making other rights meaningful.[35] Right to access energy plays the central role in not only fulfilling the personal aspirations of life, but also in realizing the other fundamental, legal and human rights guaranteed under the Constitution of India, international treaties and other legal instruments. Therefore, right to access energy acquires all the characteristics for which it must be recognized as a fundamental right.

Energy Governance in India: Issues & Challenges

Three main energy policy objectives are pursued by the Indian Government. First, access to energy, which implies ensuring supply of adequate and reliable energy to the Indian population amid growing energy demand, bolstered by economic growth. Second, energy security is driven by increasing reliance on imported fuels, which is crucial to meet India's huge energy demand. Increased import dependence also exposes the country to greater geopolitical risks and international price volatility. Finally, India is dedicated to the mitigation of climate change, although overcoming energy poverty and ensuring economic and social development remain top priority.[36]

33 For details see, Uday Shankar and Surendra Sharma, "Access to Energy: Looking through the Prism of Human Rights – Indian experience" XXXVIII(1&2) *The Journal of Energy Law and Development* 221-240 (Autumn 2012 and Spring 2013) available at http://www.scribd.com/doc/202948614/The-Journal-of-Energy-and-Development-vol-38-no-2-spring-2013-copyright-2013#scribd (last accessed on September 26, 2015).

34 For details *see*, Adrian J Bradbrook, "Access to Energy Services in a Human Rights Framework" available at http://www.un.org/esa/sustdev/sdissues/energy/op/parliamentarian_forum/bradbrook_hr.pdf (last accessed on July 28, 2015).

35 For example: right to health and medical assistance, right to get pollution free environment, freedom from hunger and poverty, right to education, right to sleep, freedom of speech and expression, right to shelter etc.

36 Sun-Joo Ahn and Dagmar Graczyk, "Understanding Energy Challenges in India: Policies, Players and Issues" (International energy Agency, 2012, France). available at http://www.iea.org/publications/freepublications/ publication/india_study_final_web.pdf (last accessed on July 4, 2015).

The Indian Government as a whole plays an indispensible role in the energy sector through State-owned enterprises, public policy, market regulation, indirect guidance and personal networks. The energy sector in pre-independent India, substantially organized around private ownership, contributed 65% of power generation.[37] After Independence, driven by a desire to harness energy for development, the involvement of the public sector has been increased and the coal industry, oil industry and the electricity sector all progressively came predominantly under the State control.[38] The leaders of newly independent India undertook comprehensive electricity legislation in 1948 and suggested for State ownership considering electricity as the fundamental instrument of economic development.[39] Anticipating Independence in 1944, eight prominent industrialists formalized this position in the "Bombay Plan," which advocated State ownership of basic industries, including electricity.[40] This phase can be characterized by greater involvement from the Central Government and Public Sector Entities in management and distribution of power which continued till 1991.[41] The Electricity (Supply) Act, 1948[42] envisaged State Electricity Boards (SEBs)[43] in different states and also constituted the Central electricity Authority (CEA).[44] The State Electricity Boards (SEBs) took over the private companies in

37 Commercial generation of electricity started in Kolkata (then Calcutta) in the year 1879. In 1879, the Government of Bengal granted an exclusive 21-year license to the Calcutta Electricity Supply Corporation to supply electricity to Calcutta. For details see, Dr. Ashish Pathak, Ms. Reeta Chawla, *et. al.*, "The Growing Indian Power Sector" 2(1) *IJRMST* (January - July, 2014), available at http://sjvndk.com/vol2.1/vol2paper1.pdf (last accessed on September 16, 2015).

38 A couple of private companies notably CESC and Tata Electric Co. in Calcutta and Bombay were not nationalized considering their performance.

39 Generation and distribution of electricity were exclusively reserved for public sectors after Industrial Policy Resolution of 1956.

40 *Cited in* Sunila S. Kale, "The Political Economy of Electricity in Asia" 77(3)*Pacific Affairs* 471 (Fall, 2004).

41 Centralized organizations such as the National Thermal Power Corporation (NTPC), the National Hydro Power Corporation (NHPC), the National Power Trading Corporation (NPTC) etc were set up at the central level.

42 The Act was enacted to entrust the responsibility of development of the electricity sector in different states.

43 The basic objective behind the formation of SEBs was to extend electrification across the country, which was limited only to the urban areas till that time.

44 The object of the CEA was to develop a sound, adequate and uniform national power policy to coordinate development of the power sector in India.

their respective States[45] and did reasonably well at providing electricity for industrialization by enhancing system reliability and widening geographical coverage. Central participation began with the creation of National Thermal Power Corporation (NTPC) and National Hydro Power Corporation (NHPC) in 1975 which was followed by a number of public corporations in thermal, hydel and nuclear power. The legislation expected the SEBs to function commercially and achieve a minimum 3 percent return on net capital. The combination of structural inefficiencies introduced through political interference and forced subsidies without Government compensation led to a situation where most SEBs were often in serious financial trouble. In most of the States, SEBs were operational under the direct administrative control of the power Department of the respective State which deteriorated the functional autonomy of the organizations. Subsidized electricity during Green Revolution, rural electrification work in rural and semi-urban areas, where expenditure and losses both were high, accelerated the poor financial conditions of SEBs.[46]

The coal and oil sectors remained in private hands for several decades after Independence. Though oil price was based on cost-plus Administered Price Mechanism (APM)[47], this was linked to a set of cross subsidies that allowed them to insulate consumers from price shocks for essential fuels such as kerosene and LPG. This approach was carried forward continued subsidies to gain political benefits which ultimately obscured the long needed objective based decision to revive the sector. In the early 1970s, the public sector entity Coal India Limited was created in reaction to poor performance, corrupt practices, low production and poor standards by private-producers. Coal prices became intertwined with administration of the railways as the rail network overcharged for freight to subsidized passenger transport, thereby driving up the price of coal freight and hence coal.[48] Thus, production and control reallocated directly into Government hands based on a method of controlled production objectives. As a result of State ownership and monopoly provision of

45 By 1956, SEBs acquired most private licensees upon expiry of their license agreement.

46 *See generally*, Animesh Pal, "Power Sector in India: Growth, Politics and Challenges" 3 (3) *IJETAE* 527-529 (Feb 2013)

47 The APM provided a system of cross-subsidization among the products to permit subsidies on kerosene, LPG, naphtha used in fertilizer production, etc.

48 *Cited in* Navroz K. Dubash, "From Norm Taker to Norm Maker? Indian Energy Governance in Global Context", 2 *Global Policy* 69 (Special Issue, September, 2011).

energy, energy prices were significantly delinked from international prices including for tradable energy resources. In most of the cases, price was determined by political judgment to fulfill political objectives rather than any economic rational.[49]

Energy sector liberalization took place in the early 1990s to attract the involvement of private sector. Considerable emphasis has been given to private investment and broad policy changes have been made during the year 1991 to reduce Government control over diverse sector in the economy including the energy sector. In continuation to this major policy reforms, transmission sector was also opened for private investments subject to approval of Power Grid Corporation of India Limited (PGCIL) as Central Transmission Utility (CTU) in 1998. In line with overall economic reforms initiated by the Government in the early nineties the Electricity Act, 2003 came into existence to bring several regulatory and structural reforms required to foster competitive markets and encourage private participation. Recognizing electricity trading as a separate line of business, the Government also unveiled several programmes, ranging from bringing about efficiency in power generating segment through introduction of super critical technology, to upgrading the existing transmission and distribution network, penetration of commercial energy in rural areas etc.[50] However, it is to be noted that energy sector in India is structurally handled by five separate ministries[51] which work in silos and make independent policy and decisions which are neither optimal nor in the interests of the country.[52]

The key issues facing India with major energy implications are rising population; need for economic growth; access to adequate commercial energy supplies and financial resources; need for the rational energy pricing regime by doing away subsidies; improvements in energy efficiency of both energy supply and consumption; technological upgrades; matching research and development base;

49 *See generally*, Navroz K. Dubash, "From Norm Taker to Norm Maker? Indian Energy Governance in Global Context", 2 *Global Policy* 69 (Special Issue, September, 2011).

50 D V Kapur, "Power Sector Management & Growth - Past & Future" 5(6) *ORF Discourse* 4-5 (December, 2010).

51 Ministry of Coal, Ministry of Petroleum and Natural Gas, Ministry of Atomic Energy, Ministry of Power and Ministry of Non-Conventional Energy Resources.

52 Ramanand N Garge, "Energy Security of India: Growing Nuclear Energy Sector" 4(2) *GNLU Journal of Law, Development and Politics* 84 (July, 2014).

and environmental protection.[53] It has been rightly stated that in the energy sector, India faces the twin challenges of meeting escalating domestic energy demand as well as reducing the carbon intensity of energy.[54] The current energy mix in India is carbon-intensive, and coal, being the cost indigenous resource, continues to be the primary energy source. India's primary energy consumption is dominated by fossil fuels[55] which are directly connected with the higher carbon dioxide emissions.[56] Thus, the Government policy and law should be organized in such manner that it will expand energy access, mitigate energy security and climate change, in addition to promoting economic liberalization.

Right to Energy Access: The Future Ahead

The growing demand in developing countries for energy services presents a historic opportunity to satisfy demand in ways that are compatible with sustainable development.[57] Energy sector in India has historically been neglected by the policymakers for a long time. According to International Energy Agency (IEA), India is the fifth largest energy consumer and third largest consumer of oil in Asia. Nevertheless, at least 306 million people in India lacked any access to electricity even in 2011. Despite its impressive growth, its per capita energy consumption is just 30 percent of the world average.[58] India has been estimated to have the largest number of people in any country in the word without

53 Mohammad Naseem, ENERGY LAW IN INDIA, 36 (Kluwer Law International, The Netherlands, 2014).

54 Aparna Sawhney and Susmita Mitra, "Growth of Clean Energy Capacity in India and Associated Technology Import" in Manmohan Agarwal and John Whally (eds.), WORLD SCIENTIFIC REFERENCE ON ASIA AND THE WORLD ECONOMY , Vol. 1, 249 (World Scientific Publishing Co. Pte. Ltd., Singapore, 2015).

55 *See generally,* Dr. Chanchal Kumar, "India's Energy Security and Climate Change: Challenges, Responses and Recommendations" *World Focus* 42 (October, 2014).

56 At present India is the fifth largest emitter of carbon emissions in the world and it is expected to grow significantly by 2030.

57 A Framework for Action on Energy, World Summit on Sustainable Development, Johannesburg, 2002, WEHAB Working Group, August 2002. available at http://www.un.org/jsummit/html/documents/summit_docs /wehab_ papers/wehab_energy.pdf (last accessed on July 1, 2015).

58 World Development Indicators 2011, available at http://data.worldbank.org/data-catalog/world-development-indicators/wdi-2011 cited in Afsaneh Beschloss, "India's Energy Challenges in Global Context- An Investor's Perspective" Najeeb Jung (ed.), *The Political Economy of Energy and Growth*, 245 (Oxford University Press, New Delhi, 2014).

adequate energy access.[59] According to one recent study, India will have to quadruple its primary energy supply and increase electricity supply by a factor of seven in order to merely sustain its current growth.[60] The analysis of energy status in India reveals that there is a large disparity in the consumption of energy across income groups, social groups and between rural and urban households. However, in common, as much as 80% and 21% of the population in rural and urban areas, respectively, are deemed to have insufficient access to clean energy.[61]

It has been estimated that the primary energy supply[62] must increase at the rate of 5.8 percent annually for fuelling the economic growth of the country.[63] Meeting this requirement is a challenge which needs to be addressed through an Integrated Energy Policy, an important step towards formulation of a comprehensive and coherent national energy policy. The broad vision behind the Integrated Energy Policy is to reliably meet the demand for energy services of all sectors including the lifeline energy needs of vulnerable households in all parts of the country with safe, clean and expedient energy at the least cost.[64] However, it is argued that compiling all energy plans and targets in one policy document itself is not sufficient to assure integration of energy policymaking and implementation.

59 Determining who has access and who does not becomes an attempt in differentiating energy poverty and energy access. Energy poverty is determined by two factors – the ability to pay for the requisite amount of energy and the access to the desired forms of modern energy. In addition to their inability to pay for energy, India suffers from a chronic shortage of modern fuels (viz. LPG/gas and electricity) and many households are forced to fill the gap with traditional biomass and unclean fuels like kerosene and coal. For details see, Subhas C. Bhattacharya, "Energy access problem of the poor in India: Is rural electrification a remedy?" 34 *Energy Policy* 3387 (2006).

60 *Cited in* Afsaneh Beschloss, "India's Energy Challenges in Global Context- An Investor's Perspective" Najeeb Jung (ed.), *The Political Economy of Energy and Growth*, 245 (Oxford University Press, New Delhi, 2014).

61 *See generally*, Karthik Ganesan and Rajeev Vishnu, *Energy Access in India- Today, and Tomorrow* 52-68 (CEEW Working Paper 2014/10, New Delhi, India).

62 Including gathered non-commercial such as wood and dung.

63 The Indian Hydrocarbon Vision-2025 predicts that the contribution of natural gas will contribute to about 20 per cent. Whereas the primary energy mix in 2011-12 comprised of about 32 per cent of oil and 11 per cent of gas.

64 For details see, Integrated Energy Policy, available at http://www.pib.nic.in/newsite/erelease.aspx?relid=46172 (last accessed on July 2, 2015).

The Integrated Energy Policy (IEP) adopted by the Government of India in 2006, identifies multiple energy challenges[65] and sets forth several policy choices that the Government can pursue to address those challenges. This choices primarily comprises four strategies: energy diversification and efficiency; catalyzing investment in energy diversification and energy by a combination of market competitiveness, regulatory intervention, energy pricing changes, and effective subsidies; strengthening diplomacy; and demanding accountability for environmental externalities.[66] The Government of India has also devised a policy called New Exploration Licensing Policy (NELP) in 1997. The main objective of the policy is to attract significant risk capital from Indian and foreign companies, state-of-art technologies, new geological concepts and best management practices to explore oil and gas resources in the country to meet rising demands of oil and gas.[67] The role of unconventional energy resources is extremely vital for sustainable energy security. There is a strong need to increase production and usage of natural gas, a green and clean fuel to reduce the consumption of oil.[68] The Jawaharlal Nehru National Solar Mission (NSM) was formally launched on 11th January, 2010 with an ambitious target of 22 gigawatt (GW) of solar power capacity by 2022. This indicates a shift in energy policy due to resource and climate change. Although solar electricity is renewable, in absence of proper implementation plan and precaution, it can create substantial social and environmental conflict.[69] The National Bioenergy Mission (NBEM) has also been developed to create 10,000 MW of biomass power by 2022. There is also an expansion of the wind energy sector to expand the existing installed capacity of 15 gigawatt (GW) to more than 27 gigawatt (GW). While ensuring energy security and mitigating climate change, the expansion of renewable energy sector will impact upon the economic

65 Those challenges include: meeting growing energy demand, securing supply, mitigating climate change, promoting renewable and alternative energy etc.

66 Planning Commission, Government of India, Integrated Energy Policy: Report of the Expert Committee (2006) available at http://planningcommission.nic.in/reports/genrep/rep_intengy.pdf (last accessed on September16, 2015).

67 For details see, New Exploration Licensing Policy (NELP), available at http://petroleum.nic.in/docs/nelp.pdf (last accessed on September 12, 2015).

68 *See generally*, Manish Vaid, "The Role of Unconventional Energy Resources in India's Energy Security" *World Focus* 120-125 (October, 2014).

69 Ranjit Deshmukh, Ashwin Gambhir, *et. al.*, "Need to Realign India's National Solar Mission" XLV (12) *EPW* 41-50 (March 20, 2010).

development and, in particular creating job opportunities in the country.[70] Initiatives have also been taken to implement the new industrial policy called green industrial policy (GIP) considering the current global financial crisis and global climate change.[71] Government has introduced several rural electrification programmes recognizing the right to access energy.[72] After the formation of the Energy Ministry the policy of the Government has been to encourage and make the best use of renewable energy resources. A variety of schemes have been promoted and incentives offered for the development of solar energy, biogas, biomass, and wind energy. India has plenty of sunlight which is a favourable condition for generating gigantic solar energy. Like many other developed countries, steps should be taken to promote biofuels and to boost the production and use of bioethanol and biodiesel. Apposite conditions need to be created to involve people at the grass roots level to explore huge untapped potential of biogas, biomass for decentralized energy supply.[73]

Summing Up

The last three decades of Indian history have seen inconceivable change from a once rural India to an industrious and first paced economy. The demand of energy is increasing due to increasing industrialization and population. With

70 Manisha Jain and Anand Patwardhan, "Employment Outcomes of Renewable Energy Technologies- Implication of Policies in India" XLVIII (7) *EPW* 84 (February 16, 2013).

71 It is different from conventional industrial policy which seeks to promote sustainable patterns of production and consumption by pricing resource consumption and promoting efficient technologies through market transformation. It seeks to prioritize production and consumption of clean energy. For details see, Ashwini K Swain, "India's Green Industrial Policy- Pursuing Clean Energy for Green Growth" XLIX (9) *EPW* 19-21 (March 1, 2014).

72 For example: *Kutir Jyoti* or Bright Home Programme (a single point connection programme for the poor living below the poverty line); REC Programmes (programme for irrigation pump electrification and village electrification); *Pradhan Mantri Gramodaya Yojana* or Prime Minister's Village Development Programme (programme for achieving sustainable human development at the village level through providing basic services including electricity); Minimum Needs Programme (programme providing 100% loan from the central government for last mile connectivity for rural electrification projects in less electrified states); Accelerated Rural Electrification Programme (programme designed for electrification of non-electrified villages); *Rajiv Gandhi Grameen Vidyutikaran Yojana* or RGGVY (the scheme provides for free of cost connection to all rural households living below poverty line. Further, there will no discrimination in the hours of supply between rural and urban areas.) etc.

73. *See generally*, K.C. Pant, "Fifty Years of India's Energy Policy" 1(1) *ORF Discourse* 1-6 (August, 2006).

an impressive trend in economic rise and promising trend in FDI in recent years in India it is expected that the demand for energy will increase further.[74] In such a situation, energy security of the country needs to be rethought. It has been envisaged that the challenge of energy security will grow more decisive in the years ahead, because the scale of the global trade in energy will grow to a large extent as world markets become further integrated.[75] In such a situation, national energy shortages and an inadequate energy infrastructure could be responsible for national energy poverty. However, access to energy and its efficient use raises many challenges both politically and technically, from traditional exploration and production of fossil fuels to more recent mining extraction methods, renewable energy and environmental protection. It has been rightly observed that, "Indian energy governance and its engagement with global processes are shaped by its own limited energy resources and the consequent persistent and growing concerns over energy scarcity."[76] zFocus should be given on judicious utilization of the renewable energy resources such as biomass, solar, wind, geothermal and ocean energy. Feasible solutions to the perennial problem of power shortage are to be found out with the help of adequate research, development and production. The energy challenges are to be tackled in a manner so that social, environmental, economic and security problems are not aggravated as it is seen with conventional energy strategies. In the medium-term to long-term, it is necessary to take steps that will reduce the energy intensity of the economy.[77] It is also suggested to shift to less energy-intensive modes of transport[78] and better urban planning to reduce the demand for energy use in the transport sector.[79] It is rightly observed that there is a

74 The Indian Hydrocarbon Vison-2025 drafted in 2000 recognized that sufficient supply of oil was necessary to India's planned economic growth of 8-10 per cent over the next three years.

75 Daniel Yergin, "Ensuring Energy Security" 85(2) Foreign Affairs 79 (March – April, 2006) available at http://www.jstor.org/stable/20031912 (last accessed on September 16, 2015).

76 Navroz K. Dubash, "From Norm Taker to Norm Maker? Indian Energy Governance in Global Context", 2 *Global Policy* (Special Issue, September, 2011).

77 For example, demand management through greater conservation of energy, optimal fuel mix, structural changes in the economy, an approximate mix in the transport sector, greater reliance on co-generation, recycling, changes in the design of different products to reduce the material intensity of those product, etc.

78 This includes measures to improve the transport infrastructure in terms of roads, better design of vehicles, use of Compressed Natural Gas (CNG), synthetic fuel, etc.

79 *See generally*, Mohammad Naseem, ENERGY LAW IN INDIA, 42-43 (Kluwer Law Internatinal, 2014, The Netharlands).

wide gap between the theoretical imperative for a strategic energy policy and Government of India's ability to put such policy into practice.[80] While ensuring the creation of more and reliable energy, it is also important that the energy created does not pollute the environment, considering the imminent danger of climate change and environment pollution.[81] The rapidly increasing energy demand and growing concern about economic and environmental consequences call for effective and comprehensive energy governance in India. At the same time, India needs a more coherent political sustainability of policy reforms to promote domestic energy use in a more efficient, sustained and environment-friendly way.

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80 Ms. Jyoti Singh, "Energy Security in India: Concept and Concerns" 418 *World Focus* 128 (October, 2014).

81 *See generally*, Brundtland Report/Chapter 7. Energy: Choices for Environment and Development, available at https://en.wikisource.org/wiki/Brundtland_Report/Chapter_7._Energy:_Choices_for_Environment_and_Development (last accessed on June 26, 2015).

Access to Clean Energy: Challenges faced by India

Bushra Quasmi[*]

Abstract

It is a fact that rural India suffers from chronic absence of clean energy sources. What is an essential and basic commodity for the global population is perceived as a luxury by the poor masses of India. However, what is ironic is that India is one of the largest consumers and producers of electricity circa 2012. The huge gap between the energy consumed by a rural family vis-à-vis an urban family is disheartening. This may be due to the heavy reliance of rural India on obsolete sources of energy such as cow dung, biogas etc. It may also be due to inefficient electricity distribution networks. Access to clean and sustainable energy is currently among the top priorities of international programs and agendas for climate change and inclusive development.

This article deals with the challenges India faces in making a successful transition from using traditional fuels towards modern, clean and sustainable sources of energy. It highlights some key problems faced by the nation and how they can be tackled to make clean energy accessible to the people of India. It further analyses the implication of the USA-led WTO decision for removal of subsidies for solar power in India.

Introduction

Energy is the golden thread that connects economic growth, increased social equity, and an environment that allows the world to thrive.[1] Access to clean

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1 UN Secretary-General Ban Ki Moon, Press Release SG/SM/14242-DEV/2941-EN/270 dated April 20, 2012 available at http://www.un.org/press/en/2012/sgsm14242.doc.htm (last accessed on September 8, 2015).

energy for all is one of the basic requirements for the inclusive and sustained economic growth of a nation. Sustainable energy for all is an investment in our collective future as it promotes the economic growth of the nation by creating new markets, bridging social inequality and empowering people. Appreciating the importance of sustainable energy and its role in our common future, the United Nations General Assembly unanimously has declared the decade 2014-2024 as the 'Decade of Sustainable Energy for All', underscoring the importance of energy issues for sustainable development and for the elaboration of the post-2015 development agenda. *Post-2015 Development Agenda*,[2] the proposed successor to the Millennium Development Goals also envisions among other goals, to ensure access to affordable, reliable, sustainable and modern energy for all. It has been included in the *Agenda* and given special importance and equivalent status to other rights such as access to water and a violence-free environment. However, in India, it remains a distant dream for many. The latest survey released by the National Sample Survey Organization (NSSO) has revealed that when it comes to lighting homes in villages, the share of kerosene is estimated at 26.5%, with electricity's share estimated at 72.7%.[3] In urban India, 3.2% of households use kerosene for lighting.[4] These statistics might come as relief for the Government as the number was decidedly higher at 62% for rural sector in 1993-94.[5] The fact that roughly 300 million[6] people of India depend upon an unclean, archaic source of energy for lighting is hardly a cause of relief.

2 This Agenda will be adopted by Member States at the Sustainable Development Summit to be held on 25-27 September 2015 at New York. India is a key member state of the UNDP and both the state and organization have worked together since 1951 in almost all areas of human development. Both are committed to promoting low carbon, climate resilient and inclusive development.

3 NSSO Report, "Energy Sources of Indian Households for Cooking and Lighting" Report No. 542 (66/1.0), Ministry of Statistics and Programme Implementaton, 13 available at http://www.indiaenvironmentportal.org.in/files/file/Energy%20Sources%20of%20Indian%20Households.pdf (last accessed on September 8, 2015).

4 Mahendra K Singh, "NSSO: 73% of rural Bihar use kerosene for lighting" The Times of India, August 3, 2015 available at http://timesofindia.indiatimes.com/india/NSSO-73-of-rural-Bihar-use-kerosene-for-lighting/articleshow/48321836.cms (last accessed on August 9, 2015).

5 NSS Report, "*Energy used by Indian households*" Report No. 410/12 available at http://mospi.nic.in/rept%20_%20pubn/410_2_part2_final.pdf (last accessed on August 9, 2015).

6 India Energy Policy, Laws and Regulations Handbook: Volume 1 Strategic Information and Basic Laws, 74 (IBP Inc Publications).

Legal and Regulatory Framework

Being a signatory to the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol, the Government of India has taken several steps towards reducing greenhouse gas emissions while striving to meet its national development objectives.[7] The Indian Energy Policy (IEP) adopted by the Indian Government in 2006 provides a comprehensive road map towards energy security for the country. The policy identified the multiple energy challenges faced by the country, including meeting energy demands, securing supply, mitigating climate change, and promoting renewable and alternative energy. Keeping in line with the IEP, the Jawaharlal Nehru National Solar Mission (JNNSM) was launched on 11th January, 2010 by the then Prime Minister of India. Other legal frameworks include the umbrella legislation for regulation of electricity viz, the Electricity Act, 2003, which regulates all the aspects of electricity generation, transmission, distribution and trading, including the use of electricity. Further the National Mission for Enhanced Electricity Efficiency was launched with the slogan of 'Perform, Achieve, Trade' to address the national problem of inefficient use of energy. In 2013, the Ministry of New and Renewable Energy, which acts as the nodal agency for development projects to exploit India's offshore wind resources, came up with the Draft National Offshore Wind Energy Policy. The policy aims to create a market for offshore wind power development in the states of Kerala, Karnataka, Goa, Tamil Nadu and Gujarat. It further aims to encourage indigenization of offshore wind energy technology, and promote spatial planning and management of maritime renewable energy resources in the country's exclusive economic zone. The objectives include achievement of energy security and reduction of carbon emissions.[8]

It suffices to say that India's energy policy is ambitious. The Government is keenly aware of both, the role of energy in the economic development of the

6 INDIA ENERGY POLICY, LAWS AND REGULATIONS HANDBOOK: VOLUME 1 STRATEGIC INFORMATION AND BASIC LAWS, 74 (IBP Inc Publications).

7 This has been through energy efficiency and provision of energy through increased emphasis on renewable energy technologies (RETs). It has also leveraged finances from Global Environment Facility (GEF) and Clean Development Mechanism (CDM).

8 Draft National Offshore Wind Energy Policy, 2013 available at http://mnre.gov.in/file-manager/UserFiles/draft-national-policy-for-offshore-wind.pdf (last accessed on September 2, 2015).

country, and the need to increase the share of renewable sources in the energy pool for the country. However, the country's recent obsession with renewable sources is not entirely owed to environmental concerns, but rather, to the aggressive stance of the country towards industrialization and economic development. Although renewable energy is undoubtedly seen as a cleaner source of energy, there is staunch perception of it as yet another source of energy which can be tapped effectively. Sustainable energy is mostly seen as an additional option rather than an alternative choice of energy. Environmental concerns seem to be secondary to the primary goal of rapid economic development. For instance, take the Natural and Shale Gas Policy, which was launched with considerable excitement in 2013, to explore the hence unchartered natural gas resources of the country. Natural gas is widely accepted as the cleanest source of energy and is consistently tapped in the US and EU. Many believe it is the driving force behind energy security of both the regions. However, the policymakers have callously ignored the full implications of the Policy, which may prove disastrous for the water-stressed regions of the country. According to The Energy and Resources Institute (TERI),[9] the process of extraction of natural gas from deep soil beds, called fracking,[10] is a complicated process which has the potential side effect of contaminating the underwater table, which in a water-scarce country like India can prove devastating. Therefore, it can be argued that though the energy policy of the country is noteworthy in its stance of achieving energy security for the nation, when it comes to giving access to clean energy to all, efforts made by the country are lackluster and tawdry.

Access to Clean Energy

Coal, oil and natural gas fuel the majority of electricity generation around the world. Burning of these fossil fuels has resulted in more than one-third of global greenhouse gas emissions, which in turn is responsible for drastic climate

9 Policy Brief, "Shale Gas in India: Look before you leap" (The Energy and Resource Institute, June 2013).

10 David E Newton, Fracking: A Reference Handbook (ABC-CLIO LLC Publications, California: January 2015).

Fracking is used here to mean the whole process of extraction of natural gas and oil extraction-from drilling and cementing a mile deep long hole to smashing apart of bedrock with huge amount of water, sand, and chemicals to conveyance of pressurized gas through pipelines.

Read: Michelle Bamberger and Robert Oswald, Real Cost of Fracking: How America's Shale Gas Boom is Threatening our Families, Pets and Food (Beacon Press, 2014).

change, depletion of the ozone layer, melting polar caps and the rise of the sea level at an alarming rate. Ironically, more than 1.3 billion people in the world still lack access to electricity that could help them raise their standard of living.[11] Among the biggest chunk of this population, are the natives of rural India. The new policies aim to reduce this number and provide cleaner, more economic and dependable sources of energy. However, there are certain challenges that India faces before there can be a successful transition by the country to clean energy. These challenges include heavy dependence on unclean and archaic sources of energy, widespread use of obsolete technologies and inefficient electric power distribution, among other issues.

Dependence on Traditional Sources of Energy

The foremost challenge is the use of low-grade fuels for energy. Rural India is still heavily dependent on archaic sources of energy such as biomass, cow dung cakes etc. As per the 2011 Census, almost 85% of rural households were dependent on traditional biomass fuels for their cooking energy requirements. According to the NSSO Reports (55th, 61st and 66th Rounds), there has been an increase in biomass fuel use in terms of absolute quantity consumed over the past decade among rural households. This is due to the non-availability of fuel with high calorific value. Lack of investment towards generation of clean energy sources has forced a major section of the population to fall back on cheap and low grade fuel sources such as agriculture residue, especially sugar cane residues and even rubber tyres.[12] There are many health hazards caused by such fuels and when discharged excessively into the environment, the residue may poison the soil, kill aquatic life forms, create stink and air pollution, and even cause eutrophication[13] of lakes and rivers.

11 Alex Doukas and Athena Ballesteros, Clean Energy Access in Developing Countries: Perspectives on Policy and Regulations Issue Brief 2, (World Resource Institute, Washington DC: June 2015) available at http://www.wri.org/sites/default/files/clean-energy-access-developing-countries-issue-brief.pdf (last accessed on last accessed on September 2, 2015).

12 *See* El-Hinnawi and Hashmi, THE STATE OF THE ENVIRONMENT 84 (Butterworth Scientific Publications, Surrey: 1987).

13 Eutrophication is the leading cause of impairment of fresh water and coastal marine ecosystems of the world. It is caused by enrichment of an ecosystem with chemical nutrients, typically compounds containing nitrogen and phosphorus and is the chief cause of algae blooms in lakes and rivers.

See Abid A. Ansari, Sarvajeet Singh Gill et al (ed), EUTROPHICATION: CAUSES, CONSEQUENCES AND CONTROL, 1 (Volume 2, Springer Publications, London: 2011).

Another challenge faced by the Government in the successful transitioning to a clean and efficient source of energy is the overdependence of the rural population on biomass, which is putting enormous stress on natural resources.[14] Though initially advertised as a renewable source of energy, it is only recently that experts have realized the true nature of converting biomass into fuel, *viz;* as a highly inefficient process which is hardly carbon neutral. Furthermore, an additional and potentially damaging effect of biomass to a steady carbon emission from burning of other fuels such as coal is a cause of concern for many people as most of the coal utilized for power generation sector in India is extracted from the Gondwana Coal Reserves. This coal is of low quality with low calorific value and high ash content[15]. While electricity is available in many regions, people continue to use obsolete technology such as tungsten bulbs and old models of air conditioners and refrigerators. The appliances used in India are relatively more inefficient than those used in the developed world.

Inefficient Power distribution

One of the biggest challenges faced by the country is the lack of efficient electricity distribution. For instance, till 2001, the distribution network in Bihar, Orissa and West Bengal was so weak that power was either not reaching or reaching inadequately to various consumption centres.[16] This period was followed by a boom in the power sector, which increased the average consumption of electricity per capita from 15 kWh in 1950 to 814kWh in 2011,[17] and yet power cuts remain a norm in urban areas whereas some of the rural areas are completely engulfed in darkness to this day. What is ironic about

14 *See* India Energy Policy, Laws and Regulations Volume 1 Strategic Information and Basic Laws, 89 (March 2015).
India has been promoting biomass gasifier technologies in its rural areas to utilize surplus biomass resources. The goal was to produce electricity for villages with power plants of up to 2 MW capabilities.

15 *See* V K Rai, N S Raman et al, "Thermal Power Plan; Policy Framework for CO2 reduction" *International Journal of Engineering Research and Science & Technology*, Vol. 2 No. 3, 83 (August 2013).

16 R V Shahi, Indian Power Sector: Challenges and Response: Compilation of Papers Presented During 1991-2001, 280 (Excel Books Publications, New Delhi: 2005).

17 National Electricity Plan, Vol. 1, Central Electricity Authority, Ministry of Power, Government of India, 1, available at http://www.cea.nic.in/reports/powersystems/nep2012/generation_12.pdf (last accessed on September 9, 2015).

this is the fact that the country is third largest producer of electricity in world and has the cheapest tariff rates in the world.[18]

Most of the houses in India receive electricity supply from State Electricity Boards (SEBs), which in recent years have incurred large losses and liabilities. These losses and liabilities are the result of Excessive Transmission & Distribution Losses or the losses incurred by SEBs due to reasons such as power theft, none and incorrect billing, leakage in system, and above all, lack of investment. These losses have resulted in poor financial conditions and distress of SEBs. In such a scenario, SEBs have had to resort to revision of tariff to generate capital. However, many SEBs find tariff revisions impossible owing to the political pressure inflicted on them. The bottom line is that, since SEBs lack capital, they cannot invest in expansion of distribution networks, and many villages which fall outside the network continue to remain so.

The Government of India is keenly aware of the role of the private sector in production of clean energy, especially solar power, and the country's policy is in alignment of that goal. For example, the country's policy on Concentrated Solar Thermal (CST) Plant is designed to be largely private sector driven with the Government creating an enabling environment for the investors[19] such as the JNNSM,[20] which is currently in its third phase. The incentive scheme has benefitted the country, especially in states such as Rajasthan and Andhra Pradesh.[21]

18 Lindsay Wilson, 'The Average Price of Electricity, Country by Country', *The Energy Collective*, dated September 25, 2013 available at http://www.theenergycollective.com/lindsay-wilson/279126/average-electricity-prices-around-world-kwh (last accessed on September 9, 2015).

19 Natalia Kulichenko, Jens Worth, CONCENTRATING SOLAR POWER IN DEVELOPING COUNTRIES: REGULATORY AND FINANCIAL INCENTIVES FOR SCALING UP, 18 (World Bank Publications, Washington DC: July 2012).

20 The Mission has set the ambitious target of deploying 20,000 MW of grid connected solar power by 2022 and aims at reducing the cost of solar power generation in the country.

21 The data for all 12 months for the FY 2013-14 are available only for 18 plants. Of these, 14 plants are in Rajasthan, 2 in Andhra Pradesh and 1 each in Orissa and Tamil Nadu. The highest total annual electricity generation per MW (AC) and the highest Capacity Utilization factor was 1.817 Million kWh and 20.7% respectively by Saidham Overseas Private Limited in Rajasthan. The lowest was 1.458 Million kWh/MW and 16.6% CUF by Indian Oil Corporation Limited, in Rajasthan. Outside Rajasthan, the highest output was a plant in Andhra Pradesh with 1.664 Million kWh/MW. 13 out of the 18 plants had generation higher than 1.6 Million kWh/KW. *See* Summary Report: Performance of Solar PV Plants under the Jawaharlal Nehru National Solar Mission (JNNSM), Inter Solar India available at http://www.intersolar.in/en/for-press/news/industry-news/performance-of-solar-pv-plants-under-the-jawahalal-nehru-national-solar-mission-jnnsm.html (last accessed on September 9, 2015).

However, certain technical difficulties and inconsistencies faced by the investors continue. This includes lack of infrastructure for the production of raw materials[22] and other components. According to the World Bank Report,[23] there is a need to tailor incentive frameworks to the specific circumstances to allow developers to use the respective CST capacity in the most efficient way possible. This could include avoiding capacity limits on individual plants because of the considerable economies of scale for individual plants that can be achieved and limits on the use of storage. Also, needless emphasis on large megawatt size grid connected SPV projects, instead of primarily focusing on off-grid and decentralized small solar applications, appears to be lacking in strategic vision. If in the Indian context, the smaller decentralized and off-grid applications are more appropriate, then the subsidy or financial support should be directed towards the same.[24] Transparent, competitive and stable pricing through long term power purchase agreements has been most effective in attracting investors to renewable energy.[25]

USA-led WTO decision against Solar Power Reforms in India

A major hurdle towards successful transition of the country from heavy dependence on fossil fuels towards cleaner alternatives has arisen recently in the form of a WTO decision against the solar power program (JNNSM) of India. The decision came in the wake of allegations raised by the US before the WTO dispute settlement panel. The US alleged that the incentive scheme provided by India under JNNSM was discriminating against the US manufacturers, and hence was in violation of global trade rules. The decision of the WTO has been met with outrage from labour and environmental advocates. The power demand in India is increasing manifold and in such a scenario, JNNSM is a key program that is already in its fourth phase and aims to create 100,000 megawatts of energy. This energy is the driving force behind the industrial development of the nation and is indispensable for the sustainable

22 Polysilicon and silicon wafers.

23 Natalia Kulichenko, Jens Worth, Concentrating Solar Power in Developing Countries: Regulatory and Financial Incentives for Scaling Up, xiii (World Bank Publications, Washington DC: July 2012).

24 Sambhit Basu, India Solar Policy: Elements Casting Shadow on Harnessing the Potential, 8 (IDFC Policy Group, November 2011).

25 World Development Report, Development and Climate Change, 281 (World Bank Publication, Washington DC:2010).

economic development. JNNSM is a noteworthy scheme for production of clean solar energy in India and the program is central to India's policy on energy security and climate control. Besides, historically, India has been facing electric power crunch. The massive power outage of 2014, which left large parts of North India without electricity for over fifteen hours, is a recent example of the acute shortage that the country faces, especially in summer months. This was further aggravated by Supreme Court's decision of cancelling the licenses of coal blocks which were found to be allocated arbitrarily and illegally.[26]

Providing energy security for the people is a major task for the Government of India and renewable sources are crucial part of energy source for the country. Thus, the decision of WTO is likely to have a widespread negative impact on the energy reforms and policy of the country. While the true implications of the decision on the people and economic development of the country will be visible shortly, the decision is being criticized by civil society and environmental advocates all over the globe. Promotion of clean energy and expanding solar initiatives is central to many international conferences and global summits on climate change including Agenda 21, Rio Summit and Brundtland Report. It has been accepted as the responsibility of all nations, especially developed nations where most of industrial activities take place and therefore leave among the largest carbon footprints. In such a scenario, developed economies like the US should be applauding the efforts made by developing nations like India, instead of creating a hindrance in the name of free trade rules. It is felt by many that, "*the WTO needs to get out of the business of hampering climate action in countries around the globe. The outdated trade rules on the books now and under negotiation in trade pacts, including the Trans-Pacific Partnership and the Transatlantic Trade and Investment Partnership encourage trade in fossil fuels and discourage countries from developing local clean energy capacity. These rules simply do not reflect the urgency of solving the climate crisis and stand in the way of clean energy growth.*"[27]

26 Manohar Lal Shrama v. Principal Secretary & Ors: Writ Petition (Crl.) No. 120 of 2012, SC, Para 157.

27 Nadia Prupis, "WTO Ruling Against India's Solar Push Threatens Climate, Clean Energy", *Common Dreams* dated August 27, 2015 available at http://www.commondreams.org/news/2015/08/27/wto-ruling-against-indias-solar-push-threatens-climate-clean-energy (last accessed on September 9, 2015).

Suggestions and Conclusion

The key to ensuring access to clean energy for all, lies in an extensive partnership between the local community, the government and international organizations. At the local level, it is important to create awareness about efficient use of energy, particularly electricity, as well as technology improvements. Also, awareness should be created about the negative externalities[28] of conventional sources of energy such as timber wood and cow dung cakes, especially in rural areas.

With regard to alternative sources of energy, there is a need for greater participation and investment. Around the world, the costs of technologies to deliver and distribute renewable energy have declined sharply in recent years.[29] This has enhanced the competitiveness of these technologies in expanding access to underserved rural areas and helped drive a surge of energy enterprises catering to this market. India should procure for herself a share of this market and derive benefit. As far as natural gas is concerned, policymakers should approach the subject with abundant caution and care as it is a risky venture. What may have worked for other countries may not prove to be successful for India. The potential damage to the environment and people far outweighs the advantages.

At the international level, there is a need for greater cooperation between developed and developing nations, particularly towards technological development and exchange for sustainable and cleaner fuel. Increased regional participation remains the key. There is a need for negotiation to arrive at a global framework which is beneficial for the country and ensures energy security for the nation.Outdated trade rules should be renegotiated and amended to keep in line with emerging energy demands. Solar energy has proved its worth as the best alternative source of energy available to tropical countries like India, and therefore policy reforms for solar power should be promoted and protected. Lessons may be learnt from the Chinese, who successfully challenged the US

28 Negative externalities of conventional sources of fuel for energy include increased air pollution due to high GHG emission, large carbon footprint, which then inadvertently affects public health.

29 Tawney, L, Jairaj, B, & Xuege Lu, "The Real Story Behind Falling Renewable Energy Investments" (2014) cited by Alex Doukas and Athena Ballesteros, Clean Energy Access in Developing Countries: Perspectives on Policy and Regulations Issue Brief 2, (World Resource Institute, Washington DC: June 2015).

tariffs at the WTO when it raised allegations of illegality against its solar power policy and regime.[30] Policies that aim to regulate subsidies for renewable energy are counterproductive for the nation and regressive for the global community.

Environmental concerns are neither the burden nor the monopoly of developed nations. Developing nations should take an earnest stand against environmental degradation. There is a need for an overhaul of energy policies as well as environmental policies to account for the disparity between developed and developing nations where it concerns the use of global wealth and resources, and thus also causes a rise in pollutants. Also efforts should be made to equate both the policies. Developing countries continue to face the brunt of energy shortage and are unable and perhaps unwilling to reduce the level of pollution and adverse environmental consequences, firstly because they are still struggling with securing first generation rights for their people such as access to clean water, shelter and a violence-free environment and secondly, they believe perhaps justifiably, that caring for the environment is the responsibility of developed nations who have been historically responsible for the routine environmental damage and are in a position where it is economically possible for them.

In such a scenario, fixed environmental standards, seemingly neutral trade policies and conservative energy policies seem unjustified and unfair, thus making an argument for pro-developing and LDC energy and environmental standards.

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30 Ian Clover, "US solar duty violated trade rules, WTO finds", *PV magazine* dated August 15, 2014 available at http://www.pv-magazine.com/news/details/beitrag/us-solar-duty-violated-trade-rules—wto-finds_100015741/#axzz3jmZwjUZd (last accessed on September 9, 2015).

Power Sector and its Regulation in India

The Electricity Act, 2003 – Liberalizing the Power Sector

Meenakshi Prasad[*] *and Apurv Parashari*[**]

Abstract

The Electricity Act, 2003 is an act brought into force to transform the power sector in India. It intends to cover all aspects of generation, distribution, transmission and trading of electricity. It also provided for open access and for enabling power trading while de-licensing generation.

While some of the Sections have been enacted and are being effectively implemented in the country, there are a few Sections that still need to be properly implemented.

The Act came into force on 2nd June 2003 to replace some age-old existing legislations in the country. The Act conserves and enhances the existing legislations and aims at the development of the electricity sector in India.

Preceding the Electricity Act, 2003, the Indian power sector was directed as per the Indian Electricity Act, 1910 and the Electricity (Supply) Act, 1948. Previously, the process of generation of electricity, distribution and transmission were carried out State-wise by the State Electricity Boards (SEBs). When the level of subsidies became unstable, it became important to distance the State governments from tariff determination. The Electricity Regulatory Commissions Act was brought into force in the year of 1998 which aimed at development of the power sector even more by involving the private sector and to bring in as much competition as possible through this Act of 2003.

Hence, this Act is a consolidation of all the existing laws relating to generation, transmission, distribution, trading and use of electricity aiming to strengthen the electricity industry by promoting competition, protecting rights and interest of consumers, supplying electricity to rural areas, regularizing of electricity tariff,

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ensuring transparent policies regarding subsidies, promotion of efficient and environment-friendly policies, establishment of Central Electricity Regulatory Authorities and establishment of Appellate Tribunal for all electricity related matters and disputes.

This article endeavors to review the Electricity Act, 2003 and to highlight how the new features are different from the existing legislations.

Introduction

India is the fourth largest energy consumer and imports 80% of its oil, 18% of its gas & now even 23% of its coal. As the Indian economy continues to grow, so will its energy consumption, especially as the growth of its manufacturing sector catches up with its services. With domestic resource production facing various challenges, the general expectation has been that Indian energy imports will continue to grow and energy security concerns will intensify.

The Electricity Act, 1887 was the first legislation regarding generation, supply and use of electricity in India. It intended to protect the public by means of legislation related to electrical energy. This was later replaced by Indian Electricity Act, 1903 which established specific provisions related to energy generation and regulation. The Electricity Act, 2003 (hereinafter referred to as "the Act" is a consolidation of all electricity legislations and combines them into one comprehensive binding Act. The Act was enacted with a view to modernize, ensure speedy reforms in the power sector aiming to electrify all villages by 2007 and provide electricity to all households by 2012.

Salient Features-

1. The Central Government shall prepare a National Electricity Policy in consultation with State Governments.[1]

It is the role of the Central Government to prepare for a National Electricity Policy and Tariff Policy.[2] The Central Government is obligated to notify a national policy for rural areas permitting standalone systems based on renewable and non-conventional sources of energy in consultation with States.[3] The

1 Section 3 of the Act.
2 Ibid.
3 Section 4 of the Act.

Government is also bound to formulate a national policy for bulk purchase of power and management of local distribution through user's association, cooperatives, franchises and panchayat institutions.

The Central Government is obligated to prepare, publish, review and revise[4] the National Electricity Policy and Plan and also has the power to notify a national policy on independent systems in rural areas and non-conventional energy sources in consultation with the States.[5]

2. Aiming to complete the rural electrification and to provide for management of rural distribution by local governing bodies, cooperative societies, NGOs, franchises etc.

The Centre and State Governments intend to extend the supply of electricity to all parts of the country which do not yet have access to electricity like villages, suburbs and hamlets.[6] The Rural Electrification Corporation Limited was formed specifically to address the issue of rural electrification. The Act gives recognition to non-conventional sources of electricity and has made captive generation license free in order to fulfil the agenda of total rural electrification.

3. Provision for license free generation

The State Electricity Regulatory Commissions (SERCs) provide for distribution under Section 12, the SERCs have the power to exempt any local authority, panchayats, cooperative societies, NGOs etc. from the licensing system.[7]According to Section 14 of The Act, there is no need for a license to a person or company in a rural area.

The Act endeavors to liberalize the generation process by eliminating the requirements for techno-economic clearance of the CEA for a thermal energy project. More regularization has been brought in the process of setting up a hydro power plant.[8] The government also liberalizes the energy sector to make captive generation free from regulatory controls and provide open access to captive generating plants.[9] Captive generation is defined in Section 2(8) as '*a*

4 Section 3 of the Act.
5 Section 4 of the Act.
6 Section 6 of the Act.
7 Section 13 of the Act.
8 Section 8 of the Act.
9 Section 9 of the Act.

power plant that has been setup by a person to generate electricity primarily for his own use and can also include a plant setup by a cooperative society or association.'[10]

Another significant step was to promote generation from non-conventional sources or co-generation.[11] The regulatory commission has the power to prescribe the minimum percentage of purchase of power from renewable or non-conventional source of energy.[12] No license is required for generation and captive generation has been freely permitted. Hydro projects exceeding the capital, however, needs concurrence of the Central Electricity Authority.

4. Transmission

The concept of transmission utility came up in 1998 through an amendment to the erstwhile Indian Electricity Act, 1910. Section 38 of the Act, 2003 provides for a central transmission utility.[13] The primary function of this body is to ensure discharge of all functions related to inter-state transmission systems which include any system that is used for conveying from one State to another and also includes transmission of power within the State.[14] The Act provides that the transmission utility shall have merely a recommendatory role on application for grant of transmission license.

Section 15 of the Act provides for the procedure for the grant of license for the transmission of electricity. This means, transmission companies are to be granted license by the appropriate commission after giving due consideration to the views of the transmission utility.[15] Section 40 lays down the duties of these transmission licensees who have been authorized to establish or operate transmission lines.[16] The duties include building and maintaining effective inter-state transmission system on the payment of transmission charges. The Act provides for an open access to transmission lines available for licensees, generating

10 Descended from Section 44 of Energy (Supply) Act, 1948.

11 Section 61(h) of the Act.

12 Section 81(1)(e) of the Act.

13 This is more or less similar to the provision to the provision in section 27A of the Indian Electricity Act, 1910.

14 Section 2(36) of the Act.

15 Section 15(5)(b) of the Act.

16 Section 2(73).

companies and consumers subject to open access in distribution. Open access means "*the non-discriminatory provision for the use of transmission lines or distribution system or any related facility by which any licensee or consumer with respect to regulations specified by the appropriate commission*".

The Act[17] mandates appropriate transmission utility to provide non-discriminatory open access to its transmission system thus enabling licensees and generating companies the right to use transmission systems without any discrimination.

The Act provides for establishment of a National Load Dispatch Center under the control of the Central Government for providing optimum scheduling and dispatch of electricity among the Regional Load Dispatch Centres[18] which are responsible for the day-to-day operation of the grid involving dispatch and scheduling. They have the power to give directions, exercise supervision and control for ensuring grid stability, achieve maximum efficiency in the operation of the power system[19] and also levy and collect fee from licensees and generating companies. The constitution of a State Load Dispatch Centre (SLDC) provides for efficient scheduling and dispatch of electricity within a State.[20]

5. Distribution

Provisions with regard to distribution of electricity have been enshrined under Part VI of the Act (Sections 42-60). It's the duty of a distribution licensee to develop the electric grid, maintain the supply of electricity in an efficient manner and provide electricity to the consumers within the area. The distribution licensee shall provide a supply of electricity within one month of an application made by the owner or the occupier of a premises, failing which a penalty may be levied on him which extends to Rupees one thousand for every day in default.[21] If a person situated in the area of supply of another distribution licensee seeks a supply of electricity from another distribution licensee, then such distribution licensee shall, on payment of an additional surcharge on the wheeling charges,

17 Under Section 38(d) and 39(d).

18 Section 26 of the Act.

19 Section 25 of the Act.

20 Section 31 & 32 of the Act. The genealogy of Section 31 can be traced from Section 55 of the Electricity (Supply) Act, 1948.

21 Section 43 of the Act.

provide a supply of electricity to such consumer.[22] A distribution licensee shall not be obligated to supply electricity within a specified time period if he is unable to do so due to reasons beyond his control.[23]

A distribution licensee shall levy charges which may include a fixed charge and the charge for the consumption of electricity. The distribution licensee shall charge a tariff which is fixed at regular intervals of time in view of the conditions of his license.[24] This tariff shall include a charge, fixed by the State Commission towards the cost incurred in maintenance of the electrical plant or line which is used to supply electricity to that area.[25]

6. Consumer protection

Subsidy regimes have a fostered inefficaciousness in the form of substandard power and service qualities. The Act promises through its preamble, to "*protect interest of consumers and to supply electricity to all areas*" so as to safeguard the rights of consumers, It also provides protection to consumers against low quality of service or performance. The regulatory commission shall impose fines or compensation in case of failure to comply with the set standards or non-compliance in paying penalty within ninety days. The Act stipulates that licensees will have to furnish information about the quality of performance which shall be published at least every year. The tariffs shall be regulated by the commissions to recover cost of electricity reasonably and without causing any detriment to the interest of consumers. For the purpose of redressing grievances of the consumers, a forum shall be constituted by the distribution licensee within six months from the appointed date or date of grant of license whichever is earlier.

An ombudsman shall be appointed to settle any grievance of the consumers as per guidelines specified by the SERC. The Act[26] holds provision for specific penalties for offences such as electricity theft, tempering of meters or waste of electricity.

22 Section 42 of the Act.
23 Section 44 of the Act.
24 Section 45 of the Act.
25 Section 46 of the Act.
26 Electricity Act, 2003.

In urban areas, a committee shall be set up in each district to review quality of power supply and levels of consumer satisfaction. However, in rural areas, separate policies have been inculcated giving an upper hand to the welfare of the society by providing electricity to everyone.

7. Trading or market development

Any trading of a distinct activity is permitted with the possession of a license as per the Act.[27] The regulatory commission or the state commission is also authorized to decide limits on the margins of trading to avoid artificial price violation.[28] The commission endeavors to enhance position and develop the market in the trading sectors.

8. Regulation commission or appellate tribunal

According to Section 82 of The Electricity Act, 2003, a State Electricity Regulatory Commission (SERC) shall be constituted within six months from the appointed date.[29]

There lies a provision for appointment of a Joint Commissioner by more than one State or Union Territory[30] and for the constitution of an Appellate Tribunal comprising of one Chairman and three members.[31]

The appellate tribunal is entitled to entertain appeals against the orders of the CERC or SERC and also to exercise general supervisory and control functions over the appropriate commissions.[32] The appellate tribunal is an essential authority as it intends to simplify the litigation process and curb any delay in the decisions through the High Court and to provide appellants with technical expertise in decisions.

9. Tariff principles

There are specified provisions for determination of tariff under this Act. However, Section 62 of the Act provides that the Regulation Commission is to

27 Section 12.
28 Under Section 79(2)(b) and Section 86(2)(b).
29 Section 2(2).
30 Section 83 of the Act.
31 Sections 110 and 112.
32 Section 111 of the Act.

be the authorized body for determination of tariff for supply of electricity by a generating company to the one with a distribution license.

The appropriate governments also need the help of a licensee or a generating company to establish details of generation, transmission and distribution for determination of tariff.[33] The State government has the power to grant subsidy to a consumer or a group of consumers.[34]

Section 63 of the Act lays down the method for determination of tariff and states that, *"The Appropriate Commission shall adopt the tariff if such tariff has been determined through a transparent process of bidding in accordance with the guidelines issued by the Central Government".*

As per Section 49, the Appropriate Commission can form agreements for the purchase or supply of electricity. However, the commission has been entrusted with powers to lay down specific guidelines for the determination of tariff and the Regulatory Commission is obligated to keep a check on the costs of generation, transmission and distribution independently.

10. Role of Central Electricity Authority (CEA)

The CEA of India is a nodal organization under Section 3(1) of Electricity (Supply) Act, 1948 which is not been overridden by Section 70(1) of the Act. Position of the CEA has significantly changed with the commencement of the Act. The provision empowering the CEA for '*techno-economic clearance*' of thermal projects which was the main function of the CEA previously, the provision included a detailed analysis of a project from a technical and economic perspective. This has been omitted with the commencement of the Act.

The CEA continues to be the authority which acts as a technical advisor to the Appropriate Government with the responsibility of overall planning.[35] It is responsible for providing specification of technical standards for electric plants and lines. It also formulates the hydro power development schemes for both public and private sector for efficient and effective generation of power.

33 Section 62(2) of the Act.
34 Section 65 of the Act.
35 Section 73 of the Act.

The CEA is entitled to regulate and maintain power within the country and facilitates distribution from areas of surplus electricity to regions having a deficit of electricity, and also with neighboring countries for mutual benefits.[36]

Section 7 of the Act stipulates, "*a generating company may establish, operate and maintain a generating station if it is in compliance with technical standards only relating to connectivity to the grid*', i.e. generating stations may not follow CEA technical standards for construction of electric plants and lines. Similarly, licensees may not implement the standards for construction of electric lines but my do so for grid code or grid standards for operating and maintaining transmission lines.[37]

11. Measures against theft

In The Act, the punishment prescribed for theft has been made more stringent and the definition of 'theft of electricity' has also been widened. However, the focus of the provisions of The Act is more on realization rather than criminal proceedings under Section 126 and 135. The penalties are linked to connected load and quantum of energy and financial gain involved in theft. Section 135 of the Act prescribes the punishment for theft which is a cognizable and non-bailable offence.[38, 39]

An inspecting officer can manually make an inspection regarding usage and if it is found that the consumer is indulging in unauthorized use, a penalty can be awarded. The inspecting officer shall compute the amount payable and allow the consumer to raise objections.

The punishment of a first time offender may include imprisonment for a term which may extend upto three years or with fine or both. In the event of a subsequent conviction the person shall be debarred from obtaining an electricity connection for a period from three months to two years, further such person shall not be entitled to obtain an electricity connection from any other source or generating station.

36 *India Yearbook 2007*, Publications Division, Ministry of Information & Broadcasting, Government of India, 2007, ISBN 81-230-1423-6.

37 Section 73(d) of the Act.

38 Section 151B of the Act.

39 The genealogy of this Section can be traced back to Section 39 of the Indian Electricity Act, 1910.

Theft of electricity has been made a compoundable offence[40] and the sum of money for compounding the offence is as prescribed below:

Name of Service	*Rate at which the sum of money for compounding is to be collected*
Industrial Service	Rupees Twenty Thousand
Commercial Service	Rupees Ten Thousand
Agricultural Service	Rupees Two Thousand
Other Services	Rupees Thousand

12. Restructuring of State Electricity Boards (SEBs)

The provisions regarding the Reorganization of the State Electricity Boards are enshrined in Part XIII of the Act. The Electricity (Supply) Act mandated the compulsory formulation of SEBs by all States, a concurrent provision does not exist in the Act. The Act, in turn has a provision to enable restructuring of SEBs through a transfer scheme. The use of SEBs as a State Transmission Utility or licensee should be for such period as is mutually agreed between the Central and State Governments.

The State Government shall bring into effect a transfer scheme and notify it to come into effect on a particular date (*effective date*). The transfer scheme shall contain the provisions for formation of subsidiaries, mergers etc. provided such combination increases the efficiency, viability and profitability. From the *effective date* all property, interests in property, rights and liabilities which belonged to the State Electricity Board shall vest in the State Government. The properties which now vest in the State Government shall be transferred to State Transmission Utility or a generating company or a transmission licensee or a distribution licensee, as per the terms agreed upon by such State Transmission Utility or as stipulated in the transfer scheme.[41]

The SEB shall remain effective for a period of one year from the *effective date* or for any other term which the State Government shall notify and for this

40 Section 152 of the Act.

41 Section 131 of the Act.

additional period the SEB shall be deemed to be the State Transmission Utility or licensee and all licenses, clearances, permissions, authorizations and approvals which have been obtained within this period shall continue to operate.[42]

Conclusion

The Electricity Act, 2003 is an effective consolidation of previous legislations as it effectively covers loopholes to ensure efficient and effective protection of both the distributors and the consumers. The Act takes a step towards recognizing the growing demand and dependence of the masses on electricity by appreciating and regularizing non-conventional and alternative sources of electricity. It allows license free captive generation in rural areas, which is a step further in allowing cogeneration and it enables power trading while de-licensing generation, it introduces open access and specifies the duties of the transmission companies. The 2003 Act provides for more stringent measures in cases of theft of electricity wherein the punishment has been increased to imprisonment of up to three years or fine or both, It enhances the measures for consumer protection by making mandatory provisions for a grievance officer, electricity ombudsman, and formation of an Appellate Tribunal. It aims at restructuring SEBs which is an essential move considering the extensive liabilities and mismanagement which has been overcome due to all the SEBs property, interest in property, rights and liabilities being vested in the State Government.

However, there are certain amendments that are proposed to the Electricity Act, 2003 through the Electricity Amendment Bill, 2014 which are already resented by some State governments, as it will have prominent influence on the nation's power sector. The main objective of the present set of amendments is to improve governance. It aims at enhancing competition in distribution sector and strengthening the power grid safety.

Quoting Yogesh Daruka Partner, Advisor, Price Waterhouse Cooper Pvt Ltd (PWC), "The key intent behind the amendments is to allow competition and better customer service without significantly increasing tariff".

Parliamentary Standing Committee has given its recommendations to the amendments and it is now ready for being placed before Parliament.

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42 Section 172 of the Act.

Electricity Act And Its Implementation in India

Kirti Singh[*]

Abstract

The infrastructure is the imperative for the economic growth and it is pivot of development of the nation. For a fast growing economy, availability of adequate quantity, quality and reliability of infrastructure is determinant. The significance of adequate infrastructure services such as power, telecommunications, transport, water supply and sanitation, for the development of industry and the quality of life can be seen in all walks of life. India is persistently facing the quandary of widespread electrical energy and peaking shortages. This shortage leads to unpropitious effect to our country's economic growth. The Indian power sector is weighed down with rising commercial losses due to various inefficiencies, mismanagement, technical losses and colossal commercial increasing subsidy burden on the states. The Government of India initiated the reform process in 1991 in order to improve the techno-economic performance and re-vitalise the sector. The electricity sector witnessed major policy changes, regulatory initiatives and structural changes as it was widely recognized that reliable and uninterrupted power supply is one of the basic necessities for the growth of industries. But still sufficient progress has not been done. The benefits from reforms are grabbed by the respective monopsonic transmission utilities of the States in the generation sector. Therefore the industry structure consisted of an interconnected chain of monopolies where the benefits of competition cannot be materialised. Effective competition in the field of electricity can be helpful for effective management in this area, since we know that the increased competition is a means to improve efficiency. This article discuses how the competition is relevant for the infrastructure sector which also includes the electricity sector. This article further analyzes the key concerns in the electricity sector and what are the various competition issues involved in the field of electricity.It also discusses matters like the issue of open access and the role of regulator in this area.

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Introduction

In the present era. electricity has emerged as the a crucial input for sustaining the process of economic as well as social development. Development of different sectors of economy in India is not possible without matching development of the electricity sector. But nowadays it has become common for angry persons to take to the streets protesting against the abysmal power situation. India faces acute power shortage. Most of the areas in the country get only an hour of electricity every day.[1] Although reform of power sector has topped the public policy agenda in India for more than a decade, and there are incentives to increase investment in generation and fine-tuning frameworks, most of the country still faces severe power shortages. There is unacceptable performance in this sector which is also leading to wastage of money. This can be credited to the lack of competition and effective regulation in the power sector.[2]

The development in the area of electricity sector took place essentially through public sector utilities, some under the Central Government and the majority under the State Governments. Until the period of 1980s, electricity services were delivered by State-owned monopolies in most developing countries of the world, as also in many developed countries of Europe. It was considered that monopolies were best suited to deliver electricity services as they enjoyed economies of scale and scope. Until 1991, India also reflected the same sentiment. The sector in the States was managed by one large, vertically integrated entity that generated, transmitted and distributed power under the respective State Ministry of Power. The rationale for State-owned integrated electric utilities reflected the internationally common view that electricity sector was a natural monopoly with the exception of US and Japan.[3] Nonetheless, in various instances, the absence of competition led to suboptimal utilization of resources, poor quality of services and little consideration for consumer interests. The incapacity of State-owned enterprises to deliver services in a cost-effective manner led to the reconsideration of the policies relating to the provision of services, and

1 Electricity Crisis in India, available at http://www.electricityinindia.com/ (last accessed on 23rd May, 2015).

2 K.Vaishali, Competition Issues in Infrastructure Sector, available at http://www.cci.gov.in/images/media/ResearchReports/Competition% 20 Issues% 20in%20the %20Infrastructure%20 Sector_With%20Special% 20reference% 20to%20 the% 20 Indian%20Electricity%20Sector.pdf (last accessed on April 21, 2015).

3 Ibid.

there was the increasing perception that corporatisation of the sectors could improve quality of service efficiencies and eventually, the bottom line. Various countries have begun to open up their electricity sector to participation by private sector as they realize the need for a new mechanism to balance the interests of the various stakeholders to ensure the viability of the industry and reduce the transaction costs associated with privatization.

The Indian Electricity Sector

Most of the State Electricity Boards (SEBs) in India have been working under resource crunch and operating at massive commercial losses. According to the Government of India reports, inefficiencies were mainly due to:[4]

- Poor billing and collection, inadequate collection efforts, tampering with meters and misreporting in collusion with consumers;
- Imbalance in the mix of generation sources and undesirable proliferation of captive generating unit;
- Unmanageable size and monolithic structure, making it unwieldy, inefficient and unresponsive to change, as well as manpower-related problems, poor productivity, low skills and lack of training for upgradation, low motivation levels;
- High transmission and distribution losses substantially higher than normal technical standards, with a high component on non-technical losses, accounted for by poor/inadequate metering and high incidence of theft of energy-; Unsatisfactory operational efficiencies, losses (including theft of power
- The Electricity Act, 2003 enshrined various provisions indicating open access, competition neutrality , efficiency, unbundling, consumer choice etc. But in spite of such obvious expression of the legislature's intention, the objectives are far from achievable.[5] The Electricity Act, 2003 provides

4 Supra note 2.

5 Ensuring electricity to all Promoting Competition in the Sector a Study Report, Meeting and Consultation With Official at Competition Commission Of India, Meeting of Power and Other Stakeholder, available at http://www.circ.in/pdf/Electricity_Sector.pdf (last accessed on May 19, 2015).

that Regulatory Commissions regulate tariff and issue of licenses and that SEBs will no longer exist in the existing form and will be restructured into separate generation, transmission and distribution entities. Regulatory function has been taken away from the purview of the Government. The Electricity Act, 2003 mandates licensee-free, non-discriminatory open access of the transmission system, thermal generation and gradual implementation of open access in the distribution system which will pave way for creation of power market in India. The main provisions of the Act are:[6]

- Open access in distribution to be introduced in phases.
- Non-discriminatory open access in transmission.
- Provision for license-free generation and distribution in rural areas and provision for management of rural distribution by Panchayats, Cooperative Societies, non-government organizations, franchisees etc.
- De-licensing of thermal generation and captive generation.
- Adoption of multi-year tariff principles.
- Multiple licensing in distribution.
- Mandatory metering of all electricity supplies.
- Setting up of an Appellate Tribunal to hear appeals against the decisions of the Central Electricity Regulatory Commission (CERC) and State Electricity Regulatory Commissions (SERC).
- Provision for cross-subsidy surcharge on direct sale to consumers.
- Power Trading recognized as a distinct activity with ceilings on trading margins to be fixed by the Regulatory Commissions.
- Upfront payment of subsidies by the States.

6 Competition Law and Competition Issues Affecting the Energy Sector in India, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1873084 (last accessed on May 12, 2015).

This Act is aimed at providing impetus to the distribution reform to be undertaken in India, creating an investor-friendly environment for potential developers in the power sector by removing administrative hurdles in the development of power projects, and provisions like de-licensing of thermal generation, open access and multiple licensing provides the basis for a competitive environment in the Indian power sector. Provisions related to open access would be helpful in the expansion of competitive power markets, while multiyear tariffs would reduce regulatory risk and bring essential incentives for performance improvement.

Critical Analysis of the Electricity Act

Electricity Act, 2003 rightly emphasizes on competitive bidding framework for encouraging private sector investment in generation. As per this Section, the regulatory commission has to adopt tariff discovered through bidding if due process as per guidelines has been followed.[7] However in reality, this bidding process is not as competitive as it is designed and instilled in the Act. A study by PRAYAS, a Pune-based NGO, highlighted the issues which distort the competitive process of competitive bidding.[8]

Section 7 talks about the generating company and requirement for setting up of generating station. Although no license is required in generation, Central Electricity Authority (CEA) can prescribe technical standards for construction of electrical plants, electric lines and connectivity to the grid.[9] Though licensing requirement has been relieved for power generation, technical standards can be imposed to make entry difficult for prospective players in the Generation Sector. State approvals for land acquisition, water allocation etc are opaque and time

7 Competition Law and Competition Issues Affecting the Energy Sector in India, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1873084 (last accessed on May 12, 2015).

8 Gayatri Gadag, Ashwini Chitnis, Shantanu Dixit (Prayas Energy Group), 'Transition from MoU to Competitive Bidding: Good take-off but turbulence ahead: Review of thermal capacity addition through competitive bidding in India', March 2011, available at http://www.prayaspune.org/peg/publications/item/140.html. (last accessed on May 23, 2015).

9 Any generating company may establish, operate and maintain a generating station without obtaining a licence under this Act if it complies with the technical standards relating to connectivity with the grid referred to in Clause (b) of Section 73 of Electricity Act, 2003.

consuming. It should be noted that although competition is promoted at the generation level, the approach is only perfunctory. The main input for electricity generation is coal which remains a Government monopoly in production, price and distribution. So any competition at the generation would be meaningless and distortive unless upstream competition is achieved with full heart.

Many other forms of distortions and barriers have been noticed in the course of the implementation. The competition distortion may arise from restrictive rules and discriminatory technical standards, and effect of such restriction will depend upon unfriendly environment and attitude to competition. Also, the state utilities indulged in generation do not require a license because they are deemed licensees under the Act. Although considering Section 30 this again is a pro-competitive clause in the Electricity Act enabling level playing field for the domestic competitors. However, the practical examples of various States indicate that the State Commissions have not been very proactive to facilitate competition.

Section 42 says that open access is to be introduced in phases but has to be subject to surcharge, cross-subsidy and other operational constraints.[10] The Electricity Act, 2003 defines "open access" to mean "the non-discriminatory provision for the use of transmission lines or distribution system or associated facilities with such lines or system by any licensee or consumer or a person engaged in generation in accordance with the regulations specified by the Appropriate Commission."[11]

Section 42 read with Section 49 gives full freedom to ensure competitive tariff structure. Purpose of Section 42 is to ensure competition and open access at least for the bulk consumer. But it is disappointing that open access provisions have not been used to facilitate introduction of competition in the distribution segment as envisaged in the Act.

10 Section 42 (2): The State Commission shall introduce open access in such phases and subject to such conditions, (including the cross subsidies, and other operational constraints) as may be specified within one year of the appointed date by it and in specifying the extent of open access in successive phases and in determining the charges for wheeling, it shall have relevant regard to all factors including such cross-subsidies and other operational constraints: ...

11 Section 2(47) Electricity Act, 2003.

Sections 61 and 62 of the Electricity Act, 2003 provide for determination of tariff for transmission, generation, distribution and supply by Appropriate Commission. Procurement from all other projects which have not been contracted (PPA signed and filed before the Commission) by September 2006 have to be on competitive bidding basis.[12]

Competition Issues in the Electricity Sector

The increasing importance of competition as a means to improve efficiency and welfare of consumer is gaining momentum in almost all sectors. Electricity sector is also one of such sectors where various restructuring models have been employed by different countries to guarantee effectiveness and consumer welfare. However, India has not been able to reap the benefits from the success of reforms in liberalizing the particular sector, even though, notionally, the reforms modelled on the basis of the Electricity Act, 2003 and its various provisions carry clear intent and objective for efficiency and competition as the main pursuit for ensuring meaningful reforms in the power sector.[13] These provisions given under the Electricity Act, 2003 helped to set the foundation for a competitive market. The process of open access in Transmission is provided for all users and the retail market (for all consumers above 1 MW) and is open for competition from January 2009. Although provisions of the Electricity Act and the Policy envisioned scope for competition and multiple players in all segments of the electricity value chain, competition has not prospered much anywhere except in generation.[14] There are two major reasons for this—

1) Monopoly at the raw material side in the field of coal and gas, and

2) Monopoly at the procurement side.

Though the enabling provisions of the Act and Policy are capable of encouraging competition in the generation segment, because of Government monopoly in the coal sector, there is a lack of competition in the upstream segment. During

12 Ibid.

13 Shri V Ailawadi, MS Bhawana Gulati, Ensuring Electricity to All: Promoting the Competition in the Sector, http://www.circ.in/pdf/Electricity_Sector.pdf (last accessed on April 20, 2015).

14 Competition in the Electricity Sector, Dec 2010, available at http://www.competition-commission-india.nic.in/work_Shop/March14-15_2007/3.%20TERI%20Presentation%20-%20March%2015,%202007.pdf (last accessed on May 2, 2015).

the XI Five Year Plan, about 22% of the total capacity addition was planned to be added by private sector with public sector contributing as much as 13.69% of the total electricity generation.[15]

The Act provided for the restructuring of the vertically integrated segments into unbundled and independent activities. The Act further recognized the capability of competition in generation and distribution in bringing the much desired change for consumer welfare enhancement.[16] Discoms acquire new power requirements on competitive basis from various suppliers. The national power exchange provides a platform for short-term trading in power sector. Various short-term transactions using inter-State open access has grown over ten times since inception involving over hundred buyers and sellers. So we can see competitive development deepen roots and expand in scale with more retail switching in coming years.[17]

In the shift from traditional regulated monopoly in the field of electricity supply to deregulated electricity supply industry in the modern age, competition is more effective than regulation in promoting private sector participation through huge investments, and efficiency in electricity supply industry has increased sharply. But there are many policy issues in the sector which obstruct competition in the market.

The following modern unique attributes of electricity and characteristics of power markets pose a problem for effective regulation of competition, which are given below:[18]

1) The short-run demand elasticity for electricity is very low and supply gets very inelastic at high demand levels as capacity constraints are approached. As a result, spot electricity prices are inherently very

15 Eleventh Five Year Plan on Energy, Planning Commission, Chapter 10, pp 354. available at http://planningcommission.nic.in/reports/publications/index.php?repts=pub (last accessed on June 1, 2015).

16 Ibid.

17 Electricity industry in India USIBC Nuclear Mission available at http://www.usibc.com/sites/default/files/committees/files/electricityindustryinindiapwcreport.pdf (last accessed on July 20, 2015).

18 James M. Griffin Steven L. Puller, ELECTRICITY DEREGULATION: CHOICES AND CHALLENGES 40 (University of Chicago Press, 2005).

volatile and unusually susceptible to the creation of opportunities for suppliers to exercise market power unilaterally.

2) Electricity cannot be stored economically and demand must be cleared with "just-in-time" production from generating capacity available to the network at (almost) exactly the same time that the electricity is consumed.[19]

While considering the segment-wise competition issues in the area of transmission, there is lack of access to transmission networks and there are issues with pricing of transmission capacity. In the generation segment, there is a lack of level playing field in the distribution and supply segment and lack of open access. There are various instances of conditions favourable to collective dominance: "the relationship of interdependence existing between the parties to a tight oligopoly within which, in a market with the appropriate characteristics, in particular, in terms of product homogeneity, market concentration and transparency, those parties are in a position to anticipate one another's behaviour, are therefore encouraged to align their conduct in the market in such a way as to maximize their joint profits by restricting production with a view to increasing prices."[20]

Electricity wholesale markets thus exhibit characteristics that are likely to support collective dominance, and allow prices to remain well above competition levels, even when the market does not appear to be particularly concentrated. If the capacity is not instantly available to deliver into a constrained region, then the generators operating in that region can demand extremely high prices.[21]

Further Section 38(2)(d), imposes a duty on the Central Transmission Utility to provide non-discriminatory open access to its transmission system for use by

(i) any licensee or generating company on payment of transmission charges;

(ii) any consumer as and when such open access is provided by the State Commission under provisions of the Electricity Act, on payment of

19 Ibid.

20 Supra note 3.

21 David M. Newbery, 'The Relationship between Regulation and Competition Policy for Network Utilities', CPRC Discussion Paper Series Competition Policy Research Centre Fair Trade Commission of Japan (University of Cambridge, December 2003).

transmission charges and a surcharge thereon as may be specified by the Central Commission.[22]

However this surcharge is not leviable for open access to captive power plants for transmission of electricity to the destination of its own use. Further S 40 (c) which imposes a duty on every transmission licensee to provide non-discriminatory open access to its transmission system for use by any licensee, generating company on payment of transmission charges, any consumer as and when such open access is provided by the State Commission under provisions of the Electricity Act, on payment of transmission charges and a surcharge thereon as may be specified by the Central Commission. The surcharge so levied is mandated to be used for the purposes of meeting the requirement of cross–subsidies which have to be progressively reduced in the manner as may be specified by the Central Electricity Regulatory Commission. On the other hand this surcharge is not leviable for open access to captive power plants for transmission of electricity to the destination of its own use.

In relation to distribution licensees, Electricity Act, 2003 vests the relevant State Electricity Regulatory Commissions with the authority to introduce open access in such phases and subject to such conditions (including cross subsidies and other operational constraints) as may be specified within one year of the appointed date by it and specify the extent of open access in successive phases and in determine charges for wheeling. This Act mandates that the relevant State Electricity Regulatory Commissions, in specifying the extent of open access shall have due regard to all relevant factors including cross subsidies and other operational constraints.[23]

Prices should be broken up into components like production cost, transmission loss cost, wheeling charges etc, so that this clarity on charges encourages consumers and Discoms towards open access. Kerala was the first state to have allowed open access. But it did not take place as the applicant had shifted to another state. In Punjab, 2 applications were received for open access and both were approved as well as implemented. Despite the State facing acute power shortage, 5 Generators (Captive & Co-generators) have been allowed Open Access to sell power outside the State in open market. Haryana and Himachal Pradesh are yet to implement

22 Section 38 (2) (d) of Electricity Act, 2003.

23 Electricity Act, 2003 vide Section 42 (2).

open access though there have been a number of applications received. The following table gives data on open access capacity sought, approved and successfully implemented. West Bengal Electricity Regulatory Commission (WBERC) has granted open access to 3 applicants, but it is yet to commence. The Jharkhand State Electricity Regulatory Commission (JSERC) has allowed one applicant (TISCO) to have open access, but OA is not taking place because this has been challenged by Jharkhand State Electricity Board (JSEB).[24]

Tamil Nadu is a major defaulter. Though it has received open access applications for 1,764 mw, the highest of all states, it has not approved even one. The main reason for this is that vested interests in the state are trying to harness and capture resources in the garb of consumer interest. The states of Tamil Nadu and Karnataka have misused section 11 of the EA, 2003, which authorizes state governments to operate and maintain generating stations, but is silent on authorizing the states to direct them to sell the electricity produced to other states. The state governments, therefore, find it easy to invoke this section to misuse it in their favour and protect state monopolies though open access is a statutory right under section 42 of the Electricity Act 2003.[25]

Top Power Deficient States in 2012 (MV)[26]

Region	Demand	Supply	Gap(MV)	Gap%
Maharashtra	21954	17456	4498	-20.5%
Tamil Nadu	14,224	10652	3572	-25.1%
Uttar Pradesh	13947	10464	3483	-25.0%
Punjab	11000	7729	3271	-29.7%
Andhra Pradesh	15721	12470	3251	-20.7%

24 Analysis and Compilation of Tariff Order, Ministry of Power and Government of India, May 2007, available at http://powermin.nic.in/whats_new/pdf/MoP_TERI%20May%202007.pdf (last accessed on April 23, 2015).

25 Ibid.

26 'Perspectives on Electricity Regulations & Competition: Indian case study' available at http://www.safirasia.org/safirpdf/namas-safir.pdf (last accessed on May 23, 2015).

Bihar	3607	1459	2148	-59.6%
Orissa	4459	3489	970	-21.8%
Rajasthan	8482	7622	860	-10.1%
Madhya Pradesh	8462	7660	802	-9.5%

It is also evident from this chart that Tamil Nadu is major defaulter in terms of supply of electricity according to statistics of 2012. A basic question which is yet to be answered, is under whose jurisdiction open access comes. Further the most important question that arises in this respect is – why the sector competition authorities and regulators are not intervening to implement open access effectively. The reason is that there is overlap in the jurisdiction of both sector regulators and CCI because of the powers entrusted to both of them by the respective laws that they are meant to implement. In case of open access, the already thin line of difference in their jurisdiction becomes more blurred.

We can briefly look into the interface between sector regulators and competition authorities. There are a few technical and structural aspects of open access which can only be regulated by the sector regulators and few behavioural aspects which have to be left to the competition authorities to look into.

It is clear that the extent of exemption of government actions from being included within the scope of the term "enterprise" (and thereby from the prohibitions under Sections 3 and 4 of the Competition Act) would depend on whether or not such action is relatable to the sovereign functions of the Government. The commission, if it feels its decision might go against provisions under the Act that the statutory authority is empowered to implement, can also make reference to a statutory authority under section 21 (A). The statutory authority, in a similar way, can make a reference to the commission under section 21. By virtue of the non-obstante clause in section 60, the CCI has an upper hand over all other sector-specific Acts, if the issue in hand is purely competition oriented. It could fine companies holding dominant positions if they are found to abuse market power or charge high prices.

The role of CCI can be seen in these following issues related to competition:[27]

- If there is lack of access to transmission networks then its role is to ensure non-discriminatory access to transmission network.
- If there is lack of level playing field in generation then recommend government to address various issues in the generating segment.
- The CCI can advise the Regulatory Commissions in the field of electricity to take action against any kind of discriminatory pricing by a particular entity if there are issues with pricing of transmission capacity - Costs of network access and usage ought to be determined in a manner that promotes open access and trading.
- The concept of open access is very much recognised under the Indian scenario but there is no proper implementation of it.
- The State distribution enterprises are facing losses of Rs. 60,000 crores due to stealing of power. The cross-subsidy also surcharge makes open access prices unattractive.[28]

So we can say that deregulation of electricity supply to high use consumers will incentivize open access. The CCI should be empowered to order compulsory access to these facilities on reasonable terms to increase the competition in the market. The only specific power of the CERC and SERC that would directly conflict with the functions and powers of the Competition Commission is the power of the CERC and SERC, under Section 60 of the Electricity Act, 2003. In case of any possible conflict in jurisdiction between CCI and specific regulator specific sector in relation to competition issues the following points have to be noted[29]:

1) Usually the laws creating sector specific regulators would not have any detailed framework governing competition issues. The sector specific laws may use

27 Shri V.S. Ailawadi, 'Ensuring Electricity to All: Promoting Competition in the Sector: A study', available at circ.in/pdf/Electricity_Sector.pdf (last accessed on August 15, 2015).

28 Ibid.

29 Piyush Joshi & Anuradha R.V, 'Competition Concern in Concession Agreement in Infrastructure Sector', Presentation at the National Conference on State of Competition in the Indian Economy, June 11-12, 2009 available at http://www.cci.gov.in/images/media/presentations/pdfJune2009/13.pdf (last accessed on May 2, 2015).

terms such as competition", "combination" "abuse of dominance", etc, but they would not have the specific framework that would enable a sector specific regulator to determine whether or not there has been violation of competition principles;

2) The laws related to the sector specific regulators may not have provisions empowering such regulators to issue orders that are needed to resolve competition issues such as orders mandating breaking up of a combination or orders directing transfer or property from one entity to another. Generally sector specific laws tend to create tariff determination mechanisms and a framework for enabling interested entities to obtain the required license to commence undertaking the relevant activity.

3) Sometimes jurisdiction of sector specific regulators may be limited territorially and would not generally cover the entire relevant market in India, as the CCI can. Thus, in relation to competition issues, the Competition Commission would generally be the special specific law.[30]

4) The jurisdiction of CERC or SERC is not related to markets but is limited by the nature of the project and the geographical limitation of whether or not there is an inter-state transmission or sale of electricity. Thus neither the CERC nor the SERC actually have jurisdiction to issue directions that would cut across the nature of the project or the geographical limitation of a particular state. It is only the Competition Commission that would have an overall jurisdiction over the electricity market in relation to competition law issues.

5) The Electricity Act, 2003 provides no specific guidelines or framework for the CERC or SERC in relation to determining whether or not there is an abuse of dominant position or whether a combination has come into being or whether an agreement or combination or abuse of dominant position is causing or likely to cause an adverse effect on competition in the electricity industry.

6) The CERC or the SERC is essentially a tariff determination authority and an authority issuing licenses in relation to certain activities.

30 Ibid.

7) There are no specific powers to issue the relevant orders that would prevent or put a stop to an anti-competitive or abuse of dominance scenario. CERC/ SERC does not have any specific powers to issue orders breaking up a combination. Such orders can be passed and enforced only under the framework provided by the Competition Act, 2002. The general provision of Section 60 of the Electricity Act, 2003 will have to be read within and be limited by the other provisions of the Electricity Act, 2003, which do not vest CERC/SERC with any power to direct changes in agreements, breaking up of assets, taking over of assets, ordering winding up of entities, creation, allotment, surrender or cancellation of any shares, transfer or vesting of property, rights, liabilities or obligations, distributions of assets, or otherwise impinge upon rights that would otherwise be covered by Article 19(1)(g) read with Article 21 and Article 300 of the Constitution of India. These are powers only vested specifically with the Competition Commission under the provisions of the Competition Act, 2002.[31]

8) The general principle of interpretation of statutes would be applicable in order to resolve any potential conflicts between sector specific regulators and the CCI. The rule of harmonious construction has to be taken into account when there is conflict between the two. The principle is expressed by the maxim *Generalia specialibus non derogant* (i.e. General things do not derogate from special things) and *Generalibus specialia derogant* (i.e. special things derogate from general things) has to keep in the mind while dealing with conflict between the two. A special law will prevail over the general one notwithstanding that the general one is later in time.[32] The same test is applied in the event two laws dealing with the same issue[33] are found to have non obstante clauses.

9) There is therefore no real conflict in the provisions between the Electricity Act, 2003 and the Competition Act, 2002 as the Electricity Act, 2003 does

31 Dr. Pramod Deo, Policy and Regulatory Framework of Indian Power Sector available at http://www.safirasia.org/SafirPDF/safir%202010%20core%20course%20IIMB1%20%283%29.pdf (last accessed on May 22, 2015).

32 Sanwarmal Kajriwal v. Vishwa Cooperative Housing Society Ltd. AIR 1990 SC 1593; Talchar Municipality v. Talchaer Regulated Market Committee AIR 2004 SC 3954; Jasbir Singh v. Vipin Kumar Jaggi AIR 2001 SC 2734; Jogendra Lal Saha v. State of Bihar AIR 1991 SC 1148; Allahabad Bank v. Canara Bank AIR 2000 SC 1535.

33 Maharashtra Tubes Ltd. v. State Industrial and Investment Corporation of India, 1993(2)SCC 144; Solidaire India Limited v. Fairgrowth Financial Services Ltd. AIR 2001 SC 258.

not have the various provisions and detailed framework relating to regulating and enforcing competition in identified markets without being constrained by nature of the individual projects or the geographical boundaries of their operations. Consequently, the non-obstante clause of the Electricity Act, 2003 will not come into operation in relation to the Competition Act, 2002 and the powers and functions of the Competition Commission.[34]

Issues related to Electricity Sector[35]

- Issue related to level playing field

Public sector has dominance in the matter of electricity supply chain which certainly results in inequitable treatment accorded to the private players and affects neutrality of independent regulators. In the field of Transmission, again, there is State monopoly and most States have government owned Discoms. In such a state of affairs, the concept of non-discriminatory open access may not be implemented in actuality. So here in this case States can exercise their control to arm twist the STUs for allowing distribution transmission and network to State Discoms. There is no level playing field at the procurement side. Largest state owned power generating company NTPC, the, has been accorded differential preferential treatment leading to issues of competition neutrality. Which is contrary to the clause 5.1 of National Tariff Policy, 2006.[36] Hence there is a need to apply uniform rules and regulations in their business operation, to ensure effective competition amongst the players. The Government should not frame policies that exempt government undertakings from its own rules or procedures and adopt "arm length approach" in applying rules.

34 Section 174 of the Electricity Act, 2003 states "save as otherwise provided in section 173, the provisions of this Act shall have effect notwithstanding anything inconsistent therewith contained in any other law for the time being in force or in any instrument having effect by virtue of any law other than this Act."

35 Shri V.S. Ailawadi, 'Ensuring Electricity to all: Promoting Competition in the field of Electricity', TERI Conference on Regulation in Infrastructure Services, Nov 14-15, 2003.

36 Clause 5.1 of the National Tariff Policy, 2006, provides that "[a]ll future requirement of power should be procured competitively by distribution licensees except in cases of expansion of existing projects or where there is a State controlled/owned company as an identified developer and where regulators will need to resort to tariff determination based on norms provided that expansion of generating capacity by private developers for this purpose would be restricted to one time addition of not more than 50% of the existing capacity."

- Restructuring of LDCs as independent System Operator to protect competition.

Although the concept of unbundling is prevalent in all states but its efficiency is still a challenge. The Girish B. Pradhan report on functioning of Load Despatch Centres (LDCs) in India acknowledged the requirement for Ring Fencing LDCs from intervention from the State utilities and making them autonomous organization to make certain effective unbundling. Ring fencing occurs when a regulated public utility business financially separates itself from a parent company that engages in non-regulated business. This is done mainly to protect consumers of essential services such as power, water and basic telecommunications from financial instability or bankruptcy in the parent company resulting from losses in their open market activities.[37]

Until LDCs are planned as independent companies, ring fencing can be ensured through administrative, financial autonomy, technical freedom to give decisions regarding issues pertaining Outage planning, Outage availing and system strengthening etc.

It is needed that CERC should suggest a model structure for the LDCs on the lines of the structure created for NLDC and RLDCs. It can persuade state Governments to create a similar board structure of LDCs on the lines of wholly owned subsidiary for the independent system operation for inter-State transmission network.

- Issue related to Monopoly in fuel supply

While the policy in the Electricity Act, 2003 promises a paradigm shift in bringing competition, the policy is ineffective and only superficial. There is a need to institutionalize and strengthen the importance of competition to ensure efficiency and consumer welfare. The policy to liberalize generation segment, which is by far the most competitive segment in electricity supply chain, has been incomplete in so far as it has not addressed the issue of coal and gas which remains a government monopoly in production, pricing and distribution. Generation in electricity sector cannot function competitively unless there is competition in coal or ensured stability in price and procurement policy. Competitive bidding guidelines should be fine-tuned in line with the fuel policy

37 http://www.investopedia.com/terms/r/ringfencing.asp (last accessed on November 3, 2015).

changes and also international price variations volatility so that developers' risk is minimized. Unless issues related to coal are resolved, competition in generation will not lead to effective outcomes.

- Issue related to Ensuring financial health of the sector for sustaining competition

The noteworthy recommendations of the Shunglu Committee Report which was given on December, 2011, noted that the high losses of State Electricity Boards are primarily on account of operational practices of distribution companies compounded by irrational tariffs fixed by regulators and poor management. The Committee has recommended that the State Electricity Regulatory Commissions should be made independent financially as well as in their functioning.[38] The first and foremost obligation of the regulators is tariff revision. It is accepted that regulated utility must remain practicable as otherwise it will not be able to serve the customers pleasingly. The state government must be made to accept approach of arms length to tariff setting process.

- Restructuring of Electricity Boards and Competition Neutrality

The concept unbundling has taken place in almost all Indian states, though in reality in some states the unbundling has not been achieved. The reason of unbundling is to ensure independence of the various segments of the electricity value chain so that they can function competitively and efficient. However, the overlapping of board membership of the STUs and Discoms has led to favouritism and biased decision making. Although Electricity Act provides for functional unbundling it is still a challenge. As all utilities are thought to be corporate entities, the unbundled entities are immune from Companies Act provisions regarding governance and regulation. So there is a requirement to ensure effective unbundling and complete ownership separation of competitive and monopolistic segments in the electricity value chain.

- Issue related to Liberalization at the Retail Supply level and Competition

Retail supply competition in electricity imply the presence of multiple retail distributors of electricity from whom the consumer can choose depending upon

38 Petition for removal of barriers to Open Access in Inter-State Transmission Network and promote competition in Power Market, 2009, clause 8.11.

his/her requirements. Although the Act envisages multiple distribution licensees, the distribution business had been retained as a monopoly to avoid duplication of assets and wasteful expenditure.[39] The solution for this issue can be two fold — first designing an incentive induced structure to attract multiple retail suppliers. The provision of composite licensees for distribution has restricted competition and growth in the competition segment, secondly there is need for recognizing retail supply as a separate activity and provision for a separate licence for retail supply thereof.

- o Issue related to Essential Facilities Doctrine (Open Access) for transmission and distribution network

At the status of acknowledgment of this doctrine is as follows in the NEP, 2005, Electricity Act, 2003 is indirect. It needs to be applied by the consumer who chooses to buy electricity from an alternative supplier. It leads the process very burdensome to the consumer and unattractive. To make Open Access a reality following actions need to be taken:

- ❖ Operator to make the whole process easy to be adopted;
- ❖ The tariffs structure should be transparent to reflect the various components which amount; to the electricity charge;
- ❖ States should cooperate to allow inter-state trading of electricity;
- ❖ Rationalization of tariff structure;
- ❖ CSS reduction and the fixation should not be more than +/- 20% as per the NTP;
- ❖ Instead of the consumer, the retail supplier should approach the consumer and the network;
- ❖ CERC regulations and guidelines should be robust to ensure the above;
- ❖ Issue related Single National Market in India.

The structure of the present market and the rate at which the reforms have gone till now hold out very little hope in the future of electricity market, for active competition and customer welfare.

39 http://www.circ.in/pdf/Electricity_Sector.pdf (last accessed on May 24, 2015).

Active competition and customer welfare are distant dreams unless the reforms in the regulatory mechanism at the central & state level become enabling and robust in creating an environment for competition.

Conclusion

The Electricity Act, 2003 contains various provisions indicating open access, competition neutrality, consumer choice, efficiency, unbundling etc. Still, in spite of such clear expression of the legislature's intention, the objectives are far from attainable even after 12 years of enforcement of the Act. Competition in this sector has enormous issues, which must be resolved in an adequate and controlled manner. Although the Indian electricity laws appear to have considered the need importance of competition and market based structure, and have envisioned provisions related to competition in all segments of the electricity value chain, competition has not prospered very much anywhere except generation. Even competition in the generation segment is half-hearted. The advantages from competition were hijacked by the respective monopsonic transmission utilities of the States, in the generation sector. Therefore the industry structure consisted of an interconnected chain of monopolies where the benefits of competition have been vague.

As we know, the increasing significance of competition as a means to improve efficiency and consumer welfare is gaining thrust in almost all parts of the world. Sectors which were once professed to be best suited for State monopoly for protection of the consumers from the so-called unscrupulous private players have witnessed a paradigm transformation. After liberalization public private partnership is gaining momentum which is well suited to requirement of competition policy.

Nowadays, open access requirements are becoming an increasingly common remedy for problems of market power in network industries. A significant benefit of this policy is the greater competition upstream of the bottleneck facility. The concept of open access to transmission grids in the electricity sector, has encouraged competition in the generation segment to a great extent. It can be concluded that in case of competition in the electricity sector, problem lies with the introduction of competition through open access in the first place. Although by law open access has been provided for, a conducive environment is yet to be created for consumers to choose their suppliers. The charges for open access are highly unappealing. Policies of various

state governments are not favourable towards the supply of power to open access to the customers of other states.

Various companies such as Discoms fear losses in revenue if big industrial customers switch to other suppliers through open access. This factor makes them reluctant to let competitors use their wheeling wires to distribute power. The distribution system in electricity sector is privatized for better efficiency in billing, revenue collection and metering. The concept of de-regulation and open access were intended to make the power system more efficient. The regulators have failed to look into the reasons for open access being denied so there has been very restricted success of this concept. There is overlapping of jurisdiction, as it is not clear which regulator has the power to take action in this regard. However, there has been substantial progress due to provisions of the Electricity Act, but the basic aim of providing cheap, reliable and high quality power to all consumers still remains unachieved. There is no clear cut answer given by the regulators to the fundamental question of whether the right to choose suppliers through open access is an enforceable right for a consumer or not. Now it high time the Commission takes up cases suo motu in pursuance of Section 18 of the Competition Act as it clearly states that it is the duty of the Commission to promote and sustain competition and protect the interest of consumers as well. Thus, there is need to ensure proper implementation of the law and regulations to provide a level playing field and neutrality for better private sector participation and competition.

Role of Regulatory Mechanisms in Energy Sector:

Focus on Promotion of Renewable Energy, Reducing Environmental Impact and Increasing Energy Efficiency

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Abstract

This article looks at the overview of the regulatory mechanisms in the energy sector in India. The brief overview of the Central Electricity Regulatory Commission, State Electricity Regulatory Commissions, Atomic Energy Regulatory Board, the Director General of Mine Safety, Bureau of Energy Efficiency, Petroleum and Natural Gas Regulatory Board and Department General of Hydro Carbons is provided in the article. In addition to the above, this article also emphasizes on the role played by the existing regulatory bodies in promoting renewable energy, reducing environmental impacts and increasing energy efficiency. The significant role played by the State Electricity Regulatory Commissions in regulating the Renewable Purchase Obligation which allows the to promote renewable energy in electricity sector is discussed. Further the role played by the Central Electricity Regulatory Commission in regulating the Renewable Energy Certificates is also detailed. Apart from this, the crucial role-played by the Director General of Hydro Carbons and Atomic Energy Regulatory Board in regulating the environmental impact and the role played by Bureau of Energy Efficiency in promoting the efficient use of energy are highlighted in this paper.

Introduction

The post-1991 period in India witnessed the emergence of numerous regulatory bodies. The regulatory bodies brought into place in the post-1991 *inter alia* include Telecom Regulatory Authority and Insurance Regulatory and Development Agency. These regulatory bodies were established for the purpose of regulating the sectors, which erstwhile were within the monopolized control of the state. Even in the case

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of energy sector, regulatory bodies such as Central Electricity Regulatory Commission and State Electricity Regulatory Commissions are created for the purpose of regulating the liberalized and privatized markets.

The common thread, as the objective of formation of all the regulatory bodies, is that of curtailing market failure and ensuring creation of effective and competitive markets. Apart from ensuring market competition, another significant function that the regulatory bodies are entrusted with is to protect the consumer interest. Hence primarily the function of Independent Regulatory Authorities (IRAs) being formed in India during post-1991 period is similar to IRAs in developed economies such as United States and United Kingdom.

As mentioned, the Central Electricity Regulatory Commission and State Electricity Regulatory Commissions are examples for Independent Regulatory Authorities of regulating the liberalized electricity market. The constitution of Central Electricity Regulatory Commission and State Electricity Regulatory Commissions are provided for in the Electricity Regulatory Commissions Act, 1998. Even the Petroleum and Natural Gas Regulatory Board was constituted for the purpose of ensuring regulating the liberalized market for "refining, processing, storage, transportation, distribution, marketing and sale of petroleum, petroleum products and natural gas" by way of the Petroleum and Natural Gas Regulatory Board Act, 2006. At the same time, for the purpose of exploration and production of crude oil, the Director General of Hydro Carbons was constituted as the regulator through a government resolution in 1993.

However, it is interesting to note that Robert Baldwin points out in the seminal work *'Understanding Regulation'* that apart from the market failure and economic rationales, the regulatory bodies could also help in ensuring the social rationales and right-based rationales.[1] Hence the regulators also have a public interest agenda to fulfill in the regulatory governance process. In the field of energy sector, it is important to take note that even prior to the constitution of IRAs, as mentioned above, the central government had constituted regulatory bodies. The central government had constituted the Director General of Mine Safety for the purpose of looking into the occupation health aspects and Atomic Energy Regulatory Board for the purpose of nuclear safety. These bodies have

1 Robert Baldwin, Martin Cave *et al*, UNDERSTANDING REGULATION: THEORY, STRATEGY AND PRACTICE, 22 (Oxford University Press, 2012).

been vested with the power to look into the safety in the energy generation process. In this regard, the regulatory bodies were also focusing on the social rationale of ensuring safety for environment and human life during the energy generation process.

This article provides a quick overview of the role played by the various regulatory bodies in the energy sector. The functions these regulatory bodies perform in case of the energy sector are detailed. This paper also attempts to look at the non-economic, social regulation function and the public interest agenda that the regulatory bodies in the energy law and policy sector in India attempts to fulfill. For this purpose, the paper attempts to conduct stocktaking of the non-economic, social regulation function that the regulatory bodies in the energy sector in India perform. In this context, the main focus is on the role played by the regulatory bodies in the energy sector in a) promoting renewable energy, b) reducing adverse environmental impacts caused during energy generation and exploration process and c) increasing energy efficiency.

Important Role Played by Regulatory Bodies in Energy Sector

In Indian context, it is relevant to note that there are multiple regulatory bodies engaged in the function of energy sector regulation. In effect, there is no single over-arching regulator looking at the energy sector. Rather, the fragmented nature of the regulatory bodies in the energy sector is evident. The Central Electricity Regulatory Commission, State Electricity Regulatory Commissions, Atomic Energy Regulatory Board, the Director General of Mine Safety, Bureau of Energy Efficiency, Petroleum and Natural Gas Regulatory Board and Directorate General of Hydro-carbons constitute significant regulatory mechanisms in the energy sector in India.

Regulatory Bodies in the Non-Renewable Energy and Conventional Energy Sector

Atomic Energy Regulatory Board, the Director General of Mine Safety, Petroleum and Natural Gas Regulatory Board and Directorate General of Hydro-Carbons could be classified as regulatory bodies functioning exclusively in non-renewable energy and conventional energy sector. According to the Atomic Energy Act, 1962 the Atomic Energy Regulatory Board was constituted by the central government. It is relevant to note that the Atomic Energy Regulatory Board is vested with the power of "granting, renewal, withdrawal and revocation of consents for nuclear and radiation facilities" in India. Similarly,

the Atomic Energy Regulatory Board has the power of oversight regarding nuclear installations, and the manner in which the radioactive substances are used in those installations.

The Director General of Mine Safety is another important regulatory body that has been constituted for the purpose of administration of the Mines Act, 1952.[2] The Director General of Mine Safety regulates the occupational safety aspect in the mines, including coalmines and oilfields.

The Director General of Hydro Carbons has been brought into existence by way of governmental resolution in 1993 "to have an appropriate agency to regulate and oversee the upstream activities in the petroleum and natural gas sector."[3] The Director General of Hydro Carbons regulates the exploration and production aspect of the oil and natural gas, which has been constituted post- 1991 as a part of opening up of the exploration and production of oil and natural gas to the private players. The objective of the Directorate General of Hydrocarbons is "to promote sound management of the Indian petroleum and natural gas resources having a balanced regard for the environment, safety, technological and economic aspects of the petroleum activity."[4]

The Petroleum and Natural Gas Regulatory Board is another regulatory body introduced for the purpose of regulating the downstream market which includes the processing aspect and also involves the "storage, transportation, distribution, marketing and sale" of the of the oil and natural gas. The Petroleum and Natural Gas Regulatory Board Act, 2006 constituted the Petroleum and Natural Gas Regulatory Board. Developing competitive market in the downstream activities of oil and gas sector and ensuring the consumer interest are the main objectives of the Petroleum and Natural Gas Regulatory Board.

One main observation that could be noted about the regulatory bodies in the field of the Non-Renewable Energy and Conventional Energy Sector is that the regulatory bodies are constituted in a fragmented nature. The purpose for

2 Report of the Working Group on Occupation Health and Safety, Planning Commission 12th Five Year Plan, available at http://planningcommission.nic.in/aboutus/committee/wrkgrp12/wg_occup_safety.pdf (Last accessed on November 1, 2015).

3 Government of India Resolution dated April 8, 1993, available at http://www.dghindia.org/pdf/Resolution.pdf (Last accessed on September 14, 2015).

4 Ibid.

constituting the regulatory bodies could be classified into safety regulating bodies and sector-market developing bodies.

The Atomic Energy Regulatory Board and Director General of Mine Safety are regulatory bodies, which are constituted for looking into nuclear safety and occupational health and safety aspect in the nuclear and coal mines respectively. At the same time Director General of Hydro Carbons and Petroleum and Natural Gas Regulatory Board are regulatory bodies that look into the sector-market development in upstream and downstream oil and gas market respectively.

Further, lack of co-ordination amongst the regulatory bodies is another important aspect that warrants attention. The lack of a comprehensive regulatory body in the field of coal sector is an important criticism. The need for integrated energy policy in India highlighted by the report of the Planning Commission has to be noted. Planning Commission report also pointed out to the fact that for the purpose of integrated energy policy, "regulation should be consistent across different energy sources."[5] The need for coordinated approach amongst the regulatory bodies or to take the route of over-arching regulator in the field of energy needs serious consideration.

Electricity Regulatory Bodies

Central Electricity Regulatory Commission and State Electricity Regulatory Commissions are regulating the electricity sector market in India and vested with the power to regulate the tariff and transmission of the electricity pursuant to Section 13 of the Electricity Regulatory Commissions Act, 1998. The Central Electricity Regulatory Commission and State Electricity Regulatory Commissions are also supposed to regulate the optimum use of non-renewable and renewable resources for the purpose of electricity generation as per the Section 3(1) of Electricity Act, 2003. Pursuant to the National Electricity Policy and Plan provided for in the Section 3(1) of the Electricity Act, 2003 the Central Electricity Regulatory Commission and State Electricity Regulatory Commissions are supposed to look into the optimum use of non-renewable and renewable resources.

5 Report of the Expert Committee on Integrated Energy Policy, Planning Commission, available at http://planningcommission.nic.in/reports/genrep/rep_intengy.pdf (Last accessed on November 1, 2015).

Regarding the functions of the Central Electricity Regulatory Commission and State Electricity Regulatory Commissions, it could be noted that both the renewable and non-renewable energy sources contributing to the electricity sector could be regulated. Thus there is an attempt for harmonization of the non-renewable energy and renewable energy in the electricity sector by the central and state regulatory commission. More detailed analysis of the same is done later in this paper.

Significance of Promoting Renewable Energy, Reducing Environmental Impact and Increasing Energy Efficiency

In today's scenario of increasing energy demand, over emphasis on the non-renewable source of energy will not meet the required demand. Apart from that, as per the energy security concept also, it is necessary to have energy surplus than the demand. Further, the heavy reliance of India on coal and thermal power plant for energy generation also leads to greenhouse gas emission. The greenhouse gas mitigation is important from the perspective of climate change mitigation action and India's National Action Plan on Climate Change, 2008.[6] Against this scenario, it is pertinent for India to focus on renewable energy.

Further, the energy generation process could have adverse impact on the environment. For example, the nuclear energy generation process has associated risk of impact due to radioactivity upon the environment and even human health. The hydroelectric projects, due to the large dam building process and the social cost of rehabilitation and resettlement could also lead to environmental degradation. Hence the energy generation processes also has to concentrate on reducing the adverse impact on environment and contribute to the mitigation of greenhouse gas emissions.

The rationale and optimal use of available energy resources is also important in the context of the large population and increasing industrial and consumption needs of India. In this context, the focus should also be on increasing the energy conservation by relying on energy use efficiency. The energy use efficiency has to be taken forward seriously for the purpose of ensuring the sustainable energy goal.

6 National Action Plan on Climate Change, 2008, available at http://www.moef.nic.in/sites/default/files/Pg01-52_2.pdf (Last accessed on September 12, 2015).

It is also important to note that the three aspects of energy dynamics, viz., using renewable energy, avoiding environmental impacts and concentrating on energy efficiency are elements of sustainable energy concept.[7] By concentrating on these three elements, the ultimate goal of furthering sustainable energy could be attained.

The regulatory bodies could play an important role in furthering the three significant elements that have been identified. Based on this background, the paper would be analyzing important social and public interest functioning of existing energy sector regulatory bodies in India.

Role of Regulatory Bodies in Promotion of Renewable Energy - CERCs and SERCs

The Indian energy law and policy landscape does not have any specific regulatory body that deals with renewable energy. But at the same time, the Central Electricity Regulatory Commission and State Electricity Regulatory Commissions take the promotion of renewable energy under their ambit. The Electricity Act, 2003 has played an important role of bringing in reform to the energy sector in India. As discussed earlier, the Central Electricity Regulatory Commission is mandated to take into consideration the optimal use of renewable energy also while making the National Electricity Plan as provided for under the Electricity Act.[8]

Renewable Purchase Obligation

The Renewable Purchase Obligation is an interesting mechanism, which allows the Central Electricity Regulatory Commission and State Electricity Regulatory Commissions to promote renewable energy. This power of the State Electricity Regulatory Commissions to stipulate and mandate the minimum percentage of the electricity purchase from renewable energy source is denoted as the Renewable Purchase Obligation (RPO).

7 "UN Secretary-General ban Ki-moon has launched a global initiative to achieve Sustainable Energy for All by 2030. All stakeholders are urged to take concrete action toward three critical objectives: (1) ensuring universal access to modern energy services; (2) doubling the share of renewable energy in the global energy mix; and (3) doubling the global rate of improvement in energy efficiency". See Sustainable Energy For All: A Global Action Agenda, Available at http://www.un.org/wcm/webdav/site/sustainableenergyforall/shared/Documents/SEFA-Action%20Agenda-Final.pdf, (Last accessed on September 12, 2015).

8 See Section 3 of Electricity Act, 2003.

Section 86 of the Electricity Act, 2003 allows the "State Commission to specify a percentage of total consumption of electricity in the area of Distribution Licensee to be purchased from renewable energy sources".[9] The Renewable Purchase Obligation encourages in creating a viable market for renewable energy and in fact helps in promoting renewable energy. The State Electricity Regulatory Commissions would provide for the Renewable Purchase Obligation for each year for the concerned state. For instance, Gujarat SERC has put RP obligation of 9% of total consumption (for 2015-16), Rajasthan SERC has kept 10.20 % of total consumption (for 2015-16).[10]

The National Tariff Policy and National Electricity Policy also highlight the need for following the Renewable Purchase Obligation as stipulated by the concerned State Electricity Regulatory Commission.[11] The Central Electricity Regulatory Commission oversees the implementation of the RPOs by the SERCs. Thus the viable market for renewable energy production as well as incentive for the renewable energy generation is being done through the Renewable Purchase Obligation mechanism by CERC and the SERCs.

Renewable Energy Certificates

Another allied mechanism, which is important from the perspective of promotion of renewable energy, is the Renewable Energy Certificates regulated by the Central Electricity Regulatory Commission.The Renewable Energy Certificates help the distribution companies and large-scale power consumers to comply with RPO by purchasing the certificates.[12] The Renewable Energy Certificates help in providing the viable market for renewable energy producer. The Central Electricity Regulatory Commission has issued the 'CERC (Terms and Conditions for recognition and issuance of Renewable Energy Certificate

9 Section 86 of the Electricity Act, 2003 and also see Background Paper For Prescribing Renewable Purchase Obligation (RPO) For Captive Consumption Of CPP & Open Access Consumers, Rajasthan Electricity Regulatory Commission, Available at http://rerc.rajasthan.gov.in/cnpl/PDFs/REC.pdf (Last accessed on 12/09/2015).

10 Based on data provided in the blog 'Open Access', Available at Ahttp://reconnectenergy.com/blog/ (Last accessed on 12/09/2015).

11 Neha Pahuja, Nimisha Pandey Et.al, GHG Mitigation In India: An Overview Of The Current Policy Landscape, available at http://www.wri.org/sites/default/files/wri_workingpaper_ india_final.pdf (last accessed on September 14, 2015).

12 P Agarwal, Renewable Energy and Renewal Energy Certificates in Indian Context, Electrical India, Available at http://www.nrldc.org/docs/documents/Articles/Renewable_Energy_-_P.K.Agarwal.pdf (last accessed on September 14, 2015).

for Renewable Energy Generation) Regulations, 2010', which governs all matter relating to issue of the Renewable Energy Certificates. CERC pursuant to the Section 66 of Electricity Act, 2003, attempts "to promote the development of a market (including trading) in power"[13] through the Renewable Energy Certificates. This market-based mechanism ensures that the renewable energy generation has proper incentives and also has a viable market. The CERC also oversees the electricity exchanges in India by way of Central Electricity Regulatory Commission (Power Market) Regulations, 2010 where the Renewable Energy Certificates could be traded.

Thus even though there is no specific regulator for the purpose of renewable energy, it is important to highlight that CERC and SERCs provide an enabling mechanism for the growth of renewable energy in India. Even in the Ministry of New and Renewable Energy's 'Draft National Renewable Energy Bill', the CERC and SERCs have been identified as key institutional mechanisms for the purpose of renewable energy promotion. The significant role that CERC and SERCs play in the Renewable Purchase Obligation is also emphasized in the 'Draft National Renewable Energy Bill'.

Harmonization of Non-Renewable and Renewable Energy

An important aspect regarding emphasizing the renewable energy is to ensure that there is integrated energy policy by which there is adequate harmonization of non-renewable and renewable energy. The Planning Commission in its report has pointed out that one important measure needed for the integrated energy scenario to be evolved in India is to equip the regulatory bodies.[14] At present, only the electricity sector energy governance has a robust regulatory mechanism of harmonizing the renewable and non-renewable energy by way of Renewable Purchase Obligation.

But there is need for robust regulatory governance to be developed in other sectors such as petroleum. The Biofuel Policy, 2008 of Government of India emphasizes on the need for moving towards ethanol blending in the petrol and

13 Statement of Object and Reason, CERC (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations , 2010, Available at http://www.cercind.gov.in/Regulations/Statement-of-Reasons_SOR_for-CERC_REC_regualtions_2010.pdf (last accessed on September 14, 2015).

14 Supra note 5.

diesel for the purpose of reducing the reliance of non-renewable fossil fuels. The regulatory mechanism such as Renewable Purchase Obligation needs to be developed in the petroleum segment also.

Reducing Adverse Environmental Impacts- Role of AERB, DGHC

The adverse impact on environment that may be caused during energy generation and exploration process also needs to be taken into consideration by energy sector regulatory bodies as part of its public interest function. This is mainly important in the energy generation and exploration process involving environmental and health risks such as nuclear energy, hydrocarbon exploration and coal-based energy. The significant regulatory mechanism involves the Atomic Energy Regulatory Board (in the nuclear sector) and the Director General of Hydro Carbons (in the oil exploration sector).

Atomic Energy Regulatory Board

Atomic Energy Regulatory Board regulates the crucial aspect of nuclear safety pursuant to the Atomic Energy Act, 1962. The pertinent functions of the Atomic Energy Regulatory Board are as follows:

- "Develop safety policies in nuclear, radiation and industrial safety areas.
- Develop Safety Codes, Guides and Standards for siting, design, construction, commissioning, operation and decommissioning of different types of nuclear and radiation facilities.
- Grant consents for siting, construction, commissioning, operation and decommissioning, after an appropriate safety review and assessment, for establishment of nuclear and radiation facilities."[15]

In this regard the Atomic Energy Regulatory Board administers the Atomic Energy (Radiation Protection) Rules, 2004, the Atomic Energy (Safe Disposal of Radioactive Wastes) Rules, 1987. The entire responsibility of nuclear safety, especially with regard to the environmental impacts and health impacts for humans due to radioactivity and also safe disposal of the nuclear waste, is vested with the Atomic Energy Regulatory Board. There has been criticism that the Atomic Energy Regulatory Board is not a completely independent regulator

15 Functions of AERB, Available at http://www.aerb.gov.in/AERBPortal/pages/English/AboutAERB/functions_aboutUs.action (last accessed on September 14, 2015).

from the governmental control.[16] International Atomic Energy Agency has also pointed out the fact that though the regulatory framework for nuclear safety in India is satisfactory, the safety regulator should be independent from the government.[17]

In this regard, there has been certain positive development by way of drafting 'Nuclear Safety Regulatory Authority Bill'. The bill sought to introduce an independent regulatory body to monitor the standards for environmental and human health impacts of nuclear plants. Though the bill could not be translated into legislation till now, it is a step in the right direction for ensuring the nuclear safety in India and minimizing any adverse impact upon the environment.

Director General of Hydro Carbons

The Director General of Hydro Carbons has the pertinent role of ensuring the environmental safety in case of exploration activities, which stipulates the conditions that need to be followed in the course of exploration in the Production Sharing Contract.[18] The pertinent guidelines that need to be followed by the contractor undertaking the exploration activities are as below:

- Contractor shall conduct its Petroleum operations with due regard to concerns with respect to protection of the environment and conservation of natural resources and shall in particular:
    - Employ modern oilfield and petroleum industry practices and standards including advanced techniques, practices and methods of operation for the prevention of environmental damage in conducting its petroleum operations.
    - Take necessary and adequate steps to prevent environmental damage and, where some adverse impact on environment is

16 Anirudh Mohan, Nuclear Safety and Regulation in India: The Way Forward, Observer Foundation Issue Brief, available at http://www.observerindia.com/cms/export/orfonline/modules/issuebrief/attachments/ORFIssuebrief_96_1435311623845.pdf (last accessed on September 14, 2015).

17 IAEA Mission Concludes Peer Review of India's Nuclear Regulatory Framework, available at https://www.iaea.org/newscenter/pressreleases/iaea-mission-concludes-peer-review-indias-nuclear-regulatory-framework(last accessed on September 14, 2015).

18 Article 14 of the Production Sharing Contract, Available at http://www.dghindia.org/pdf/ARTICLE%2014%20new.pdf (last accessed on September 14, 2015).

> unavoidable, to minimize such damage and consequential effects thereof on property and people."[19]

Coal mining is an area that could lead to major impact upon the environment. It is pertinent to note in case of coal mining, the Director General of Mine Safety is an important regulatory body that looks into the occupational health safety issues in the mining sector. But absence of a comprehensive regulator in the coal sector has been noted by many studies.[20] The need for an independent regulatory body in the coal sector due to the rampant adverse impact upon the environment was also highlighted. A positive step in this direction was the proposed 'Coal Regulatory Authority Bill' which sought to set up an independent regulatory body to ensure conservation of coal resources and compliance with the mining plan and mine closure plan.

The discussion hitherto provides a significant knowledge of the regulatory bodies in the energy sector, which have crucial role to play in governance of the environmental impact. Even though Environmental Protection Act, 1986 and other allied legislations are presently governing the environmental pollution and regulating the adverse impact upon the environment, the pro-active role played by energy sector specific enforcement and compliance bodies in environment protection needs to be critically examined. Further, the room for improvement in environment protection by energy sector specific enforcement and compliance bodies also needs attention. Bringing in comprehensive regulatory bodies such as Nuclear Safety Regulatory Authority and Coal Regulatory Authority could help in this regard.

Increasing Energy Efficiency- Role Played by Bureau of Energy Efficiency

Bureau of Energy Efficiency, constituted under the Section 3 of the Energy Conservation Act, 2001 performs the energy efficiency monitoring function. The primary objectives of the Bureau of Energy Efficiency (BEE) are to "improve energy efficiency and reduce the energy intensity of the Indian economy by developing policies that focus on self-regulation and market principles for all

19 Environment and Safety, Available at http://www.dghindia.org/OtherActivites.aspx?tab=2 (last accessed on September 14, 2015).

20 Arpita Asha Khanna, Governance in Coal Mining: Issues and Challenges, TERI-NFA Working Paper, available at http://www.teriin.org/projects/nfa/pdf/nfa-WkP9-coal-governance.pdf (last accessed on September 14, 2015).

sectors of the economy."[21] The Bureau of Energy Efficiency is also "empowered to establish a compliance mechanism to measure, monitor, and verify energy efficiency in individual sectors."[22] The Perform, Achieve, and Trade [PAT] scheme is a good example of BEE's functioning. PAT scheme has set energy efficiency targets for certain energy intensive industries (example: cement, fertilizer, steel). Those industries that fail to achieve targets will have to pay penalty. Any additional savings can be used to earn energy saving certificates (ESCerts), which are tradable with other industries that are short of targets.

Further, the Bureau of Energy Efficiency also uses information tool of regulation such as labeling of electronic products based on their energy efficiency. Labeling of electronic products helps the consumers to make informed choice regarding energy consumption while purchasing the electronic products.

Conclusion

The above discussion has helped in identifying the public interest and social regulation function the regulatory bodies in the energy sector are engaged in. The present regulatory landscape in the energy sector in India is criticized for being fragmented. Harmonization and convergence of the energy sector regulatory bodies needs to be focused upon.

Further, the lack of specific regulatory body for the purpose of renewable energy is often criticized. Also, the proposed independent comprehensive regulatory bodies such as Nuclear Safety Regulatory Authority, Coal Regulatory Authority should be brought into place.

Even with various shortcomings and without any specific overarching regulator in the energy sector in India, the existing bodies do play a significant function in the promotion of renewable energy, reducing impact on environment and achieving energy efficiency. Though piecemeal in approach, the existing regulatory mechanisms in the energy sector are striving within the existing regulatory framework to achieve the goal of sustainable energy, which is to be duly acknowledged.

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21 Supra note 11. Also see Section 13 of the Energy Conservation Act, 2001 for the detailed list of functions of the Bureau of Energy Efficiency.

22 Ibid.

Power Sector Contracts in India

Dr. Sairam Bhat[*] *and Rohith R. Kamath*[**]

Abstract

Contracts in the power sector are multifarious and includes within its array various extensive contractual arrangements and obligations. This paper attempts to delve into certain cornerstone agreements that are witnessed in the Power Sector and study the law-policy approach in India with regard to the same. There has been a gradual shift towards privatisation in the Indian Power Sector with the advent of the Electricity Act, 2003. The contractual arrangements in Dabhol and Cogentrix have been tough lessons that brought forth scepticism of development through public private participation. Yet, there have been sincere and scrupulous efforts made by the introduction of competitive-bid process to boost public confidence in private participation. The vibrant approach by the Supreme Court of India, in the Adani Issue, allowing for the contention of 'Change in Foreign Law', to be raised as a defence in contractual performances, has left the private participants exuberant.

Introduction

With the advent of a liberalised approach towards private participation, modern forms of business arrangements, particularly, Public Private Partnerships have come into existence. In the era of Liberalisation, Privatisation and Globalisation, power sector has been identified for private participation, in the generation and distribution sectors, leaving the transmission segment predominately with the Public Sector. The contractual relationships have faced an outburst since the adoption of the policy of liberalisation, due to an increase in the private participation in various sectors of the economy, including the Power Sector. The Government has realized that 'Energy security' to every citizen in the

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country, can be achieved only by means of public-private participation and hence the opening of the Power sector has not only been encouraged but also strongly pursued by various State Governments. Essentially, privatisation in the power sector meant that the government entertained the domains of commercial transactions, with Government on one side, and the power producer/generator on the other. However, Reliance Infra and TATA involvement in Mumbai and Delhi in the power distribution segment has only led to enhanced dissemination of electricity distribution, by giving the Consumers a choice between State Distribution Companies and Private Companies. The emergence of private participation in the power sector has brought forth various contractual developments commencing from Partnership Agreements and extending up to agreements on Settlement of Disputes by way of Arbitration. Privatisation has meant that the Government will have to ensure a level-playing-field to the private players, PSUs, foreign investors, and finally the consumers, who are the broad stakeholders of the power sector. The stakeholders' interests are sought to be protected by the Regulators, *viz.* Central Electricity Regulatory Commission and State Electricity Regulatory Commissions, to stablise and rationalize contractual terms, including pricing and tariff fixation, curb any abuse of dominant position, and bring forth changes in contractual obligations.

Indian Power Sector

The Indian Power Sector has been under a regulatory framework from the start.[1] Under the British regime, the power sector was developed by means of private participation.[2] The basic framework was set-forth by the Electricity Act of 1910 (Hereinafter, Act of 1910). The Act of 1910 vested the power to grant multiple licenses for the supply of electricity, in the hands of the State Government, thereby bringing in more competition in the distribution of electricity. The Act provided for the sale of power to third parties, and thus created a framework of open access in distribution. The Act imposed a duty[3] on the licensee to provide electricity to any person, on application, at a rate of

1 The Electricity Act 1887 regulated the use of electrical energy so as to protect the public. The later Electricity Act of 1903, the local governments were given the power to grant licenses for generation of electricity.

2 Piyush Joshi, LAW RELATING TO INFRASTRUCTURE PROJECTS 259 (second edition, LexisNexis Butterworths India, New Delhi, 2003).

3 Section 22 of Indian Electricity Act 1910 (Act No. IX of 1910).

charge without undue preference,[4] that enabled the licensee to receive a reasonable return on capital expenditure and other standing charges incurred therein to meet the requisite demand. However, with the promulgation of the Electricity (Supply) Act 1948, three statutory bodies, namely: the Central Electricity Authority, the State Electricity Boards and the Regional Electricity Boards were established, and the power sector became a state monopoly with a few exceptions in the area of distribution of power.[5]

Though power is a concurrent subject in the Constitution, the first major policy thrust from Central Government came only in 1998 when it enacted the Electricity Regulatory Commission Act, 1998, paving the way for the formulation of the Central and State Electricity Regulatory Commissions and thereby creating an independent body for determination of tariffs. This monopolistic approach by the Government in the power sector was altered by a policy framework in 1991 that allowed for private participation in respect of the generation aspects of the power sector and with the revision in 1998, private participation was also extended to the transmission of electricity.

However, the regulatory developments to allow for private participation in the Indian Electricity Sector were imperative to the thrust of the adoption of a liberal policy approach, the need for which was felt due to increasing tariff rates that were a direct impact of a closed-economy approach. Ultimately, in 2003 there was a revamp of the entire legal framework relating to electricity that was brought forth by the Electricity Act 2003. Private participation in the power sector may relate to the Generation, Transmission or Distribution/Supply of Electricity, and more recently to the Trading of Electricity. Although such participation existed since the British regime, a major shift occurred in the manner such participation was dealt with. After the Electricity Act of 2003, there is a minimal regulatory compliance by the introduction of a uniform licensing requirement for either Generation; Transmission; or Distribution of Electricity.

4 Section 23 of Indian Electricity Act, 1910 (Act No. IX of 1910).

5 Cf Joshi (n 2) 259.

Private Participation

Private participation in several infrastructure projects, including the power sector is encouraged through formation of Public Private Partnerships (Hereinafter, PPP). Although the Twelfth Five Year Plan (2012-2017) seems sceptical about the role of PPPs, nevertheless is inclined towards PPP in most infrastructure projects such as roads, airports, power generation and distribution, ports, *etc.* In regard to PPP in Power Sector, it is provided that, *"To attract private sector participation, government has permitted the private sector to set up coal, gas or liquid-based thermal, hydel, wind or solar projects with foreign equity participation up to 100 per cent under the automatic route. The government has also launched Ultra Mega Power Projects (UMPPs) with an initial capacity of 4,000 MW to attract `160–200 billion of private investment. Out of the total nine UMPPs, four UMPPs at Mundra (Gujarat), Sasan (Madhya Pradesh), Krishnapatnam (Andhra Pradesh) and Tilaiya Dam (Jharkhand) have already been awarded. The remaining five UMPPs, namely in Sundergarh District (Orissa), Cheyyur (Tamil Nadu), Girye (Maharashtra), Tadri (Karnataka) and Akaltara (Chattisgarh) are yet to be awarded. To create Transmission Super Highways, the government has allowed private sector participation in the transmission sector. A PPP project at Jhajjar in Haryana for transmission of electricity was awarded under the PPP mode. Further, to enable private participation in distribution of electricity, especially by way of PPP, a model framework is being developed by the Planning Commission."*[6] This shows that for a certain period of time, at least, till the near future, PPPs are going to play a crucial role in the Power Sector. In this context, it becomes imperative to have a broad overview about PPPs.

In general, a PPP refers to a form of co-operation between public authorities and private market players who come together and form a special utility vehicle for the purpose of financing, construction, maintenance and management of an infrastructure project. OECD defines a public-private partnership as an agreement between the government and one or more private partners (which may include the operators and the financiers) according to which the private partners deliver the service in such a manner that the service delivery objectives of the government are aligned with the profit objectives of the private partners, and where the

6 Twelfth Five Year Plan, (2012-2017) < http://planningcommission.gov.in/plans/planrel/12thplan/pdf/12fyp_vol1.pdf (last accessed on September 13, 2015).

effectiveness of the alignment depends on a sufficient transfer of risk to the private partners.[7] A PPP may be formulated either for the management of existing assets or for the creation of new business assets, depending upon the policy objective as to the extent of private participation. Thereby, the objectives to enter into a PPP being multifarious, the nature of the project would also take a different form, having a nexus to the scope of private participation. Here under, the most popular forms have been elucidated:[8]

- **Performance Based Maintenance Contract:**

  This form of partnership does not lead to the creation of a new asset, *albeit*, it is an arrangement where the private participant is cast an obligation to maintain an existing asset on the pre-condition that the contract would be extended on the basis of performance evaluation. The technique of evaluation has to be explained under the contract. These forms of contracts are usually given on a short-medium term basis, with the condition to extend the period of arrangement based on the evaluation.

- **Operations and Maintenance Contract:**

  This form of arrangement is usually entered into for a short period of time, lasting between two to five years. The Operator, viz. the private party is paid a fixed fee to meet the standing expenses and is usually paid a performance-based fee in addition to the same. The arrangement may cast obligation on the private operator to operate and maintain the assets, sometimes extending to bearing the cost of routine replacement of small, low value parts of equipment. Such features require more monitoring to ensure that the outputs are being achieved and usually involve higher establishment costs.

- **Lease & Affermage Contract:**

  These arrangements are usually entered into for a time period of eight to fifteen years. There is a greater commercial risk passed to

7 Public Private Partnerships: In pursuit of Risk Sharing and Value for Money (Working party of senior budget officials, OECD), April 2008.

8 Introduction to Public Private Partnerships, available at: < http://ieg.worldbank.org/Data/reports/chapters/ppp_chap1_0.pdf (last accessed on October 12, 2015).

the private partner, and the operator does not receive a fixed fee for his services from the public authority but charges an operator fee to consumers. A specified sum earned by the operator is given to the public authority as lease fee and the private participant is entitled to the rest of the turnover; wherein the operator has to bear the expenses in relation to operating costs and other expenses incurred in relation to the lease-asset. Similarly, in the case of an Affermage, the operator retains the operator fee out of the receipts and pays an additional surcharge to the awarding authority that is charged unto the customers, in regard to the investments made by the public authority.

- **Concession Contract:**

  In this form of arrangement, the public authority extends to the private partner a long-term right to use all assets conferred unto him through the arrangement, and also casts an obligation as to the operation and additional investment for the same. However, the ownership of these assets remains with the public authority and a mere concessionary interest is passed onto the private partner. The public authority has a reversionary interest in the assets that are a subject matter of these arrangements. This form of arrangements is peculiar to civil law countries.

- **Design-Build-Finance-Operate Arrangements:**

  In this form of arrangement the ownership of the Asset vests with the public partner, however, the design-outlay, investment and operation of the same is carried on by the Private partner. The risks are borne by the private investor and the return for his investment is received from the operating charges collected from users of the utility. The operator is responsible for the design, investment outlay and operation throughout the span of the contractual period, at the end of which the Asset would be transferred to the public authority.

- **BOT-Contracts:**

  This form of arrangement is known by the acronym BOT, that stands for Build, Operate and Transfer. This form of arrangement is similar to the Concession Agreement discussed in the previous

paragraph, the prime difference being that the former does not have the creation of a new asset, but the latter does. The private partner is under an obligation to build upon the existing assets, maintain and operate the same for a fixed period of time and then transfer the same to the public authority at the end of the contractual period. The private partner builds and operates a given infrastructure facility for a fixed period of time, wherein, there is a contractual right to collect toll, fee or charge for the utility of the service rendered. At the end of the fixed term the project developer transfers the asset to the government or public authority.

- **BOOT-Contracts:**

Under this arrangement, the private partner is under an obligation to invest and build a new utility-infrastructure project, and also has the right to operate the same with an extended right of ownership for a specified contractual period. At the end of the contractual term, the said asset that is developed is transferred to the public authority.

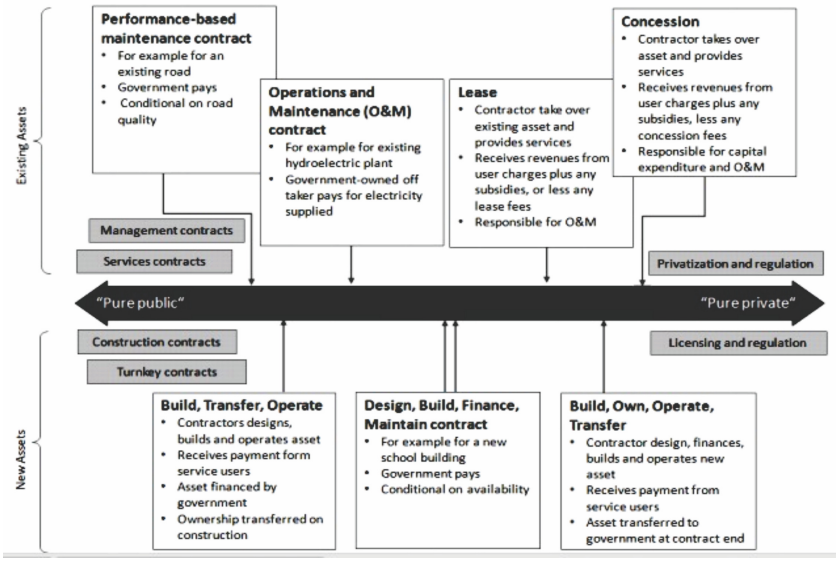

Figure 1: Spectrum of PPP Arrangements[9]

9 cf (n 8).

PPP are considered the most desirable modes of venture in regard to Infrastructural facilities such as power, highways, etc. as it affords the flexibility of the private sector without compromising with the primacy of the government. The chief reason for seeking private participation in development was to allow for greater flow of capital for the development of infrastructure and efficiency in the manner of provision of infrastructural facilities and related services.[10] However, the Indian PPP ventures in the Power sector are marred with controversies. For instance, in 1991 Enron Corporation, a Houston-based service provider for natural gas and one of the fast growing companies at international level, was invited by Government of Maharashtra to create innovative and efficient mechanism for energy solutions and a better environment. The company through one of its subsidiaries Enron Development Corporation, identified Dabhol district in Maharashtra (the only deep water port) to set up its 2015 MW power plant. The Maharashtra State Electricity Board (MSEB) was selected to aid the corporation in building and running the ambitious largest invested plant in India. The Dabhol project is one of those exposed corruption-laid projects that showed the stiff resistance of Indian political parties against the issue of privatization and globalization. Even bureaucrats and technocrats failed to stand as whistle blowers to the impending damages that would harm the environment and safety of the people and stepped aside in the name of minor techno-economic clearance. The Enron-funded Dabhol Power Project was prevented from further running owing to glitches found in the Contract. It was found by the Munde Committee that there was a lack of transparency and accountability and far-less attribution to environmental concerns & issues and was marred by the absence of competitive bids.[11] As a result, Enron decided to pull out its operations and slammed India in an international level arbitration for violating the terms of contract and for non-payment of its dues.

Similar to the above controversial project is the Power Purchase Agreement (PPA) between Karnataka Electricity Board and Cogentrix Ltd. for the generation of 1000 MW of electricity at Mangalore. This venture was furthered by the 1991 policy and like the Dabhol venture was covered by Sovereign Guarantee.

10 cf Joshi (n 2) 85.

11 The Munde Committee, Report of the Cabinet Sub-Committee to Review the Dabhol Power Project, available at https://www.hrw.org/reports/1999/enron/enron2-2.htm (last accessed on November 9, 2015).

The Cogentrix Project too, was marred by the absence of a competitive bidding process, and the cost-plus approach adopted by the contract in its place. The Agreement conferred numerous benefits *inter alia*, immunity from the power of the Electricity Board to order for closure. By way of a Memorandum of Understanding, the State of Karnataka had decided to entrust implementation of the Project to Cogentrix for generation of power at Bangalore and Mangalore. The State had agreed to disclose to Cogentrix, assist in implementation and approval and make available all reasonable requirements of permits, licences or other forms of approvals of the Government as may be found necessary from time to time for the development, construction and operation of the project. The Electricity Board of the State of Karnataka was to transfer to Cogentrix upon request, all permits, licences, consents and approvals previously obtained by the State, the Government of Karnataka and all its appurtenants, agencies, instrumentals and departments with respect to the Project. Upon completion of the envisaged activities, Cogentrix was to prepare a report covering financial structure and projections, project completion and operational schedule and the proposed tariff agreement. The MoU however, did not contemplate the execution of PPA with Cogentrix, yet there was a Power Purchase Agreement entered into that imposed power purchase obligations upon the State at the tariff rates specified under the PPA, thereby casting burden upon the end consumer. India has learnt its lessons the hard way and private participation is achieved by way of regulating the competitive bid system, thereby trying to eliminate the risks of its tainted past.

A competitive bidding process to enable private participation is a preferred route, *albeit*, not a mandated one[12] and the reasons for the same were emphasized and elaborated upon in the case of *Essar Power Limited v. UPERC and Anr*, wherein the scheme of regulations by the Central Government for competitive bidding was explained to be for the following purpose: "*a) To promote competitive procurement of electricity by the distribution licensees; b) To facilitate transparency and fairness in procurement processes; c) To facilitate reduction of information asymmetries for various bidders; d) To protect consumer interests by facilitating competitive conditions in procurement of electricity; e) To enhance standardization and reduce ambiguity for materialisation of projects; f) To provide*

12 Natural Resources Allocation, In re, (2012) 10 SCC 1.

flexibility to suppliers on internal operations while ensuring certainty on availability of power and tariffs for buyers."[13]

CONTRACTUAL OBLIGATIONS IN THE POWER SECTOR

The "Energy Chain" as described by Bowen and Cole,[14] includes a large gamut of activities within its contours; also owing to the fact that the energy may be contained in gas molecules, the current of the water, electrons, or also in some other form such as heat. The Energy Chain, in relation to the Power Sector, encompasses every stage of conversion to arrive at the consumable product, *viz.* Electricity (See Figure Below).

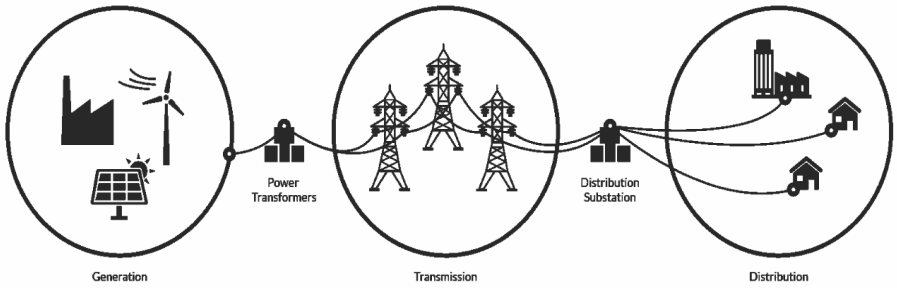

Figure 2: Activities in the Power Sector[15]

The broad outlay of the Energy Chain, with regard to the Power Sector may be ascertained through the analysis of the provisions of the Electricity Act, 2003 wherein it classifies Infrastructural facilities relating to power in the following manner:

- Generating Companies: They are basically of two classes,[16] based on the nature of power they generate, *viz*. Hydro-electric generating station, and other than Hydro-electric generating station. The generating company is cast with a duty to establish, operate and

13 2012 ELR APTEL 182 , available at: http://aptel.gov.in/judgements/27.12.2011%20Appeal_No._82_of_2011_%281%29.pdf (last accessed on October 11, 2015).

14 Bowen and Cole, 'Principles of Energy Contracting', AMPLA YEARBOOK 2003, 310.

15 'Understanding Power Purchase Agreements', Creative Commons Attribution, available at: http://go.usa.gov/FBzH (last accessed on October 12, 2015).

16 Section 8 and Section 7 of the Electricity Act 2003.

maintain generating stations, tielines, sub-stations and dedicated transmission lines connected therewith in accordance to the Act.[17] There is no requirement of licensing to carry out the activity of generation of electricity. Further, under the Act open access is granted to all generating companies for transmission or distribution of electricity upon application accordingly. A generating Company is authorised to sell electricity to any licensee (viz. a Transmission Licensee, a Distribution Licensee or an Electricity Trader).

- Captive Generating Plants: The Act supports captive generation of electricity by mandating open access to every person who has constructed and maintains and operates a captive generating plant for the purposes of carrying electricity from its captive plant to the destination of its use.[18]

- Transmission Companies: The Act allows for the grant of a license to enable a person to undertake transmission of electricity. Central Transmission Utility and State Transmission Utility assist in inter-state and intra-state transmission respectively.

- Distribution Companies: The Act creates a license regime so as to enable a person to undertake the distribution of electricity. Distribution is the activity that involves the process of provision of electricity to the ultimate consumers in the area of supply.

- Electricity Trading Companies: The Act further introduces the concept of trading of electricity that allows a licensee to carry out the purchase and sale of electricity, otherwise than by way of Distribution to the Consumer.

Similar to the activities, there is a large gamut of contractual arrangements that arise in each of the above stages of the Electricity Chain. This Research Paper provides a glimpse into a few of the most important Agreements that constitute the heart and soul of the Electricity Chain, *viz.* from Production to Distribution.

17 Section 10 of the Electricity Act 2003.

18 Section 9 of the Electricity Act 2003.

Fuel Supply Agreements

At the end of the 12th Five Year Plan, it is estimated that coal based power generation would contribute over 134 GW i.e. 56% of India's capacity and 66% of electricity generation.[19] The use of other fuel substitutes in Power Generation, such as Natural Gas and Petroleum products amounts to a paltry 31 percent, and 1 percent of total production of such fuel. It is in this context, the Fuel Supply Agreement would be dealt in relation to Coal, being the principal fuel requirement of a power company. With the Colliery Control Order, 2000 the Central Government has no power to fix the prices of coal. Coal has also been removed from the list of essential commodities through an amendment of the Essential Commodities Act, 1955. The Coal Companies themselves fix the coal price based on input costs, installation index, market trends etc. and notify the same periodically. In the Indian context, a Fuel Supply Agreement (Hereinafter, FSA) requires certain fuel-specific regulatory compliances. For instance, as per the present Import policy, coal can be freely imported (under Open General Licence) by the consumers themselves considering their needs and based on their commercial prudence. However, if the Power Company wishes to procure coal domestically, then the same shall be procured as per the New Coal Distribution Policy, dated as on 18th October 2007, issued by the Ministry of Coal, wherein there has been a classification of the consumers of coal into Core and Non-Core Consumers. The erstwhile Linkage system has been mandated to switch over to an arrangement by means of FSA. As per the Policy, New Power Companies may be issued a Letter of Assurance (LoA), having a validity of up to twenty-four months, on the basis of the recommendations given by the administrative mechanism, *viz.* Standing Linkage Committee. Further, on completion of the milestone objectives as per the LoA, a Fuel Supply Agreement shall be entered into within a period of three months of completion of such objectives. However, the grant of LoA, shall be on the basis of the provision of an Earnest Money Deposit, the concept of which shall be discussed in the further paragraphs of this paper.

Fuel Supply Agreements are usually entered into by the parties a long-term basis, so as to bring the long-term availability and supply of the fuel. Fuel is a core ingredient for the generation of electricity and thereby this project

19 Report on Coal-Based Power Stations, available at <http://www.indiaenergy.gov.in/supply_coalpower.php> (last accessed on October 11, 2015).

document, *viz.* the FSA is of utmost importance to an electricity generating company. The importance of this Agreement is that it is required to be reflected in the Power Purchase Agreement, wherein the power supplier to the agreement must be absolved from any liability that may arise in relation to non-supply of power due to non-availability or non-supply of fuel. An ideal framework requires that, the FSA and the PPA must go hand-in-hand. For instance, the Liability Clause, under the FSA, that imposes liability against the fuel supplier for failure of performance, must effectively cover the liability that the generating company may incur in case of its failure to supply the power. The FSA must describe the nature and quality of the fuel required. However the nature of the document requires that there be some amount of flexibility as to the quantity and time schedule for delivery.[20] The crux of this document lies in how the PPA addresses the issue relating to situations wherein there is a failure of fuel supply. In this context, it may be quintessential to note the advents in relation to the *Adani matter* decided by the Central Electricity Regulatory Commission, now pending before the Electricity Appellate Tribunal, wherein the CERC, taking note of the rise in fuel prices, *viz.* price of Coal from the Indonesian Markets, due to a change in the Indonesian law and policy, allowed for a Compensatory Tariff to be paid to Adani Power in respect of the power contracted to be purchased therein under a Power Purchase Agreement. The dispute in relation to the Compensatory Tariff arose mainly because of the inability of the PPA to reflect the position in the FSA.

In addition to the Fuel Supply Agreement, there exists another document that relates to the provision of Fuel, *viz.* the Fuel Supply and Transport Agreement (Hereinafter, FSTA). The FSTA may be either in the form of a bipartite or a tripartite agreement. As in, there may be a FSTA concluded directly with logistics agency or it may be jointly entered into between the Fuel Supplier, the Power Company and the Logistics Agency. The tripartite approach is more beneficial for the reason that it brings forth the principle of Privity and also deals with the role and obligations of each party specifically.

20 cf Joshi (n 2) 337.

Engineering procurement and construction agreements

It is often rare that the project company would have the ability and experience to carry out the Engineering, Procurement and Construction [EPC] work that is usually demanded by a project.[21] The EPC form of Contract usually undertakes to provide a complete shield to the project company to outsource "turnkey" engineering, procurement and construction works. It generally involves the production of plans and technical specification which describes the project in different forms. In major mechanical contracts the term "engineering" is used to describe the process whereby the project is defined and described generally and in detail to produce plant requirements for stated output. In contracts requiring major items of plant and equipment, these items of plant and equipment must be purchased or procured from local or overseas suppliers or manufacturers. The design or engineering detail having been completed in connection with a particular project, then the process of construction is carried out. This process, or provision of construction services, generally entails the provision of workmanship and materials required to build or construct the whole or part of the project.[22]

This model provides that the contractor would ensure the completion of the project specifications either by himself or by means of sub-contracting. This Contractual document gains efficacy for the reason that infrastructure is quintessential for carrying out the project objectives. In the first stage, *viz.* that of Engineering wherein the Contract is awarded, the nature of service provided by the contractor is of advisory nature, and until the drawings and design has been prepared and the project undertaker instructs the engineer to proceed with the project design prepared, the contractor would not have the authority to carry out the contractual objectives. The performance in EPC Agreements is generally phase based, wherein the first phase, *viz.* the Engineering, is of advisory nature and takes the shape of a back-hand desk or technical work wherein the

20 cf Joshi (n 2) 337.

21 Dimple Sahi Bath, INDIA POWER PROJECTS: REGULATION, POLICY AND FINANCE, 242 (Vol. II, Asia Law & Practice Publishing Ltd).

22 Terence M. Burke, 'Some Legal Aspects Of Design Engineering And Construction Contracts In Major Mineral Projects', *Australian Mining and Petroleum Law Journal* 322 (vol. 4 No.2).

design is developed to the requisite specifications of the project undertaker.[23] The EPC agreements are to be drafted with immense caution and care as for the reason that, where there are several parties involved, the doctrine of Privity causes particular problems in relation to enforcement and settlement of claims. In this regard the decision of the Delhi High Court in *National Highway Authority of India v. China Coal Construction Co.*[24] is of relevance. In the said matter, NHAI contracted with China Coal for the construction and development of NH-2, wherein a particular clause entitled NHAI to appropriate the equipments of China Coal Co., in case there was a breach in accordance with the contractual provisions. There were two contractual arrangements in this matter, one a Construction Agreement between NHAI and China Coal Co., whereas another Procurement Agreement, by way of Hire-Purchase between China Coal Co. and an Intervenor. NHAI sought to appropriate those equipments by seeking an interim-order before the High Court of Delhi, in light of the Contractual position under the Construction Agreement, whereas, the intervenor sought to take possession of those equipments by a suit filed before the High Court of Kolkata, in light of China Coal Co.'s failure to make payments in accordance with the Hire-Purchase Agreement. The Court observed that the entangling of these disputes was the reason that the two parties, *viz.* NHAI and the Intervenor, were not privy to the Contractual Arrangements, inter-se. The Arbitral Tribunal passed an Award stating that, *"the claimants (China Coal Co.) will not remove any machinery from the site during pendency of the dispute. This order shall not, however, in any manner effect the orders in respect of the said machinery by the Hon'ble Kolkata High Court."* The said interim-order of the Arbitral Tribunal gains primacy as for the reason that the Kolkata High Court granted an order in favour of the Intervenor and as a result, NHAI was in a contractual fix, wherein it could neither enforce the bank guarantee nor could appropriate the Equipments, extended and procured, respectively, by China Coal Co. The High Court of Delhi, however held that the Interim-order passed by the Arbitral Tribunal was beyond its power, as for the reason that there was no privity between NHAI and the Intervenor, and for the same reason, NHAI was not in an obligation to not exercise the lien

23 See, Ian Norman Duncan Wallace, Alfred Arthur Hudson, HUDSON'S BUILDING AND ENGINEERING CONTRACTS, 32 (Sweet & Maxwell, 12 Edn., 1995).

24 AIR 2006 Delhi 134.

over the equipments used by China Coal Co., regardless of any Intervenor being the owner of those equipments.

In addition to the above, the question of efficacy of an EPC Agreement arises also because of the reason as to delay in completion of the project and as also the failure of the contractor to meet the performance standards required by the Power Company. Delay in Construction increases the project cost of the principal and a failure to meet the Performance Standards leads to an increase in Overhead and other costs. The Delay in completion is altogether a different subject-matter and a satisfactory analysis of the same cannot be made hereunder. The most common remedy found in construction contracts for late completion is the liquidated damages clause.[25] The basis for computation of Liquidated Damages, may be either daily or weekly, and may be negotiated accordingly. Liquidated Damages must be specified specifically, in relation to delay and further in relation to the failure to meet the performance standards. In case of the latter, the liquidated damages vary with the degree of failure. For instance, where the EPC relates to the construction of a Power Station, the liquidated damages may be arrived at an agreed Rate per unit of Heat produced over the agreed tolerance limit, and a separate rate has to be agreed for each unit of shortfall in the power produced.[26]

The Supreme Court of India, has had a liberal approach towards deciding the contractual disputes involving Liquidated Damages clause. It has observed, in arriving at a decision as to the payment of Liquidated Damages, the Terms of the contract are required to be taken into consideration and where such terms are clear and unambiguous stipulating the liquidated damages in case of the breach of the contract unless it is held that such estimate of damages/compensation is unreasonable or is by way of penalty, party who has committed the breach is required to pay such compensation as provided in Section 73 of the Indian Contract Act, 1872. Where Liquidated Damages are specified, a party is not required to prove actual loss or damage suffered by him before he can claim a decree. The Court is competent to award reasonable compensation in case of breach even if no actual damage is proved to have been suffered in consequences of the breach of a contract, if the same is found to be reasonable. In some contractual arrangements, it would be

25 cf Burke (n 19) 338.

26 Jane Jenkins, Simon Stebbings, INTERNATIONAL CONSTRUCTION ARBITRATION LAW, 45 (Kluwer Law International, 2006).

impossible for the Court to assess the compensation arising from breach and if the Liquidated Damages contemplated are not by way of penalty or unreasonable, the Court may award the same provided it is a genuine pre-estimate of the losses made by the parties.[27] The use of Liquidated Damages, thus, serves as an effective remedy, as for the reason that it is considered a substitute for any loss suffered.

Power Purchase Agreement

A Power Purchase Agreement[28] (Hereinafter, PPA) is a technical and industry-specific agreement that deals with the procurement or purchase of power/ electricity. In today's world, electricity generating assets need ample financing for adequate and efficient output. A PPA is a hybrid between a Bulk Off-take Agreement and a Concession Agreement.[29] The PPA would provide for the following clauses that deal with the role and responsibility of the parties, *inter alia*, as to Off-take obligation; Indemnity; Force Majeure; Insurance; Regulation of the facility, etc. The basic reason as to the need for a PPA may be said to have an industry-specific agreement that amply conveys, *inter-alia*, the technical obligations of the parties. A PPA can be characterised as a core document that facilitates in establishing a framework that governs the implementation of the project in relation to the Power Sector. A typical PPA seeks to cover the following two core issues, *viz.* the framework for the construction, operation and maintenance of the power station; and the contractual obligation as to the sale and purchase of electricity. It may thus be said to be the bedrock of fundamental obligations on the basis of which the project is sought to be implemented.

The need for a PPA form of contractual framework for the implementation of the private participation in sale of Electricity is to counter-balance the lacunae that the law possesses. The law, however comprehensive it may be, cannot be exhaustive in itself due to the various implicative terms used in the provisions. By entering into specific contractual terms in the PPA that clearly and precisely enlist the obligations of the parties, there is a sense of security and certainty that can be achieved, which but for the PPA, would depend upon the judicial foreplay at the time of interpretation of such transactions. However, there are

27 Oil & Natural Gas Corporation Ltd v. Saw Pipes Ltd., AIR 2003 SC 2629.

28 Check for Sample PPAs: http://ppp.worldbank.org/public-private-partnership/sector/energy/energy-power-agreements/power-purchase-agreements.

29 cf Joshi (n 2) 335.

manifold benefits that ensue upon entering into a PPA, they may be elucidated hereunder:

- **Financial Guarantee:** The projected revenues of the project would otherwise be uncertain and so some guarantee as to quantities purchased and price paid are required to make the project viable;
- **Protection from competition:** There is a possibility of competition from cheaper or subsidized domestic or international competition (e.g., where a neighbouring power plant is producing cheaper power) - the PPA provides some certainty of being protected from the same;
- **To legally facilitate an agreement:** A government utility may be purchasing the power generated by a power plant. The government will want to understand how much it will be paying for its power and that it has the first call on that power. A PPA will therefore substantiate such information.

The PPA is a structured technical document that deals with the procurement of power, thereby requires to be regulated by suitable and subsequent intervention by the Government Agency, so as to ensure a free, fair and equitable use and availability of electricity to the ultimate consumers.

Tariff

The main obligation of the buyer under the PPA is to pay the agreed tariff when due. The PPAs have to base the tariff price on the basis of a competitive bidding process, for the reason that it would bring about transparency and public confidence in the project. Further, the Electricity Act 2003 vests the power to determine tariff with the electricity regulatory commissions.[30] The Generating companies and licensees are mandated to make an application to the relevant commissions for determination of tariff. Such an application is to be determined by way of a tariff order accepting the application with suitable modification as to the tariff value. Such an application may be rejected only if the same is not made in accordance with the provisions of the Act. However, no such application may be rejected unless the reasons for rejection are stated in writing.[31]

30 See Section 62 of Electricity Act 2003. However in accordance with Section 63, the Commission may also determine the tariff by means of transparent bidding process.

31 See Section 64 of the Electricity Act 2003.

The Electricity Act, 2003 has in this regard vested the regulatory power in the hands of the Regulatory Commissions, Central and State. A generating company, if the liberalization and privatization policy is to be given effect to, must be held to be free to enter into an agreement and in particular long term agreement with the distribution agency, terms and conditions of such an agreement, however, are not unregulated. Such an agreement is subject to grant of approval by the Commission. However, the Commission has a duty to check if the allocation of power is reasonable. If the terms and conditions relating to quantity, price, mode of supply the need of the distributing agency *vis-a-vis* the consumer, keeping in view its long term need are not found to be reasonable or lead to a scenario where there is an abuse of its dominant position, approval may not be granted and further appropriate directions may be given by the Commission under Section 60. If regulatory provisions under the Electricity Act 2003, are sought to be applied in relation to allocation of power, the same would defeat the de-licensing provisions. Generating companies thus have the freedom to enter into contract and in particular long term contracts with a distribution company subject to the regulatory provisions contained in the 2003 Act.[32] Thus a PPA benefits a Generating Company, *inter alia,* to enter into long term arrangements so as to secure itself a bulk off-taker for the power produced by it.

Contracts that secure obligations

Obligations of a party may be either contractual or financial. It is more often than not, that parties in a commercial transaction are not similarly placed. In such cases, a weaker party, in terms of bargaining power, may hesitate to enter into contractual obligations, lest the other ensures the protection of its interests adequately. Such arrangements as to the securing of objectives is sought to be discussed hereunder. Such arrangements take various forms; however, the most prominent arrangements are discussed hereunder.

In a commercial transaction, a guarantee may either take shape of a Financial Guarantee, the primary object of which is to ensure payment obligations, or a Performance Guarantee, that vouches for the ability of a party to perform. Such Guarantees involve the creation of Earnest Money Deposits or Escrow Agreements, depending upon the discretion of the parties to a transaction. Escrow Agreements are one of the mechanisms by means of which a weaker

32 Tata Power Company Ltd v. Reliance Energy Limited, 2009 16 SCC 659.

party, in terms of bargaining capacity, aims to strike a balance vis-à-vis the other party. It involves the deposit of money or other property into the possession of a third party, to be held until the occurrence of a contingent event or the performance of an obligation.[33] There are certain transaction specific laws that deal with the maintenance of Escrow Accounts in India.[34] However, there is no specific legislation on Escrow Agreements in India and it is, more or less, self-regulated by the terms of the contract. An Escrow Agreement may be entered into by two modes, *viz.* by way of a special contract and another as a clause in the Project Document. A typical Escrow Agreement is a tripartite one, wherein the contractual parties to the subject matter of the contract, in relation to the Power Sector, identify and involve a third party, *viz.* the Escrow Agent and define the terms and conditions as to the manner in which the obligations of the contractual parties are to be secured against one another. For instance, in the matter relating to the procurement of Coal wherein a Letter of Assurance is issued, it involves the creation of an Earnest Money Deposit of "5% of the Annual Value of Coal Requirement", that stands discharged on the conclusion of a Fuel Supply Agreement.[35]

The controversial Dabhol Project, dealt in detail further ahead, involved a guarantee made by the Government of Maharashtra (Hereinafter, GoM) that guaranteed the payment obligation of the Maharashtra State Electricity Board (Hereinafter, MSEB) for its purchase obligations under the Power Purchase Agreement. The Government of India had further counter-guaranteed by agreeing to pay "any sum of money validly due" under the PPA that had not been paid by MSEB or the GOM.[36]

The counter-guarantee in the Dabhol Project led to huge embarrassment to India, the matter being decided by an Arbitration Tribunal, with the claim of approximately $110 million plus compound interest against the Indian

33 Richard A. Rosen, SETTLEMENT AGREEMENTS IN COMMERCIAL DISPUTES: NEGOTIATING, DRAFTING & ENFORCEMENT, Vol. 1, 8-32 (Aspen Publishers Online, 2000).

34 For Instance, SEBI (Substantial Acquisition of Shares & Takeover) Regulations 2011, deal with the maintenance of an Escrow Account.

35 New Coal Distribution Policy, Office Memorandum No. 23011/4/2007-CPD, Government of India, dated 18th October 2007, available at: <http://scclmines.com/downloads/newcoaldistribution.pdf> (last accessed on October 10, 2015).

36 Preeti Kundra, 'Looking Beyond the Dabhol Debacle: Examining its Causes and Understanding its Lessons', *Vanderbilt Journal Of Transnational Law*, 907, 909 (Vol. 41).

government being espoused by the United States of America against India.[37] By July 2005, the Government of India had finalised settlement terms with all the international parties to the Dabhol power project, and for the first time, the project was fully owned and controlled by government interests.[38]

Force Majeure Clauses

Impossibility of performance, subsequent or supervening in nature, may arise due to changed circumstances or any occurrence of certain unforeseen events that would make the performance of the contractual obligation frustrated. In such a circumstance either of the party may seek to avoid the Contract. For instance, Impracticability is a recognized defence in California when fulfilment of the contractual obligations by a party may become too costly or challenging.[39] However, mere increase in the costs and a heavier burden in performing the obligation do not always excuse a performance as impracticable.[40] Such a relief is granted by the court when it finds that the basis of the contract was frustrated by the intrusion or occurrence of the unforeseen event or change in circumstances beyond the control of either party.[41] Such avoidance or discharge is not available where the contract makes full and complete provision, as intended, for a given contingency. The occurrence of the impossibility must be of the kind that was not within the contemplation of the parties at the time of vetting of the contract.[42] As such, Force Majeure Clauses play a major role in Electricity Contracting, just as in the case of any other Commercial Contractual Relationship.

An instance of Impossibility of performance is a matter before the CERC,[43] wherein an application under Section 79 of the Electricity Act 2003 was made

37 Ibid 908.

38 Kenneth Hansen, Robert C. O'Sullivan and W. Geoffrey Anderson, 'The Dabhol Power Project Settlement What Happened? and How?' *Infrastructure Journal* 4 Dec. 22, 2004, available at: <http://www.chadbourne.com/files/Publication/a5aa1e52-4285-4bb5-87e6-7201123895a0/Presentation/PublicationAttachment/352f8f09-ae96-40fc-a293-720d0b8f0ca8/Dabhol_InfrastructureJournal12_2005.pdf> (last accessed on October 12, 2015).

39 Kennedy v. Reece, 37 Cal. Rptr. 708, 712 (Cal. Dist. Ct. App. 1964).

40 Ibid.

41 Satyabrata Ghosh v. Mugneeram Bangur & Co. AIR 1954 SC 44.

42 Dr. P. C. Markanda, THE LAW OF CONTRACT 923 (Lexis Nexis, Vol. I, 3rd Edn).

43 Adani Power Limited, Ahmedabad Petitioner v. Uttar Haryana Bijli Vitaran Nigam Ltd. and others, CERC Order in Petition No: 155/MP/2012; *Also see*, Tata Power: Coastal Gujarat Power Limited v. Gujarat Urja Vikas Nigam Limited & Others, CERC Order in Petition No. 159/MP/2012.

for the revision of the tariff price set-forth in the PPA between Adani Power and Gujarat Urja Vikas Nigam Limited. It was dealt in detail as to whether there would be a frustration of the PPA if the changed circumstances are induced by a change in law in Indonesia. Adani Power had agreed to supply electricity to Gujrat Nigam and certain State Utilities in Haryana. The former had made provisions for procurement of fuel, *viz.* coal at reasonable price rate, from Indonesia due to issues in procuring fuel from domestic sources. In 2010, the Indonesian Government issued a set of regulations stipulating that holders of mining permits in Indonesia will be permitted to sell coal only at benchmark prices accepted in the international markets and any sale of coal at a price lower than the benchmark price would lead to the cancellation of the mining license. These Indonesian regulations had a significant impact on export prices of coal from Indonesia, which were higher than the contracted prices, due to which it became unviable for Adani Power to supply power at agreed prices to the state utilities in Gujarat and Haryana. Adani Power approached the CERC for a revision of the Tariff rates on account of changed circumstances; arguing that the performance of the obligations had become impracticable and therefore the contract should be held to be frustrated. However, the CERC refused to hold that the Contract was frustrated for the reason that a mere rise in the price of a commodity does not result in impossibility of performance, and further held that the force majeure clause was not attracted on the basis that the 'change in law' as contemplated in the PPA, referred to the change in the law regulating the PPA, *viz.* Indian Law. However, the CERC allowed for the revision of tariff by providing for what it called a Compensatory Tariff, so as to counter balance the effect of increased price of coal imports. The CERC took this approach on the ground that, if the parties were to resort to the process of competitive bidding it would bring uncertainty to the power sector and would be prone to misuse. The CERC ordered in the *Adani Case* that the Petitioner needs to be compensated for the intervening period. And as and when the hardship is removed or lessened, the compensatory tariff would be revised or withdrawn. It was observed by the Commission that the same was the most pragmatic way to make PPAs workable while ensuring supply of power to the consumers at competitive rates. The matter is now pending before the Appellate Tribunal for Electricity, wherein the Supreme Court by an order dated 31st

March 2015 has allowed Adani Power to raise the argument of change in International Law to defend the compensatory tariff allowed by CERC.[44]

The regulatory changes that have been brought forth by the Electricity Act 2003, whereby the respective commissions are given the power to regulate the tariff rates, and with the approach of the CERC in respect of *Adani Power* and *Tata Power*, it is quite commendable that the Commission takes up the matter presented before it on the basis of commercial principles and not on the basis of economically or politically inspired objectives.

Dispute Settlement Process

Prior to 2003, there was no effective dispute settlement mechanism. Consequential to the lack of an effective domestic mechanism was the failure of the resolution of the Cogentrix Project. The Dabhol Project due to the intervention of International Chamber of Commerce met its daylight, although causing an international embarrassment to India.[45] The Dabhol and the Cogentrix Projects have been tough lessons that taught India the need for an effective regulatory and compliance regime for the Electricity Sector, thus leading to the promulgation of the Electricity Act, 2003.

Regulatory Commissions: as an Adjudicatory Body

The Electricity Act 2003 has established Central Electricity Regulatory Commission (CERC) and the State Electricity Regulatory Commission (SERC) in each State. They are statutory bodies that have quasi-judicial powers to adjudicate upon disputes that relate to generation, transmission and distribution of electricity. The CERC has the power to adjudicate upon disputes involving generating companies or transmission licensees with regard to Regulation of Tariff and the sale of electricity in more than one State; Inter-state Transmission of Electricity; Determination of Tariff for Inter-state Transmission of Electricity

44 Based on the Audited Financial Report of Adani Power Limited for the year ended 31st March 2015, available at: <http://www.adanipower.com/Common/Uploads/FinanceTemplate/2_FFReport_APL_Results.pdf,> (last accessed on August 21, 2015).

45 Capital India Power Mauritius I and Energy Enterprises (Mauritius) Company v. Maharashtra Power Development Corporation Limited, Maharashtra State Electricity Board, and the State of Maharashtra, International Commercial Arbitration Case No. 12913/MS (27 April 2005), available at: <http://ita.law.uvic.ca/documents/Dabhol_award_050305.pdf> (last accessed on July 17, 2015).

and Issue of Licenses for transmission and trading of electricity for operation between states. The powers of the SERC are restricted to intra-state generation, supply, transmission, trade and wheeling of Electricity. Both the regulatory commissions have the power, *inter alia*, to refer any dispute for arbitration.

Arbitration

Arbitration is a reference to the decision of one or more persons of some matter or matters of difference between parties.[46] In *Booz Allen and Hamilton Inc. v. SBI Home Finance Ltd.*, the Supreme Court discussed the concept of arbitrability in detail and held that the term 'arbitrability' has different meanings in different contexts: (a) disputes capable of being adjudicated through arbitration, (b) disputes covered by the arbitration agreement, and (c) disputes that parties have referred to arbitration. It stated that, in principle any dispute that can be decided by a civil court can also be resolved through arbitration.[47]

Infrastructure projects typically involve several different types of contracts, and arbitration may not always be the preferred means of dispute resolution for each of those types of contract and therefore there are certain non-adjudicative processes that are preferred over arbitration. However, the potential advantage in Arbitration is that Infrastructure project disputes often involve technical subject matter that is more suitable for resolution by an arbitrator hand-picked by the parties for his or her specialized competence than by a national court judge or jury with little or no prior knowledge or experience in the field. The arbitrator's specialized competence may enhance not only the quality of decision-making but also the efficiency with which the proceedings are conducted. Further, the confidentiality and relative informality of arbitral procedures (which may include site visits), as well as the flexibility arbitrators have in fashioning appropriate remedies in arbitration, may be better suited to preserve the long-term relationships established in connection with infrastructure projects.

In a Power Purchase Agreement between the Dabhol Power Corporation (DPC – owned by Enron, Bechtel, and General Electric) and the Maharashtra State Electricity Board (MSEB), the MSEB agreed to buy 90% of the power generated by the project regardless of market demand for electricity and at a cost well

46 Dr. P.C. Markanda, EMDEN'S BUILDING CONTRACTS AND PRACTICE, 846 (Ninth Edn., Lexis Nexis).

47 2011 (5) SCC 532.

above that of other available energy sources.[48] Public opposition to the Dabhol project was a major factor in the Maharashtra state election in 1995, which led to the election of a coalition government that was committed to the object of cancelling the project.[49] The public outrage was due to the reasons, *inter alia*, that Enron's proposal did not undergo a standard competitive bidding process in India.[50] In response to the Government of Maharashtra's step to cancel the project, Enron initiated arbitration in London under the dispute settlement clause of the PPA between the Dabhol Power Corporation (DPC) and the MSEB, whereas the Indian Entity continued action in the domestic courts in India. The litigation ended when Enron and the Maharashtra Government agreed in 1995 to renegotiate the deal. The renegotiation led to modest changes in the size, tariffs, payment terms, environmental monitoring, and ownership of the project.[51] Alleging a breach of the PPA by DPC, the Maharashtra Government ceased its payments to DPC, and the Indian Government, the counter-guarantor to MSEB also refused to make payments citing the existence of a contractual dispute. This led to a legal turmoil and battle between the parties to the PPA, as in first instance, the dispute under the PPA was referred by the DPC to arbitration in London (and by the MSEB to Indian courts). Secondly, Bechtel, a co-owner of the DPC, referred a claim under the DPC Shareholders Agreement to the International Chamber of Commerce (ICC) Arbitration in New York.[52] There were in total four Arbitration matters that were filed in respect of the Dabhol Issue. However, it is a matter of serious introspection that these Arbitration Tribunals did not purport to act as a forum of technical adjudicatory bodies, *albeit,* acted as a forum that enforced a broader review mechanism for policy choices of MSEB. The ICC assumed jurisdiction

48 P. Purkayastha, 'Enron: The Drama Continues', 30 (33) *ECON. & POL. WKLY*. 2042 (19 August 1995)

49 The Enron Corporation: Corporate Complicity in Human Rights Violations, *Human Rights Watch* (1999), available at: <http://www.hrw.org/legacy/reports/1999/enron/> (last accessed on September 20, 2015).

50 Kirit S. Parikh, 'Thinking through the Enron Issue', 36(17) *ECON. & POL. WKLY*. 1463 (28 April 2001).

51 Ibid.

52 *See* Capital India Power Mauritius I and Energy Enterprises (Mauritius) Company v. Maharashtra Power Development Corporation Limited, Maharashtra State Electricity Board, and the State of Maharashtra, International Commercial Arbitration Case No. 12913/MS (27 April 2005), available at: <http://ita.law.uvic.ca/documents/Dabhol_ award_ 050305.pdf> accessed on July 17, 2015.

for interpretation of the PPA, essentially an agreement between DPC and MSEB, neither of whom were parties to the Shareholders Agreement. In a claim against India, in respect of the Dabhol Project, India was required to pay about $110 million to Enron, Bechtel, General Electric, and Bank of America in risk insurance.[53]

Conclusion

The Contractual Arrangements in the Indian Power Sector have increased explosively in light of the liberalisation of the Power Sector in India. The development of the legal scenario has to be commensurate the same. The Power Sector, being one of the core infrastructural facilities in any given economy, has got several stakeholders, including the common citizen who is a consumer of electricity. With the increasing contour of stakeholders, it is imperative that, any rash or rampant changes in the undertaking, generation, transmission or distribution of Electricity, the lives to be affected are several. Contractual (mis)arrangements are capable of causing turmoil, both on the Financial as well as developmental front. The lessons learnt from the *Dabhol* and *Cogentrix* fiascos are bitter yet fruitful, having led to the adoption of a competitive bidding process in relation to the private participation in the Infrastructure Projects. Although there are certain agreements that require special legislative attention, such as those relating to Escrow Accounts and Guarantees towards contractual obligations, they have been encompassed into the rubric of the legal system by the principles of Contract, thus requiring the same to be drafted with close scrutiny so as to avoid sheer embarrassment and jeopardy. The Courts have been quite friendly to Commercial Interests, and have practiced an apolitical approach in deciding the matters, thereby reflecting India to be a hub for Investment.

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53 John R. Crook, 'U.S. Initiates Arbitration against India over OPIC Claims for the Dabhol Power Project', 99 *American Journal of International Law* 271 (2005).

Power Purchase Agreements – Questionable Sanctity in a Volatile Market

Mandakini Ghosh & Parinay Deep Shah***

Abstract

The trend of entering long-term power purchase agreements (PPA) is the norm in the Indian energy sector. Both the generator and the procurer want to enter into a relationship whereby neither has to frequently renegotiate the contract, especially after each of them incurs large scale investments. The idea is that entering into a long-term PPA provides legal certainty and sanctity of contract. While in theory this argument seems to hold good, longstanding jurisprudence demonstrates how the volatile nature of the energy market has led to the parties constantly being incentivized to breach the contract or take resort to the change in law and force majeure clauses contained in the contracts, often on flimsy grounds. This paper discusses how the rationale for long-term PPAs is somewhat contradictory; although long-term PPA is assumed to provide legal certainty, however its very nature is such that the parties are likely to find a reason to breach the contract. Even though the Indian Courts have in numerous cases highlighted the importance of sanctity of contract, that has not deterred parties from attempting to renegotiate PPAs time and again. In such a scenario it is hard to accept that long-term PPAs offer any kind of security with respect to the supplying and procuring of electricity. Recently, Appellate Tribunal of Electricity has interpreted the regulatory powers of the Electricity Commissions under the Electricity Act, 2003 very widely and recognized the power of relevant electricity Commission to reopen the PPAs as well as re-determine the price in already concluded agreements. The power of the Commission to modify the tariff for concluded PPAs has also been considered to be emanating from the basic scheme of the Electricity Act, where the interest of the consumer has been considered as one of the most safeguarded right. The Central Electricity Commission while noting the sanctity of a long term contract, has taken the view that there has to be a mechanism to compensate the aggrieved party for uncontrolled cost increases. The said mechanism has been formulated in

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the form of compensatory tariff. Therefore the electricity forums have found a novel way to get around the sanctity of long-term contracts by way of compensatory tariff.

Introduction

Power purchase agreements under the Electricity Act, 2003 (EA 2003) are agreements for buying and selling electricity typically for a period varying from 1 month to 40 years. The buyer may either be a trading/distribution licensee under the EA 2003 or an end consumer. The trading licensees enter into a PPA with a generator with an objective of re-selling the electricity to one or more beneficiaries, which may be distribution licensees requiring power for retail supply to its' consumer base or a consumer (a factory, mall or HT Industry having a load of 1 MW and above) through the open access regime[1] via a back-to-back power sale agreement (PSA). The distribution licensees also directly enter into PPAs with generators for a fixed period which depends on the power requirement of the distribution licensee and the state specific regulations that bind the distribution licensee.

All PPAs/PSAs entered into between the buyer, distribution licensee and the seller, generator/trading licensee are subject to regulatory scrutiny of the State Electricity Regulatory Commission (State Commission) under Section 86 (1) (b) of the EA 2003.[2] The scope of this article is to discuss the binding value of PPAs entered into between a distribution licensee and sellers in the current regulatory regime which is uncertain, fluctuating and gravely affected by international/national trends of currency fluctuation, fuel shortage and judgments of the Supreme Court regarding cancellation of coal blocks.

PPAs/PSAs are complex agreements usually dealing with technical and commercial aspects of the transaction, which also identify the generating source, type of fuel, tariff at which the power is to be purchased, point of delivery of power, the additional rates & charges to borne by the seller till the point of delivery and the buyer from the point of delivery, dates from which the supply is to commence, accompanying penalties and incentives. In most other respects, PPAs/PSAs list out an exhaustive list of obligations to be performed by both buyers and sellers, events of defaults leading to termination which are similar to regular agreements to sale.

1 *Refer* No. 23/1/2008-R&R (Vol-IV), Government of India, Ministry of Power, November 30, 2011.

2 Tata Power Company Limited v. Reliance Energy Limited, (2009) 16 SCC 659.

Regulatory Framework

Section 86(1)(b) of the EA 2003 provides power to the State Commissions for regulatory purview of agreements between the generating companies and the licensees or other sources.[3] Therefore, every PPA entered into by a distribution licensee with a generating company or a PSA with a trading licensee has to be approved by the State Commission. A distribution licensee may enter into a PPA after floating bids under the competitive bidding guidelines[4] or through the negotiated route.[5] Both processes of competitive bidding guidelines and negotiated route are adopted/approved by the State Commission under Section 63 and 62 of the EA 2003.[6]

A State Commission will have the jurisdiction under Section 86(1)(f) of the EA 2003 to adjudicate upon any dispute that arise under a PPA/PSA entered into between a distribution licensee with a trading licensee or a generating company. Such procurement can be made by the distribution licensee from any place within or outside the State, inter-State or Intra State.[7] The State Commission will have jurisdiction to entertain the PPA dispute and adjudicate the same so long as some part of the cause of action arose within its statutory jurisdiction. A pointer towards establishing territorial jurisdiction would be to establish whether the transaction, negotiations, issuance of letters of intent, and point of delivery of power to the distribution licensee is within the state.[8] Only the State Commission will have the power to adjudicate disputes arising under a PPA/PSA executed by the distribution licensee irrespective of where the generator or the trading licensee is located.[9]

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3 Section 86(1)(b) - *regulate electricity purchase and procurement process of distribution licensees including the price at which electricity shall be procured from the generating companies or licensees or from other sources through agreements for purchase of power for distribution and supply within the State*.

4 *Refer* No. 23/11/2004-R&R (Vol.II), Government of India, Ministry of Power, January 19, 2005.

5 Under the negotiated route of procurement, the distribution licensee negotiates tariff and terms for supply of power with the generator. Under competitive bidding guidelines, power tariff is determined through a process of bidding in accordance with the guidelines issued by the Central Government.

6 BRPL v. DERC, 2010 ELR (APTEL) 0404.

7 *See* M/s Pune Power Development Private Ltd. v. KERC, Appeal No. 200 of 2009 (APTEL); Lanco Amarkantak Power Pvt. Ltd. v. MPERC, Appeal No. 7 of 2009 (APTEL).

8 Ibid at 11.

9 Also, Lanco Kondapalli Power Private Limited v. Haryana Electricity Regulatory Commission & Ors., 2010 ELR (APTEL) 36.

There are many instances where the distribution licensee may enter into a PSA with a trading licensee and there would be a back to back PPA between the trading licensee and the generator. In such cases, thus it is clear that no privity of contract exists between the generator and the distribution licensee. In such circumstances, an interesting question that has arisen before the Appellate Tribunal for Electricity (APTEL) is whether a State Commission has the jurisdiction under Section 86(1)(b) read with Section 86(1)(f) to adjudicate upon a dispute where the generator is not within the jurisdiction of the State Commission and has no direct agreement with the distribution licensee. The APTEL has carved out an exception to the privity of contract rule and applied the nexus test to uphold the State Commission's jurisdiction to adjudicate disputes under a back-to-back arrangement of PPA & PSA. The jurisdiction of the State Commission is attracted only in certain specific events when there is a direct nexus between (a) Generating company and the State in which power produced by it is going to be consumed or (b) a direct nexus between the PPA and PSA.[10]

APTEL has laid down tests to establish nexus between the back-to-back arrangements, i.e. the nexus between the PPA and the State. The jurisdiction of the State Commission can only be invoked if it is established that the PPA and PSA are inextricably linked. Simply the recitals of the PPA indicating that both the PSA and PPA are back to back agreements may not be enough to establish nexus. The original PPA between the generator and the trading licensee must identify the ultimate purchaser/beneficiary of the power. If the generating company enters into the PPA for the sale of power generated by it, knowing the State or the place where the power generated is going to be consumed, then the generating company acts with a nexus to the consumers of that State.[11]

The Electricity Act has created a national market for electricity.[12] An inter-state trader may purchase wind energy from a generator located in Karnataka, under a PPA, wheel it through the distribution lines of Karnataka, Tamil Nadu and then onto the national transmission grid maintained by Power Grid Corporation of India Limited, to supply power to Delhi distribution licensees under a PSA. Such a

10 M/s. Lanco Budhil Hydro Power Private Ltd. v. Haryana Electricity Regulatory Commission, Appeal No.188 of 2011 (APTEL).

11 Ibid at 61.

12 In re Supply of Electricity from generating stations of the TATA Power Company Ltd. to Reliance Infrastructure Ltd. for distribution to its consumers, Case No. 13 of 2010 (MERC).

transaction will involve various entities and multiple jurisdictions. A close reading of the agreements involved in the transaction is necessary to establish jurisdiction and obtain speedy relief from the correct forum.

Re-Opening PPAs

The primary issue plaguing the implementation of PPAs is re-opening of PPA and varying the settled tariff. The question that the judiciary is currently grappling with is whether in exercise of regulatory power, the appropriate commission can revisit the tariff and re-open PPAs.

An executed PPA is a concluded contract. The parties to the PPA expressly agree on the terms for supply of power for the period of PPA which often extends to forty years. Tariff or price at which power is to be supplied to the distribution licensee forms one of the fundamental balustrades on which the PPA rests. However, over the past decade, a number of renewable energy generators have approached the appropriate commission to unilaterally upwardly revise the tariff of the power being supplied to the distribution licensee. Though such an approach strikes at the heart of contractual law – *Pacta Sunt Servanda*, the APTEL in a long line of cases dealing with viability of tariffs under concluded PPAs for supply of renewable energy has upheld the powers of the appropriate commission to re-open PPAs and upwardly revise the tariff for maintaining the financial viability of the renewable energy generators.

The APTEL, in the light of the objectives of the EA 2003 has unequivocally held that Power Purchase Agreements can be re-opened only for the purpose of giving a thrust to the renewable energy projects and not for curtailing the incentives.[13] The APTEL has further held that the State Commission has power under Section 61, 62(2), (3) and (4) and 86(1)(a), (b) & (e) of the Electricity Act, 2003 to revisit tariff and reopen PPA.[14] It appears that the APTEL has allowed upward revision of tariff for renewable energy generators only on account of uncontrollable factors resulting in insurmountable financial unviability for the

13 Ritwik Energy System v. Transmission Corporation of Andhra Pradesh, Appeal No.90 etc. Batch of 2006.

14 Transmission Corporation of Andhra Pradesh Ltd. & Anr. vs. Sai Renewable Power Pvt. Ltd. & Ors. (2011) 11 SCC34; Techman Infra Ltd. vs. HPERC & Ors., Appeal No. 50 of 2008; Tarini Infrastructure Limited vs. GUVNL & Ors, Appeal nos. 28 & 29 of 2011.

generators. The uncontrollable circumstance may be a host of reasons spanning from defective hydrological data[15] leading to reduced generation to rise in price of bio-mass fuel.[16] An interesting example of uncontrollable circumstance would be a recent judgment of the Apex Court,[17] wherein the Coal Block allocation and allotment made by the Government of India were declared to be arbitrary and illegal and thereby cancelled. Considering that 214 coal blocks were cancelled in this case, a large number of allottees who had already entered into PPAs with procurers have been affected. Post cancellation of the coal blocks, the cost of production of electricity for such allottees has risen considerably. While the judgment of the Apex Court appears to fall well within the exception of 'change in law' which is a standard clause in such PPAs, it will be interesting to see how the Courts will adapt the affected PPAs to restore the financial equilibrium.

In terms of the law laid down by APTEL, the State Commissions have the powers to revise tariff in a concluded PPA as long as there are uncontrollable circumstances and where the revision in tariff is required to meet the objective of the EA 2003, i.e. promotion of renewable energy. However, this has to be balanced with the larger interest of consumers, who will invariably be financially burdened with higher tariff. Therefore, the State Commissions are expected to walk a tight rope, setting off the advantages of promoting a greener environment against the grievances of higher electricity bills.

Prima facie, the precedents set by APTEL seem benign and pro-development. However, it has effectively opened a Pandora's Box. It has resulted in a deluge of renewable energy generators approaching regulatory forums, seeking re-opening of PPAs and tariff increase, citing financial unviability. Some of these cases may well be genuine but the presence of generators who bid aggressively, quoting ridiculously low tariff for securing PPAs cannot be ignored. All in all, the regulatory forums have a tough job on their hands weeding out these unworthy causes from generators who are truly facing financial closure due to unviable tariffs.

15 Patikari Power Ltd. v. Himachal Pradesh Electricity Regulatory Commission, Appeal No. 179 of 2010.

16 M/s. Junagadh Power Projects Private Limited vs. Gujarat Electricity Regulatory Commission, Appeal No. 132 & 133 of 2012.

17 Manohar Lal Sharma v. The Principle Secretary & Ors, W.P. (Crl) No. 120/2012 order dated 25.08.2014 read with order dated 24.09.2014.

Compensatory Tariff

The story of re-opening of PPAs acquires darker shades as the stakes get higher. Adani Power and Tata Power (Generators) have been locked in battle from 2012 onwards with a number of distribution licensees over the issue of 'compensatory tariff' for supply of power from their respective Gujarat thermal power generating plants.[18] The PPAs were executed by the Generators[19] after emerging successful in competitive bidding process conducted by the distribution licensees under Section 63 of the EA 2003. The Generators had submitted the tariff bid on the basis of imported Indonesian coal as the fuel source. Subsequently, the Indonesian Government passed certain laws (Indonesian Regulations) that exponentially increased the price of Indonesian coal. In view of the promulgation of the Indonesian Regulations having an impact on the export price of coal from Indonesia, Generators experienced an unforeseeable increase in cost of production of electricity which rendered it commercially unviable to supply power to the distribution licensees at the PPA agreed price. Accordingly, the Generators filed petitions before the Central Electricity Regulatory Commission (CERC) under Section 79 of the EA 2003 for evolving a mechanism for revision of tariff. The CERC by orders dated 02.04.2013 and 15.04.2013 rejected the pleas of force majeure and the change in law under the PPA due to promulgation of Indonesian Regulations. However, the CERC moved away from granting reliefs envisaged under the PPA and in exercise of its regulatory jurisdiction under Section 61 and 79 of the EA 2003, decided to grant relief in the form of compensatory tariff over and above the tariff agreed in the PPAs. The CERC orders were appealed against and the issue of 'compensatory tariff' is pending adjudication.

The decision of the CERC caused uproar. While some hailed it as path breaking, the dangerous precedent it set could not be ignored. There are two equally convincing sides to this story. It cannot be denied that grant of compensatory tariff would indeed be a beneficial exercise of regulatory jurisdiction. It would save the UMPPs from becoming stranded assets and enable supply of much-

18 Adani Power Limited v. Uttar Haryana Bijli Vidyut Nigam Ltd., Petition No.155/MP/2012; Coastal Gujarat Power Limited v. Gujarat Urja Vikas Nigam Limited & Ors., Petition No. 159/MP/2012.

19 The dispute is in respect of thermal power generating plants set-up by Adani Power and Tata Power in Gujarat with a capacity of 4620 MW and 4000 MW respectively and entered into long-term PPAs with Haryana, Gujarat, Punjab, Maharashtra & Rajasthan discoms (Power distribution companies).

needed power to the states. However, it begets consideration that the PPAs entered into by the industry titans were pursuant to a tender process. Grant of compensatory tariff would amount to change in bid conditions which would be arbitrary and patently unfair to other unsuccessful bidders. It is true that the Indonesian Regulations had a grievous impact on tariffs. However, at the same time, the Generators are not above reproach. The Generators had taken huge risk and bid aggressively by quoting almost as much as 55% of the energy charges under non-escalable head. Therefore, the benefits of escalation index were not available to the Generators. This aggressive bidding kept the bid price low and enabled the Generators emerge successful in the bidding process. However, in the long run such action has completely back-fired resulting in unviable tariffs under the PPAs. If compensatory tariff is finally upheld, the consumers in the area base of the particular licensees will have to shoulder the burden of increased tariffs.

In a separate matter, vide order dated 28.05.2015, the Hon'ble Supreme Court in *Bangalore Electricity Supply Corporation Limited v. Konark Power Projects Limited & Anr.20* has put in place certain embargoes for re-opening PPAs and re-working the tariff therein. The Hon'ble Supreme Court has held with reference to applicable regulations that PPAs are concluded contracts and that there is no scope for the State Commission to vary the tariff agreed between the parties under the approved PPAs.

It will be interesting to see the effect of this judgment on the pending appeals related to re-opening of PPAs. It appears that the Supreme Court, did not consider the larger question whether the concluded PPAs can be reopened by the State Commission under the provisions of the EA 2003. The Supreme Court discussed the issue of re-opening of PPAs in context of the state specific regulations that placed an embargo on the State Commission to vary the tariff under the concluded PPA. In a recent judgment of the APTEL, the Konark judgment has been distinguished and the regulatory powers of the Appropriate Commission to re-open concluded PPAs and re-determine tariff have been upheld once again.[21]

20 Civil Appeal No. 5612 of 2012; Also see for discussion, Transmission corporation of Andhra Pradesh Ltd & Anr –v- Sai renewable power private Ltd & Anr (2011) 11 SCC 34.

21 GUVNL v. Green Infra Corporate Wind Power Ltd & Ors & batch, Appeal Nos. 198,199,200,291 of 2014.

Conclusion

The energy sector is still in nascent stage of development in India and thus the adjudicatory bodies continue to struggle with the question, whether the regulatory powers available with the commission under the Electricity Act, 2003 contain an inherent power to re-determine the price in a long-term contract. It is undeniable that the judgments of the State Commissions and APTEL re-opening the PPAs and revising the tariff, go a long way in saving ailing renewable energy generators and preventing stranded assets. The flip side to such judgments is that the generators will continue to bid aggressively knowing fully well that a bail-out package will be available at a later point of time.

There appears to be judicial consensus on the fact that there cannot be a blanket prohibition on reopening of PPAs because the nature of a long term PPA is such that there will always be certain events that the parties to the contract could never have anticipated. Even the maxim *Pacta Sunt Servanda* has an exception i.e. *Clausula rebus sic santibus,*[22] which means that if there is a fundamental change in circumstances, the clauses of the contract may become inapplicable. The electricity judicial forums while examining the question of reopening of PPAs, may refer to the doctrine of hardship found in UNIDROIT Principles of International Commercial Contracts 2004. In terms of UNIDROIT Principles, there is hardship where occurrence of events fundamentally alter the equilibrium of the contract.[23] Although this does not allow the disadvantaged party to withhold performance, it can request renegotiations. The Court upon being approached may adapt the contract with a view to restore its equilibrium.[24] Similar exceptions also exist in other international rules.[25]

It may be prudent for Indian law framers to revisit the current practice of using long term PPAs for procurement and distribution of energy. The legislature may also explore the options of having long-term PPAs with the option of fixed short-term negotiations and a flexible tariff adjustment mechanism. In long term PPAs, parties bind themselves for a period of upto 40 years. In volatile markets, assuming such long term risks appears to be commercially inexpedient. However given the present regulatory regime, though businesses can't predict the future, they can't resist the inevitable urge to try.

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22 Latin for "things thus standing".
23 Article 6.2.2 of UNIDROIT Principles of International Commercial Contracts 2004.
24 Article 6.2.3 of UNIDROIT Principles of International Commercial Contracts 2004.
25 Article 62 of the Vienna Convention on the Law of Treaties, 1969.

U.P. POWER CORPORATION LTD. AND ORS V. ANIS AHMAD - POWER THEFT- SETTLING THE DOMAIN AND THE DICHOTOMY

*Dr. Anuja. S**

The Supreme Court in the case U.P. Power Corporation Ltd. & Ors v. Anis Ahmad[1] has settled the law on the jurisdiction of Consumer Forum to decide theft of energy cases and order passed by Assessing authority under S.126 of the Electricity Act, 2003. This case reveals an interesting aspect on the interplay and the so called overlapping domains/ dichotomy between COPRA, 1986 and the Electricity Act, 2003.

Consumer is acknowledged as the powerful motivating force of production, yet at the same time the consumer is an equally vulnerable segment of the whole marketing system. This concern is effectively addressed by the Consumer Protection Act,1986 (hereinafter referred to as COPRA, 1986) in so far as the Act enshrines the rights of the consumer such as right to safety, right to be informed, right to be heard, and right to choose, right to seek redressal and right to consumer education. The Act envisages a three tier redressal mechanism in the form of District, State and national consumer dispute redressal forums with specified pecuniary jurisdiction. Electricity is an essential requirement in all facets of our life. Electricity falls under the services envisaged under the COPRA, 1986 .The Act covers matters of redressal relating to defective goods and also applies to deficiencies in services. Hence, the understanding is, a consumer of electricity has to file complaints against deficiency in services on the part of Electricity Board in the three tier forums envisaged by the Act depending on the pecuniary limits prescribed.

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Electricity is a primary input factor for maximum utilization of other inputs such as manpower and other capital-related resources. The old system of electricity distribution was changed with the enactment of the Indian Electricity Act, 2003 following which electricity has been privatized in the country. The Electricity Act, 2003 is a legislation to consolidate the laws relating to generation, transmission, distribution, trading and use of electricity and generally for taking measures conducive to development of electricity industry, promoting competition therein, protecting interest of consumers and supply of electricity to all areas, rationalization of electricity tariff, ensuring transparent policies regarding subsidies, promotion of efficient and environmentally benign policies constitution of Central Electricity Authority, Regulatory Commissions and establishment of Appellate Tribunal and for matters connected therewith or incidental thereto.[2] The State Electricity Board and Electricity Departments are in the service of consumers for generation, transmission, supply and distribution of electric power.

The case under study is *U.P. Power Corporation Ltd. & Ors v. Anis Ahmad* wherein the judgement was delivered by Justice Sudhansu Mukhopadhaya for a bench headed by Justice G S Singhvi in the Supreme Court of India in the year 2013. The practice was that Consumer forums envisaged under the COPRA, 1986 used to entertain disputes regarding assessed bills for electricity theft. But, a couple of years ago, the SC restrained the forum from finally deciding such complaints. Anis Ahmad and other consumers of U.P. Power Corporation had filed complaints before the district forum challenging the assessed bill raised by the Power Corporation for electricity theft. All the complaints filed in District Consumer Protection Forum in respective jurisdictions reflected identical allegations and prayers. All the complainants were consumers of electricity with sanctioned load of higher horse power prescribed for commercial purposes. The complaints were against the assessment made under Section 126 of the Electricity Act, 2003 or action taken under Sections 135 to 140 of the Electricity Act, 2003 by the Service providers.The complainants on some pretext or the other had raised the contention of deficiency of services against the Power Corporation / Electricity Boards respectively who were the service providers in respective cases. The complainants contended that complaints filed by them in the consumer forum were maintainable and that the consumer forum has jurisdiction in such matters and challenged the assessment action resorted to by the service providers

1 8 SCC 491 (2013).

2 Preamble to the Electricity Act, 2003.

u/Sections 126, 127, 135 to 140 under the Electricity Act, 2003 and prayed for compensation arising out of deficiency of service under the COPRA, 1986.

According to the Service providers, the complainants were found guilty of committing theft/ pilferage of electricity in different forms. The service Providers contended that the complainants, having taken industrial connections, did not fall within the definition of "consumer" as per Section 2 (1)(d) under the COPRA,1986. As they were not consumers a complaint filed u/COPRA, 1986 was not maintainable. Adequate support was taken from Sections 2(c), 2(d) and 2(g) of COPRA, 1986 to justify their stance. A common contention raised in the objections filed by the service providers was that theft/pilferage of electricity would not amount to deficiency in service of providing electricity under the COPRA, 1986 therefore; the Consumer Forum did not have jurisdiction to entertain the petition regarding the theft of electricity under the COPRA. The Service providers filed objections and raised the question of maintainability of the petition as they contended that consumer forum was not the proper forum of redressal for matters arising under Section 126 of the Electricity Act, 2003. The Power Corporation disputed the maintainability of the complaints before the consumer fora. The Moradabad District Forum, Uttar Pradesh State Commission and the National Commission held the complaints to be maintainable. The National Commission allowing the complaint, held it was the complainant's option to file a complaint either under Consumer Protection Act or to file appeal under Section 127 of the Electricity Act, 2003. The Corporation moved the Apex court through a Special Leave petition.

The Supreme Court took a cautious approach in analyzing elaborately on the provisions of COPRA, 1986 and Electricity Act, 2003 to reach a judicious decision on the issues raised. The questions involved in these appeals were:

a) Whether complaints filed by the respondents before the Consumer Forum constituted under the Consumer Protection Act, 1986 were maintainable and;

b) Whether the Consumer Forum has jurisdiction to entertain a complaint filed by a consumer or any person against the assessment made under Section 126 of the Electricity Act, 2003 or action taken under Sections 135 to 140 of the Electricity Act, 2003.

The first task of the Court was to analyze whether theft of electricity was included under the domain of COPRA, 1986.To substantiate that, the specific nature transaction of theft /pilferage of electricity is not within the domain of COPRA, 1986, the court delved into the definitions of Consumer Dispute and Complaint under COPRA, 1986. "Consumer dispute" under the COPRA, 1986 is defined as a dispute where the person against whom a complaint has been made, denies or disputes the allegations contained in the complaint.[3] A "complaint" under COPRA,1986 means any allegation in writing made by a complainant regarding (i) an unfair trade practice or a restrictive trade practice adopted by any trader; (ii) the goods bought by him or agreed to be bought by him] suffering from one or more defect; (iii) the services hired or availed of or agreed to be hired or availed of by him] suffering from deficiency in any respect; (iv) a trader having charged for the goods mentioned in the complaint a price in excess of the price fixed by or under any law for the time being in force or displayed on the goods or any package containing such goods; (v) goods hazardous to life and safety when used, are being offered for sale to the public in contravention of the provisions of any law for the time being in force requiring traders to display information in regard to the contents, manner and effect of use of such goods with a view to obtaining any relief provided by or under this Act.[4] Hence, only the aforementioned aspects can be the subject matter of a consumer complaint *viz.* unfair trade practice or restrictive trade practice, when there are defective goods, deficiency in services, hazardous goods, hazardous services or a price in excess of the price fixed under any law etc. The Court came to the conclusion that only aforementioned aspects can be the domain of a consumer complaint as envisaged by the COPRA, 1986.

Deficiency of service by the service provider was one of the allegations raised by the complainants in the complaint. The Court analyzed the definition of Deficiency of Service under COPRA, 1986. "Deficiency" meant any fault, imperfection, shortcoming or inadequacy in the quality, nature and manner of performance which is required to be maintained by or under any law for the time being in force or has been undertaken to be performed by a person in pursuance of a contract or otherwise in relation to any service.[5] S.126 of the Electricity Act, 2003 on the other hand envisaged final order of revenue assessment passed by the officers of the Service

3 S.2(e),COPRA,1986.

4 S.2 (1)(c), COPRA,1986.

5 S.2(g), COPRA,1986.

Provider after checking as per the due procedure envisaged gats over. Thereupon court came to the conclusion that the nature of transaction ie. Theft of Electricity and its allied proceedings to be taken up by the Service providers under S.126 of the Electricity Act does not come within the ambit of complaint under the COPRA, 1986. The SC summarized that, to file a complaint under the COPRA, 1986 a person must be a consumer and there must be an allegation that the goods are defective, or there is a deficiency in service, or that unfair trade practice or restrictive trade practice has been adopted, or that the goods or services are hazardous or that the charge is in excess of the price declared or fixed by law. Since the complaints in respect of commercial purposes/industrial purposes were excluded under the COPRA, 1986, the SC ruled that the complaints were not maintainable before the consumer fora. In the present case, none of the complainants had alleged any deficiency in service or unfair trade practice, instead merely disputed the final order of assessment in respect of unauthorized use or theft of electricity.

Having identified that, the nature of transaction was completely outside the domain of COPRA, 1986 the next task of the court was to identify the consumer under both the legislations. A Consumer under the Electricity Act, 2003 is any person who is supplied with electricity for his own use by a licensee or the Government or by any other person engaged in the business of supplying electricity to the public under this Act or any other law for the time being in force and includes any person whose premises are for the time being connected for the purpose of receiving electricity with the works of a licensee, the Government or such other person, as the case may be.[6] The Court distinguished a consumer under the Electricity Act with one under the COPRA,1986 and pointed out that under S.2(1)(d) of COPRA,1986, those who were supplied with electricity for commercial purposes and those who did not avail services for consideration, irrespective of electricity connection in their premises would not fit within the meaning of 'consumer'. Hence the respondents were held not be complainants for the purpose of filing a complaint before the Consumer Forum.

The Apex Court dissected the indigenous built-in mechanisms envisaged under the Electricity Act to substantiate that the Electricity Act, 2003 falls into the category of a complete code for the purposes of theft /unauthorized use of power. The analysis started with understanding Section 126[7] of the Electricity Act, 2003 and the powers

6 S.2(15), Electricity Act, 2003.

7 S.126 of the Electricity Act relates to the Investigation and Enforcement chapter.

and procedures to be followed by the officers-in-charge while investigating such cases of unauthorized use of electricity by the consumers. The officer in-charge, if by inspection of any place or equipment's comes to the conclusion that there is some unauthorized use of electricity, he can provisionally access to the best of his judgment the electricity charges payable by the person benefited by such use. An order of provisional assessment shall be served on the person who owes the premise. The person may accept the assessment and deposit the assessed amount with the licensee within seven days of the assessment order. After assessment if the person is found guilty the assessment has to be done for the entire period for which the activity has been carried out. In cases where this cannot be ascertained the period of theft is takes as twelve months from the date of first inspection and this assessment shall be at the rate twice the tariff rates applicable for the particular class of consumer.[8] The real focus after the identification of the activity of electricity theft by any class of consumer is on the collection of revenue which is chargeable to the offender according to the financial gain incurred by him brought out by the assessment of the assessment officer. The civil part of the theft would be left to the appellate authority or the assessor.

The grievances with regard to the assessment report submitted by the officers in charge will have to be addressed before the appellate authority envisaged under Section127 of the Electricity Act, 2003. A separate provision of appeal to the appellate authority has been prescribed under Section 127 so that any person aggrieved by the final order made under Section 126, may within thirty days of the said order, prefer an appeal Section 145 of the Electricity Act, 2003, creates an express bar for the civil courts to entertain a suit relating to such abovementioned assessment orders passed on Section126 matters.[9] A bare reading of Section126 read with Sections135-140 of the Electricity Act, 2003 reveals that while acts of unauthorized use of electricity attracts civil consequences of penal charge of electricity, twice the rate of electricity, for which an assessment is made by assessing officer under Section 126,

8 S.126, Electricity Act, 2003.

9 S.145, Electricity Act reads thus:

No civil court shall have jurisdiction to entertain any suit or proceeding in respect of any matter which an assessing officer referred to in Section 126 or an Appellate Authority referred to in Section 127 or the adjudicating officer appointed under this Act is empowered by or under this Act to determine and no injunction shall be granted by any court or other authority in respect of any action taken or to be taken in pursuance of any power conferred by or under this Act.

the very same acts of unauthorized use of electricity constitute offences under Sectionss135-140 for which sentence and fine has been prescribed. Sections153-158 of the Electricity Act envisages special courts to be constituted for speedy trial in the manner prescribed therein for the offences stipulated under Sections 135-140.

The limitations under Sections 173[10], 174[11] and 175[12] envisaged under the Electricity Act, 2003 were also scrutinized by the court to analyze the exact scope of both the legislations. Section 3 of the COPRA, 1986 clarifies that the provisions COPRA shall be in addition to and not in derogation of the provisions of any other law for the time being in force. As the court had looked into the entire object and reasons of COPRA, 1986 and the Electricity Act, 2003 and clarified on the domain of each of the legislations, the dichotomy between the two legislations got settled in the context. The court upheld that the entire object and reasons of the Consumer Protection Act were not crossed over by the Electricity Act, 2003 and whenever such situation arose, the Electricity Act, 2003 left the option open for the consumer to take recourse under other laws.

Thus the Apex Court setting aside the orders passed by the National Commission allowed the appeals filed by the service provider-licensee and held: Anis and others, who had industrial connections meant for commercial purpose would not fit into the definition of 'consumer' as delineated under the COPRA, 1986 and also, none of them had alleged any deficiency in service or unfair trade practice but had only opposed the order of assessment with regard to unauthorised use of electricity. The Court further stated that since the assessing officer was a public servant and his assessment was a quasi-judicial decision, any issue regarding the assessment would not constitute a consumer dispute. Indulging in "unauthorised use of electricity"

10 S.173, Electricity Act: Inconsistency in laws.- Nothing contained in this Act or any rule or regulation made thereunder or any instrument having effect by virtue of this Act, rule or regulation shall have effect insofar as it is inconsistent with any other provisions of the Consumer Protection Act, 1986 (68 of 1986) or the Atomic Energy Act, 1962 (33 of 1962) or the Railways Act, 1989 (24 of 1989)."

11 S.174, Electricity Act, 2003 reads thus Act to have overriding effect. - Save as otherwise provided in section 173, the provisions of this Act shall have effect notwithstanding anything inconsistent therewith contained in any other law for the time being in force or in any instrument having effect by virtue of any law other than this Act.

12 S.175, Electricity Act, 2003: Provisions of this Act to be in addition to and not in derogation of other laws. - The provisions of this Act are in addition to and not in derogation of any other law for the time being in force.

does not fall within the jurisdiction of consumer forums and neither has any relationship with "unfair trade practice" or "restrictive trade practice" or "deficiency in service" nor does it amounts to hazardous services by the licensee. A complaint against the assessment made by the corporation was held not maintainable before a consumer forum.

The Court held thus:

(i) in case of inconsistency between the Electricity Act, 2003 and the Consumer Protection Act, 1986, the provisions of Consumer Protection Act will prevail, but ipso facto it will not vest the Consumer Forum with the power to redress any dispute with regard to the matters which do not come within the meaning of "service" as defined under Section 2(1)(o) or "complaint" as defined under Section 2(1)(c) of the Consumer Protection Act, 1986.

(ii) A "complaint" against the assessment made by assessing officer under Section 126or against the offences committed under Sections 135 to 140 of the Electricity Act, 2003 is not maintainable before a Consumer Forum.

(iii) The Electricity Act, 2003 and the Consumer Protection Act, 1986 runs parallel for giving redressal to any person, who falls within the meaning of "consumer" under Section 2(1)(d) of the Consumer Protection Act, 1986 or the Central Government or the State Government or association of consumers but it is limited to the dispute relating to "unfair trade practice" or a "restrictive trade practice adopted by the service provider"; or "if the consumer suffers from deficiency in service"; or "hazardous service"; or "the service provider has charged a price in excess of the price fixed by or under any law".

A Division Bench of the Gujarat High Court in 2011, in a group of LPAs filed against different Electricity Companies of the GUVNL, challenging the orders of the single Judge of the same HC, held that the Consumer Courts constituted under the Consumer Protection Act, 1986 has no jurisdiction to entertain cases of unauthorised use under Section 126 of the Electricity Act, 2003 and of theft of electricity booked under Section 135 of the Electricity Act, 2003.[13] The only question involved in these cases was whether the consumer disputes redressal forum has jurisdiction to entertain the complaint filed by the consumer against the bill raised

13 Manoramaben Kansara d/o Balkrishna Kansara v. Madhya Gujarat VIJ Company Limited LPA/1759/2010.

under Section 126 of the electricity act, 2003 or against the action taken under Section 135 of the Electricity Act, 2003.This case highlighted the certain prominent decisions on the scope of copra, 1986 settling its domain and forums.

In *State of Karnataka v. Vishwabharathi House Building Co-op. Society*[14], the Supreme Court held that the Consumer Protection Act, 1986 is a socio-economic legislation which should be interpreted as broadly as possible. The Forums under the Act can entertain a complaint notwithstanding concurrent jurisdiction of other forums/Courts. In the case of *Secretary,* Thirumurugan Co-op. Agricultural Credit Society v. M. Lalitha[15], the Apex Court held that the remedy before the consumer forum is in addition and not in derogation to remedy under other Acts. The jurisdiction of the consumer forum to decide the dispute is not ousted in view of the remedy of arbitration provided under Section 90 or 156 of the Tamil Nadu Co-operative Societies Act, 1983.The Supreme Court In the case of *Kishori Lal v. ESI Corporation*[16], held that claim of damages for medical negligence by ESIC doctors can be entertained by the consumer forum and such claim does not fall within the purview of Employee Insurance Court. In the case of *Karnataka Power Transmission Corporation v. Ashok Iron Works Pvt. Ltd.,*[17] the Supreme Court noticed the words and phrases of "consumer", "person", "service" and "deficiency" as defined under Sections 2(1)(d), 2(1)(g), 2(1)(m) and 2(1)(o) of the Consumer Protection Act, 1986 and remitted the matter to the District forum to decide the matter in terms with the ratio laid down by the Supreme Court.

In the case of *Jharkhand State Electricity Board v. Anwar Al Proprietor, M/s. Pinki Plastic Industrial Area, Kokar Ranchii*[18], the National Commission had elaborately delved into the nitty- grities of the Electricity Act and elaborately discussed at length the need for the redressal under the Electricity Act. The case dealt with provisions contained in Sections 126 and 127 of Part XII of the Electricity Act, 2003. The question of inconsistency of both legislations was resolved upholding that the domain of abovementioned provisions are not inconsistent with the provisions of Consumer Protection Act, 1986 and consequently there was no need to have resort to the provisions of Section 173 and 174 of the Electricity Act. The question

14 (2003) 2 SCC 412.
15 AIR 2004 SC 448.
16 AIR 2007 SC 1819.
17 III (2009) Consumer Protection Judgments 5 (SC).
18 II (2008) CPJ 284 (NC).

which required consideration was whether Consumer Fora have jurisdiction to deal with the grievances of the consumer of electricity, in case of deficiency in service by the electricity supplier, after enactment of the Electricity Act 2003? The question squarely meant that with the coming up of Electricity Act, 2003 has the COPRA, 1986 outlived its utility to the extent of dealing with deficiency in services as far as electricity is concerned. Similar questions of interpreting the scope of Sections 126, 127,173, 174 and 175 of Electricity Act, 2003 with the domain envisaged under COPRA, 1986 were raised. The Forum adopted a harmonious interpretation of both the legislations upholding the well-settled rule of interpretation that every effort should be made to harmonize the provisions of two Acts and, if the colliding effect cannot be harmonized, then only the provisions of one Act are to be read down in preference to the provisions of the other Act.

The National Commission looked through different decisions to identify any inconsistency occurring among the both the legislations. The forum relied on *J.K. Cotton Spinning & Weaving Mills Co. Ltd. v. State of U.P.*[19] wherein the court observed the extent to which the rule of harmonious construction could be applied and held that in applying the rule however we have to remember that to harmonize is not to destroy. In the interpretation of statutes the courts always presume that the legislature inserted every part thereof for a purpose and the legislative intention is that every part of the statute should have effect. These presumptions will have to be made in the case of rule-making authority also.

The Electricity Act mainly intended to have growth of electricity industry through private licensees ; to take appropriate decision of tariffs and to provide for distancing the government from determination of tariffs; constitution of State Electricity Regulatory Commissions and decentralization of management of distribution through Panchayats, Users Association, Cooperatives or franchisees, etc. and also constitution of Appellate Tribunal for disposal of Appeals against the Central Electricity Regulatory Commission and State Electricity Regulatory Commissions as well as provisions relating to theft of electricity so as to have a revenue focus. Chapter-X of the Act contemplates Constitution of Regulatory Commissions. As per Section 76, there would be a Central Electricity Regulatory Commission whose functions are specified in Section 79. Section 82 contemplates Constitution of State Electricity Regulatory Commissions whose functions are provided in Section 86. The functions

19 (1961) 3 SCR 185.

specified in the aforesaid two Sections are general in nature, dealing with tariff for generation, supply, transmission, etc. and have nothing to do with the individual grievances of consumers. Further, Chapter-XI provides for Establishment of Appellate Tribunals for hearing Appeals against the orders of Adjudicating Officer or the appropriate Commission under the Act. Under Section 111, there is specific exclusion of the order which is passed under Section 127 of the Act. In this view of the matter, it cannot be said that Electricity Act and the Consumer Protection Act are intended to run parallel. They run parallel only with regard to limited purpose of giving redressal to the consumer in case of any arbitrary, illegal, and unjustified or action which is against the rules and regulations of electricity code.

A confusion aroused in interpreting Section 3 of the COPRA, 1986, in the light of Section 175 of the Electricity Act, 2003 which specifically provided that the provisions of the Consumer Protection Act, 1986 as well as the Electricity Act are in addition to and not in derogation of any of the provisions of any other law for the time being in force. Some pertinent case laws give indications that COPRA, 1986 by providing speedier remedies supplements existing judicial system.[20] This would be also in conformity with the various judgments rendered by the Apex Court wherein it was held that the COPRA, 1986 being beneficial legislation, should receive a liberal construction and that provisions of the Act are required to be interpreted as broadly as possible and the Fora under the COPRA, 1986 have jurisdiction to entertain a complaint despite the fact that other Fora or Courts would have also jurisdiction to adjudicate upon the lis.[21]

The National Commission clarified the reason why consumer fora constituted under the Consumer Protection Act cannot entertain any complaint in regard to the matters of assessment is that such forums can neither replace the validly constituted statutory Assessing Officer or the Appellate Authority nor can it sit over in appeal against such duly constituted authorities. It would not be out of place to mention that assumption of jurisdiction by the consumer fora in matters relating to assessment would be meaningless because consumer for a would not be able to provide the requisite relief in regard to these matters, strictly going by the reliefs which a consumer fora can grant within the parameters of section 14 of the Consumer Protection

20 *See* Laxmi Engineering Works v. PSG Industrial Institute (1995) 3 SCC 583; Charan Singh v. Healing Touch Hospital (2000) 7 SCC 668.

21 *See* Spring Meadows Hospital v. Harjol Ahluwalia [(1998) 4 SCC 39]; State of Karnataka v. Vishwabharathi House Building Coop. Society [(2003) 2 SCC 412].

Act. Section 14 of the Consumer Protection Act which talks about the types of remedies that can be granted by the consumer forums under the COPRA, 1986 does not envisage granting any such relief to a consumer like quashing the order passed by the Assessing Officer or by the Appellate Authority in appeal. Vesting jurisdiction in consumer fora in regard to matters of assessment of charges/duty for unauthorized use of electricity would amount to scuttling the valid procedure for assessment of charge/duty by a duly constituted authority. Consumer fora ought not to usurp the jurisdiction which is not legally vested in them.

The National Commission categorically held:

a) The provisions contained in Sections 126 and 127 of Part XII of the Electricity Act, 2003 are not inconsistent with the provisions of Consumer Protection Act, 1986 and consequently there is no need to have resort to the provisions of Sections 173 and 174 of the Electricity Act. The provisions of the Consumer Protection Act and Electricity Act can be given their full meaning and effect on the ground.

b) Consumer fora constituted under the Consumer Protection Act would have jurisdiction to entertain only the complaints filed by a consumer of electricity alleging any defect or deficiency in the supply of electricity or alleging adoption of any unfair trade practice by the supplier of electricity.

c) The consumer fora established under the Consumer Protection Act have no jurisdiction over the matter relating to the assessment of charges for unauthorized use of electricity, tampering of meters etc. as also over the matters which fall under the domain of special Courts constituted under the Electricity Act, 2003.

Similar questions regarding the matrix between the applicability of Section126 assessment matters under the Electricity Act and the remedy available had come up before the in the High Court of Punjab and Haryana and the State Consumer Disputes Redressal Commission on later occasions. The judicial trend reflects upholding the position settled by U.P. Power Corporation Case. Upholding the Supreme Court's judgment on U.P. Power Corporation lines the State Consumer Disputes Redressal Commission Punjab, in the case of State *Electricity Board v. Darshan Singh*[22] the order of the district forum, accepting the complaint on merit was set

22 First Appeal No. 637 of 2009.

aside and the complaint filed by the complainant was dismissed without prejudice to the rights of the complainant to seek his appropriate remedy before the proper authority under the Electricity Act, 2003 relating to matters arising under assessment orders under S.126.

In *Hari Chand v. Dakshin Haryana Bijli Vitran*[23] High Court of Punjab and Haryana in 2014 upheld the views reiterated by the present case and by a conjoint reading of Sections 135 and 145 of the electricity act the court upheld the bar on civil courts in entertaining matters under Section 126 of the Electricity Act. In *Kapoor Singh v. Punjab State Power Corporation*[24] the question that aroused before the Punjab Haryana High court was with regard to the operation of the notification issued by the government of Punjab in the Department of Home Affairs and Justice (Judicial-I Branch) wherein the subject matter was theft of electricity, designating special court i.e. the court of additional district and sessions judge of the sessions division exercising territorial jurisdiction over the dispute raised. The confusion with respect to jurisdiction as settled under the U.P. Power Corporation case was referred to by petitioner's counsel but the issue of jurisdiction was neither disputed nor required to be dealt with, while discussing the remedy available on issues relating to S.126 of the Electricity Act in comparison with Section135 of the Act. The court upheld the clear distinction between the cases that would fall under Section 126 of the 2003 Act and Section 135 and held that they operate in different and distinct fields.

A detailed perusal of the above mentioned cases brings out the detailed scope and limitations of both the legislations. With the Supreme Court curtailing the jurisdiction of consumer courts to entertain complaints against the Power Department, these courts will no longer hear complaints regarding unauthorised use of electricity and power theft. The significance of the present case study is that it reveals an elaborate discussion on the jurisdiction of Consumer fora (set up under COPRA, 1986) and Consumer Grievance Redressal Fora (set up under Electricity Act, 2003). Therefore the indigenous redressal procedure which falls under the domain of Electricity Act, 2003 as per the provisions contained in Section 153 of the Electricity Act, 2003 the Special Courts have the jurisdiction to entertain the complaint relating to theft under Section 135 of the Act and the Appellate Authority under Section 127 can entertain an appeal against the bills issued under Section 126 of the Act for unauthorized use of electricity and under Section 42(5) of the Electricity Act, 2003, the consumer can

23 R.S.A No. 1002 of 2014 (O&M).

24 C.R.No.1865 of 2014.

file a complaint before the forum for redressal of grievances of the consumers constituted under the Electricity Act, 2003 and against the decision of the forum, an appeal can be filed before the Electricity Ombudsman under Section 42(7) of the Act. Thus, there are three different forums available for the consumers for the redressal of their grievances. Hence, the consumer forum constituted under the Consumer Protection Act, 1986 has no jurisdiction to entertain such application.

Conclusion

The Supreme Court thus clarifies and precipitate down to settling the issue by upholding harmonious construction of both the legislations that in case of inconsistency between the Electricity Act and the Consumer Protection Act, the provisions of latter would prevail, but, *ipso facto*, it will not vest the consumer forum with the power to redress any dispute with regard to matters not falling within the meaning of 'service' or 'complaint' as defined under the COPRA, 1986. If the deficiency in service or unfair /restrictive trade practice or hazardous services which is very much specific to COPRA, 1986 cannot not be proved, then, such complaints will not be maintainable before the consumer fora. The SC judgment does not debar consumer fora from adjudicating complaints regarding supply of electricity, so long as the dispute fits within the domain (keeping into view its intent and objects) of the COPRA, 1986.[25] The case in hand paves a way forward in settling down the domain of the Electricity Act,2003 and COPRA, 1986. The dichotomy as to whether COPRA, 1986 has outlived its utility with the enactment of Electricity Act, 2003 is hence put to rest through this significant judgment.

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25 Timesofindia.indiatimes.com/city/mumbai/Consumer-fora-cannot-decide-onpower-theft-assessment-disputes/articleshow/21229912.cms (last accessed on September 8, 2015).

CASE COMMENT:

HINDUSTAN ZINC LTD. v. *RAJASTHAN ELECTRICITY REGULATORY COMMISSION*

2015 (6) SCALE 706

Manjeri Subin Sunder Raj[*]

While the whole world is grappling in the dark, trying to determine ways in which energy can be put to better and more efficient use; it is heart-warming to note that the Supreme Court of India has pronounced a landmark judgment on the applicability of Renewable Purchase Obligations (RPO) regulations, which foster better use of Renewable Energy. The Court has taken a proactive step in dealing with the manner in which Renewable Energy is put to use.

Facts:

This appeal by way of a Special Leave Petition was filed by companies engaged in the business of production, manufacturing and sale of non-ferrous metals and having captive generation power plants which come under the ambit of the Electricity Act, 2003. The Rajasthan Electricity Regulatory Commission (RERC) in exercise of its power under Sections 61,[1] 66,[2] 86(1)(e)[3] and 181[4] of the Electricity Act, 2003 framed RERC (Renewable Energy Obligation) Regulations, 2007 and RERC (Renewable Energy Certificate and Renewable Purchase Obligation Compliance Framework) Regulations, 2010. Both the Regulations imposed Renewable Energy obligation on Captive Gencos (Generation Corporations) and other obligated entities including the appellants to purchase minimum energy

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1 S. 61- Tariff Regulations.

2 S. 66- Development of Market.

3 S. 86 Functions of State Commission: (1) The State Commission shall discharge the following functions, namely: - ...

(e) promote co-generation and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee; ...

4 Powers of State Commissions to make regulations.

from renewable sources and to pay surcharge in case of shortfall in meeting the RE obligation. Though the regulations were challenged by the appellants before the Rajasthan High Court, they were unsuccessful.

Issue:

The subtle question of law is whether the RERC has a statutory power to impose Renewable Energy obligation on Captive Gencos and other obligated entities as well as open access consumers, to purchase minimum energy from renewable sources and direct them to pay surcharge in case of a shortfall in meeting the RE obligation.

Arguments Galore:

The appellants argued that the Regulations were ultra vires Ss. 7,[5] 9,[6] 86(1)(a)[7] and 86(1) (e) and 181 of the Electricity Act. It was also contended that the Fundamental Rights guaranteed under Art. 14[8] and 19(1) (g)[9] are being violated, apart from the fact that it is not in accordance with the National Electricity Policy, 2005 and the Tariff Policy, 2006. Further points were raised as regards the rationale of the Electricity Act, 2003 which was argued by the petitioners, to have been enacted by the Parliament with a view to encourage participation of private sectors involved in generation of electricity. Due to this objective, generation of electricity was de-licensed and captive generation was freely promoted and the appellants argued that the impugned Regulations are not in accordance with the basic object of the 2003 Act.

It was also put forth that the National Electricity Policy, 2005 as well as the Tariff Policy, 2006 were framed to promote production of energy and utilization thereof to the maximum extent in respect of the captive generation plants and not to compulsorily force them to lower their production of energy by making

5 S. 7 Generating company and requirement for setting up of generating station.

6 S. 9- Captive Generation.

7 S. 86 Functions of State Commission: — (1) The State Commission shall discharge the following functions, namely: - (a) determine the tariff for generation, supply, transmission and wheeling of electricity, wholesale, bulk or retail, as the case may be, within the State.

8 Art. 14 Equality before law- The State shall not deny to any person equality before the law or the equal protection of the laws within the territory of India Prohibition of discrimination on grounds of religion, race, caste, sex or place of birth.

9 Art. 19 Protection of certain rights regarding freedom of speech, etc. (1) All citizens shall have the right..... (g) to practise any profession, or to carry on any occupation, trade or business.

them purchase renewable energy as per the newly framed the impugned Regulation No. 9 of Regulations 2010. The 2003 Act, according to the appellants has totally liberalized the establishment of captive power plants and kept them out of any licensing and regulatory regime. Neither any licence nor any approval from any authority is required to install a captive power plant and thus, the RERC had no jurisdiction to impose any obligation for compulsory purchase of electricity from a renewable energy source. They raised the point that the renewable energy source and captive generating plant are both alternative sources of energy which have to be promoted and one cannot be placed on a higher footing. The appellants vociferously argued that the RERC by imposing a compulsory obligation to purchase electricity from renewable source and to pay surcharge in case of shortfall in meeting out the RE obligation as per the Regulation has acted beyond the object sought to be achieved under the National Electricity Policy, 2005 as well.

The appellants argued that the RERC does not have jurisdiction under Section 86(1)(e) read with Section 181 of the Electricity Act, 2003 to frame the impugned Regulation in respect of the industries running their own Captive Power Plants. It was put forth that the power was only to frame Regulations with respect to the distribution licensees and that it was not open for the RERC to impose the RE obligation upon the appellants having captive power plants and to make them compulsorily purchase energy from renewable source and to pay surcharge in the event of shortfall to fulfil the RE obligation.

Reliance was placed on *Tata Power Co. Ltd v. Maharashtra Electricity Regulatory Commission and Ors*,[10] wherein the question of law was 'despite the Parliamentary intent of giving a go-bye to its licensing policy to generating companies, whether through imposing stringent regulatory measures the same purpose should be allowed to be achieved?'[11] The Court's opinion in this case, as quoted below, was relied on heavily by the appellants.

> '*delicensing of generation as also grant of free permission for captive generation is one of the main features of the 2003 Act.*'[12] *The primary object, therefore, was to free the generating companies*

10 (2009) 16 SCC 659, , JT 2009 (8) SC 562, MANU/SC/0932/2009.

11 Ibid Para 100.

12 Ibid Para 106.

> *from the shackles of licensing regime.*[13] *If de-licensing of the generation is the prime object of the Act, the courts while interpreting the provisions of the statute must guard itself from doing so in such a manner which would defeat the purpose thereof. It must bear in mind that licensing provisions are not brought back through the side door of Regulations.*[14]

The appellants also placed reliance on *Global Energy Ltd. and Anr. v. Central Electricity Regulatory Commission,*[15] wherein it was laid down that the rule making power conferred upon the Regulatory Commission is only to see that Regulations are framed in exercise of its statutory power for carrying out the purpose of the Electricity Act, 2003. This was held to be a general delegation and was incapable in laying down any guidelines. That being so, the court had held that the Regulation making power cannot be exercised by the Regulatory Commission so as to bring into existence substantive rights or obligations or disabilities upon the captive generating plants which are not contemplated in terms of the provisions of the Electricity Act, 2003.[16]

The respondents were of the opinion that the impugned Regulations were made in exercise of the power under Section 86(1) (e) of the Electricity Act, 2003 which provides for promotion and cogeneration of electricity from renewable sources of energy. They also argued that the same was in consonance with Para 4.2.2 of National Action Plan on Climate Change and the Preamble of the Electricity Act, 2003. Both these, they argued, emphasize promotion of efficient and environmentally benign policies and encourage generation and consumption of green energy as in envisaged under Articles 21 and 51A(g). It was also put forward by the respondents that the same only imposes a reasonable restriction as provided under Art.19 (6), by placing reliance on the decision given in *Society for Unaided Pvt. Schools of Rajasthan v.U.O.I. and Anr.*[17] It was argued that the

13 Ibid Para 108.

14 Ibid Para 110.

15 (2009) 15 SCC 570.

16 Ibid Para 18.

17 (2012) 6 SCC 1. In Para 143 of the judgment, it was opined that '*rights protected under Article 19(1)(g) are fundamental in nature, inherent and are sacred and valuable rights of citizens which can be abridged only to the extent that is necessary to ensure public peace, health, morality etc. and to the extent of the constitutional limitation provided in that Article'*. Further in Para 145, it was opined that *the Parliament can enact a social legislation to give effect to the Directive Principles of State Policy*.

Regulation was in conformity with Section 86(1)(e) read with Section 3 of the Electricity Act which gives a clear idea that the National Electricity Policy, 2005 was framed by the Central Government to achieve the objective enshrined under Article 48A and Article 51A(g).

The respondents distinguished the cases relied on by the appellants. They argued that the decision given in *Tata Power Company Ltd* involved the interpretation of Section 86(1)(b) read with Section 23 of the Act. It was pointed out that the Regulations in the present case had been enacted pursuant to Section 86(1)(e) of the Act and thus the *Tata Power Company Ltd* case did not apply in the present scenario. It was also pointed out that the observations made in para 77 in the said case show that despite de-licensing, Generating Companies do not enjoy complete monopoly and are subject to Regulatory jurisdiction of the Forums under the Electricity Act, 2003.

The reliance placed by the appellants on *Union of India and Ors. v. S. Srinivasan*[18] wherein it was held that Regulation making power cannot be exercised by the RERC in the absence of substantive provisions, was countered by the respondents who argued that the substantive provision is present in Section 86(1)(e) of the Electricity 2003. It was also argued that the Electricity Act of 2003 being a self-contained comprehensive legislation in the matter of generation and the transmission and supply of energy to its consumers, Section 82 casts a duty on every State Government to constitute a Regulatory Commission in their respective States to regulate the implementation of the provisions of the Act. This is to be done by framing suitable Regulations and Rules with reference to the matters/entries enumerated in Section 181 and the same was done by the State of Rajasthan.

The respondents relied on *PTC India Ltd. v. Central Electricity Regulatory Commission,*[19] wherein the Supreme Court had categorically held that Regulations can be framed by the Commission under the Electricity Act 2003 as long as two conditions are satisfied, namely,

1. Regulations framed must be consistent with the provisions of the Act and should be made for carrying out the provisions of the Act, and

18 (2012) 7 SCC 683.

19 (2010) 4 SCC 603.

2. The National Electricity Policy, 2005 and Tariff Policy, 2006 being the policies framed by the Union of India, cannot supersede or override the 2003 Act.

Court's Take:

Delving into the arguments put forward by both the sides, the court tried to build a comprehensive picture. Relying on the precedents cited by respondents, the court looked into the rationale behind framing the Regulations. It was held that the same has been done in exercise of the power under Section 86(1)(c) read with Section 151 of the Electricity Act, 2003, which provides for promotion and co-generation of electricity from renewable sources of energy in the area. Relying on Para 4.2.2 of the National Action Plan on Climate Change and the Preamble of the Electricity Act, the court opined that the emphasis is on promotion of efficient and environmentally benign policies to encourage generation and consumption of green energy, which in turn serve the purpose of Articles 21, 48A and 51A(g). It was also held that the said Regulations are consistent with the international obligations as made clear by India's stand on the Kyoto Protocol.

The Court rightly pointed out that reasonable restrictions can be imposed under Article 19(6) and that being the situation in the instant case, placed reliance on *Society for Unaided Pvt. Schools of Rajasthan v. U.O.I. and Anr*[20] and *State of Bihar v. Maharajadhiraja Sir Kameshwar Singh of Darbhanga*[21] wherein the Supreme Court of India illustrated how a directive principle may guide the court in determining crucial questions on which the validity of an important enactment may be hinged. It was opined that when the courts are required to decide whether the impugned law infringes a fundamental right, the courts need to ask the question whether the impugned law infringes a fundamental right within the limits justified by the directive principles or whether it goes beyond them.[22]

The court also rejected the contention of the appellants wherein they had argued that the renewable energy purchase obligation can only be imposed upon total consumption of the distribution licensee and cannot include open access

20 Supra n. 17.
21 (1952) SCR 889.
22 Supra n. 17.

consumers or captive power consumers. It was held by the court that the said contention depends on an erroneous basic assumption that open access consumers and captive power consumers are not consumers of distribution licensees.

The court opined that it would be highly discriminatory to only subject the regular consumers of the distribution licensee to bear the cost of purchase of renewable energy and to exempt the gencos from the Open Access Consumers or Captive Power Plants from the obligation to purchase/share the cost for purchase of renewable power despite being connected to the distribution network of the distribution licensee and despite the fact that they can demand back up power from such licensee any time they want. Thus, it was held, to reduce the dependency on fossil fuels, such proactive steps are necessary and the need of the hour. It was also held to be in larger public interest and within the reasonable restrictions provided for under Article 19(6).

The Court, relying on *Subhash Kumar v. State of Bihar and Ors,*[23] *M.C. Mehta v. Union of India and Ors* [24] and *Municipal Corporation of Greater Mumbai and Ors v. Kohinoor CTNL Infrastructure Co. (P) Ltd,*[25] reiterated the fact that the right to live under Article 21 of the Constitution of India includes the right to live in a pollution free environment. Holding that the impugned Regulations fall within the four corners of the Electricity Act 2003 as well as Electricity Policy 2005, the Court came to the conclusion that the object of imposing RE Obligations is to protect the environment and prevent pollution by utilising Renewable Energy Sources as much as possible in larger public interest.

The Court also held, relying on the 'Polluter Pays' Principle, that the penalty prescribed in the Regulations is compensatory in nature and not punitive.[26] It reiterated that penalty is attracted as soon as the contravention of the statutory obligation as contemplated by the Act and the Regulations is established, and the intention of the parties committing such violation is irrelevant.

The Court also noted the submission made by the RERC that 21 states have framed similar Regulations imposing Renewable Purchase Obligation on both

23 (1991) 1 SCC 598.

24 (2004) 12 SCC 118.

25 (2014) 4 SCC 538.

26 The Court relied on the judgment given in *Chairman, SEBI* v. *Shriram Mutual Funds and Anr,* (2006) 5 SCC 361.

distribution licensees as well as captive gencos entities. Going by the intent behind the framing of these regulations, the court opined that such steps need be taken to foster better environmental protection and serve larger public interest, and upheld the decision of the High Court.

Concluding Observations:

It is pertinent to note that the Court, having had a chance to look into a rather touchy issue, has come out with a reasoned judgment. Stating clearly that larger public interest would, anytime, oversee private interest; the court has been able to make a point on its own. Throughout the judgment, one cannot but help notice that the court has placed strong reliance on decided cases which has helped it come a long way and pass a strong message.

The Court has been successful in reading into national law, the very spirit in which India has acceded to international obligations which foster efficient energy use. Public interest and the right to live in a healthy environment have been placed on the highest pedestal; and rightly so.

CASE COMMENT:

GMR ENERGY LIMITED & ORS. V. GOVERNEMNT OF KARNATAKA & ORS.

MANU/KA/0200/2010; W. P. Nos. 590, 591 and 9721 of 2009

Yatharth Gupta[*] *& Nishtha Chugh*[**]

The Electricity Act, 2003 idealized the principle of open access, entitling the private power generating companies to enter in Power Purchase Agreements (PPAs) with the buyers at a regulated price, but this principle was diluted by the High Court of Karnataka in *GMR Energy Ltd. & Ors. v. Government of Karnataka & Ors.* The court addressed the question of legal competency of the State Government while passing a compulsory supply order under Section 11 to an interstate private power generating company. The authors analyze the judgment and try to recommend to the Apex court to poise the balance between a statutory right and public interest, as the matter is *sub-judice* before the Supreme Court.

1. Background of the Case

1.1. The said case envisage three writ petitions i.e. WP Nos. 590 and 591 of 2009, writ petition no 4693 of 2009 and writ petitions no 9721 and 9722 of 2009.

Facts in Writ Petition Nos. 590 and 591 of 2009.

1.2. The GMR Energy Ltd (hereinafter first petitioner) has established a 220 MW Barge Mounted Power Plant at Tanir Bhavi Village near Mangalore, being the successful tenderer in pursuant to a global tendering process initiated by the Government of Karnataka for setting up power projects in the State. The GMR Energy Trading Ltd (hereinafter second petitioner) is a company trading in power. The first petitioner was supplying power to the State of Karnataka (hereinafter respondent no 1) through a definitive Power Purchase Agreement, which expired in June 2008.

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1.3. The, Karnataka Power Transmission Corporation Limited (KPTCL) (hereinafter second respondent) through its procurement company, Power Corporation Karnataka Limited (PCKL) (hereinafter third respondent), invited tenders in the month of October 2008 for supply of 700 MW of power for the period from November 2008 to January 2009. The second petitioner participated in the said tender for supply of power from the Barge Mounted Plant of the first petitioner with whom it had entered into a back to back agreement and they offered to supply 200 MW of power at the rate of Rs. 9.54 per unit. The committee constituted by third respondent negotiated with first petitioner, and the firm agreed to supply power at unit rate of Rs. 8.85 for the months Dec. 2008 and Jan. 2009. A LOI was also issued to that effect. Further, it was informed that on the date of such offer i.e. 30th October, 2008, the Naphtha price was Rs.46.124 per KG and variable cost working out to Rs.8.443 per unit, meanwhile the Govt. of India reduced the import Duty of 5% on Naphtha to 0% with effect from 7-12-2008. Negotiations were held with the representatives of first petitioner on 8-12-2008second respondent. First petitioner indicated that it would not be possible for them to reduce the prices as they have entered into "back to back" agreement with M/s. BPCL for supply of Naphtha at a fixed price and they have got payment from BESCOM at the LOI rate or Rs. 8.85 per unit for December 2008and as such first petitioner was required to produce documentary evidences for supply of Naptha and other relevant document to support their case for non-reduction in the prices for supply of power but they did not submit any supporting documents. Because of the steak fall in prices of naphtha, third respondent in the board meeting so called, decided to recommend Government to issue directions under Section 11[1] of Electricity Act, 2003 to fix the rate at Rs. 5.50 per unit from first petitioner.

1.4. In exercise of the powers conferred under Section 11 of the Electricity Act 2003 respondent 1 issued the following directions:

(a) All generators existing and operating in Karnataka State shall operate and maintain the Generating Stations to their maximum exportable capacity and PLF.

1 Section 11 provides that the appropriate Government may specify that a power generating company shall, in extraordinary circumstances, operate and maintain any generating station in accordance with the directions of that Government.

(b) All generators shall supply all exportable electricity generated to the State Grid, in view of the extraordinary circumstances.

1.5. In view of the steep fail in the fuel prices and petitioner 1 being not in a position to produce documentary evidences for not reducing the prices and in the interest of the public, the order was issued to petitioner 1 to supply energy to the State Grid at the rate of Rs.5.50 per unit from January 2009 to May 2009.

Facts in Writ Petition Nos. of 9721 of 2009:

1.6. In writ petition no 9721 of 2009, the petitioner Sandur Power Company Ltd, a company incorporated under Companies Act, 1956 operates a 5 MW bagasse based power generation plant located at Village Belgundi, District Belgaum, Karnataka and as such it is a generating company under Section 2(28) of the Electricity Act. It is 'merchant power plant'[2] in the electricity sector, as it has been set up by private capital, without any Government support and does not have a power purchase agreement with any State owned distribution company. It is also an inter-state trading licensee.[3]

1.7. During the relevant period, the petitioner was engaged in selling electricity to Reliance Energy Limited (REL) a distribution licensee in Mumbai City whereby REL agreed to purchase 5 MW of power. Thus, the petitioner was engaged in inter-state supply of electricity, which was being effected by availing open access to the inter-state transmission lines.

1.8. REL extended the contract for purchase of power from the petitioner. The procedure for grant of inter-state open access is provided in the CERC (Open Access in inter-State Transmission) Regulations, 2008.[4] The State Load Dispatch Centre (SLDC) have been given the pivotal role of according

2 Conference on Development of Merchant Power Plants with Developers/Investors on 16th Jan 2007 (1100 Hrs) At Jacaranda Hall India Habitat Centre, New Delhi; "Merchant power plants are a product of the restructuring of the electricity industry. They cater to different niches in the market; some provide steady supplies to the grid, while others fire up only when demand is highest and meet peak loads"; http://powermin.nic.in/upload/pdf/DEVELOPMENT%20OF% 20MERCHANT%20POWER%20PLANTS.pdf (last accessed on October 20, 2015).

3 Such licensee, is authorized to undertake inter-state purchase and sale of electricity.

4 Under the Regional Load Dispatch Centre (RLDC) of the region where point of drawl of electricity is situated has been designated as the nodal agency for grant of inter-state open access.

concurrence to inter-state open access transactions, without which the concerned Regional Load Dispatch Centre (RLDC) shall not grant open access. The power generated by the petitioner's power plant in the State of Karnataka was to be supplied to the city of Mumbai. The Western RLDC was the nodal agency for grant of inter-state open access and Karnataka SLDC's concurrence to such open access was a mandatory condition precedent to grant of such open access by the Western RLDC. In other words, in the absence of concurrence by Karnataka SLDC the petitioner could not have got inter-state open access from the Western RLDC.

1.9. CERC is a special statutory body. The SLDCs are required to act impartially in matters of system operators. Further, CERC had categorically pointed out, that subjecting an intra-state generating company to the mandatory requirement of selling electricity to the State is contrary to the provisions of the Act. As noted above (in writ petition no 590 and 591of 2009), it was the suggestion of Power Company of Karnataka Limited (PCKL), a Government of Karnataka enterprise and the bulk purchaser of electricity for distribution companies in Karnataka that generating companies must be subjected to such requirement of mandatory sale to State. Interestingly, the State Government by way of the impugned Government Orders has forcibly imposed PCKL's proposal, which did not find favour with CERC on the ground of it being contrary to the provisions of the Act.

1.10. Karnataka SLDC started refusing concurrence for inter-state open access applied for by generating companies and trading licenses. The petitioner learnt that, the State Government was going to purchase power from generating stations for meeting its own requirements, and it was to facilitate the purchase of electricity by the State owned distribution companies from generating stations, that, the Karnataka SLDC/KPTCL had decided not to grant concurrence for inter-state open access transactions involving outflow of electricity from the State.

1.11. The denial of open access by Karnataka SLDC, when admittedly, there were no transmission constraints, amounted to a deliberate violation of the provisions of the Act. The petitioner filed a petition before the CERC under Section 79 of the Act, praying inter alia for an order directing the Karnataka SLDC to grant open access to the petitioner. Accordingly, the

Karnataka SLDC/KPTCL accorded concurrence to the petitioner's inter-state open access application and the petitioner was successfully able to schedule power to M/s Reliance Energy. However, once again open access was denied to the petitioner. It is thereafter the impugned notification whereby it mandated that all generating companies shall supply the exportable electricity to the State Grid. In the meanwhile, CERC passed an order on directing the Karnataka SLDC to accord concurrence to open access applications of the petitioner therein, i.e. Reliance Energy Trading Limited. The Government of Karnataka filed Writ Petition before the Court wherein the order passed as to Karnataka SLDC/KPTCL accorded concurrence to the petitioner's inter-state open access application and the petitioner was successfully able to schedule power to M/s Reliance Energy was challenged. An ex-parte order staying the operation of CERC's order was passed. Therefore, the petitioners have preferred this Writ Petition challenging the aforesaid Government Orders.

1.12. In writ petition no 4693 of 2009, Petitioner is a generating company having a Mini Hydel Power Plant who entered into a Power Purchase Agreement with the second respondent (KPTCL) wherein the petitioner agreed to supply the electricity generated by it to the second respondent at the rate of Rs. 2.90 per kilowatt-hour, subject to an escalation of 2% p.a. over the base tariff, every year and further it was agreed to pay the petitioner the amounts due within 15 days from the date of receipt of the tariff invoice and on failure to make such payments when due, the second respondent would be liable to pay penal interest at the rate of State Bank of India (SBI) medium term lending rate, p.a. for such payment, from the date such payment was due until such payment was made in full. In the event of a payment default by the second respondent, for a continuous period of three months, the petitioner shall be permitted to sell power to third parties through the Grid System, by entering into a Wheeling and Banking Agreement with the respondent, for which it shall pay Wheeling Charges at the rates applicable from time to time, in addition to Banking Charges at the rates applicable from time to lime as approved by the Commission. The second respondent subsequently transferred the said agreement to the third respondent (PCKL) and the PPA thus governed the relations between the petitioner and the third respondent.

1.13. The petitioner regularly fed electricity into the Grid System. Tariff invoices were raised every month towards the electricity supplied. However, the third respondent was highly irregular in making payments in respect of these invoices. Payments made were highly delayed. The payments for the months of February, March, April and May 2008 were not paid on time and reminders were sent to the second respondent calling upon them to pay the outstanding amounts in relation to each month. Despite these repeated reminders huge amounts remained unpaid and overdue. In the light of the continuous payment defaults committed by the third respondent, in relation to the tariff invoices pertaining to March April and May 2008 the petitioner was constrained to invoke Article 9.3 of the PPA which entitled it to sell the power generated to third parties. The third respondent was called upon to permit such sale. Having invested huge amounts in the setting up of their plant the petitioners were compelled to continue to supply the electricity generated into the Grid under constraint. Notwithstanding the invocation of Article 9.3 of the PPA, since electricity continued to be generated at the petitioner's installation the plant being a mini hydel-plant, the petitioner was constrained to supply this power to the Grid and the respondents had the benefit and use of such power. Having had the benefit, which was not intended to be gratuitously given, the respondents were obliged to make payments in this regard notwithstanding the fact that the petitioner had invoked Article 9.3 of the PPA.

1.14. Consequent upon the invocation of Article 9.3 of the PPA, the petitioner entered into a Power Purchase Agreement with M/s. Tata Power Trading Company Limited (TPTCL) wherein TPTCL agreed to pay the petitioner an annual average rate of Rs. 3.60/kilowatt-hour for the electricity supplied. Pursuant to this agreement, TPTCL applied to the second respondent herein seeking open access for the petitioner to the second respondent's Grid System. The application was made in pursuance of the terms of the agreement entered into between TPTCL and for the benefit of the petitioner. Petitioner also requested the second respondent to grant open access to its Grid System. When the request was not acceded to, the petitioner was constrained to file a petition before the fourth respondent seeking for grant of open access and for payment of the huge amounts outstanding, including a sum of Rs. 6,29,15,745.55 as damages towards unpaid supplies alone, in addition to

claims regarding interest on over-due payments. It is at that stage, the impugned order is passed directing all the generating companies to operate and maintain their generating stations at their maximum exportable capacity and to supply all the electricity generated by them to the State Grid. Aggrieved by the said Government Order, petitioner has filed this Writ Petition.

2. Judgement

2.1. The first contention was whether electricity shortage amounted to "extra ordinary circumstances" within the provisions of section 11 of the electricity act, 2003 so raised by the petitioners is dismissed on the grounds that severe shortage of electricity amounted to extra ordinary circumstances within the meaning of the section 11 of the electricity act, 2003 because it amounted to threat to state security under the implied meaning of section 11 wherein it does not mean that when there was a threat to security of State or public order, this power could be exercised even though there was no scarcity of electricity. Threat to security of State or public order was not cause for scarcity of electricity therefore this constituted separate category or genus. Moreover the principle of *ejusdem generis*[5] came to rescue to substantiate the reasoning for the dismissal and to resolve ambiguity or uncertainty and reconcile incompatibility between specific and general words.

2.2. The second issue was whether appropriate Government, could direct to "supply power" when words used were only, 'operate and maintain' and word supply was conspicuously missing in section 11 when supply was defined under Section 2(70) of Act, this issue envisage the conflict between the interpretation of Section 11 and Section 2(70) and as such the petition was again dismissed on the grounds that Section 11 of Act implied if electricity so produced was supplied to Government at a price lesser than commercial price, said provision intended to protect generating company from such adverse financial impact, therefore Section 11 of Act intended for direction to generating company to operate and maintain generating

5 Black's Law Dictionary (8th Edition, 2004), where general words follow an enumeration of persons or things, by words of a particular and specific meaning, such general words are not to be construed in their widest extent, but are to be held as applying only to persons or things of the same general kind or class as those specifically mentioned.

station in accordance with direction of the Government, direction to operate meant to generate electricity for supply to State grid only and not for commercial supply to their licensee or customer thus Government had power to issue direction under Section 11 of Act to supply electricity to the State Grid.

2.3. The issue again so raised as to the exercise of the power by the appropriate authority was in contravention of Article 301[6] of Constitution of India was again rejected on the grounds that power exercised by State Government was to regulate supply of electricity and not to prohibit or restrict supply of electricity as by exercise of such power government was not curtailing production and supply of electricity Therefore, there was no prohibition or restriction or curtailment of right to supply electricity produced - However, electricity supplied was to State Grid in public interest i.e., to make it available to public at large and not to any individual or a particular customer. Thus provisions of Section 11 of Act was regulatory in nature and was not a restriction to trade.

2.4. The petition raised the question of interpretation with regard to the "appropriate government" mentioned under section 11 of the Act. The court held that the state government amounted to appropriate authority under the aforesaid section because firstly, there were no conflict of interest between the central and state government and though Section 11 clearly specifies the instances where central government can exercise its power and further the installations in the question, the central government had no role to play as state government had the territorial jurisdiction. Mere existence of *de-minimums* supply inter-state would not take away jurisdiction of State Government which had to deal with extra-ordinary circumstances existing within State.

2.5. The contention elevated the issue of dissolution of "open access[7]" by the order, the court again dismissed the contention on the grounds that Regulations made it abundantly clear that open access was not an unbridled or absolute right. The right of open access is subject to the restriction so imposed by the appropriate authority on the grounds of public interest and national

6 301. Freedom of trade, commerce and intercourse- Subject to the other provisions of this Part, trade, commerce and intercourse throughout the territory of India shall be free.

security etc. and on the occasion of the extra ordinary circumstances so arising the right cannot be upheld. Said right could be exercised in manner stipulated in Regulations in absence of any direction issued by Government under Section 11 of Act. Open access meant only that private generating companies should not be discriminated in use of transmission lines or distribution system or associated facilities. It did not mean a right was conferred on them absolutely to supply electricity to a consumer or a licensee of their choice and that such a right could not be curtailed under any circumstances. Hence it could not be said that exercise of power under Section 11 of Act run counter to concept of open access, privatization and liberalization of power industry in country.

2.6. The petitioners claimed that the State government exercised colourable power while passing the order, the court dismissed the plea on the grounds that the order so passed by the appropriate authority does not cover *malafide* intention because the said order is passed against all generating companies not only the petitioner number 1 and as such the claim set out would not arise.

3. Analysis of the Judgement:

The Judgement of Karnataka High Court is an appreciable attempt in order to secure the public interest over the private interest. The Judges while writing the judgment tried to answer the issues with a socialist ideology which are in line to the demands of the needy countrymen, but this could lead to effect on the market and make the Private Generating Companies[8] reluctant in operating there plants in full capacity, resulting in the reduction of total power generation in the republic. Thusly, the Judgment was not able to set the scale between the parties.

The authors understand that the order was a reasonable restriction on the ground of 'public interest' as electricity is a basic necessity for survival

7 Section 2 (47) of the Act, "open access" means the non-discriminatory provision for the use of transmission lines or distribution system or associated facilities with such lines or system by any licensee or consumer or a person engaged in generation in accordance with the regulations specified by the Appropriate Commission;

8 As per Position Paper on The Power Sector in India, Department of Economic Affairs, Ministry of Finance, Government of India (December, 2009), the Private Generating Companies account 15.4% of the total generating capacity.

of a person in modern days[9] but in *Hansa*[10] the apex court laid down that a tax law having a direct and immediate on trade and commerce would be barred by Art. 301 unless it satisfies the requirement of Art. 304(b). In *Atiabari*[11], the Supreme Court categorically held that Presidential assent is *sine qua non* for the inter-State as well as intra-State commerce thereby the court held a State law imposing tax invalid because of lack of Presidential assent. Also, in the current case, the court disregarded the white and black letter of law which clearly specifies that in the matter of a power generating company dealing in inter-State consumption, an 'Appropriate Government'[12] is a Central Government and not a State Government. This shows that, the Judiciary is overstepping its power over the Central Legislature, which altogether is violating the spirit of separation of power among the pillars of Government.

Though the judgement so laid to an extent satisfies the authors to a degree, yet in order to balance out the interest of the petitioners and the other generating companies along with the 'Public Interest', the authors hereby come up with certain recommendations that can be followed and taken into account to reduce the friction in the present case and also, recurrence of such events in future. Such recommendatory guidelines for a solution-oriented approach include:

- Under the Open Access scheme, a Private Power Generating Plants is permitted to sell electricity to any third party by entering into a 'Power Purchase Agreement', instead in order to reduce the conflict between the Generating Plants and the State in matter of shortage of power supply, the authors suggests that a Public-Private Partnership (PPP) model will act as more efficient model. This model will satisfy interest of both *vis-a-vis* public interest and commercial gain retrospectively, due to the subsequent reasons:

9 M/s Maa Vaishanavi Sponge Ltd. & Anr. v. Orissa Mining Corporation & Ors, 2013 (I) ILR-CUT-364.

10 State of Karnataka v. Hansa Corp., AIR 1981 SC 463 : (1980) 4 SCC 697.

11 Atiabari Tea Co. v. State of Assam, AIR 1961 SC 232 : 1961 (1) SCR 809.

12 Section 2(5)(a)(ii), Electricity Act, 2003.

- Both parties will have a stake in the Power Generation Plant making everybody equally responsible for the decision, irrespective of the division in the stake.
- With regard to the funding in these projects, principally it could be done with the help of Private Individuals and Indian Public Fund, the latter in form of equity. This would reduce the burden on the State exchequer. Delhi Metro Rail Corporation Limited (DMRC)[13] is a breathing successful PPP model in the country.

Thusly, the authors endorse a PPP model over the PPA as it would lead to reduction in disagreement between the Government and the Private Incorporate body.

- The other alternative can be reasonable power cuts on one hand and also the practice of price differentiation, for a reasonable period of time till the shortage is combatted, can be exercised wherein the big units that consume more electricity will be charged highly as against those using it more for private or lesser usage. This will help in the ruthless wastage of electricity as well because then the consumer will be alarmed with the price hike.
- The state government can also enter into the contracts with the other power plants of the different states, by doing so not only the electricity shortage can be combatted but also to will lead to the enhancement of the mutual state relationships on the social front.
- The government can also resort to the usage of non-conventional sources of energy for the production of electricity which will though amount to greater investment initially which can be raised through public by issuing government securities in the International as well as domestic markets but the outcome of the said projects shall be efficient and effective in

13 Promoting Low Carbon transport in India, UNEP Report (June, 2014), ISBN: 978-87-93130-14-2.

the future as these power generation methods has low carbon foot-prints.[14]

Conclusion

The Hon'ble High Court of Karnataka in the present case held in favor of Public interest and prejudiced the right of a Private Incorporation, to safeguard the right of shelter under Art. 19(1) of the Constitution, by clearing overlooking the pith and substance of the Statute i.e. Electricity Act, 2003. The authors tried to understand the insight of the Judgement and deduced that the court surpassed its power to adjudicate the matter within the scope of the legislation. Such type of inclination would lead to a shortage of liquidated money in the economy as investor would be reluctant in investing in the Indian market, considering the preferential treatment of public interest even if the private interest is safeguarded under the legislation.

The authors are concerned with such type of single-sighted judgments of the higher judiciary of the country as this would lead to incorrect settlement of precedents. The authors aspire for the balance to be checked out between the public interest and the private interest under the statute and not erroneously favoring every 'public interest' without looking on reasonability of imposing of such interest over the private interest.

The current case is *sub judice* case before the Hon'ble Supreme Court of India, questioning the same issues. The authors hope that the apex court will preserve the equilibrium in the weighing scale of private interest *versus* public interest.

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14 K. R. Gupta & J. R. Gupta, Indian Economy, Atlantic Publishers & Distributors (P) Ltd. (Volume 2), p. 464.

Energy Sectors: Law and Policy

Nuclear Energy in India

Dr. Shashikala Gurpur[*] *and Pratima Puri*[**]

Abstract

Focussing on nuclear energy in India, this article provides an analysis of the Civil Liability for Nuclear Damage Act, 2010. Other issues and challenges facing nuclear energy in India from the stand point of various concerns like setting up of nuclear power plants, land acquisition for the said purpose, ecological viability and related human rights issues are also analysed. The role of the Department of Atomic Energy and other organisations in the nuclear energy sector is examined. Besides, it provides a critique of India's nuclear agreements with other nations and the involvement of the judiciary in the nuclear power scenario.

Introduction

Nuclear energy is the fourth biggest source of power in India.[1] The four steps in nuclear power generation are uranium mining, fuel advancement, power generation and waste transfer.[2] India has twenty atomic reactors in operation in six nuclear power plants, generating 4,780 MW[3] while seven different reactors are still under development. The new reactors are relied upon to create an extra 5,300 MW in the Five Year Plan Period 2012 to 2017.[4] In October 2010, India

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1 Nuclear Power Plants, available at http://indianpowersector.com/home/power-station/nuclear-power-plant/ (last accessed on August 19, 2015).

2 Getting to the Core of the Nuclear Fuel C/ycle: From the Mining of Uranium to the Disposal of Nuclear Waste, http://www.iaea.org/ourwork/st/ne/nefw/_nefw-documents/nuclearfuelcycle.pdf (last accessed July 27, 2015).

3 Nuclear Power Generation, available at http://www.npcil.nic.in/main/all project operation display.aspx (last accessed on May 10, 2015).

4 The Report of the Working Group on Power for Twelfth Plan (2012-17), available at http://planningcommission.nic.in/aboutus/committee/wrkgrp12/wg_power1904.pdf (last accessed on August 17, 2015).

drew up "an eager plan to achieve an atomic force limit of 63,000 MW in 2032."[5] However, after the 2011 Fukushima nuclear disaster in Japan, the population around proposed Nuclear Power Plant sites in India has launched protests, raising questions about atomic energy as a clean and safe alternative to fossil fuels.[6] There has been mass dissent against the French-supported 9900 MW Jaitapur Nuclear Power Project in Maharashtra[7] and the Russian 2000 MW Kudankulam Nuclear Power Plant in Tamil Nadu.[8] The state legislature of West Bengal state has additionally denied authorization to a proposed 6000 MW unit close to the town of Haripur that expected to have six Russian reactors.[9]

Nuclear Power Generation in India and the need for nuclear material and technology

India has twenty one nuclear power plants spread across seven locations and run by the Nuclear Power Corporation of India Limited. Seven different reactors are under development and are relied upon to create an extra 5,300 MWe by 2017.[10] Uranium is the core element required for production of nuclear power. India has approximately 70,000 tonnes of natural uranium. India is richer in Thorium deposits and has approximately 3,60,000 tonnes of this material.[11] The Indian uranium reserves

5 S K Jain, former Chairman and Managing Director, Nuclear Power Corporation of India Limited, Interview to the Press Trust of India, *The Economic Times*, October 11, 2010.

6 Siddharth Srivastava, 'India's Rising Nuclear Safety Concerns', *Asia Sentinel*, October 27, 2011.

7 'Protest Against Jaitapur Nuclear Power Project', *The Hindu*, October 30, 2010, available at http://www.thehindu.com/news/national/other-states/protest-against-jaitapur-nuclear-power project/article857678.ece. *Also see*, The Statement of the Atomic Energy Department, (March 13, 2013), available at http://pib.nic.in/newsite/erelease.aspx?relid=93573 (last accessed on August 16, 2015).

8 'Kudankulam Agitation', *The Hindu*, November 11, 2011, available at http://www.thehindu.com/opinion/letters/kudankulam-agitation/article2615886.ece. Also see the statement of the Atomic Energy Department, (November 23, 2011), available at http://pib.nic.in/newsite/printrelease.aspx?relid=77457 (last accessed on August 16, 2015).

9 'West Bengal Government Rules Out Haripur Nuclear Project', *The Hindu*, August 17, 2011, available at http://www.thehindu.com/news/national/other-states/west-bengal-government-rules-out-haripur-nuclear-project/article2366598.ece (last accessed on August 16, 2015). 'Unclear Over Nuclear' (Editorial), *Economic and Political Weekly*, Vol XLVI No. 40, (October 01, 2011).

10 https://en.wikipedia.org/wiki/Nuclear_power_in_India (last accessed on October 3, 2015).

11 http://www.world-nuclear.org/info/Country-Profiles/Countries-G-N/India/, last visited on October 3, 2015.

are modest and cannot make an overly significant contribution to electricity requirements, if this Uranium is used once in a nuclear reactor and then disposed of as waste. However, with a carefully planned programme and imports, uranium can be used to harness the energy contained in non-fissile Thorium, of which India possesses about 30 per cent of the world's reserves.[12] This requires the development of second generation and third generation reactors. Thus, India needs both uranium and nuclear reactor technology which is obtained through the nuclear agreements with several countries. The value of this market is slated to be about US $ 100 billion over the next twenty years.[13]

Nuclear Reactors used in India

The first stage of this programme involves using the indigenous uranium in Pressurised Heavy Water Reactors (PHWRs), which produce not only energy but also fissile plutonium. In the second stage, by reprocessing the spent nuclear fuel and using the recovered plutonium in Fast Breeder Reactors (FBR), the non-fissile depleted uranium and thorium can breed additional fissile nuclear fuel plutonium and uranium-233 respectively. In the third stage, thorium and uranium-233 based nuclear reactors can meet India's long-term energy requirements. Sustainable development of the country's economy requires nuclear energy and sustainable development of nuclear energy requires closing the nuclear fuel cycle with thorium utilization. Although the Advanced Heavy Water Reactor (AHWR), the latest Indian design for a next-generation nuclear reactor that will burn thorium as its fuel, is being developed at Bhabha Atomic Research Centre (BARC) in Mumbai and is an important step towards the third stage of Indian nuclear power programme, which envisages use of thorium fuel cycles for commercial power generation, uranium is still required. The AHWR is a vertical pressure tube type reactor cooled by boiling light water under natural circulation. The AHWR will be fuelled by a mix of uranium-233 and plutonium, which will be converted from thorium and uranium-238 respectively by previously deployed and domestically designed fast breeder reactors. Another version of the AHWR called AHWR-LEU will use low

12 K. M. V. Jayaram, 'An Overview of World Thorium Resources, Incentives for Further Exploration and Forecast for Thorium Requirements in the Near Future,' in *Thorium-Based Nuclear Fuel: Current Status and Perspectives*, International Atomic Energy Agency, IAEA-TECDOC-412, March 1987.

13 Supra note 11.

enriched uranium along with thorium.[14] All these require the exchange of nuclear technology.

The United States actively promoted nuclear energy cooperation with India from the mid-1950s, building nuclear power reactors (Tarapur), providing heavy water for the CIRUS research reactor, and allowing Indian scientists to study at US nuclear laboratories. Although India was active in negotiations of the 1968 Nuclear Non-Proliferation Treaty (NPT), India refused to join the NPT on grounds that it was discriminatory.[15] The peaceful nuclear test in 1974 and the consequent formation of the NSG the next year blocked India out of trade for nuclear material and technology. This blockade continued till August 2008 till the US and India signed a civil nuclear energy agreement, popularly known as the 123 Agreement.

The Indian Atomic Energy Act of 1962 aims "to provide for the development, control and use of atomic energy for the welfare of the people of India."[16] As per this Act, the Union Government of India has a complete monopoly over the atomic energy and the fissile materials used in nuclear reactors. In 1963, an Agreement for Cooperation between the Government of the United States of America and the Government of India was signed. The US entered into the deal under the provisions of Section 123 of The US Atomic Energy Act of 1954. The 1963 agreement was confined to the supply of nuclear materials by the United States to India for its Tarapur reactor, India agreed for the inspection of International Atomic Energy Agency (IAEA) and India assured that the supplied material shall be used only for peaceful purposes and not for military purposes.

Prior to this, as far back as in 1956, India and Canada signed a nuclear cooperation agreement.[17] Under the agreement, Canada agreed to supply half the initial uranium fuel required for the CIRUS (Tarapur) research reactor. A month

14 Advanced Heavy Water Reactor is the latest Indian design for a next-generation nuclear reactor that will burn thorium as its fuel by Virendrasingh Ghunawat, *India Today*, February 27, 2014, available at http://indiatoday.intoday.in/story/advanced-heavy-water-reactor-ahwr-thorium-reactor-bhabha-atomic-research-centre-mumbai-india/1/345888.html (last accessed on July 30, 2015).

15 Congressional Research Service: U S Nuclear Cooperation with India: Issues for Congress, p. 2, available at http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix= html&identifier =ADA467273, accessed on July 27, 2015.

16 Scope and Objects of No. 33 of 1962.

17 D G Hurst (Ed), CANADA ENTERS THE NUCLEAR AGE, 20 (Toronto: McGill-Queen's University Press, 1997).

earlier, the United States made a contract to sell India heavy water for this reactor. The agreement states that "the heavy water sold hereunder shall be for use only in India by the government in connection with research into and the use of atomic energy for peaceful purposes..."[18]

In 1963 and 1964, India and Canada reached agreements[19] on the Canadian financing of the heavy-water moderated CANDU (Canadian deuterium-uranium) power reactor, also known as RAPS-1 (the first reactor of the Rajasthan Atomic PowerStation), to be built in Rajasthan by Indian engineers with design assistance and technology provided by Atomic Energy of Canada Ltd (AECL). The agreement detailed information sharing and assistance from Canada including blueprints for the facility, as well as a $37 million loan from Canada to pay the foreign exchange expenses for the services and technology that Canada provided. India promised to use the Canadian technology and fuel only for peaceful purposes.[20] An agreement for RAPS 2 was entered into with Canada in 1965.[21]

In October 1971, the Government of India and the Federal Republic of Germany signed an agreement that calls for "cooperation in the peaceful uses of atomic energy and space research" in New Delhi. Earlier that year, the Government of India and the Socialist Republic of Rumania (Romania) signed an agreement, which called for "cooperation in the utilization of atomic energy for peaceful purposes" in Bucharest.[22]

After Pokhran, there was a lull in nuclear agreements with India. It was not until 1982 that the French Ambassador Andre Ross and India's Atomic Energy Commission (AEC) Chairman Homi N. Sethna signed an accord under which France supplied fuel to the US-built Tarapur reactors.[23] However, on 30th August 1982 France suspended talks with India on the delivery of enriched

18 Brahma Chellaney, NUCLEAR PROLIFERATION: THE US-INDIA CONFLICT, 6, 36 (New Delhi: Orient Longman, 1993).

19 Janet Wood, NUCLEAR POWER, 51 (London: The Institution Of Engineering and Technology, 2007).

20 G.G. Mirchandani, INDIA'S NUCLEAR DILEMMA, 242 (New Delhi: Popular Book Services, 1968)

21 *See* Rajesh Rajagopalan and Atul Mishra, NUCLEAR SOUTH ASIA: KEYWORDS AND CONCEPTS (New Delhi: Routledge, 2007).

22 Department of Atomic Energy, Government of India, "Annual Report: 1971-1972", 150.

23 Brahma Chellaney, NUCLEAR PROLIFERATION: THE US-INDIAN CONFLICT, 137 (New York: Orient Longman, 1993).

Uranium fuel for the Tarapur Atomic Power Station (TAPS) because of a disagreement over appropriate safeguards. India had refused to submit to the International Atomic Energy Agency (IAEA) controls. The disagreement seemed to revolve around the "perpetuity" and "pursuit" clauses in the IAEA safeguards. The perpetuity clause called for international supervision of the nuclear power plants, while the pursuit clause provided for international supervision of the reprocessing of spent fuel.[24] The impasse was sorted out in March 1983 when India and France signed an agreement on the supply of enriched uranium for the US-built nuclear power plant at Tarapur in Maharashtra.[25] The agreement was signed by Cogema, a subsidiary of the French Atomic Energy Commission, and India's Atomic Energy Commission (AEC). The agreement was finalized only after France agreed to "waive the safeguards stipulated by the London Nuclear Club, which require members to insist on what are known as 'pursuit' and 'perpetuity' clauses."[26] In 1985, India and France agreed to start joint projects in fast breeder nuclear reactors at Kalpakkam.

The erstwhile USSR was always a strong ally of India. The USSR supplied heavy water to India since 1976. In November 1988, Soviet President Mikhail Gorbachev and Indian Prime Minister Rajiv Gandhi issued a joint statement calling for the immediate banning of nuclear weapons testing to prevent an arms race in strategic nuclear weapons.[27] Before his departure, Gorbachev and Gandhi also signed the final agreement under which the Soviet Union sold two 1,000 MW VVER (Russian pressurised water reactor) light water nuclear power stations to India.[28] The reactors were to operate under international safeguards. The USSR agreed to supply enriched uranium fuel for the entire operational life of the nuclear power station. The agreement provided for maintenance by

24 R Ramachandran, 'Indo-US Nuclear Agreement and IAEA Safeguards', *Strategic Analysis*, Vol. 29, No. 4, Oct-Dec 2005, pp: 574-592.

25 *See* T.S. Subramanian, 'A feat at Tarapur', *Frontline*, Volume 23 - Issue 07: Apr. 08 - 21, 2006, http://www.frontline.in/static/html/fl2307/stories/20060421006811800.htm (last accessed on October 7, 2015).

26 *See* www.nti.org/media/pdfs/india_nuclear.pdf?_=1316466791 (last accessed on July 30, 2015).

27 *See* N. Ram, 'Explaining the non-deal with Russia', *The Hindu*, http://www.thehindu.com/todays-paper/tp-opinion/explaining-the-nondeal-with-russia/article1958276.ece (last accessed on October 17, 2015).

28 Neel Patri, 'Gorbachev, Gandhi Sign Pact to Finance VVER-1000s in India,' *Nucleonics Week*, 24 November 1988, at 3.

India of a mutually agreed minimum quantity of nuclear fuel and control assemblies. The agreement also provided for return of spent fuel.[29] In April 1991, USSR "had agreed on specifications, some details of the time schedule and on the maximum cost" of the two VVER-1,000 reactors to be built in Kudankulam (Tamil Nadu). These reactors have controls from Western Countries but the computer controls were developed entirely in India. Russia supplied the designs, drawings and all the equipment for the two identical reactors, which was then built by the NPCIL (Nuclear Power Corporation of India Limited). This was the first time that the NPCIL dealt with Light Water Reactor (LWR) technology. Four more reactors are set to be added to this plant under a memorandum of intent signed in 2008. Under an inter-government agreement signed in December 2008, Russia is to supply to India, four third generation VVER-1200 reactors of 1170 MW.In 2003 and 2008 India and Russia signed deals for the fuel to be used at Kudankulam and for its uninterrupted supply.[30]

The United States wanted to sign a nuclear pact with India for its own strategic and commercial benefits and this required that the embargo imposed on India be lifted. It was the United States that pushed for a clean waiver to India at the NSG (Nuclear Suppliers' Group) meeting although several participating governments, including Austria, Switzerland, Norway, Ireland and New Zealand, expressed reservations about the lack of conditions in the proposed exemption. In a meeting on September 6, 2008, the NSG participating governments agreed to grant India a "clean waiver" from its existing rules, which forbid nuclear trade with a country which has not signed the NPT.[31] The NSG's decision came after three days of intense US diplomacy. The approval was based on a formal pledge by India stating that it would not share sensitive nuclear technology or material with others and will uphold its voluntary moratorium on testing nuclear weapons. The pledge was contained in a crucial statement issued during the NSG meeting by India outlining the country's disarmament

29 Ibid.

30 *See* Mycle Schneider *et al* (Eds), The World Nuclear Industry Status Report 2012, http://www.worldnuclearreport.org/The-World-Nuclear-Industry-Status.html (last accessed on October 26, 2015).

31 *See*, 'Next: Getting India in NSG,' *The Economic Times*, available at http://articles.economictimes.indiatimes.com/2008-09-09/news/28492545_1_nuclear-cartel-nsg nuclear-suppliers-group (last accessed on October 2, 2015).

and non-proliferation policies. On September 7, 2008 the NSG removed the 34-year ban on India's participation in international nuclear trade and supported the U.S.-India nuclear agreement.[32]

It is interesting to note that old nuclear allies, France and Canada expressed their willingness to negotiate and sign nuclear deals with India just before the lifting of this moratorium. On September 30, 2008 India and France signed a bilateral nuclear cooperation agreement that allowed the sale of French nuclear reactors to India. In January 2008 the two countries had signed a framework agreement for civil nuclear co-operation. In December 2008, the NPCIL and the French nuclear company Areva have signed an agreement for the supply of 300 tons of uranium to Indian reactors under IAEA safeguards. This was the first such agreement since the NSG admitted India into international nuclear trade. Areva had concluded a deal with the NPCIL in February 2009 to construct at least two nuclear power plants in India worth about $10 billion. The number of reactors could be as many as six.[33]

In 2009, India signed nuclear agreements with Kazakhstan.[34] India and Mongolia signed a crucial civil nuclear agreement on 15 June 2009 for supply of Uranium to India, during the then Prime Minister Manmohan Singh's visit to Mongolia making it the fifth nation in the world to seal a civil nuclear pact with India. The Memorandum of Understanding on "development of cooperation in the field of peaceful uses of radioactive minerals and nuclear energy" was signed by senior officials in the department of atomic energy of the two countries. On 2 September 2009, India and Namibia signed five agreements, including one on civil nuclear energy which allows for supply of uranium from the African country. Namibia is the fifth largest producer of uranium in the world. The Indo-Namibian agreement in peaceful uses of nuclear energy allows for supply of uranium and setting up of nuclear reactors in that country. On 14 October 2009, India and Argentina signed an agreement in New Delhi on civil nuclear cooperation and nine other pacts to establish strategic partnership. Taking into consideration their respective capabilities and experience in the peaceful uses of

32 *See* http://www.nuclearsuppliersgroup.org/en/organisation/history (last accessed on October 26, 2015).

33 *See* http://india.areva.com/EN/home-1029/areva-s-nuclear-epr-projects-in-india-areva-india.html (last accessed on October 2, 2015).

34 *See* http://www.yourarticlelibrary.com/nuclear/agreements-on-nuclear-energy-that-india-has-signed-with-different-countries/5762/ (last accessed on October 22, 2015).

nuclear energy, both India and Argentina have agreed to encourage and support scientific, technical and commercial cooperation for mutual benefit in this field.

In 2010, the International Commission on Nuclear Non-proliferation and Disarmament (ICNND) expressed its "concerns about the terms of the exemption approved by the Nuclear Suppliers Group for India's nuclear programs." In a statement, the commission said that it was concerned that India's exemption "did not require a strong new commitment to disarmament and non-proliferation objectives and measures."[35] The commission recommended that in future any exports of nuclear equipment and technology to countries outside the Non-proliferation Treaty should be accompanied by two conditions - that the recipient country will "not conduct any nuclear test and implement a moratorium on the production of fissile material for weapon purposes, pending the entry into force of a fissile material production ban."[36] In spite of these reservations, India and the United States signed a bilateral agreement on the reprocessing of spent nuclear fuel in accordance with their '123 Agreement' on civilian nuclear cooperation. Under the latest agreement, India will be able to reprocess spent fuel at a new, dedicated and safeguarded installation. The very same year, India and Japan and India and United Kingdom conducted the first round of discussions on a civilian nuclear cooperation agreement. The talks, held in Tokyo, discussed "the guiding principles of how to conduct negotiations in the future."[37]

The Statutory Framework governing nuclear power generation

Atomic energy and mineral resources necessary for its production are a subject in the Union List of the Seventh Schedule to the Constitution of India.[38] The Atomic Energy Act, 1962 was passed by Parliament under this entry "to provide for the development, control and use of atomic energy for the welfare of the people of India and for other peaceful purposes and for matters connected therewith". Section 22 of the Act deals with the production of electricity while the rest of

35 *See* Rajiv Nayan, THE NUCLEAR NON-PROLIFERATION TREATY AND INDIA, 1-13 (New York: Routledge, 2012).

36 *Ibid.*

37 Supra note 10. *Also see* Rajaram Panda and Ch. ViyyannaSastry, 'India and Japan: Prospects for Civil Nuclear Cooperation', *Indian Foreign Affairs Journal* Vol. 6, No. 2, April–June 2011, 202-216.

38 Entry 6.

the Act is a regulatory framework giving the Central Government a monopoly control over atomic energy and matters related thereto.[39]

The regulation of atomic energy was a matter of concern even to the Constituent Assembly. Justice Radhakrishnan has observed that:

> The Constituent Assembly discussed the formal legal framework to regulate atomic energy in the year 1948 and the legislation by the name Atomic Energy Act, 1948 was enacted. That Act envisaged the constitution of an Atomic Energy Commission (AEC) and a Department of Atomic Energy (DAE) and both were established in the year 1954. The AEC is the apex body of the Central Government for atomic energy that provides direction on policies related to atomic energy. It consists of eminent scientists and technocrats, secretaries to different ministries, senior officials from the office of the Prime Minister. The AEC has to report to the Prime Minister of India on various policies related to atomic energy. DAE deals with the

39 Section 22 reads as follows: Special provisions as to electricity:

i. Notwithstanding anything contained in the Electricity (Supply) Act, 1948, the Central Government shall have authority:-

a. To develop a sound and adequate national policy in regard to atomic power, to co-ordinate such policy with the Central Electricity Authority and the State Electricity Boards constituted under sections 3 and 5 respectively of that Act and other similar statutory corporations concerned with the control and utilization of other power resources, to implement schemes for the generation of electricity in pursuance of such policy and to operate either by itself or through any authority or corporation established by it or a Government Company, atomic power stations in the manner determined by it in consultation with the Boards or Corporations concerned, with whom it shall enter into agreement regarding the supply of electricity so produced.

b. To fix rates for and regulate the supply of electricity from atomic power stations either by itself or through any authority or corporation established by it or a Government Company in consultation with the Central Electricity Authority.

c. To enter into arrangements with the Electricity Board of the State in which an atomic power station is situated either by itself or through any authority or corporation established by it or a Government Company for the transmission of electricity to any other State.

d. Provided that in case there is a difference of opinion between the Central Government or such authority or corporation or Government Company as the case inserted wide the Atomic Energy (Amendment) Act, 1987 (No. 29 of 1987). Substituted wide the Atomic Energy (Amendment) Act, 1987 (No. 29 of 1987) may be and any State Electricity Board in regard to the construction of necessary transmission lines the matter shall be referred to the Central Electricity Authority whose decision shall be binding on the parties concerned.

> development and implementation of nuclear power and related nuclear fuel cycle activities and research and development activities carried out in various units under it. Baba Atomic Research Centre (BARC), was also established in the year 1954 and research reactors namely Apsara, Cirus and Dhruva were set up in the year 1956, 1960 and 1985 respectively. The control and development of atomic energy in the country and matters connected therewith were then regulated by Act 29 of 1948.[40]

Following developments in the field, the 1948 Act was replaced by the Atomic Energy Act in 1962. The Act has been enacted to provide for the development, control and use of atomic energy for the welfare of the people of India and for other peaceful purposes.[41] The Central Government, in exercise of the powers conferred under Section 27 of the Act, constituted the Atomic Energy Regulatory Board (AERB)[42] to carry out certain regulatory and safety functions.[43] The AERB has the power to lay down safety standards and frame rules and regulations in regard to the regulatory and safety requirements envisaged under the Act and have to report to AEC. The Act underwent amendment vide amending Acts 59 and 29 in the years 1986 and 1987 respectively. However, the major amendment was of the year 1987,[44] by which the Central Government was empowered to produce and supply electricity from atomic energy. For achieving the envisaged target of nuclear power generation, a nuclear power corporation or a Government company was also decided to be set up which would design, construct and operate nuclear power stations in India. Following that, a separate public sector company, namely, the Nuclear Power Corporation of India (NPCIL) with a view to design, build and operate nuclear reactors in the country was created in September 1987. NPCIL is an undertaking wholly owned by the Government of India, and functions under the administrative control of DAE. This Act functioned within its closeted realm and the NPCIL and its operations ran unquestioned till the People's Union for Civil Liberties [PUCL] decided to question the vires of Section 18 of the Act in the

40 G. Sundarrajan v. Union of India, C.A.4440/2013 (Supreme Court), pp.2-5, http://judis.nic.in/supremecourt/imgs1.aspx?filename=40374 (last accessed on September 14, 2015).

41 *See* The Objects and Reasons of the Act.

42 Vide notification dated 15.11.1983.

43 See Sections 16, 17 and 23 of the Act.

44 Vide Amending Act 29 of 1987.

Supreme Court. In their case against the Union of India and Others,[45] which the Petitioners lost, the Court held that the Act dealt with a "sensitive subject."[46] The Court, considering the facts and circumstances ruled that the 1962 Act was not an antiquated Statute but the nature of fuels discharged from a NPP is a matter of a sensitive nature and the restriction placed under the Act against its revelation is a reasonable restriction under Article 19(2) of the Constitution of India.

The Court ruled that every Statute carries with it the presumption of Constitutionality and Section 18 did not confer on the Government any unbridled powers.[47] The presumption that the statutory authority that has been conferred these powers will not exercise the same arbitrarily also comes with the statute, the Bench comprising of (the then) Chief Justice V N Khare and Justice S B Sinha ruled. PUCL had moved the Apex Court after the Bombay High Court dismissed their writ petition filed in 1996 challenging Section 18. PUCL was refused information (prior to the passage of the Right to Information Act[48]) regarding operations and activities including the safety features and discharge of spent fuel from the Tarapur and Trombay NPPs. PUCL's demand for information followed a disclosure by a former chairman of the AERB, Dr. A Gopalakrishnan, that there were serious safety issues in most of the NPPs including Tarapur, Trombay and Kaiga. Upholding the validity of Section 18, the Court categorically ruled that the Atomic Energy Act, 1962 was constitutional.

The Supreme Court in *A. P. Pollution Control Board v. M V Nayudu,*[49] had held that precautionary principle is part of the law of the land. The principle mandates that when a new technology or process can cause serious and irreversible harm to human health and the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. The promoter of the undecided action, rather than the public, has to bear the burden of proof. Therefore,

45 People's Union for Civil Liberties and another v. Union of India and Others (2004) 2 SCC 476.

46 Ibid, Paragraph 36, at 493.

47 Ibid, Paragraphs 42 and 43, SCC.

48 Even now, the Government may refuse to divulge information as Section 18 overrides provisions in the Right To Information Act, 2005.

49 (1999) 2 SCC 718.

it is absolutely essential in the interest of life, health and safety of large sections of the population that the precautionary principle is invoked and the Government be directed not to go ahead with the project till all the recommendations of its own task force on safety are implemented or if this burden is not discharged. In this case, Justice S B Majmudar and Justice Jaganadaha Rao enumerated that environmental concerns arising in the Apex Court or in the High Courts are of equal importance as human rights concerns and carry equal weight. Both are to be traced to Article 21 which is the right to life and liberty. Environmental aspects concern "life", the Court ruled. Admitting that the Supreme Court has faced "sufficient difficulty" in providing adequate solutions to meet the requirements of the public interest, environmental protection, elimination of pollution and sustained development, the Bench felt it would not be inappropriate to seek the aid and advice of technical bodies and subject experts to ensure complete justice. Cases involving correctness of technological and scientific opinions or the use of alternate technologies pose problems all over the world and in such cases the precautionary principle is to be adopted, the Court ruled. Evolving the doctrine of the special burden of proof as has been outlined in the beginning of the analysis of this verdict, the Supreme Court has adopted this principle in several other cases like *GuruvayoorDevaswom Management Committee v. C K Rajan* [3 Judges][50] and *Kapila Hingorani v. State of Bihar*.[51] A similar approach has been taken in *G Sundarrajan's* case although the Supreme Court relied heavily and solely on the opinion and technical inputs given by the regulators of atomic energy in this country regarding the utility, feasibility and safety of the KNPP.

The Supreme Court verdicts in the *Indian Council for Enviro-legal Action v. Union of India*[52] and the *Vellore Citizens' Forum's* case[53] have been followed in a plethora of cases since their pronouncements. In the context of pollution caused by a nuclear power plant, both these principles are pivotal. The Nuclear Liability Act, 2010 is a statutory safety valve and thus goes a long way, by incorporating both these principles to ensuring that the public are protected to the maximum extent possible in the event of a nuclear catastrophe.

50 (2003) 7 SCC 546.

51 (2003) 6 SCC 1.

52 (1996) 3 SCC 212.

53 Vellore Citizens' Welfare Forum v. Union of India AIR 1996 SC 2715.

The Nuclear Liability Act had capped the liability of the operator due to any nuclear accident to the rupee equivalent of 300 million SDR's ($450 million) or Rs. 1,500 core in 2010.[54] In Section 17 of the Act,[55] it was further specified that the nuclear operator had a right to recourse from the supplier, if it was found that the accident was due to the supply of faulty or substandard equipment. The right to recourse was limited to the amount that the operator had paid out, and in any case had an upper limit of Rs. 1,500 crore, the maximum liability of the operator.[56] This Act fixes the liability for nuclear damage and specifies procedures for compensating victims. The liability cap fixed is very low as compared to the US.[57] Absolute liability should be imposed on the operator of NPP as the measure of compensation in cases of absolute liability must correlate to the magnitude and capacity of the venture involved. The Central Government utilizing the plenary power under Section 6 might do well to considerably increase the liability cap that might serve its actual reason for NPP operators from surpassing security measures and systems in the event of a nuclear accident in a power plant.

54 Section 6.

55 See especially Section 17 (b) which reads: "The operator of the nuclear installation, after paying the compensation for nuclear damage in accordance with Section 6, shall have a right of recourse where-the nuclear incident has resulted is a consequence of an act of supplier or his employee, which includes supply of equipment or material with patent or latent defects or sub-standard services."

56 Prabir Purkayastha, 'Sabotaging India's Nuclear Liability Act to Help US Suppliers', available at http://www.cpim.org/views/sabotaging-indias-nuclear-liability-act-help-us-suppliers (last accessed on September 7, 2015).

57 As of September, 2013, each reactor company is obliged to contribute up to $121,255,000 per reactor in the event of an accident with claims that exceed the $375 million insurance limit. As of 2013, the maximum amount of the fund is approximately $12.61 billion ($121,255,000 X 104 reactors) if all of the reactor companies were required to pay their full obligation to the fund. This fund is not paid into unless an accident occurs. However, fund administrators are required to have contingency plans in place to raise funds using loans to the fund, so that claimants may be paid as soon as possible. Actual payments by companies in the event of an accident are capped at $18,963,000 per year until either a claim has been met, or their maximum individual liability (the $121,255,000 maximum) has been reached. [See https://www.law.cornell.edu/uscode/text/42/2210, last visited October 4, 2015.]

The principal advocates of the Bill pushed that the Bill would reinforce India's improvement on four fronts:[58]

(1) expansion of India's capability to generate energy and power,

(2) creation of India's defence technology,

(3) taking into account headways in India's space program,

(4) fortification of global interest and investment in India.

According to American commentary, the new Nuclear Liability Act was a "flawed civil nuclear liability legislation" which is not compatible with the US-India Agreement.[59] The underlying angle behind the US not being upbeat about the Indian enactment is that it has a clause by method of which the operator can shift the liability onto the supplier. Former Prime Minister Manmohan Singh had fortified the proposed Civil Liability for Nuclear Damage Bill in Parliament, saying that the enactment might permit India to take part in nuclear trade with remote suppliers and "end nuclear apartheid" against the country.[60] The Indian government was conversing with US companies like GE Hitachi and Westinghouse (claimed by Japan's Toshiba) to end up suppliers of Nuclear instruments.[61] But the presence of such a clause is not in their interest and its suggestion might be that they may not agree to contract with the Indian government. Agents from the nuclear industry have communicated concern over this procurement of the enactment and its deviation from international standards.[62] US-based Westinghouse Electric has marked a preparatory arrangement to construct a Nuclear power plant in India, indicating the first noteworthy forward development on contentious civilian nuclear deal concurred between the two nations in 2008.[63]

58 Civil Liability For Nuclear Damage Bill 2010: How Civil And How Liable?, Centre For Legislative Research And Advocacy, Clra Policy Brief For Parliamentarians, Policy Brief Series: No. 10, (July-August , 2010).

59 Lisa Curtis, India's Flawed Nuclear Legislation Leaves US-India Partnership Short, *Heritage Foundation Report*, (August 31, 2010), available at, www.heritage.org/research/reports/2010/08/indiasflawed-nuclearlegislation-leaves-us-india- partnership-short.

60 Vinay Kumar, We Cannot Ignore The Nuclear Option, *The Hindu*, August 26, 2010.

61 Supra note 59.

62 Ashish Kumar Sen, 'US Raises N-Liability Concerns With Krishna', *The Tribune*, September 29, 2010.

63 Carey L. Biron, 'Westinghouse Agrees To Build Indian Nuclear Power Plant', *Inter Press Service News Agency Washington*, June 13, 2012, available at, http://Www.Ipsnews.Net/2012/06/Westinghouse-Agrees-To-Build-Indian-Nuclear-Powerplant.

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According to a release by Westinghouse, the new project was a 1,000-mega watt reactor, to be manufactured at Mithivirdi in the western state of Gujarat. In spite of the fact that the site has long been under attention for a nuclear installation, the New Delhi government had a while ago proposed that it was re-evaluating the venture because of concerns emulating the Fukushima debacle and restored anti-nuclear public campaigns.[64]

As regards radiation and its associated ill-effects, although there is no direct case in point regarding radiation from a NPP, the Kerala High Court in 2007 had an opportunity to examine the issue of radiation from mobile towers. A Division Bench of the High Court comprising of Justice K S Radhakrishnan (who was later elevated and was part of the Bench in *G Sundarrajan's* case) and K Padmanabhan Nair, in *Reliance Infocom v. Chemanachery Gram Panchayat and Others*[65] examined whether there were any serious health hazards due to radiations from mobile towers. Finding in the negative, the Court ruled that the license granted to the Petitioner cannot be revoked. However, as has been analysed earlier, radiation from Nuclear Power Plants, especially from SNF (Spent Nuclear Fuel) can be extremely hazardous and needs careful handling. This is indeed a thorny problem and needs planning and appropriate measures for proper handling.

Issues and concerns in NPPs

1. Land Acquisition for setting up NPPs and the setting up NPPs in areas not germane to setting up of NPPs

This question was examined minutely by the Bombay High Court in *Bhikaji Jagannath Waghdhare and others v. Union of India and others*.[66] A Division Bench comprising of Justice Ranjana Desai and Justice A Sayed examined issues concerning land acquisition for the Jaitapur NPP in Ratnagiri in Maharashtra. The High Court noted that the Supreme Court has upheld acquisition of land by invoking urgency clause for setting up houses for the poor, for setting up sewerage plant, for shifting business outside the city to ease traffic congestion, for information Technology Park and for setting up industries so as to generate

64 Id.

65 AIR 2007 Ker 33.

66 WP No.8458 Of 2008.

employment. The present Nuclear Power Project stands on the same footing or perhaps on a higher footing as it is going to supply power to millions of people.[67]

The Site Selection Committee's report of the Ratnagiri NPP needs to be examined. Its foreword indicated that working group members drawn from the various organizations i.e. Bhabha Atomic Research Centre, Atomic Minerals Directorate for Exploration and Research, Central Electricity Authority, Union Ministry of Environment and Forests and units of NPCIL had participated in collection scrutiny and review of the site related characteristics and made recommendations. It is a report prepared by experts in respective fields and is entitled to great weightage.[68] So far as Jaitapur site is concerned, the report states that the site is suitable, initially for setting up first module of 2 x 1000 MWe LWRs. The Court's observation was based on land and water availability an additional second module of 2 x 1000 MWe LWRs can also be set up. The recommendation discussed the availability of water and states that subsequently, supplementing the water supply with desalination plant, the site in the ultimate stage can be considered for third module of 2 x 1000 MWe LWRs. The Court noted that it "would not interfere with a policy decision of this nature based on expert advice."[69]

Thus in this area also it is seen that it is the calculus of the greatest good to the greatest number that comes into play. Courts have seldom interfered in acquisition proceeding for Nuclear Power Plants. Whether this is the cost of development, or the apparent or hidden cost of nuclear power is a question that is difficult to answer.

Accessibility of area for reserving for the venture action without creating any hardship to nearby communities and their socio-cultural and economic angles is exceptionally essential. Availability of required land for acquisition is to be ascertained from local authorities, revenue records and many other sources especially in a country like ours where land records are not maintained properly.

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67 Ibid, Paragraph 55.

68 *See* http://www.indiaenvironmentportal.org.in/files/executive%20summary.pdf (last accessed on October 4, 2015).

69 Paragraph 50.

However, it is seen that this is seldom done and a case in point is that of *Bhikaji Jagannath Waghdhare and Others v. Union of India and Others.*[70] There is an unhealthy combination of urgency and secrecy, both supported by law, when it comes to acquisition of land for nuclear power plants.

2. Regulatory Framework Governing Nuclear Power Plants For Land Acquisition

The Atomic Energy Act 1962

Section 10 mentions compulsory acquisition of rights to work minerals wherever the land where these minerals are available can be acquired by the central government.[71] The Compensation in respect of any right acquired under this section shall be paid in accordance with Section 21, but in calculating

70 http://indiankanoon.org/doc/1500977/ (last accessed on October 7, 2015).

71 S. 10. **Compulsory acquisition of rights to work minerals:**

i. Where it appears to the Central Government that any minerals from which in its opinion any of the prescribed substances can be obtained are present in or on any land, either in a natural state or in a deposit of waste material obtained from any underground or surface working, it may by order provide for compulsorily vesting in the Central Government the exclusive right, so long as the order remains in force, to work those minerals and any other minerals which it appears to the Central Government to be necessary to work with those minerals and may also provide, by that order or a subsequent order, for compulsorily vesting in the Central Government any other ancillary rights which appear to the Central Government to be necessary for the purpose of working the minerals aforesaid including (without prejudice to the generality of the foregoing provisions):-

a. Rights to withdraw support.

b. Rights necessary for the purpose of access to or conveyance of the minerals aforesaid or the ventilation or drainage of the working.

c. Rights to use and occupy the surface of any land for the purpose of erecting any necessary buildings and installing any necessary plant in connection with the working of the minerals aforesaid.

d. Rights to use and occupy for the purpose of working the minerals aforesaid any land forming part of or used in connection with an existing mine or quary and to use or acquire any plant used in connection with any such mine or quary and

e. Rights to obtain a supply of water for any of the purposes connected with the working of the minerals aforesaid or to dispose of water or other liquid matter obtained in consequence of working such minerals.

the compensation payable, no account shall be taken of the value of any minerals present in or any land affected by the order, being minerals specified in the order as those from which in the opinion of the Central Government uranium or any concentrate or derivative of uranium can be obtained.[72] Section 21 entitles the land owner to compensation as determined by agreement between the parties (Central Government and land owner) or as determined by an arbitrator to be appointed by the Central Government. The section provides that even the arbitration is to be governed, not by the provisions of the

72 S. 21. **Principles relating to payment of compensation:**

i. Save as otherwise provided in this Act, where by reason of exercise of any powers under this Act, any compensation is payable, the amount of such compensation shall be determined in the manner and in accordance with the principles herein after set out, that is to say:-
   a. Where the amount of compensation is fixed by agreement, it shall be paid in accordance with such agreement.
   b. Where no agreement is reached the Central Government shall appoint as arbitrator a person having expert knowledge as to the nature of the right affected who shall determine the amount of compensation payable.

ii. In making his award, the arbitrator appointed under sub-section (1) shall have regard:-
   a. In the case of any compensation payable under section 9:-
      A. To the nature of the work done.
      B. The manner, extent and duration of the exercise of any power under that section.
      C. The diminution in the rent of the land and of the property situated thereon, which might reasonably be expected over any period or diminution in the market value of the land and property on the date when the exercise of powers comes to an end and
      D. The provisions of sub-section (1) of section 23 of the Land Acquisition Act, 1894, in so far as such provisions can be made applicable to the exercise of powers under section 9.
   b. In the case of any compensation payable under section 11 or under section 12, to the price which the owner might reasonably have been expected to obtain on a sale of the property effected by him immediately before the date of the acquisition.

iii. An appeal shall lie to the High Court against an award of the arbitrator except in cases where the amount claimed thereof does not exceed an amount prescribed in this behalf by the Central Government.

iv. The Central Government may make rules prescribing the procedure to be followed in the arbitrations under this Act and the principles to be followed in the apportionment of the cost of proceedings before the arbitrator and on appeal.

v. Save as provided in this Act, nothing in any law for the time being in force relating to arbitration shall apply to arbitrations under this Act.

Arbitration and Conciliation Act, 1996 but provisions under the Atomic Energy Act, 1962.[73]

Section 11 of the Atomic Energy Act provides for compulsory acquisition and the next section stipulates that compensation shall be granted as per the structure set up in Section 21. Appurtenant structures on the land, including tramways, railway sidings and aero-bridges can be acquired under Section 11. Compensation for these is also governed by Section 21 of the Atomic Energy Act, 1962.

The Land Acquisition Act of 2013

According to Section 105 (1), subject to Sub-section (3), the provisions of this Act shall not apply to the enactments relating to land acquisition specified in the Fourth Schedule which includes Atomic Energy Act 1962. Thus the other law, the Atomic Energy Act 1962 has to be amended, to ensure that just and fair compensation is given to persons from whom land is acquired for setting up nuclear power plants.[74]

3. Some Areas of Land Acquisition In India For Nuclear Power Plants

Jaitapur Power Plant

The Jaitapur Power Plant Project is to be spread in excess 968 hectares of area, comprising of covering five towns Madban, Niveli, Karel, Mithgavane and Varliwada — which collectively have a population of 4,000. Madban and Varliwada have been recognized for the site of project fitting, while Karel,

73 See Section 21 (1) (b).Principles Relating To Payment Of Compensation, Following Are The Measures Of Payment

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(b) where no such agreement is reached, the central government shall appoint as arbitrator a person having expert knowledge as to the nature of the right affected who shall determine the amount of compensation payable.

(2) in making his award, the arbitrator appointed under Sub-section (1) shall have regard-

(a) in the case of any compensation payable under section 9-

(i) to the nature of the work done;

(ii) the manner, extent end duration of the exercise of any powers under that Section;

(5) Save As Provided In This Act, Nothing In Any Law For The Time Being In Force Relating To Arbitration Shall Apply To Arbitrations Under This Act.

74 Anita Joshua, 'New Land Acquisition Law Rolled Out', *The Hindu*, January 1, 2014, available at http://www.thehindu.com/news/national/new-land-acquisition-law-rolled-out/article5526605.ece, (last accessed on April 26, 2014).

Niveli and Mithgavane might turn into the township for the project staff.[75] The Department of Atomic Energy (DAE) keeps up that the Jaitapur atomic power plant will not prompt any exclusion of individuals, and that a great part of the obtained area is useless. This strains naivety. As one can see underneath, the area in the range underpins a flourishing farming and plant economy.

Persons in the Jaitapur region acknowledged land acquisition order in 2007, and by January 2010, the government of Maharashtra had finished the acquisition of 938.026 hectares. Villagers were offered Rs 2.86 for every square foot for desolate area and Rs 3.70 for every square foot for cultivable area. This was along these lines raised to Rs 4 lakhs an acres of land, and most as of late, to Rs 10 lakhs, with the guarantee of one employment for each influenced family.

Notwithstanding, regardless of coercive acquirement of area, just 114 out of 2,375 farmer families have claimed the compensation offered; all others have declined to take the cheques.

Nuclear Power Cooperation of India Limited has marked 65 percent of the area as uninhabited.[76] The area is in fact very prolific and produces rice, different oats, the world's most popular mango (the Alphonso), cashew, coconut, kokum, betel nut, pineapple and different products of the soil in richness. A portion of the area is likewise utilized for dairy cattle munching and rain-fed agriculture and is subsequently profitable.

Ratnagiri was pronounced a "horticulture area" by the Maharashtra government in 2003. Agriculturists have put enormous sums in cultivation (mostly mangoes and cashew nuts) under government plans, regularly with credits. Moreover, there are complaints about the government not recording their plantation crops rightly, and the individuals likewise claim that the recompense for these trees is generously short of what they acquire from them yearly. The rate is Rs. 9,386 for every tree if there should be an occurrence of mangoes, while they earn or reap Rs 10,000-15,000 from a single tree yearly; and it is Rs 1,989 for a plant of cashew while the yearly acquiring for every plant is normally Rs 4,000-5,000.[77]

75 'Jaitapur Nuke Plant Will Be Social Disaster: TISS Report', *DNA Mumbai*, (Dec 26, 2010), available at http://digital.dnaindia.com/epaperpdf%5c27122010%5c26main%20edition-pg3-0.pdf.

76 *See* http://www.npcil.nic.in/main/A_Brief_on_JNPP.pdf (last accessed on October 26, 2015).

77 Social Impact Assessment Report, Tata Institute of Social Science.

Ratnagiri has 15,233 hectares under mango development, with an expected yearly business turnover of Rs. 2,200 crores. The mango yield is amazingly sensitive to the minutest changes in temperature and soil science. The local people apprehend that a good deal of the mango harvest would be lost if the project comes up.

Other than farming and cultivation, the Jaitapur–Madban range has a sizeable fishing economy. The fishing population will additionally be influenced, since the plant will every day discharge an immense 52,000 million litres of high temperature water into the Arabian Sea. Besides the rise in seawater temperature, tighter security in the coastal region would also restrict fishing severely.

'The community leaders fear that once the project becomes operational, its elaborate security arrangements would imperil fishermen's unhindered use of the two creeks of Jaitapur and Vijaydurg, where they get a depth of 20 fathoms, which is usually found at a distance of 2 to 3 nautical miles on other coasts. Altogether, the nuclear park would jeopardize the livelihoods of 40,000 people, including 15,000 dependent on fishing.'[78]

As stated by the Maharashtra Macchimar Kruti Samiti, seven fishing towns – Sakhari Nate, Tulsunde, Ambolgad, Sagwa, Kathadi, Jambhali and Nana Ingalwadi — will be undermined by the Nuclear Power Plants. The annual fish catch in Ratnagiri district 1, 25,000 tons and something like 40,000 tons comes from Sakhari Nate.

The yearly turnover from fishing in these towns is about Rs 15 crore.[79] In Nate alone, there are 200 enormous trawlers and 250 little vessels. Almost 6,000 individuals directly rely on fishing in the zone and more than 10,000 are subject to related or secondary actions.[80]

A sizeable measure of this fish catch is exported to Europe, Japan and different nations. Fish exports are additionally liable to be influenced in light of the fact

78 'Jaitapur May Jeopardise 15,000 Fishermen's Livelihood', *Sakal Times* (December 12, 2010), available at, http://www.sakaaltimes.com/sakaaltimesbeta/20101212/4747658152490648049.htm (last accessed on August 25, 2015).

79 Ibid.

80 'Fisherfolk Join The Fight Against Nuclear Plant In Jaitapur', *The Hindu* (Jan 18, 2010), available at http://www.thehindu.com/news/national/article81725.ece.

that generate from the area might fizzle the stringent prerequisites of European 'catch certificates' which request an affirmation of the area, profundity, temperature, and time of fishing.

Relatively few buyers in the created nations might relish consuming fish or mangoes developed in the area of nuclear reactors. Mango dispatches from Ratnagiri have been rejected in Japan on the grounds that hints of pesticides were found in the bundling material.

In addition, the population being particularly reliant on cultivating, agriculture and fishing, many individuals in Jaitapur-Madban make their living out of optional occupations including for example, mango and cashew handling, exchanging, transportation, retouching of fishing nets, maintenance of various kinds of equipment and machinery which need both skilled and unskilled labour services.

In 2006, the zone was nominated as an Agro-Economic Zone and Tourist Zone by the concerned divisions of the state government.

Kovvada Nuclear Power Plant [Andhra Pradesh]

The Communist Party India (M) urged the State government to stop land acquisition proposed at Kovvada town in Srikakulam area, as the Land Acquisition Bill 2013 was pending before the President for consent after it was received in both Houses of Parliament.

Depicting the notice issued for land acquiring under 1894 Act as "totally unjustified", CPI (M) State Secretary Narsinga Rao said that the new Act stipulates that no venture ought to be cleared without acquiring assent from 80 percent penny of the project affected people. It also envisages payment of compensation at the rate of four times the actual land value.

Rao said issuing of warning under Section 4 (1) of old Act was 'anti-people' and included that the district administration needed to obtain 481 segments of land and 94 pennies from Kotapalem and Ramachandrapuram panchayats of Ranasthalammandal. He charged that under the Indo-American Nuclear deal, India was under weight to import six reactors from General Electricals to create 6,000 MW power from the Kovvada plant.

"If the nuclear plant is set up at Kovvada, it will threaten the people living in the long stretch from Ichhapuram in Srikakulam to Kakinada in East Godavari due to radiation and radioactive waste storage and transportation," he said.[81]

Gorakhpur Nuclear Power Plant [Haryana]

In 2010 farmers also opposed land acquisitions for Nuclear Power Plants. Farmers of Gorakhpur-Kumharia town in Fatehabad area of Haryana, where the Nuclear Power Corporation of India Limited (NIPCL) arrangements to set up a Power plant, are extremely worked up against the government's move to get their territory. On August 17, several farmers submitted an update to the District Revenue Officer asking the authorities to procure another area for the plant.

The state government had issued a notice under the Land Acquisition Act, 1894, for procurement of almost 1,400 sections of land of town area for the plant. The villagers, whose area has gone under this warning, have additionally begun documenting distinctive complaints with the powers. As stated by the journalist, at a gathering held in the town Chaupal on August 16, the farmers have united, chosen to resist the administration's move and protested against it. The Kisan Sangharsh Samiti, which is leading the farmers' agitation, has issued an appeal opposing the land acquisition by the government for the nuclear power plant, citing amongst other things that:

- Radiation from the nuclear power plant will be a grave danger for the inhabitants of the zone and in addition for the plant and creature life and nature's turf.
- According to the Nuclear Council of India, no human home ought to be placed inside 100 km of an atomic force plant. Nonetheless, the locale where the area is proposed to be gained is occupied with a population thickness of about 1000 individuals for every square km. The power plant might bring about substantial scale dislodging of individuals and subsequent destruction of their lives and job. The legislature has, in this way, not exhibited any cement plan for the recovery of the villagers who might be uprooted as an after-effect of the plant.

81 Available at ,http://www.thehindubusinessline.com/news/states/ap-land-acquisition-for-nuclear-plant-in-srikakulam-opposed/article5390305.ece(last visited on 28 August 2015).

- The land proposed to be acquired for the nuclear plant is rich rural area, where agriculture utilizing present day technologies is practiced, and yielding 3 yields for every year.

The Haripur Nuclear Power Plant [West Bengal]

In attempting to assemble Nuclear Power Plants in West Bengal, the state has been faced by various legacies: the historical backdrop of local Communist rule; cultural memory of violent resistance to British colonialism; a movement against Special Economic Zones (SEZs) in response to neo-liberal economic policies in the 1990s and a deep suspicion of the nuclear establishment.

The SEZ violence, while not directly related to anti-nuclear protests, nevertheless helps illustrate how local political and social dynamics, rather than technological issues alone, have an important influence in the campaign against the government's nuclear energy ambitions. In Nandigram and Singur, community activism was spearheaded by Anuradha Talwar's organization, the West Bengal Agricultural Workers Union, also known by its Bengali acronym, Paschim Banga Khet Majdoor Samity. For example, the group pursued an independent fact-finding mission to investigate police atrocities, violence committed by villagers, and Communist party infighting. Earlier, in 2006 PBKMS mobilized six thousand villagers to create a bamboo barricade to prevent scientists, engineers, and police from entering the village to perform soil tests for the Nuclear Power Corporation of India. Talwar and her colleagues opposed potential human displacement and the lack of transparency concerning its consequences.

In all the protested areas as mentioned above, the impact is on the farmers with the loss of primary sources of livelihood of fishermen and tribal communities in particular. Those who have traditional rights on Natural Resources Sea and Forests for their livelihoods are the most affected community. Impact of land acquisition has a direct and indirect impact on them and their rights are being violated.

Thus, land acquisition for any project is an arduous task. The cooperation of the person parting with his land is required. Due compensation for deprivation of a person's property (although no longer a Fundamental Right) is an essential component of the Rule of Law in India now. In this backdrop, Section 21 of the Atomic Energy Act, 1962 read with Section 105(1) of the Land Acquisition

Act, 2013 as enumerated and analysed above defeats the law itself. The acquirer, that is the Central Government, is often the judge in its own cause and even on paper injustice is apparent. Courts have seldom interfered in matters relating to land acquisition for atomic energy and having land that falls within the area of a NPP or having land that is rich in atomic material has now proven to be a bane rather than a boon for the landowner. Precluded from invoking the provisions of the Land Acquisition Act, 2013 and left at the mercy of Section 21 of the Atomic Energy Act, 1962; the idea of just and fair compensation is a mirage. The structure thus perpetuates statutory, constitutional and human rights violations. NPPs stand on a "higher footing"[82] and the eminent domain thus has been able to justify this unjustifiable overreach.

Recommendations

The judicial and legal responses at the national and international level on civil nuclear liability demonstrates the necessity of the Act and the various drawbacks in the Act, the law governing the land acquisition for nuclear power plants, and impact on the environment of the nuclear power generation. Analysing, the Indian statutory framework 'Civil Liability for Nuclear Damage Act, 2010.' This Act fixes the liability for nuclear damage and specifies procedures for compensating victims. The liability cap fixed is very low as compared to the US. Absolute liability should be imposed on the operator of NPP as the measure of compensation in cases of absolute liability must correlate to the magnitude and capacity of the venture involved. The Central Government utilizing the forces vested as a part of it under Section 6 might do well to considerably increase the liability cap that might serve its actual reason for discouraging the members of atomic industry from surpassing security measures and systems.

The land acquired for NPP must not violate Human Rights of any person. The new Land Acquisition Act of 2013 under Section 105(i) excludes nuclear power from its purview and the land acquired for nuclear power plants is governed by Atomic Energy Act 1962 and this can be amended within one year. The government should revise the Atomic Energy Act. But the acquisition of various areas for NPP has violated the rights of farmers the most. The Law framed covers all the aspects to protect the human rights but the regulating and lack in implementation has taken a step forward to violate the human rights.

82 Per Justice Ranjana Desai in Bhikaji Jagannath Waghdhare And Others v. Union Of India And Others, Supra note 32, Paragraph 55.

This is the sensitive position of energy which has links with the three dimensions of sustainable development – economic, environmental, and social. Energy services are vital for economic and social development. As energy use will continue to grow, its health and environmental impacts will have to be controlled, alleviated or mitigated in order to achieve sustainable development goals. The main challenge of sustainable development in the energy sector is to extend the benefits of energy services to the world as a whole, and to future generations, without undermining the essential life support systems or the carrying capacity of the environment. Supply technologies, such as nuclear energy, have a role to play in this context. It involves large volumes of material flows, and large-scale infrastructures to extract, process, store, transport and use it, and to handle the waste. Conditions in which nuclear energy may contribute to meeting the goals of sustainable development must be followed. In India AERB's (Atomic Energy Regulatory Board) mission is to ensure that ionizing radiation and nuclear energy in India do not cause unacceptable impact on the health of workers, the public, or the environment complying with the IAEA scenario of the sustainability.[83] The Nuclear Power Corporation of India Limited (NPCIL) designs, builds, and operates the nuclear power generation facilities in India.[84] The IAEA has the five levels for the sustainable development to be attained. For the sustainability in power generation by the process of nuclear safety is must at all the four stages of the generation. Although at each stage it is achieved, waste management remains the major issue at the global level. Thus in the environmental dimension core indicators for the environmental dimension of sustainable development include criteria related to natural resource management, climate change, air and water quality, and biodiversity and landscapes. Environmental hazards arising from nuclear energy mainly result from radioactive emissions and waste.

The nuclear electricity generation chain does not release gases or particles that acidify rains, contribute to urban smog or deplete of the ozone layer. Carbon dioxide emissions from the entire nuclear fuel cycle are negligible. A nuclear plant will also offset the emission of SO_2, NO_2 and particulate matter, thereby contributing significantly to local air quality.[85]

83 Sustainable Energy, available at http://www.world-nuclear.org/info/Energy-and-Environment/Sustainable-Energy/ (last accessed on August 30, 2015).

84 Nuclear Reactor Regulation, available at http://www.nucleartourist.com/operation/nrc1.htm (last accessed on August 30, 2015).

85 Nuclear Energy in a Sustainable Development Perspective, Nuclear Energy Agency Organization For Economic Co-Operation And Development 8 (2000).

Radiological protection is essential to ensure that nuclear energy is compatible with sustainable development. The risks associated with radiation are among the most extensively studied hazards known to mankind. From a sustainable development perspective, waste management practices are intended to ensure the confinement and disposal of waste materials in a way that minimizes harmful impacts on humans and the environment at any time.

Safety measures are also a must. The amount of fuel to be transported for generating nuclear electricity is miniature, due to the high energy density of nuclear fuel. However, transport of nuclear fuel to and from nuclear power plants requires adequate packaging and regulatory measures to protect humans and the environment from being exposed to hazards from radiation. Physical security of sensitive materials should also be ensured. Regulations for the safe transport of radioactive material were published. Regulations for the harmless convey of radioactive material were published for the first time by the IAEA in 1961 and are revised and updated on a continuing basis. Since the mid-1980s, improvements to design and operating procedures which have lowered significantly the risk of accident and indicators for reactor safety, as well as for radiation protection, show continuing progress. Both accident prevention and accident mitigation will be improved by improvements in the design of the power plant. The rights of the future generation should not be curbed because of the present generation. Because it's also a part of social justice there will be inequality if the rights of future generation are violated. The judiciary underlines the utilitarian perspective the concern of the majority, and does not take the responsibility to look into the safety, which they give charge to the concerned authorities.

Operator's liability should be increased and the supplier's legal responsibility must not be left out. The AERB should be enabled to work as an independent operator. The AERB should not be headed by the Secretary, Department of Atomic Energy. This raises a clash of interests as the Department practices managerial control over NPCIL that operates nuclear power plants. The statutory regulator as recommended as AERB is just a notification and can be amended by DAE. Corporate Social Responsibility should be taken seriously. Use of Nuclear Power plant has many effects on human life, both positive and a negative impact. The positive impact is relied upon to improve the quality and solace of human life, yet the unanticipated negative impact may be a decrease

the quality and solace of human life. Natural administration and observation ought to be carried out to defeat the negative impacts that may occur. The owners of nuclear power plants needs to participate in CSR as a form of awareness of entrepreneurs to society. Preventive provisions are better than post-incident provisions, as illustrated by the Chernobyl disaster, whose after-effects cannot be quantified in monetary terms. Tough audits must be conducted by the government and international experts in the case of each nuclear installation; and false audit must result in heavy fines and punishment including criminal prosecution. Eradication of Corruption should be focused upon. The implications of the land acquisition provisions must be stressed upon. Preventing and Mitigating the Effects of Severe Accidents. Environmental Impact Assessment and Public Participation must be assured. The public should be given in-depth knowledge of the new technologies especially in the area where the plant is to be constructed so that there are no mass protests. This can be done through media, public speaking, seminars, television etc.

Conclusion

At the end, it must be recalled that everything is taken on at an expense. The world has recently recovered from three significant atomic debacles and cannot afford another. Along these lines the official leaders of the nations wishing to realize their vision of harnessing nuclear energy at a major scale must strive towards incorporating a risk-free method of using atomic energy to make the world a better and safer place to live in.

To change our future we should deliberately lead our present. Any choice in regards to nuclear power ought not to be taken in haste, and proper discussion must be embraced when launching any advancement in the nuclear power programs.

As pointed out by the supreme court in *G Sundarajan* case, there exist various codes and safety standards issued by the AERB, mainly dealing *inter alia* with sitting, design, construction, operation, quality assurance, decommissioning. Safety codes and safety standards are formulated based on nationally and internationally accepted safety criteria for design, construction of specific equipment, systems, structures and components of nuclear and radiation facilities.

Development and social justice must go hand in hand. In emergency the developing countries like India requires nuclear energy. In this globalizing world

it is the need. But one must not shrink its principles for the sake of Globalization. It is suggested that we tread cautiously in our attempts to harness nuclear energy. The prospect of using nuclear energy viewed from the number of positives it generates is indeed heartening. These positives may be in the form of cleaner energy and revenue generation due to the nuclear pacts that follow. Nevertheless, land used is very closely linked to environment and has impact on the environment. Any contamination in land starts the chain reaction contaminating the water and air also. Life forms on land such as plants and animals are also directly affected by the nature of the land use.

Civil Liability for Nuclear Damage in India

Dr. Sandeepa Bhat B.[*]

Abstract

The liability for nuclear damage is a worldwide hotly debated issue in the present context, especially in the light of wide-scale devastation that may be resulted in a nuclear accident. Such a huge potentiality of damage is witnessed as not merely a possibility but as a reality by the mankind in the form of Chernobyl and Fukushima disasters. These two eye-openers have brought forward the moot question on the need and efficacy of future use of nuclear energy in many national and international fora. While nuclear energy cannot be discarded completely, at least until the advent of efficient alternative means of energy, the States have thought in terms of bringing in confidence in the mind of people by strengthening the safety and safeguard mechanisms as well as by adopting the regime of liability to adequately compensate the victims in case of happening of unexpected. In this backdrop, India has enacted the Civil Liability for Nuclear Damage Act in 2010 to take care of the issue of liability in case of nuclear damage. This Act tries to be in consonance with the Annex of Convention on Supplementary Compensation 1997, which India is keen to ratify. However, in its zeal to ratify the Convention, India seems to drift towards certain American ideologies rooted in the Convention, which might not suit to the Indian conditions. Moreover, the Act finds itself in the centre of criticism on the points of sphere of application, right of recourse, adjudication and limitation period. A probe into the Indian legal position, before the private players enter into the field as operators, is absolutely essential to avoid chaos in the future.

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Introduction

The advent of atomic energy in the first half of the twentieth century and its use in the World War II[1] has shaken the world community. With the knowledge of its potentiality to destroy, the States, led by the United States, advocated for the commercial use of nuclear energy.[2] The shift from initial military use of nuclear materials to the commercial use has not transformed nuclear activities to be free from dangers. The wide scale damage to person and property that can be inflicted by a nuclear disaster is evidenced in Chernobyl and Fukushima catastrophes. Despite the arguments for use of other alternative and safer energy sources, the use of nuclear energy is continuing among the nuclear power States. It is also expected to continue at least until breakthroughs in the efficient use of alternative energy sources to meet the needs of growing population.

Over the years, India has established itself as a major player in the field of nuclear activities. It has an ambitious plan of expanding its nuclear activities to meet the demand. Interestingly, India is not a party to any of the international conventions dealing with the liability for damage caused by nuclear activities.[3] Also until 2010, no efforts were made at the national level to deal with the issue. Consequently, questions have often arisen as to the liability for nuclear damage in India. The Civil Liability for Nuclear Damage Act (CLNDA) 2010 has been enacted with a view to find answers to these questions as well as to provide mechanism for settlement of claims. However, due to certain unique provisions, the Act has become the bone of contention for other States as well as for foreign suppliers of nuclear materials. This chapter would critically analyse the provisions of the CLNDA to find out the merits in concerns expressed.

1 On 6 August 1945 first atomic bomb was dropped on Hiroshima, and three days later, second bomb was dropped on Nagasaki immediately killing 80,000 and 40,000 people respectively. Many more died later due to the exposure to radiation. *See* 'Bombing of Hiroshima and Nagasaki', available at <http://www.history.com/topics/world-war-ii/bombing-of-hiroshima-and-nagasaki> (last accessed on August 31, 2015).

2 United States' advocated for "Atoms for Peace" programme in 1953 to divert the military use of atomic energy to commercial use. See "Atoms for Peace" Address Before the General Assembly of the United Nations on Peaceful Uses of Atomic Energy, New York City, December 8th, 1953, available at <http://www.eisenhower.archives.gov/all_about_ike/speeches/atoms_for_ peace.pdf> (last accessed on August 31, 2015).

3 Paris Convention on Third Party Liability in the Field of Nuclear Energy 1960, Vienna Convention on Civil Liability for Nuclear Damage 1963 and Convention on Supplementary Compensation 1997 are the three major conventions in the international level.

Background of the CLNDA

Energy need in India has been significantly growing with its ever-increasing population. With the exhaustion of traditional sources of energy, obvious search for other sources has led the way for resorting to nuclear energy in 1950s. At the initiative of Homi Jehangir Bhabha research works started in Tata Institute of Fundamental Research.[4] The first research reactor, 'APSARA', was constructed in 1956 to write the name of India in the books of history as the first Asian State, outside the erstwhile Soviet Union, to construct a nuclear reactor.[5] India has aggressively continued its peaceful nuclear activities after this achievement and established several research and commercial nuclear reactors all over the country.[6] Currently, India has 21 operating nuclear reactors with the installed capacity of 5780 MW.[7] There is an ambitious plan of increasing the capacity to 63,000 MW by 2032 with the construction of 16 more nuclear plants.[8]

The Atomic Energy Act of 1948 is the first Indian legislation on the use of atomic energy, which established the Atomic Energy Commission to look after the atomic energy activities. With the vision of empowering India through technology, creating more wealth and providing better quality of life with the effective use of nuclear technology, the Department of Atomic Energy (DAE) was established in 1954 directly under the charge of the Prime Minister.[9] The 1948 Act was repealed in 1962 with the new Act, which established the Atomic Energy Regulatory Board (AERB) to lay down safety standards and to formulate

4 B. V. Sreekantan (talk), 'Homi Jehangir Bhabha: A Visionary', *Resonance*, 2010, pp. 462 - 475 at p. 465.

5 S. A. Bhardwaj, 'Indian Nuclear Power Programme – Past, Present and Future', *Sadhana*, Vol. 38, Part 5, 2013, pp. 775 - 794 at pp. 779 & 780.

6 M. V. Ramana, 'The Indian Nuclear Industry: Status and Prospects', *Nuclear Energy Futures Paper No. 9*, 2009, pp. 2 - 6, available at <https://www.cigionline.org/sites/default/files/nuclear_energy_wp9.pdf> (last accessed on October 13, 2015).

7 *See* <http://www.npcil.nic.in/main/AllProjectOperationDisplay.aspx> (last accessed on October 13, 2015).

8 'India eyeing 63,000 MW nuclear power capacity by 2032: NPCIL', *The Economic Times*, October 11, 2010, available at http://articles.economictimes.indiatimes.com/2010-10-11/news/27616582_1_pressurised-heavy-water-reactors-fuel-cycle-indian-nuclear-society (last accessed on October 13, 2015).

9 *See* <http://dae.nic.in/?q=node/159> (last accessed on October 13, 2015).

necessary rules and regulations.[10] The 1962 Act was further amended in 1986 and 1987.[11] However, the Atomic Energy Act did not deal with the third party liability for the damage caused by nuclear activities. Consequently the general principles of tort law were applicable in the determination of liability for nuclear damage.[12] But the situation was far from satisfactory due to the absence of clarity. Uncertainties were clearly evident in the determination of basis of liability itself, since there was no idea as to the application of negligence based liability or strict / absolute liability.[13] It was also not clear as to the person or entity that can be made liable to pay compensation.

Meanwhile, the international norms on the nuclear liability developed in the form of Paris Convention 1960,[14] Vienna Convention 1963[15] and Convention on Supplementary Compensation 1997.[16] Both Paris Convention and Vienna Convention are amended with supplementary conventions and protocols over the period of time.[17] These instruments have tried to codify some of the fundamental norms on nuclear liability, which include: (a) Channelling of liability against the operator; (b) Strict liability for damage; (c) Limiting the liability in terms of time and amount; and (d) Procuring insurance coverage or financial security.

India is not a party to any of the above mentioned international instruments. Therefore, the fundamental principles enshrined under the international norms are not applicable directly in India. India has shown its interest in becoming a party to the Convention on Supplementary Compensation, which requires the

10 G. Sundarrajan v. Union of India and Others (2013) 6 SCC 620.

11 *See* <http://dae.nic.in/?q=node/153> (last accessed on October 13, 2015).

12 Mohit Kumar Gupta, 'India's 2010 Civil Liability for Nuclear Damage Act: An Analysis of Domestic and International Legal Issues', *Indian Journal of International Law*, Vol. 51, 2011, pp. 100 - 109 at pp. 101 & 102.

13 *See* Sumeet Kachwaha, 'Indian Experience on Nuclear Commerce and Liability Issues', *Construction Law International*, Vol. 5, Issue 1, 2010, pp. 19 - 22 at pp. 21 & 22.

14 Paris Convention on Third Party Liability in the Field of Nuclear Energy 1960.

15 Vienna Convention on Civil Liability for Nuclear Damage 1963.

16 Convention on Supplementary Compensation 1997.

17 Brussels Supplementary Convention 1963, Protocol to Amend the Paris Convention 2004 and Protocol to Amend the Brussels Supplementary Convention on Nuclear Third Party Liability 2004 are entered for amending Paris Convention. Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage 1997 is the amendment of Vienna Convention.

States to adopt municipal regime to deal with the nuclear liability in compliance with the principles enshrined under the Convention.[18] Therefore, the national legislation to deal with the nuclear liability in India was found indispensible.

As mentioned in the Preamble, the CLNDA carries the objective of fixing liability for nuclear damage on operator and ensuring prompt compensation to the victims.[19] The Act not only applies to nuclear damage suffered in different maritime zones of India but also to any damage suffered on board the Indian registered ship or aircraft and any artificial island, installation or structure under Indian jurisdiction.[20] However, the Act is applicable only with respect to those nuclear installations, which are owned or controlled by the Central Government.[21] Therefore, the status of private operators, though there is no one at present, is not dealt under the legislation.

Definition of Nuclear Damage

The definition of nuclear damage itself has evolved over the period of time. The international treaties initially had a restrictive definition of nuclear damage with only covering actual economic losses.[22] However, the coverage of nuclear damage has been expanded over the period of time, which is also reflected under Section 2 (g) of the CLNDA.

18 A. Vinod Kumar and Kapil Patil, 'Resolving India's Nuclear Liability Impasse', *IDSA Issue Brief*, 8 December 2014, pp. 1 - 8 at p. 3.

19 The Preamble states: "An Act to provide for civil liability for nuclear damage and prompt compensation to the victims of a nuclear incident through a no-fault liability regime channeling liability to the operator, appointment of Claims Commissioner, establishment of Nuclear Damage Claims Commission and for matters connected therewith or incidental thereto."

20 Sec. 1 (3).

21 As per Sec. 1 (4): "It applies only to the nuclear installation owned or controlled by the Central Government either by itself or through any authority or corporation established by it or a Government company."

22 Vedran Soljan, 'The New Definition of Nuclear Damage in the 1997 Protocol to Amend the 1963 Vienna Convention on Civil Liability for Nuclear Damage', in Patrick Reyners (ed.), Reform of Civil Nuclear Liability, (Paris: Organisation for Economic Cooperation and Development, 2000) pp. 59 - 83 at pp. 61 & 62. Patrick Blanchard, 'Responsibility for Environmental Damage under Nuclear and Environmental Instruments: a Legal Benchmarking', *Journal of Energy & Natural Resources Law*, Vol. 18, No. 3, 2000, pp. 233 - 253 at p. 235.

Meaning of 'nuclear damage' under the Act extends to three broad categories of damage: (a) damage to person or property; (b) damage to environment; and (c) cost incurred in taking preventive measures. Under the first category, loss of life, personal injury, and loss of or damage to property are covered as compensable damage. In addition, any economic loss arising from such loss or damage is also covered within the ambit of the definition. The personal injury would cover both immediate and long term health impact to a person. Under the second category, any cost involved in the reinstatement of impaired environment and any loss of income derived from an economic interest in any use or enjoyment of the environment is covered. However, the claim under these heads can be made only if there is no claim for same damage under the head of loss of or damage to property. Under the third category, cost incurred in taking necessary preventive measures, and further loss or damage caused by such measures are compensable. However, such preventive measures can be taken only subject to the approval of Central Government.[23]

In addition to the above three categories, the Act mentions to cover within the definition of nuclear damage "any other economic loss, other than the one caused by impairment of the environment..., in so far as it is permitted by the general law on civil liability in force in India and not claimed under any such law."[24] However, if this Act is intended to be a comprehensive piece of legislation, as reflected in the drafting history and interaction with the drafters,[25] leaving the scope for liability for nuclear damage under any other legislation seems to be contrary to the intended objective. Though this clause reflects the recent developments in the international treaties,[26] it is not clear in the Indian context.

Any occurrence or series of occurrences having the same origin which causes nuclear damage or creates a grave and imminent threat of causing such damage is defined as 'nuclear incident'.[27] While the nuclear damage is directly

23 Sec. 2 (o).

24 Sec. 2 (g) (vii).

25 Author had the opportunity to interact with the persons involved in preparing the draft of the CLNDA during the contact sessions of Post Graduate Diploma in Nuclear Law held in the BARC Campus, Mumbai.

26 Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage 1997 and Convention on Supplementary Compensation 1997 contain such provision.

27 Sec. 2 (i).

compensable, grave and imminent threat of causing such damage is compensated only when the preventive measures are taken with the approval of Central Government. Therefore, the task of determining *grave and imminent threat*[28] rests with the Central Government. In case of nuclear incident resulting in nuclear damage and also damage other than nuclear damage which are not separable, the totality of the damage is deemed to be nuclear damage caused by the nuclear incident compensable under the Act.[29]

Under Section 3 of the Act, the Atomic Energy Regulatory Board (AERB) is duty bound to notify the nuclear incident within fifteen days from the occurrence of a nuclear incident, unless AERB is satisfied that the gravity of threat and risk involved in a nuclear incident is insignificant. Soon after the notification, AERB must also give wide publicity about the occurrence of nuclear incident. This helps the victims to ascertain their losses and put forward the claims at the earliest.

LIABILITY NORMS UNDER THE ACT

Operator's Liability

The CLNDA channelizes primary liability for nuclear damage on the operator of nuclear installations.[30] The 'operator' of nuclear installation for the purposes of the Act means, "the Central Government or any authority or corporation established by it or a Government company who has been granted a licence pursuant to the Atomic Energy Act, 1962 for the operation of that installation."[31] The liability applies to the incidents both within nuclear installation[32] and transport.

28 Emphasis added.

29 Sec. 4 (4), Explanation (d).

30 Sec. 4.

31 Sec. 2 (m).

32 As per Sec. 2 (j): "nuclear installation" means-

(A) any nuclear reactor other than one with which a means of transport is equipped for use as a source of power, whether for propulsion thereof or for any other purpose;

(B) any facility using nuclear fuel for the production of nuclear material, or any facility for the processing of nuclear material, including re-processing of irradiated nuclear fuel; and

(C) any facility where nuclear material is stored (other than storage incidental to the carriage of such material).

Explanation.-For the purpose of this clause, several nuclear installations of one operator which are located at the same site shall be considered as a single nuclear installation;

Explanation to Section 4 mentions certain person or entity deemed as operator/s liable in specific circumstances. As per the explanation, the person responsible for transit of nuclear material would be deemed as the operator where the damage is consequent to the nuclear incident occurring in a nuclear installation on account of temporary storage of material in transit. The consignor is deemed to be the operator if the damage is caused during the transportation of nuclear material. The Act also gives liberty to consignor and consignee or consignor and carrier of nuclear material to agree in writing the person liable as operator.

Since the risk of damage is immense, the Act imposes strict liability[33] on the operator subject to certain exceptions. In case of more than one operator liable for nuclear damage, the liability of the operators shall be joint and several.[34] Hence, the victim is at his liberty to proceed against one of the operators or against all concerned operators to get the total compensation due to him.

Exoneration and Limits of Liability

Section 5 of the Act provides several defences to the operator in case of nuclear damage. First, operator is exonerated from liability in the cases wherein the nuclear incident causing the damage is directly due a *grave natural disaster of an exceptional character.*[35] However, there are no set criteria for determining grave natural disaster of an exceptional character. This leaves sufficient scope for determination by adjudicating authorities, which may be problematic in the absence of repetitive practices to develop the standard. Second, if the nuclear incident is consequent to an act of armed conflict, hostility, civil war, insurrection or terrorism, the operator is not liable to pay compensation.[36] Third, the operator is also exonerated from liability, if the damage is suffered by a person on account of his own negligence or from his own act of commission or omission.[37] In addition to above exonerations, the operator is also not liable for any nuclear damage caused to the nuclear installation, to any property on the same site used in connection with the installation and to the means of transport used at the time of nuclear incident.[38]

33 Sec. 4 (4).
34 Sec. 4 (2).
35 Emphasis added. Sec. 5 (1) (i).
36 Sec. 5 (1) (ii).
37 Sec. 5 (3).
38 Sec. 5 (2).

Section 6 of the Act fixes a maximum liability of 300 million SDR with respect to damage caused by each nuclear incident.[39] This limit may be increased by the Central Government by notification.[40] The Central Government *may*[41] take additional measures to pay compensation, if the compensation to be awarded exceeds the limit of liability. Thus, payment of any compensation above the limit of liability is at the mercy of the Central Government.

Within the maximum limit of liability, the Act creates two tiers of liability by fixing the limit of liability for different operators separately. At the first tier, the limit of liability for operator is fixed at three different levels depending on the nature and capacity of nuclear operation carried on by the operator. First, Rs. 1,500 crores is the limit of liability of the operator of nuclear reactors having thermal power equal to or above 10 MW. Second, Rs. 300 crores is the limit of liability of the operator of spent fuel processing plants. Third, Rs. 100 crores is the limit of liability of the operator of research reactors having thermal power below 10 MW, fuel cycle facilities other than spent fuel processing plants and transportation of nuclear materials. This limit of liability of operators may also be increased by the Central Government by notification.[42]

In case of joint and several liability of multiple operators for nuclear damage, total liability of operators shall not exceed the limit of liability specified above. If the nuclear incident causing damage originates from several nuclear installations of same operator, the operator concerned would be separately liable to the extent of above mentioned limit of liability with respect to each such nuclear installation.[43]

At the second tier, the Central Government is liable to pay the compensation for nuclear damage exceeding the limit of liability of the operator. Hence, any compensation amount in excess of maximum liability of operator and below the limit of 300 million SDR attracts the liability of the Central Government.

39 Limiting the liability of the operator has developed historically due to the inability of the operator to get the requisite insurance coverage and the consequential risk of operator being bankrupt in an event of disaster. See Suvrat Raju and M. V. Ramana, 'The Other Side of Nuclear Liability', *Economic & Political Weekly*, Vol. XLV, No. 16, 2010, pp. 48 - 54 at p. 51.

40 Sec. 6 (1).

41 Emphasis added.

42 Sec. 6 (2).

43 Sec. 4 (3).

The Central Government is also liable to pay compensation for any nuclear damage caused by a grave natural disaster of exceptional character or by an act of armed conflict, hostility, civil war, insurrection or terrorism.[44] For shouldering this second tier liability, the Central Government is empowered to establish Nuclear Liability Fund by charging levy from the operators.[45] In case the nuclear damage is caused by an incident in the nuclear installation owned by the Central Government, it shall be liable to pay the full amount of compensation subject to the maximum limit of liability.[46]

In order to meet the liability, operator is obligated to take insurance coverage or financial security or combination of both to the extent of liability prescribed under the Act. Insurance or the financial security requirement is a precondition to be complied with by the operator before the beginning of operation.[47] However, this requirement is not applicable to the installation owned by Central Government.[48]

Settlement of Claims

In order to adjudicate the claims for nuclear damage, one or more Claims Commissioners are to be appointed by the Central Government for each area.[49] The Claims Commissioner is empowered to take the assistance of persons having expertise in the nuclear field or such other persons as may be required.[50] Claims Commissioner is deemed to be a civil court[51], and the powers vested in a civil court under the Code of Civil Procedure 1908 are enjoyed by the Claims Commissioner on several matters.[52]

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44 Sec. 7 (1).
45 Sec. 7 (2).
46 Sec. 7 (1).
47 Sec. 8 (1).
48 Sec. 8 (3).
49 Sec. 9.
50 Sec. 12 (2).
51 Sec. 12 (5).
52 Sec. 12 (4) covers the following matters in this regard:
(a) summoning and enforcing the attendance of any person and examining him on oath;
(b) the discovery and production of documents;
(c) receiving evidence on affidavits;
(d) requisitioning any public record or copies thereof from any court or office;
(e) issuing of commission for the examination of any witness;
(f) any other matter which may be prescribed.

Once the AERB notifies the nuclear incident under Section 3 of the Act, concerned Claims Commissioner is duty bound to give wide publicity for inviting applications for claiming compensation for nuclear damage.[53] The victim, legal representatives of victim or person duly authorised by the victim are entitled to put forward any claim for nuclear damage.[54] The Claims Commissioner has to dispose of the application for compensation within three months from the receipt by making an award.[55] Such an award of the Claims Commissioner is final.[56] Thus, the Act provides for speedy disposal of claims giving relief to the victims without undue delay. The Claims Commissioner is also empowered to provide interim relief in the form of temporary injunction to restrain the operator from removing or disposing of his property.[57]

The Central Government may establish Nuclear Damage Claims Commission instead of Claims Commissioner to adjudicate damage, if having regard to the injury or damage caused, the Central Government forms an opinion that it is expedient in the public interest to establish such commission.[58] The Commission consists of a Chairperson and other members, not exceeding six. All appointments are done by the Central Government upon the recommendation of a Selection Committee.[59] For the purpose of hearing of claims, the Chairperson of the Commission is empowered to constitute benches comprising of not more than three members of the Commission.[60]

Similar to Claims Commissioner, the Claims Commission enjoys powers vested with a civil court under the Code of Civil Procedure 1908.[61] The Commission is empowered to regulate its own procedure and it is not bound by the procedure laid down in the Code of Civil Procedure. However, the Commission is guided by the principles of natural justice.[62] The provisions relating the Claims Commission on time period for making the award, granting temporary relief and finality of award are same as that of the Claims Commissioner.

53 Sec. 13.
54 Sec. 14.
55 Sec. 16 (1).
56 Sec. 16 (5).
57 Sec. 16 (3).
58 Sec. 19.
59 Sec. 20.
60 Sec. 32 (3).
61 Sec. 32 (5).
62 Sec. 32 (4).

Section 35 of the Act ousts the jurisdiction of civil courts, except the Supreme Court and High Courts, to entertain any suit or proceeding on the matter that the Claims Commissioner or Commission is empowered to adjudicate. The proceedings before the Claims Commissioner or the Commission are deemed to be judicial proceedings.[63]

Section 36 provides the procedure for enforcement of award of Claims Commissioner or Commission. First of all, the insurer or any person who had guaranteed financial security is obligated to deposit the amount to meet with his liability agreed under the contract with the operator.[64] Next, the operator concerned must deposit the amount constituting difference between the amount in excess of insurance coverage or financial security and operator's maximum liability stipulated under the Act.[65] In case of failure of insurer/person providing financial security or of the operator, the compensation amount can be recovered as arrears of land revenue.[66] Finally, the amount deposited has to be disbursed to the victims within fifteen days of deposit.[67]

Offenses and Penalties

Sections 39 to 42 outline the offenses and penalties under the Act. Any offence committed by a company is attributed to every person who was directly in charge of and was responsible to the company for the conduct of its business at the time of the offence and also to the company.[68] In case the offence is committed by the government department, the Head of the Department is held guilty of the offence.[69] However, the individual liability under above provisions is exempted when the individual concerned proves that he had no knowledge of the offence or that he had exercised all due diligence to prevent the commission of such offence. The jurisdiction of courts below the Metropolitan Magistrate or Judicial Magistrate of First Class is ousted under the Act.[70] Moreover, the cognizance of offence can be taken only

63 Sec. 34.
64 Sec. 36 (1) (a).
65 Sec. 36 (1) (b).
66 Sec. 36 (2).
67 Sec. 36 (3).
68 Sec. 40.
69 Sec. 41.
70 Sec. 42.

upon a complaint made by the Central Government or by an officer authorised by the Central Government.[71]

MAJOR AREAS OF CONCERN

Sphere of Application

As discussed above, the Act is made applicable only to the nuclear installations owned or controlled by the Central Government either by itself or through any authority or corporation established by it or a Government company.[72] This is supplemented by the definition of 'operator' under Section 2 (m), which states that "operator, in relation to a nuclear installation, means the Central Government or any authority or corporation established by it or a Government company who has been granted a licence pursuant to the Atomic Energy Act, 1962 for the operation of that installation." It is interesting to note that there is only one such operator at present in India, that is, Nuclear Power Corporation of India Limited (NPCIL), a public sector undertaking directly under the administrative control of DAE.[73] Bharatiya Nabhikiya Vidyut Nigam Limited (BHAVINI) is going to be the second such operator in the near future tasked with operating the fast breeder reactors.[74] However, both are government owned corporations, and there is no other player coming within the definition of 'operator' who would be liable under the Act.

In the light of above circumstances, the practical utility of the Act itself is in question. The two tier liability regime under Section 6 of the Act seems to be insignificant, since the Central Government would have to shoulder liability under both tiers.[75] Similarly, exoneration of operator from liability under Section 5 and making Central Government liable in some of such circumstances under Section 7 also doesn't make any sense. Thus, it creates confusion as to the real intention of drafters

71 Ibid.

72 Sec. 1(4).

73 See <http://www.npcil.nic.in/main/AboutUs.aspx> (last accessed on October 13, 2015).

74 'India's Fast Breeder Reactor Project to Start by September, Says Officials', available at <http://www.ndtv.com/chennai-news/indias-fast-breeder-reactor-project-to-start-by-september-says-officials-772478> (last accessed on October 13, 2015.

75 Debu C., 'Nuclear Liability Law: What's the Big Deal?', available at <http://www.mapsofindia.com/my-india/government/nuclear-liability-law-whats-the-big-deal> (last accessed on October 13, 2015).

while enacting the legislation. In addition, this arrangement is in contrast with the national laws of other States, wherein the first tier liability is on private operators.

Right of Recourse

Under Section 17 of the Act, the operator paying compensation for nuclear damage has right of recourse against others in three circumstances. First, if such a right is expressly provided in a contract in writing. Second, if the nuclear incident has resulted as a consequence of an act of supplier or his employee. Such act includes supply of equipment or material with patent or latent defects or sub-standard services. Third, if the nuclear incident has resulted from the act of commission or omission of an individual done with the intent to cause nuclear damage.

The suppliers' liability under Section 17(b)[76] has been the bone of contention for suppliers of nuclear material from different countries. They have vehemently argued that such a liability of suppliers under the Indian law is against the international norms, which channelize the liability on operator.[77] On the one hand, the United States' suppliers are expecting India's early ratification of Convention on Supplementary Compensation, which they believe, would relieve them from liability under the Indian legislation, since the United States' does not recognise such a right of recourse by the party to Convention on Supplementary Compensation.[78] On the other hand, the Russian suppliers have invoked the Intergovernmental Agreement (IGA) signed by Indian and Russian governments to exempt the liability of Russian suppliers from nuclear liability.[79]

However, the contentions of both United States and Russian suppliers are controversial. The argument of United States' suppliers brings forward a situation of conflict between the international law and Indian domestic law. While the United States may not recognise the right of recourse by a party to

76 Suppliers' liability for supply of equipment or material with patent or latent defects or sub-standard services.

77 Mohit Abraham and M. P. Ram Mohan, 'Don't waver now on nuclear liability', *The Hindu*, September 20, 2013, available at <http://www.thehindu.com/opinion/lead/dont-waver-now-on-nuclear-liability/article5147177.ece> (last accessed on October 09, 2015).

78 Supra note 18.

79 Ifrah Shaikh and Swati Bisen, 'The Civil Liability for Nuclear Damages Act 2010 – A Detour from the International Regime', *Journal of Economics, Business and Management*, Vol. 3, No. 12, 2015, pp. 1152 - 1158 at p. 1157.

Convention on Supplementary Compensation, India would not hesitate from applying its domestic law to hold United States' suppliers liable. This would bring forward serious issues in the enforcement of Indian judgments in United States. The Russian suppliers' claim of exemption from liability on the basis of 2008 IGA brings forward the question as to the competence of the executive to waive suppliers' liability much against the legislative intent reflected in the CLNDA. Moreover, such a waiver of suppliers' liability would go against the public interest, since operators' liability in the Indian context would mean payment from taxpayers' money.[80] Thus, it would be impermissible for either Government of India or nuclear operator to waive the liability of suppliers in the light of Supreme Court's verdict in *Krishna Bahadur v. Purna Theatres*.[81]

Applicability of Other Laws

Section 46 of the Act states that "The provisions of this Act shall be in addition to, and not in derogation of, any other law for the time being in force, and nothing contained herein shall exempt the operator from any proceeding which might, apart from this Act, be instituted against such operator." This provision brings forward twofold issues on nuclear liability. Firstly, the possibility of application of tort law principles to fix liability on operators. Such a possibility would be a departure from the liability scheme provided under the CLNDA as well as international standards. While the absolute liability principle[82] under the Indian tort law may replace the strict liability enshrined under the Act, the limit of liability under the Act may be lifted by the application of tort law.

Secondly, the possibility of the victims of nuclear incidents proceeding against the suppliers for compensation under the tort law cannot be ruled out.[83] Therefore, the channelling of liability under the Act would be breached by the application of municipal tort law. The Ministry of External Affairs, in an effort to impress the United States, has stated that "The CLND Act channels all legal liability for nuclear damage exclusively to the operator and Section 46 does not

80 Supra note 77.

81 AIR 2004 SC 4282.

82 *See* M.C. Mehta v. Union of India 1987 AIR 1086; 1987 SCR (1) 819. The absolute liability principle developed by the Indian Supreme Court is understood to be much stringent than the strict liability regime due to the absence of any exception to the principle.

83 Norbert Pelzer Gottingen, 'The Indian Civil Liability for Nuclear Damage Act, 2010 – Legislation with Flaws?', *International Journal for Nuclear Power*, Vol. 56, Issue 1, 2011, pp. 1 - 9 at p. 5.

provide a basis for bringing claims for compensation for nuclear damage under other Acts. That this section applies exclusively to the operator and does not extend to the supplier is confirmed by the Parliamentary debates at the time of the adoption of this Act."[84] However, the wordings of Section 46 do not seem to support this argument.

Element of Bias in Decision-making

Adjudication of claims under the Act is done by the Claims Commissioner or Claims Commission as the case may be. It is interesting to note that all appointments to these adjudicating bodies are done by the Central Government, which would be the respondent in any case of nuclear liability before these adjudicating bodies. Added to this, the Central Government is having significant control on the adjudicating bodies under the Act. This is reflected under Section 37, which mandates the Claims Commission to report to the Central Government[85], and Section 38(1), which confers power to the Central Government to dissolve the Claims Commission[86].

Conferment of such wide powers to the Central Government in the process of adjudication goes against one of the most significant principles of natural justice; rule against bias.[87] Even if the Central Government is argued to be unbiased, still the present setup would go against the principle that justice should not only be done, but also seem to be done.[88] Whatever may be the amount of

84 Suhasini Haidar, 'No change in nuclear liability law: MEA', *The Hindu*, February 8, 2015, available at <http://www.thehindu.com/news/national/mea-on-indous-negotiations-no-changes-to-the-law/article6871193.ece> (last accessed on October 09, 2015).

85 Sec. 37: The Commission shall prepare, in such form and at such time in each financial year, as may be prescribed, an annual report giving full account of its activities during that financial year and submit a copy thereof to the Central Government which shall cause the same to be laid before each House of Parliament.

86 Sec. 38 (1): Where the Central Government is satisfied that the purpose for which the Commission established under section 19 has served its purpose, or where the number of cases pending before such Commission is so less that it would not justify the cost of its continued function, or where it considers necessary or expedient so to do, the Central Government may, by notification, dissolve the Commission.

87 See generally Matthew Groves, 'The Rule Against Bias', *Hong Kong Law Journal*, Vol. 39, 2009, pp. 485 - 514.

88 *See* R v. Sussex Justices, Ex parte McCarthy [1924] 1 KB 256; [1923] All E Rep 233. *See also* Rikki J. Klieman, 'Justice Must Not Only Be Done - It Must Be Seen to Be Done', *AALL Spectrum*, 1997, available at <http://www.aallnet.org/mm/Publications/spectrum/archives/Vol-1/pub_sp9707/pub-sp9707-justice.pdf> (last accessed on October 30, 2015).

compensation fixed by the adjudicating bodies, the common man would always think it to be insufficient and biased towards the respondent, Central Government. Ousting of jurisdiction of the civil courts under the Act adds fuel to the element of bias, since the victims are not left with any option, even if they have no faith in the adjudicating bodies under the Act.

Period of Limitation

Section 18 of the Act provides period of limitation for claiming compensation, which is ten years for damage to property and twenty years for personal injury. The period of limitation is computed from the date of occurrence of incident as notified under the Act. Though this provision is in accordance with the provisions of Convention on Supplementary Compensation,[89] the time period provided seems to be very less in light of the fact that the nuclear damage may occur at a time much later than the period of limitation specified above. It is now well accepted that the personal injury from nuclear incident may be detected much later than twenty years due to the slow development of diseases like cancer. This is why the amendments to Paris Convention[90] and Vienna Convention[91] have extended the time period to thirty years from the occurrence of nuclear incident.

Going by the Convention on Supplementary Compensation, Sections 15(2) and 31(2) inject additional requirement of putting forward the claim for compensation within three years from the date of knowledge of nuclear damage by the person suffering such damage. This might also be cumbersome due to the fact that the person suffering damage may be incapacitated for a long time to put forward a claim for compensation due to his medical condition, and he might not also have any representative to claim on his behalf.

Conclusion

Given the devastating effects of nuclear energy in the event of disaster, the world community is certainly worried about the future use of nuclear energy. In the absence of codified international liability regime for nuclear damage, the

89 See Art. 9, Annex of Convention on Supplementary Compensation.

90 *See* Protocol to Amend the Convention on Third Party Liability in the Field of Nuclear Energy of 29 July 1960, As Amended by the Additional Protocol of 28 January 1964 and by the Protocol of 16 November 1982, 2004.

91 *See* Protocol to Amend Vienna Convention on Civil Liability for Nuclear Damage 1997.

public concern on the use of nuclear energy has multiplied in the recent past. Added to this, only a handful of States have enacted national legislation on liability for nuclear damage, which has eventually left such a significant issue in most of the jurisdictions to be exclusively remedied under the uncodified tort law principles. This has been the situation in India until the enactment of CLNDA in 2010.

The CLNDA is the starting point of development of jurisprudence on nuclear liability in India. Undoubtedly, the efforts behind the enactment are commendable, which is reflected in some of the provisions that deviate from the orthodox standards. Right of recourse against the supplier, for example, is a step forward especially in light of the fact that time has ripen for suppliers to shoulder their share in nuclear liability. It makes more logical to take away the earlier privilege of exoneration of suppliers from liability, since they have become wealthy enough to compensate for their mistakes in the form of supply of defective equipment or material, or rendering of sub-standard services. Liability for such mistakes of suppliers cannot be transferred to the operator in the Indian context, since the operator covered under the Act would ultimately be the Central Government, and thus, payment of compensation would ultimately be from public funds.

However, the Act is not free from loopholes. In the absence of private operators in India, the practical implication of the Act, on many counts mentioned above, itself would be a moot question. Possibility of application of other domestic laws under Section 46 would also take away the effectiveness of the Act, since many claimants would prefer the application of tort law to nullify the effect of exoneration clauses and limits of liability under the Act. Moreover, the claimants may also prefer the judicial settlement by the application of tort law to prevent the possibility of bias in the decision-making as discussed above. Finally, the zeal to become party to the Convention on Supplementary Compensation has also brought in the concerns on period of limitation. Thus, it can be safely concluded that India has taken a positive step in the field of nuclear liability by enacting CLNDA, but this is not the end. India needs to revisit CLNDA neither on the ground of suppliers' hue and cry, nor due to political pressure, but in the light of concerns highlighted above to safeguard the public interest in the event of nuclear accident.

NUCLEAR POWER: YAY OR NAY

Sanjana Kala[*]

Abstract

India's civil nuclear energy program has always been mired in controversy. The recent Fukushima Nuclear Disaster in Japan has again sparked a debate on whether India is ready for electricity dependency on nuclear energy. This paper aims to examine the nuclear energy policy regime in India with reference to the Civil Liability for Nuclear Damage Act, 2010 and the NSRA Bill, 2011 highlighting the lacunae existing in the statutory arrangement and determining the future viability of atomic energy as a sustainable energy resource for the country. The current secrecy regime in the nuclear establishment along with the liability capping provisions for foreign suppliers has failed to gain public acceptance resulting in a collective opposition to nuclear power. As a result of the absence of a comprehensible regulatory mechanism scheme, India was listed in the top-25 countries as most likely to possess weapons usable nuclear reserves in a US Nuclear Threat Initiative. This is suggestive of the mistrust and skepticism the world harbours towards India in the capacity of a nuclear operator. Internal disturbances and international isolation has forced India to rely on its own indigenous techniques to come up with a civil nuclear programme for generating electricity needs for the country. The Government aims to double its current nuclear output within two years. India's vast thorium reserves and unique Pressurized Heavy Water Reactor technology has attracted the attention of foreign suppliers which was cemented with the culmination of the Indo-US Nuclear Deal. Nuclear power has the potential to emerge as the primary energy generation source for the country that can be sustained for a thousand years. A low emitting carbon source with minimal nuclear waste and an abundantly available fuel in the form of thorium can form the basis for a long term nuclear project increasing international proliferation of nuclear supply.

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Introduction

According to the Nuclear Power Corporation Limited (NPCIL), the Government of India aims to increase India's nuclear energy dependency by generating 25% of the country's total energy production by the year 2050.[1] This scheme is a massive leap from the current nuclear energy regime in India, comprising of twenty one nuclear power reactors which contribute around 4500 MW of power, amounting to a mere 3% of the country's total energy supply, making nuclear energy the fourth-largest source of energy supply in India. The reason why India heavily relies on renewable sources of energy for its electricity generation is due to insufficient infrastructure and improper management in the nuclear energy sector in terms of safety of nuclear power plants, inefficient radioactive waste-disposal policies and absence of innovative research and development facilities to tackle complications. Moreover, the recent public opposition to the nuclear energy projects in Maharashtra, Tamil Nadu and West Bengal represents the amount of mistrust and resistance among the general population towards the country's nuclear establishment.[2] The Fukushima Disaster in Japan in 2011, prompted the locals in these states to stage protests against foreign-built nuclear power projects. The additional support by state opposition parties, environmental activists and academicians proved to be a major hurdle for the UPA Government and the megapower projects were put on hold. In Tamil Nadu, the native farmers and the fishermen rose in protest against the Russian Kudankulam Nuclear power plant, forcing the then Chief Minister to retract the project. The plant is still unoperational and is yet to start power generation. West Bengal Chief Minister Mamata Bannerjee scrapped the Haripur nuclear plant project which would have produced 6000 MW of power generated by six Russian atomic reactors. The French-backed Jaitapur Nuclear power plant in Maharashtra is also under controversy as activists have raised concerns about the geological location of the nuclear plant, which is prone to the dangers of a tsunami or an earthquake. The agreement between France and India guarantees a 25-year supply of nuclear fuel and construction of two European pressurized reactors, which would've produced around 9900 MW of power, making it the largest nuclear power plant in the world.[3]

1 'India eyeing 64,000 MW nucl ear power capacity by 2032: NPCIL', *The Economic Times*. October 11, 2010.

2 Ranjit Devraj, 'Prospects Dim for India's Nuclear Power Expansion as Grassroots Uprising Spreads', *Inside Climate News*, October 25, 2011.

3 'Jaitapur nuclear project: villagers turn down compensation', *The Hindu*, July 25, 2010.

However, the project is still stalled due to non-acceptance of compensation by the villagers after the Government completed the land acquisition.

A Writ Petition was also filed in the Supreme Court opposing the construction of the Kudankulum nuclear power plant and challenging the constitutional validity of the Civil Liability for Nuclear Damage Act, 2010.[4] The appellants moved the Apex court claiming that the aforementioned nuclear plant was in violation of the fundamental right to life, of the people living in that area, guaranteed under Article 21 along with the right to safety and environmental protection.[5] The appellants also maintained that unless the Nuclear Power Corporation of India, implements the 17 recommendations of the expert committee in Atomic Energy Regulatory Board, the plant cannot function. However, the AERB submitted that the Task Force formed after the Fukushima disaster had already cleared the plant for generation and 12 out of 17 recommendations had already been implemented and the rest were being complied with in a phased manner. The Court dismissed the appeal on grounds that the Kudankulum power plant had followed all safety regulations, statutory provisions and security guidelines as prescribed and held that the courts cannot review technical policy decisions made by experts. The Court can only intervene if the policy is unreasonable, arbitrary or in violation of the Constitution which it was not. [6] Therefore, the Kudankulum plant was declined to be closed down and the Court placed *constitutional trust* on the authorities urging them to not be complacent in safety matters.[7]

Background

India has always been considered an outsider in terms of nuclear technology, due to it not being a signatory of the Non- proliferation of Nuclear Weapons Treaty or the NPT.[8] This treaty promotes non-proliferation, complete disarmament and use of nuclear energy in a peaceful manner. However, India stated that the NPT was just a tool to create a group of "nuclear haves" and a bigger group of "nuclear have-nots".[9] Consequently, India was internationally isolated from being a part of the 45-member Nuclear Supplier's Group, which was an informal

4 (2013) 6 SCC 620.
5 Constitution of India, 1950.
6 (2013) 6 SCC 620 p15.
7 (2013) 6 SCC 620 p 243.
8 "UNODA - Non-Proliferation of Nuclear Weapons (NPT)".
9 Embassy of India: 'Nuclear Non-proliferation'.

congregation created by the signatories of the NPT, which regulates export of nuclear fuel, reactors and exchange of technology, overseen by the International Atomic Energy Agency. Therefore, India was compelled to rely on innovation and develop its own nuclear weapons program including indigenous fast-breeder reactors and a heavy water thorium-centered fuel cycle.[10] In 1998, India conducted 5 nuclear tests at Pokhran which subjected it to international sanctions by the NSG as non-signatories were not allowed to possess or produce nuclear weaponry. These sanctions hardly affected India and India was recognized to have the capability of producing a "gigantic nuclear arsenal".[11] India contains around 1% of the world's uranium reserves, which though may be sufficient to develop nuclear weaponry, cannot maintain a country's nuclear power generation program. Therefore, a need arose to free India of its civilian nuclear program restrictions and maximize on its unique nuclear technology. In 2001, the United States lifted all NSG sanctions on India in order to commence an alliance which would benefit both States. In 2005 heads of both the States, Dr. Manmohan Singh and George W. Bush, announced their intention to work towards a joint civilian nuclear program under which India was required to separate its military and civil nuclear facilities and place the latter under the regulations of the IAEA.[12] This was done in lieu of an agreement called the India-United Stated Civil Nuclear Agreement, popularly known as the Indo-US Nuclear Deal. The deal was a step forward in enhancing global security and preventing proliferation of nuclear weapons. The deal faced stiff opposition in both the countries and several steps were taken in order to give effect to the agreement:

1. The Henry J. Hyde United States-India Peaceful Atomic Energy Cooperation Act[13] was passed in 2006 forming the legal basis of the Indo-US Nuclear Deal. Even though India was not a signatory to the

10 Thorium fuel cycle — Potential benefits and challenges, IAEA, May 2005, available at < http://www-pub.iaea.org/MTCD/publications/PDF/TE_1450_web.pdf > (last accessed on September 15, 2015).

11 Ashley Tellis, 'Atoms for War? U.S.-Indian Civilian Nuclear Cooperation and India's Nuclear Arsenal' p. 31–36.

12 Joint Statement Between President George W. Bush and Prime Minister Manmohan Singh, available at < http://georgewbush-whitehouse.archives.gov/news/releases/2005/07/20050718-6.html (last accessed on September 15, 2015).

13 < http://www.gpo.gov/fdsys/pkg/BILLS-109hr5682enr/pdf/BILLS-109hr5682enr.pdf > (last accessed on September 15, 2015).

NPT or the Comprehensive Test Ban Treaty (CTBT), it was considered a de-facto member of the NSG due to India's strong non- proliferation record. This was clearly an exception from the norm and the US was criticized for discriminatory behavior against other States that were not allowed this leeway, one of them being its closest ally Israel.[14]

2. Section 123 of the US Atomic Energy Act, 1954[15] titled "Cooperation with other nations" was amended to enable the United States to enter into a nuclear agreement with India in 2007 by including the exemption provided for in the Hyde Act. Such agreements are called Section 123 Agreements and are a prerequisite for the US before entering into any such nuclear deals. Article 2.2 of the agreement mandates full civil nuclear cooperation between the parties.

3. In India, the opposition against the nuclear deal became stronger, as the Left Front withdrew support and the erstwhile UPA government came under a lot of political pressure to squash the deal. However, a confidence vote was mooted in the Parliament and on July 22, 2008 the UPA government won the trust vote.

4. The IAEA and India concluded the specific safeguards agreement and the policy was sent for approval to the NSG.

5. In September 2008, India was grated the NSG Waiver amongst reservations by other member countries. Although, India is still not recognized as a nuclear-weapons state, its position as a rising global power was acknowledged but any instance of nuclear weapons testing by India in the future would result in immediate termination of nuclear trade.

The Indo-US Nuclear agreement was then signed on October 8, 2008, three years after its inception and was formalized on October 10, 2008 by signing the bilateral treaties and finally, after years of isolation, opening the gates of civil nuclear trading for India. In September 2008, France was the first

14 Shuddhabrata Sengupta, 'The Hyde Act and the 123 Treaty', Kafila, June 18, 2008.

15 Nuclear Regulatory Legislation, USNRC, NUREG-0980 Vol. 1, No. 10, September 2013, available at http://pbadupws.nrc.gov/docs/ML1327/ML13274A489.pdf#page=23 (last accessed on September 15, 2015).

country to sign a civil nuclear deal with India for setting up nuclear power plants in Jaitapur, followed by Russia, Canada and Mongolia.

The Civil Liability for Nuclear Damage Act, 2010: Critical Analysis

The Civil Liability for Nuclear Damage Act was passed in 2010 and has been mired in controversy since its inception. The Act allows for private investment in the nuclear sector enabling foreign investors to enter the civil nuclear energy market in India. This Nuclear Liability Act was seen as a last lap in the Indo-US Nuclear Deal, as the Act would help US investors get insurance cover in their country. However, the Act has been termed unconstitutional on account of its liability provisions and compensation cap. The Act was drafted in consonance with the Convention on Supplementary Compensation for Nuclear Damage[16], 1997 which mandates an international liability establishment so as to augment compensation for victims of nuclear damage. Since, India was neither a party to the Vienna Convention on Civil Liability for Nuclear Damage of 1963 nor the Paris Convention on Nuclear Third Party Liability of 1960, it was obligated to formulate a domestic law in conformity with the stipulations in the CSC, which would enable it to become a party to these conventions. The Act aims to set-up a no-fault liability regime wherein the victims of nuclear damage will be provided prompt compensation by the operator.[17] The important features of the Act include:

1. Section 6: Limits of Liability

   Section 6 provides for limitations on the liability of an operator in a nuclear accident to be awarded as compensation to the victims, i.e Rs. 1500 crores, in a nuclear reactor producing more than or equal to 10 MW of power, Rs. 300 crore in respect of fuel processing plants and Rs. 100 crore in reactors producing less than 10 MW of power. The Central Government has been given the power to review the liability and provide for higher compensation whenever required.

16 Convention on Supplementary Compensation for Nuclear Damage, https://www.iaea.org/publications/documents/treaties/convention-supplementary-compensation-nuclear-damage (last accessed on September 15, 2015).

17 Preamble, Civil Liability for Nuclear Damage Act, 2010.

Section 2(m) of the Act defines "operator" which means the Central Government or any authority established by it or a government company. In India's case the operator is the NPCIL, which is a government organization, hence the liability will be fulfilled by the government itself, i.e. the taxpayer.

2. Section 7: Liability of Central Government

   This Section makes the Central Government liable for nuclear damage in cases where the liability of the operator exceeds the amount specified in Section 6, if the nuclear installation is owned by the Government and even if it is not, the Central Government can take full responsibility of the damage if it is in the public interest.

   This provision accords even more liability on the Central Government, wherein it can establish a Nuclear Liability Fund, in turn burdening the taxpayer.

3. Section 17: Operator's right to recourse

   This provides the operator a right to claim compensation, after he has paid compensation in three situations:

   1) Where such right has been provided in a contract in writing

   2) Where the nuclear accident was caused by the fault of the supplier or his employee including supply of defective equipment or sub-standard services

   3) Where an act was done by an individual with the intention to cause nuclear damage

      This Section was added to include supplier liability along with the operator and is unique to India. The suppliers being foreign companies, this provision goes directly against the CSC, the Paris Convention and the Vienna Convention. Also, the suppliers will only be liable to the amount prescribed in Section 6 which maybe insufficient to cover damages in a nuclear accident. Therefore, India is defaulting on its international obligations and making its domestic liability law weaker at the same time.

4. Section 18: Extinction of right to claim

   This section extinguishes the right to claim compensation by providing a limitation period of 10 years, with respect to damage of property and 20 years, in case of damage to an individual, from the date of the nuclear incident. A nuclear liability act cannot be limited by time as long-term injuries may arise.

5. Section 35: Exclusion of jurisdiction of civil courts

   This section excludes the jurisdiction of civil courts in matters falling under this Act, giving the authority to the Claims Commissioner under the Nuclear Damage Claims Commission. The civil courts are barred from passing any injunction or order pursuant to the decisions of the Commission.

6. Section 46: Act to be in addition to any other law

   This provision states that the Act will be in addition to and not in derogation of any other law and that the operator shall not be exempted from his liability under any circumstances. This implies that an action outside of this Act, i.e. tortuous or contractual shall subsist in addition to the strict liability of operators under this Act. However, the Act does not expressly exclude the liability of the supplier giving rise to multiple interpretations.[18]

The constitutionality of this Act was chall enged in the Supreme Court[19] stating that the Act was arbitrary, unreasonable and went against the basic structure of the Constitution. The Supreme Court cited a US case[20] where the Price-Anderson Act[21] was challenged for not providing adequate compensation to victims. The US Supreme Court upheld the validity of the Act stating that nuclear accidents were to be treated differently from other claims and that the Act does not encourage irresponsibility with respect to the environment and

18 Ran Chakrabarti, 'India: Civil Nuclear Liability Law In India', Mondaq, May 8, 2015, available athttp://www.mondaq.com/india/x/395640/Energy+Law/Civil+Nuclear+Liability+ Law+in+India (last accessed on October 15, 2015).

19 (2013) 6 SCC 620.

20 Duke Power Co. v. Carolina Environment Study Group 57 L.Ed.2d 595.

21 The Price-Anderson Nuclear Industries Indemnity Act was first passed in 1957 in the United States. It provides for partial indemnification of the nuclear plant in case of any injury with an aggregate liability of 500 million dollars for a single nuclear accident.

safety rather it strives to create private industry participation in the nuclear industry.[22] Thus, the Indian Supreme Court, in this case, upheld the constitutionality of the Act stating the importance of absolute liability principles extending not only to victims but also to restoring the environment.[23] The judgment did not comment on the provisions of the Act.

The Nuclear Dominion

It is imperative to cite the regulatory framework which operates in India, to highlight the lacunae existing in its functioning.

- ATOMIC ENERGY COMMISSION

  The Indian AEC came into existence in 1948 under the Department of Scientific Research.[24] The AEC is accorded all the powers of the Government of India in formulating and implementing policies under atomic energy and perform functions of the DAE, except its budget which has to was be approved by the Parliament.

- DEPARTMENT OF ATOMIC ENERGY

  The DAE was set up in 1954 under the direct control of the Prime Minister vide a Presidential order. The DAE oversees all nuclear activity in the country including five research and development centers, five PSU's and three industrial and service organizations like the Nuclear fuel complex in Hyderabad and the Heavy Water Board in Mumbai to name a few.[25]

- ATOMIC ENERGY REGULATORY BOARD

  The AERB was formed in 1983, by a Presidential order deriving its powers from the Atomic Energy Act, 1962 and the Environment Protection Act, 1986, with a view to monitor the safety concerns of nuclear projects under the DAE and ensure the safety of the public

22 (2013) 6 SCC 620 p 96.

23 (2013) 6 SCC 620 p 98.

24 Government of India Atomic Energy Commission, available at http://dae.nic.in/?q=node/394 (last accessed on September 15, 2015).

25 <http://dae.nic.in/?q=node/634> (last accessed on September 15, 2015).

and the environment.[26] The AERB is required to report to the AEC and is provided staff and technical assistance by the DAE.

- NUCLEAR POWER CORPORATION OF INDIA LIMITED

  The NPCIL is a public service undertaking responsible for operations of the nuclear power plants in the country. It is under the control of the DAE and currently has twenty one reactors operating in the country.

The problem with this framework is that these bodies are not independent and are regulated by each other. For instance, the DAE Secretary is also the Chairman of the AEC, therefore the reporting and the regulating body is the same. Moreover, the AERB is provided finance and staff by the DAE, thereby undermining its autonomy. The AERB has been criticized for being unable to make independent decisions as it is under the control of the central government and is answerable to the Prime Minister, thereby hampering its ability to solely focus on policy reformations without external political and social stimuli. According to a 2012 report submitted by the Comptroller and Auditor General of India,[27] AERB has failed to involve itself in on-site emergency drills, or provide for decommissioning plans for nuclear plants and has not conducted 85 per cent of the mandatory regulatory inspections. The Supreme Court, in 2001, had ordered the AERB to set-up a Directorate of Radiation Safety in each state to regulate X-ray medical facilities. The AERB has managed to implement the DRS regime in only two states.[28] It has been recommended to impose larger fines and penalties, maintain a comprehensive inventory, conduct environment safety studies and apply the appraisal services of the IAEA.

Another problem plaguing the nuclear law regime is the secrecy provision of the Atomic Energy Act, 1962 which empowers the government to deny information to citizens related to nuclear plants and material. Section 3 of the

26 About AERB, available at <http://www.aerb.gov.in/AERBPortal/pages/English/AboutAERB/AboutAERB_aboutUs.action> (last accessed on September 15, 2015).

27 CAG Report Summary on AERB, available at http://www.prsindia.org/parliamenttrack/report-summaries/cag-report-summary-on-aerb-2432/ (last accessed on October 15, 2015).

28 India's nuclear regulation must improve, World Nuclear News, August 24, 2012, available at http://www.world-nuclear-news.org/RS_Indias_nuclear_regulation_ must_improve _ 2408121.html (last accessed on October 15, 2015).

said Act declares the location, processing, design, construction and operation of nuclear reactors to be restricted information which can't be made public. A country's civil nuclear regime cannot be put out of the ambit of the right to information of citizens and such a provision only goes to show the amount of transparency and responsibility the authorities are willing to take.

The Nuclear Safety Regulatory Authority (NSRA) Bill, 2011 is an important development in this regard. This bill was drafted by the Department of Atomic Energy and was sent for approval to the Cabinet in order to be tabled in the Parliament. The proposed structure of the NSRA Council consists of the Prime Minister as the Chairperson and government officials as members who will be responsible for implementing radiation-safety policies, providing grants and organizing public awareness programmes. This Bill provides for a more powerful and effective regulatory body to be appointed by the Parliament which will be answerable directly to the Parliament instead of the Atomic Energy Commission.[29] It also aims to make the AERB a *de-jure* independent body. However, the core issues still remain unaddressed in the aforementioned Bill. The AERB is already under the control of the Prime Minister and despite the CAG's recommendations of forming a more autonomous regulatory body, the NSRA Council has again been placed subordinate to the Central Government, in turn compromising on accountability.[30] Moreover, Section 26 of the Bill prohibits disclosure of information relating to the regulatory bodies or the activities carried out by officials in the furtherance of their employment to the public. Thus, the secrecy provision in the nuclear regime has not been done away with highlighting the reluctance of the Government to enable transparency. Currently, the Bill has lapsed in the Parliament and is yet to be re-introduced.

Conclusion

Even though, India's nuclear market was opened seven years ago, India has managed to conclude zero commercial contracts. One of the primary causes of this is the operator's right to recourse provided in Section 17 of the Civil Nuclear

29 Happymon Jacob, 'Regulating India's Nuclear Estate' *The Hindu*, August 29, 2014, available at http://www.thehindu.com/opinion/lead/lead-article-regulating-indias-nuclear-estate/article6360984.ece (last accessed on October 15, 2015).

30 Section 27, Nuclear Safety Regulatory Authority.

Liability Act coupled with possibility of tortious liability against the supplier in Section 46. The internationally accepted practice, which India has conceded to in Article 3 of the Convention on Supplementary Compensation for Nuclear Damage, is that a right for compensation will rest against the operator only.[31] Furthermore, Rule 24(1) of the Civil Liability for Nuclear Damage Rules, 2011 implies that a contract under Section 17(1) between the operator and the supplier must contain a liability clause for availing the right to recourse. This means that the supplier can be held liable for uncertain claims in case of a nuclear accident, which will in turn prevent them from getting insurance benefits in their country, required for entering into nuclear power contracts, thereby defeating the whole purpose of the enactment. In addition to defaulting on its international obligations, India has diluted its domestic law simultaneously. The supplier can be held liable only to the extent of the sum referred to in Section 6(2) or the sum agreed to in the contract, whichever is lower. Also, according to Rule 24(2), if the accident was caused due to a product defect in the supplier's equipment, the right to recourse subsists only till the duration of the initial license to the supplier or till the product liability period exists. Therefore, in the event of a nuclear accident, the compensation amount is capped to 238 million dollars and a limitation period equal to a licensory period has been provided. The supplier can also evade liability under Article XIII of the CSC, which states that jurisdiction of these disputes will lie in the country of the contracting party, i.e. the supplier's country. Thus, foreign courts can dismiss an Indian courts' decision against a supplier, on the grounds of inapplicability of jurisdiction. These inadequacies have not been addressed to by the Apex court nor rectified by the legislature.

Before the NSRA Bill is tabled in the Parliament again, the Department of Atomic Energy should incorporate a more comprehensive regulatory framework which would not only make the nuclear establishment more effective but also put to rest the growing safety concerns of the world in relation to India's ambiguous nuclear territory. The Court's unwillingness to resolve the existing lacunae in the nuclear statutory regime coupled with the legislature's inability

31 Article 3.9: The right to compensation for nuclear damage may be exercised only against the operator liable, provided that national law may permit a direct right of action against any supplier of funds that are made available pursuant to provisions in national law to ensure compensation through the use of funds from sources other than the operator.

to draft a clear and explicit code has pulled India decades back. Until the country's international obligations and domestic security are balanced, no private investors will be willing to transact with India and public angst against such a murky nuclear regime will never end.

With fossil fuels depleting and renewable energy sources not being able to sustain the electricity requirement of 1.1 billion people in the country, nuclear energy is an important element in sustaining India's economic growth. In this regard, India's three stage nuclear programme for long-term energy dependence and focusing on India's large thorium reserves instead of its limited uranium reserves, is proving to be a promising energy generation establishment:

1. Pressurized Heavy Water Reactor
2. Fast Breed Reactor
3. Thorium based reactors[32]

As Mr. Jairam Ramesh, India's former environment law Minister stated,

> *"it is foolish to think that India can attain high growth rate and sustain the energy needs of 1.2 billion population with the help of solar, wind, biogas and such other forms of energy.It is paradoxical that environmentalists are against nuclear energy."*[33]

If the thorium reserves, along with the unknown uranium reserves are brought together, the AEC predicts that energy generation can be continued till the end of the century. Therefore, harnessing this untapped potential will not only usher a new era of global presence and economic independence, but also reduce India's carbon footprint and bring about an impetus to focus on climate change.

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32 Venkataraman, Ganesan, *Bhabha and His Magnificent Obsessions*, Universities Press (India) Ltd., 1994.

33 Vinaya Deshpande, "It's paradoxical that environmentalists are against nuclear energy: Jairam Ramesh", *The Hindu*, November 29, 2010.

Towards a New Blueprint for Oil and Gas Licensing in India

Adarsh Mohandas[*] and Smrithi Bhaskar[**]

Abstract

This paper attempts to brings to light certain policy deficiencies surrounding the oil and natural gas sector in India with respect to enhancing energy security. The authors intend to focus on the upstream sector or exploration and production (hereinafter E&P) arena. The history of oil and natural gas in India and the statutes governing them are discussed in the introduction. The paper then focuses on the current policy in place which is the New Exploration Licensing Policy (hereinafter NELP). The authors present the challenges faced in NELP and its shortcomings. Furthermore, the paper discusses issues surrounding the Production Sharing Contracts (hereinafter PSC) applied in NELP rounds and the ongoing debate as to its retention. The paper explores certain other policies being employed across the world and examines their application to India. The authors have tried to bridge a sound policy in view of India's sensitive needs and the energy crunch being faced. The policy initiatives suggested are in line with international best practices for developing nations and to develop India into an energy self-sufficient nation.

Introduction

Energy security is one of the major issues facing the country at present. India still relies heavily on imports to meet its energy requirements, and it meets 75% of its oil and gas requirements through imports alone.[1] At present, India has a total of about 3.14 million square km of sedimentary basins, both onshore and offshore, of which a significant 15% remains unexplored.[2] The reason for this

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1 Economics and Statistics Division, Ministry of Petroleum and Natural Gas, Indian Petroleum and Natural Gas Statistics 2013-14 (2014).

2 Sedimentary Basins, available at http://www.dghindia.org/SedimentaryBasins.aspx (last accessed on September 12, 2015).

disparity between need and action is that the policy governing this sector remains regressive and lacking in efficiency of implementation and adaptation. The authors of this article have focused mainly on reforms pertaining to the upstream activities, to try and show how the deficiency for oil and natural gas can be met by policy changes.

The history of the Indian oil and natural gas industry can be traced back to the first commercial discovery of oil in 1889 in Digboi, Assam. Subsequently, in 1889, the Assam Oil Company (hereinafter AOC) was established to take control of the petroleum production. In 1921, Burmah Oil Company was appointed as technical manager to AOC. Post-independence, more oil was found near Digboi and in West Bengal. In 1955, the ONGD (Oil and Natural Gas Directorate) was set up under the Ministry of Natural Resource and Scientific Research. In 1956, the Directorate was elevated to a Commission. In 1959, OIL India Private Limited was formed to increase the pace of exploration in North Eastern India.[3] The Government of India (hereinafter GoI) owned only a third of the shares, while the rest was owned by AOC. This was changed in 1981, when the GoI bought all the shares of OIL India Private Limited. In 1992, a committee headed by Shri. P.K. Kaul was formed and recommended the creation of a Directorate-General of Hydrocarbons (hereinafter DGH) to take over the regulation of leases, licensing, safety, environmental concerns and development from Oil and Natural Gas Corporation (hereinafter ONGC).[4] Pursuant to this, the DGH was set up in 1993 under the Government of India.[5] With respect to licensing during this period, Petroleum Exploration Licenses (hereinafter PEL), which the Central Government had the power to grant, were required under the Petroleum and Natural Gas Rules, 1959, for carrying out prospecting operations for oil in any area. These were given to National Oil Companies (hereinafter NOCs) on a nomination basis until 1991. Between 1991 and 1993, a different regime of granting Petroleum Mining License (hereinafter PML) was followed, whereby the license was granted through International Competitive Bidding. In the pre-NELP stages, 28 blocks were awarded to private companies, and

3 History, available at http://www.ongcindia.com/wps/wcm/connect/ongcindia/Home/Company/History/ (last accessed on September 12, 2015).

4 Directorate General of Hydrocarbons, Information Handbook under Right to Information Act, 2005.

5 Resolution, available at http://petroleum.nic.in/docs/exp/circulars%20&% 20 notifications64.pdf (last accessed on September 14, 2015).

NOCs were allowed to participate after discoveries had been made.[6] In 1997, the government introduced a new system of licensing, the New Exploration Licensing Policy (hereinafter NELP), whereby the awarding of PELs on a nomination basis was discontinued.[7] This system was adopted in 1999 and provided the same opportunities to private investors as it did to NOCs.

As in most countries, the sovereign owns the natural resources in India. The GoI derives this power from the Constitution to act as the custodian of these resources[8] before as they are considered national assets. The regulation and development of natural resources also rests with the GoI, as per entry 53 of List I, Schedule 7.[9] In pursuance of these powers vested in it, Parliament has passed various legislations such as The Petroleum Act, 1934 ("Petroleum Act"),[10] the Petroleum and Natural Gas Rules, 1959 ("Petroleum Rules"),[11] Oilfields (Regulation and Development) Act, 1948 ("Oilfields Act"),[12] and Petroleum and Natural Gas Regulatory Board Act, 2006[13] to regulate this sector.

The Oilfields Act provides a structure for the leasing of petroleum and gas blocks. Along with the Petroleum Rules, it governs the granting of both PELs and Mining Leases (hereinafter ML),[14] laying down who may apply for leases and the terms with respect to maximum area and time. It prohibits mining or prospecting without a valid lease as obtained under these regulations and obtained from the central government, and also gives the person(s) obtaining the license exclusive rights to extract oil or gas, depending on the nature of the license, for as long as the time period permits.[15] It also prescribes the fiscal regime that India follows in this sector. This Act is mainly related to upstream activities of exploration, recovery and production. To regulate midstream activities, The

6 Directorate General of Hydrocarbons, Hydrocarbon Exploration and production Activities 2013-14, (2014).

7 Ashok Chawla *et al*, Report of the Committee on Allocation of Natural Resources 45 (May 2011).

8 Art 246(1), Constitution of India 1950.

9 Schedule 7, List 1, Entry 53, Constitution of India, 1950.

10 The Petroleum Act, 1934. (Act No. 30 of 1934).

11 Formulated as per Sections 5 and 6 of the Oilfields (Regulation and Development) Act, 1948.

12 Oilfields (Regulation and Development) Act, 1948 (Act No. 53 of 1948).

13 The Petroleum and Natural Gas Regulatory Board Act, 2006 (Act No. 19 of 2006).

14 Rule 4, Petroleum Rules, 1956.

15 Rule 7, Petroleum Rules, 1956.

Petroleum Act is mainly used. It regulates the import, storage, production, refining and blending of petroleum.[16]

To regulate downstream activities, The Petroleum and Natural Gas Regulatory Board Act, ("PNG Act") was enacted in 2006. Under the provisions of this Act, a regulatory authority in the form of the Petroleum and Natural Gas Regulatory Board[17] was set up to overlook the transportation, distribution, marketing and sale of petroleum, natural gas and associated products.[18] It regulates the development of natural gas pipelines in cities or local gas distribution networks to reach its objective of ensuring adequate supply of these products and to create a competitive market for them.

At present, the GoI uses the NELP system to award Exploration and Production (hereinafter E&P) licenses while there have been steps to move to the Open Acreage Licensing Policy (hereinafter OALP). Each system has its merits and disadvantages, and using them judiciously is likely to increase investment in E&P activities by private players in the oil and natural gas sector in India.

NELP

The New Exploration and Licensing Policy was formulated by the GoI in 1997 to open up the oil and gas upstream sector to private players in order to facilitate better investments in the sector. This was to ensure a fair competitive market wherein the NOCs would compete with international foreign players to secure acreages in an open bidding system. Its implementation was entrusted with the DGH. The policy was approved in 1997, and became effective in February 1999.[19] Before the introduction of the NELP, the sector was completely dominated by the NOCs, which in the long run could not be relied upon considering India's energy security needs. The idea behind the NELP was to spur the sector with technological know-how, fresh inflow of capital and adoption of safer and speedier procedures. The primary thrust for the new system was the need for more fields in India's sedimentary basins to be discovered and made commercially viable for the production of oil and gas.

16 Sections 3, 4 and 5 of the Petroleum Act, 1934.

17 Section 3, Petroleum and Natural Gas Regulatory Board Act, 2006.

18 Section 11, Petroleum and Natural Gas Regulatory Board Act, 2006.

19 New Exploration Licensing Policy, available at http://petroleum.nic.in/docs/nelp.pdf (last accessed on September 09, 2015).

The policy is designed in such a manner that the GoI invites bids on a certain acreage that it has identified for the purpose of exploration based on the available data with the DGH on the prospective reserves and any International Oil Companies (hereinafter IOC) or Joint Ventures (hereinafter JV) or NOCs can participate in the bidding process by submitting a bid. This bid will be evaluated on the technical capability, financial capability, work commitment and amount of profit agreed to be shared with the GoI (fiscal package), called the Bid Evaluation Criterion (hereinafter BEC).[20] Bids are generally confirmed based on higher profit share to the GoI.

NELP was introduced to allow 100% Foreign Direct Investment (hereinafter FDI) in small and medium oil and gas fields, which translates to higher investments and use of sophisticated technology. In order to encourage potential investors to invest more in India certain other measures such as cess exemption and a tax holiday for 7 years were imposed, although the Minimum Alternate Tax (hereinafter MAT) was payable by the company. NELP envisaged a level playing field wherein identical contractual and fiscal terms exist for all players investing in the field. The GoI also gained substantially through a royalty imposition for different areas of E&P activity (10% for offshore and 12.5% for onshore). NELP did not impose any restrictions on oil and gas prices and followed market determined prices to boost E&P activity. Still, gas prices were regulated by the Gas Utilization Policy and, therefore, gas was heavily subsidized for the end customer as it continues to be an essential commodity for the common man. The NELP also exempted goods imported for E&P from import duty.

NELP is carried out through a Model Production Sharing Contract (hereinafter MPSC) that is reviewed before every round. A Production Sharing Contract (hereinafter PSC) is a contract which grants a license to the company involved in E&P to carry out exploration activities and further develop the field to produce oil and gas. In general, there are three systems that govern petroleum E&P activity throughout the world. They are the concession regime based on royalty and tax, where ownership rests with the concessionaire; PSC where revenue is shared between the State and the company but the State retains

20 Nirmal Mohanty, Mineral Taxation in India, May 24, 2008, available at http://www.idfc.com/pdf/publications/mineral_taxation_in_india.pdf.

ownership; and service contracts where prices are not indexed to the company's remuneration.[21] In India, a mixture of the concession and PSC was worked out and formulated under the NELP. The concept behind the PSC adopted in India is such that the PSC grants limited rights of E&P in a field subject to the condition that profits are shared with the GoI, although the sharing of profits can be done after recovery of costs in the investment of the field. The novelty regarding the Indian PSC model is that royalty at a certain rate is payable over and above the profit share since profit actually starts accruing only after cost is recovered fully. The NELP has granted the MPSC the exclusivity to grant up to 100% recovery of costs while engaged in E&P.

The PSC in India varies from general PSCs because it is linked to a Pre-Tax Investment Model (hereinafter PTIM) which is essentially the ratio of contractor's net cash income to the cumulative exploration and development costs.[22] Here, contractor's net cash flow is the deduction of production cost and royalty from the contractor's take.[23] This ratio is indexed on a scale wherein a lower ratio offers lower revenue share to the GoI and once the ratio crosses a certain threshold the rate of the government's share multiplies offering very high revenue to the GoI. The reason for allowing recovery of costs incurred is to invigorate the investments from foreign players as E&P activity involves risking large amounts, an undertaking by which players could lose the money invested if the field is found to be commercially unviable or if no gas or oil is struck.

The working of a PSC in the Indian context is categorized under two rubrics, namely, exploration phase and discovery and development phase as has been elucidated in *Fiscal and Contracting Regime for Hydrocarbon Production Sharing Contracts*.[24] The exploration phase consists of exploration activity for a maximum

21 Chawla, supra note 7.

22 Id.; See Fiscal and Contracting Regime for Hydrocarbon Production Sharing Contracts, available at http://saiindia.gov.in/english/home/our_products/audit_report/Government_Wise/union_audit/recent_reports/union_performance/2011_2012/Civil_%20Performance_Audits/Report_19/chap2.pdf (last accessed on September 11, 2015).

23 Mohanty, supra note 20. The contractor's take is the sum of cost petroleum and contractor's share of profit petroleum. The cost petroleum is the cost incurred by the operator to explore, develop and produce the petroleum and contractor's share of profit petroleum is the profit remaining after deduction of royalty from total profit made by the operator.

24 Fiscal and Contracting Regime for Hydrocarbon Production Sharing Contracts, available at http://saiindia.gov.in/english/home/our_products/audit_report/Government_Wise/union_audit/recent_reports/union_performance/2011_2012/Civil_%20Performance_Audits/Report_19/chap2.pdf (last accessed on September 11, 2015).

of seven years under normal areas and eight years for deep-water areas. The exploration phase further consists of different sub-phases and contractors need to submit the Minimum Work Programme (hereinafter MWP) with respect to initial surveys, seismic programme and so on as they undertake in the bid and must complete them within the stipulated time, or else pay costs to the GoI. Once discovery is made, the second phase begins wherein commercial viability of the discovery is determined after intimation to the GoI and Management Committee (hereinafter MC). Discovery of potential commercial interest leads to the submission of an appraisal scheme within 120 days delineating the development area. On completion of 30 months after discovery of crude oil, notification to the MC to treat the discovery as commercial or not must be made.[25] A development plan must be submitted upon declaration of commercial discovery within 200 days and on its submission, an application for a PML must be submitted for the development area which shall be for a period of 20 years with renewal for 5 years.[26]

NELP though largely an appreciable effort has failed in its core objective to woo foreign investors to invest in India as is evident from the later rounds of NELP.[27] The taxing structure in India has only contributed to the misery in the sector as there exists no stability in contractual terms with retrospective tax applicable at times.[28] NELP has also failed to accommodate the risks involved in different basins considering factors such as geology because contractual provisions aligned to such factors allow investors to undertake E&P in an efficient manner. For example, investment in offshore basins is generally triple that of onshore basins, which means fiscal benefits must also be commensurate with the risks undertaken. An identical contract for all basins does not serve the needs of the sector. Ireland is a pertinent case where different contractual provisions exist for onshore and offshore basins. A primary issue relating to the Indian petroleum sector is that it remains largely elusive to the players who want to invest because there exists no comprehensive data repository providing

25 Id.

26 Id.

27 Soumyajit Mukherjee, PETROLEUM GEOSCIENCES: INDIAN CONTEXT 276, 277 (Springer Publishing 2015); Chawla, supra note 3 at 57.

28 Dr. Vijay Kelkar et al, 'Roadmap for Reduction in Import Dependency in the Hydrocarbon Sector by 2030', 10 (Ministry of Petroleum and Natural Gas, Government of India, September 2014).

information about the geology, geography and other relevant data pertinent to the sector.[29] This acts as an impediment to private and foreign players investing in India as data availability itself is largely skewed and such players start investing only when commercial viability of projects is assured. This is evident from the 30% stake held by British Petroleum in the Reliance Industries Limited operated KG-D6 basin. A major bottleneck in the current system is that of the over-burdening of the MC and the DGH while administering bids, checking costs recoverable and conducting audits. The existing system imposes a burden on the regulator to check the costs submitted by the company, as companies try to evade profit share to the GoI by accounting huge costs on their balance sheets.[30] Therefore, an independent evaluation is done by the MC and sanctioned by the DGH.

Open Acreage Licensing Policy

In order to implement a regime of licensing for oil and natural gas exploration and production in India which would tackle the challenges faced by the existing NELP system, and to ensure that the slack the industry is facing is rectified, the GoI has decided to adopt an Open Acreage Licensing Policy.[31] Originally, the NELP system was meant to serve only as a bridge for the OALP system to be implemented.[32] An OALP is a liberal regime of licensing whereby interested parties can bid on a block of their choice at any point during the year on a rolling basis after getting the opportunity to study available data.[33] Contrasted with the NELP system, where investors had to wait for the GoI to call for bids on specific blocks, in an OALP system, data is available to potential investors in the form of a National Data Repository (hereinafter NDR).[34] Once a request

29 Mukherjee, supra note 24.

30 Dr. Chakravarthi Rangarajan et al, 'Report of the Committee on the PSC Mechanism in Petroleum Industry' 23, 24 (December 2012).

31 Chawla, supra note 3 at 57.

32 Ministry of Petroleum and Natural Gas Resolution, available at http://petroleum.nic.in/newgazette/goi1.pdf (last accessed on September 12, 2015).

33 Anupama Sen & Tirthankar Chakravarty, AUCTIONS FOR OIL AND GAS EXPLORATION LEASES IN INDIA: AN EMPIRICAL ANALYSIS, The Oxford Institute for Energy Studies, available at http://www.oxfordenergy.org/wpcms/wp-content/uploads/2013/12/SP-30.pdf (last accessed on September 15, 2015).

34 Policy for Geo-Scientific Data Generation for Hydrocarbons in Indian Sedimentary Basins, availabl;e at http://petroleum.nic.in/docs/Agreement.pdf (last accessed on September 12, 2015).

has been received, it is suggested that it be put through the normal tender process that exists under the NELP regime.[35] This regime of licensing is considered more appealing to the market since the choice of the block is not made by the government, but by the market itself, which will then be awarded by way of competitive bids.[36]

The model proposed by the Kelkar Committee Report envisages an OALP system which is introduced as early as possible. While it may be run parallel to the NELP format in the initial stages, the Kelkar Committee report advises that it be implemented as soon as possible.[37] This model will allow for acreages to be available all year round, excluding those areas already under an ML, PEL or already allocated through NELP X. Companies will have the freedom to choose the size and shape of the block they bid on before such bidding commences. Once a potential investor decides on an acreage to bid on, they approach the government to grant an exploration license. The periodicity recommended by the committee is 6 months, giving time for open bids. However, this is to be reviewed based on the response received[38].

An OALP system, also called Open Door Licensing system, is considered less competitive than other bidding systems. There is also excessive discretionary power that lies with the government, making it an untrustworthy system in the eyes of a potential investor. Since in most implementations of this system, criteria for awards are not explicitly mentioned, nor are there publication of the negotiations, the general perception is that they are less transparent. It is also not usually preferred since it creates a lack of transparency and makes the entire regime vulnerable to corruption.[39]

However, an Open Door Licensing system is preferred to increase investment in hitherto unexplored areas. Taking into account the geological potential of an area, if there is no information about an area, the risk for an investor increases merely because of the lack of such data.

35 Chawla, supra note 3 at 60.

36 Id at 50.

37 Kelkar, supra note 28 at 36.

38 Id at 37.

39 Silvana Tordo, David Johnston & Daniel Johnston, *Petroleum Exploration and Production Rights Allocation Strategies and Design Issues,* (World Bank working paper no. 179, 2009).

To ensure that there is no data asymmetry to investors, and to further the efficient functioning of the OALP regime, it was also suggested to begin the creation of an NDR with immediate effect.[40] The concept of creating an NDR is a long standing issue. It was supposed to have been created on a priority basis by the DGH, but has still not been completed. The DGH was to invite bids to operate the NDR, as despite the DGH having control, the operation is planned to be outsourced.[41] Since the OALP system presupposes the existence of data based on which companies will make their bids, the creation of such an NDR is a pre-requisite to the implementation of OALP. The Kelkar Committee recommended certain methods to be adopted while creating an NDR, keeping in mind the objectives. Since such a data repository is essential to begin the implementation of OALP, it was suggested that the data currently existing with NOCs be used until further data can be collected. This has been done to some extent, whereby NOCs have shared data with the DGH on a publicly accessible server.[42] While this may not provide for a uniform data structure, it ensures that OALP can be brought into force with immediate effect to revive this sector, as opposed to linking the implementation of the same with the creation of a satisfactory NDR. Additionally, in furtherance of the objective of building an NDR in compliance with world best practice norms, the Committee recommended that funds of roughly around USD 700 million be provided in phases to collect data from those basins that are currently considered as posing a high risk because of lack of accurate and adequate information. The purpose of the NDR, as per the Committee, will be two-fold. Not only will it enable the OALP regime to occur without information asymmetry, it could also be used as a marketing tool for others. Apart from this, it was also suggested that any non-proprietary data with private investors be incorporated into the NDR. This will make non-proprietary data available after the period mandated, or after the block is explored and/or relinquished.[43] To induce private players to provide information to the NDR, parties must be assured of a period of exclusivity to their data, corresponding to global practices. It was also recommended by this committee as well as the DGH that the government should

40 Kelkar, supra note 28 at 36.

41 Chawla, supra note 3 at 54.

42 Id.

43 Kelkar, supra note 28 at 37.

not involve itself in pricing of the data, nor should it be concerned with approval of funds for exploration. It is imperative that an NDR be established at the earliest since it is on the basis of such high quality, geo-scientific data that not only an OALP system can be implemented, but the DGH can monitor and control further E&P activities more efficiently.

World over, a very small number of countries have adopted the Open Door system. When countries do follow such systems, they follow it only for certain specific areas of land that have so far been unexplored, providing a more lenient system than that followed for their regular licensing rounds.

For example, Denmark follows two systems of licensing for different types of blocks. There is a licensing round with respect to certain kinds of blocks and an Open Door procedure for all non-licensed areas east of 6°15' eastern longitude. Similar to the procedure recommended in India, companies which are interested in conducting E&P activities in this region may submit bids. However, there is a specified time period from the 2nd of January till the 30th of September of each year for companies to submit such bids.[44] The area to which this policy applies is so far unexplored in the Danish region.[45] Therefore, the Open Door policy is used and applied in a more lenient fashion than in the other licensing rounds that Denmark conducts. This leniency sufficiently offsets the risk interested parties face by trying to conduct operations in uncharted areas, since the lack of sufficient data puts them at a significant disadvantage.[46] The policy adopted with respect to these areas is such that companies which obtain the license are under no obligation to commit to exploratory drilling. The work is initially divided into 6 phases, to be completed over a time period of 6 years, and new work is taken up only as the phases progress. This enables companies to increase their exploration activities or relinquish their licenses. Though two licenses have been granted with respect to this area, till date no oil or gas discoveries have been made.[47] Ireland too follows a mixed

44 Licensing, available at http://www.ens.dk/en/oil-gas/licences/licensing (last accessed on September 11, 2015).

45 Danish Energy Agency, Oil and Gas Production in Denmark and Subsoil Use (2013), available at http://www.ens.dk/sites/ens.dk/files/dokumenter/publikationer/downloads/danmarks_olie-_og_gasproduktion_2013_uk.pdf (last accessed on September 12, 2015).

46 Tordo, supra note 39.

47 Danish Energy Agency, Oil and Gas Production in Denmark and Subsoil Use (2013), available at http://www.ens.dk/sites/ens.dk/files/dokumenter/publikationer/downloads/danmarks_olie-_og_gasproduktion_2013_uk.pdf (last accessed on September 12, 2015).

regime of combining Open Door policies and licensing rounds. The power lies with the Minister for Communications, Energy and Natural Resources to grant authorisation for exploration activities. The Minister also classifies certain areas to be governed by the Open Door policy or "open areas'' and certain areas to fall under the licensing rounds or "closed areas''.[48] Unlike in Demark, applications may be accepted at any time for those blocks falling within the open areas, while the system followed for blocks within the closed areas is similar to the NELP system.

An OALP system is being introduced in India with the aim of providing flexibility to companies and helps them develop an interest in exploring only in areas of their choice. It is also introduced in the hope that it will result in a much faster regime of allocating blocks to speed up the exploration and production activities. Additionally, as this is largely considered a more lenient regime, it will encourage investors to invest in areas with little or no data about them, the leniency offsetting the risk. The system so far proposed seems in line with these objectives. By making a phased system of reconnaissance and exploration, this system attempts to induce companies to first invest in obtaining data about basins. The current system allows for a party to exist after the first stage of reconnaissance, with no penalty being imposed, as long as the previously agreed upon work programme is completed. The subsequent exploration is at the interest of the investor.[49] However, unlike in Denmark, an investor who wishes to continue from a reconnaissance phase to an exploration phase is required to bid again, and can only operate the block if they emerge as the winner. An investor who loses such a bid may partially recover his cost of obtaining the data from the winner of the bid.

It must, however, be noted that such a model will fail when applied to areas which pose a high financial risk. In frontier basins and those areas with a high risk, it may be difficult to induce investors to invest their own money for data acquisitions. In such a situation, the GoI may acquire data at its own expense

48 Department of Communications, Energy and Natural Resources, Licensing Terms for Offshore Oil and Gas Exploration (2007), available at http://www.dcenr.gov.ie/natural-resources/SiteCollectionDocuments/Oil-and-Gas-Exploration-and-Production/LicensingTerms%202007.pdf (last accessed on September 12, 2015).

49 Working paper on OALP, available at http://www.aogo.in/working-papers.html#char (last accessed on September 11, 2015).

and use this as an incentive to attract investment in viable areas.[50] Therefore, the policy that is to be implemented with respect to data is two-fold. Firstly, where there are proven basins, companies may obtain data at their own expense, and offer such data to other investors who are able to obtain the block through the proposed OALP system. Secondly, in areas where there is a high risk, the GoI itself attempts to obtain data to provide to potential investors. However, this will not be done at a profit, keeping in mind that providing data collected by the GoI at a profit to investors will raise the initial cost of exploration and deter further investment in this sector.

Therefore, in the initial stages where both NELP and OALP systems coexist, it is recommended that OALP should allow companies to bid on blocks where adequate data exists, as well as blocks where data is inadequate or of a lower quality than companies require since there is a need to also improve the availability of data simultaneously along with the implementation of OALP.

In conclusion, as far as the policy regarding allocation of blocks is concerned, while not many countries have adopted an Open Door system such as India has planned to implement, and while those countries that do follow this system adopt it only for certain specific regions, there is no evidence to suggest that with the right implementation it will not achieve the objectives of transparency, regulatory effectiveness and obtaining sufficient data about blocks. While an Open Door system by itself has been criticised for lack of transparency in awarding of licenses, this is an issue that is easily corrected by making the criteria for awarding known before any negotiation processes. It is also advisable to publish all outcomes of negotiations to improve investor confidence in the transparency of the new system. The main issue with OALP is the lack of data on the basis of which companies can make bids. Therefore, parallel to implementing this, it is also necessary to collect data about basins, regardless of their risk factor. While promising basins may be given to companies to collect data, the onus of collecting data regarding basins with high risk will eventually fall upon the government.

50 Policy for Geo-Scientific Data Generation for Hydrocarbons in Indian Sedimentary Basins, available at http://petroleum.nic.in/docs/Agreement.pdf (last accessed on September 12, 2015).

Revenue Sharing Regime

Another issue that deters private players from investing in E&P for oil and gas in India is the need for a better and assured profit sharing system. While the GoI as the owner of the resource needs to be compensated, it also needs to make the E&P attractive to potential investors. The GoI aims to do this using a Revenue Sharing Regime (hereinafter RSR).

The GoI has shown interest in moving to the revenue sharing regime as proposed by the Rangarajan Committee on PSC by auctioning 69 blocks under Revenue Sharing Contract (hereinafter RSC).[51] The primary reason for such a decision is that it increases GoI revenue in the short run itself and less regulation and management is required for such a regime. The RSC is intended to work on a price and production scale wherein GoI revenue shoots up as production or price of petroleum rises. This means instant revenue for the GoI as soon as production begins, and therefore, cost recovery does not arise. The effect is such that the absence of cost recovery also significantly reduces the burden on the MC and the DGH in assessing the profits and costs of the operator. The DGH would only monitor the preparation of blocks, its sizes and distribution with respect to different areas and basins,[52] while MC would only need to oversee safety aspects, environmental concerns and general administration of the operator and its work.

RSC may look lucrative to the GoI, but there also lie inherent flaws in this system. It is a highly regressive system that discourages investment that India needs at present. Developing countries across the globe adopt versions of PSC because it promotes investment. Besides, almost 70-80% of the world operates on some form of profit-based mechanisms. A rather overlooked aspect of RSC is the impact it creates. A totally new contractual regime, in fact, only slows down investment and there is no clear evidence to show that this regime has been anywhere near successful across the globe. Most countries that originally developed it, such as Peru, have long abandoned it.

51 Govt puts 69 oil fields on the block, unlocks Rs 70,000 cr of reserves, *The Hindu*, available at http://www.thehindu.com/business/govt-puts-69-oil-fields-on-the-block-unlocks-rs-70000-cr-of-reserves/article7607959.ece (last accessed on September 14, 2015).

52 Rangarajan, supra note 30 at 42.

Conclusion

The concern regarding capital inflow to the GoI can be ensured using the royalty-tax component that is already being used and also capping the amount of cost recovery possible.[53] The issues regarding administrative burden and oversight can be overcome by outsourcing them to independent private entities which have expertise in evaluation of work commitment, audits and legal compliance.

The issue currently plaguing the sector is the lack of high investment and cutting edge technology, which cannot be achieved through a regressive model. The alternative is that indigenous technology be developed as in the defence sector by creating institutions such as the Defence Research and Development Organisation.

In order to encourage private player investment in oil and gas E&P in India, the GoI needs to use a mix of models. It needs to use the OALP system for new fields where there is inadequate data, work to create the NDR, and use a royalty tax regime to ensure its share of profits while providing private participants with the incentives to invest in India. A comprehensive oil and gas policy that covers all of these areas is likely to help speed up exploration and production of oil and gas fields in India and enhance India's energy security. A uniform licensing policy which covers oil and gas under a single window would be optimal instead of the current system of separate licensing for oil and gas.

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53 Kelkar, supra note 28 at 97.

Natural Gas Pricing in India

Jeydev C S[*]

Abstract

One of India's main regulatory agencies, the Directorate-General of Hydrocarbons, has the stated objective of promoting the sound management of Indian petroleum and natural gas resources, by doing away with state monopolies in the sector and envisioning a future of private and joint ventures. An important issue of contention is the approach of the judiciary in overseeing the operations of the DGH and the role it plays in the management of natural gas reserves in India, and its policies vis-à-vis the exploration and marketing of this fuel resource. The Courts have utilized the opportunity presented by the disputes between Reliance Industries Ltd. and Reliance Natural Resources Ltd., to further investigate the roles of the many stakeholders in this matter.

This article seeks to analyze the emergence of the multi-stakeholder public-private model that has become the norm in the natural gas extraction and marketing sector. Particularly, the pricing models that have evolved, and their antecedent schemes will be evaluated to gauge their efficiency, sustainability, and most importantly, their legal and constitutional validity. An argument will be made that the natural resource jurisprudence of the Supreme Court in RIL v. RNRL, has played a significant role in creating the necessary framework that permits the most optimal utilization of the underlying resource, such that there would be an increase in net welfare in society. The decision permits the government to devise rational policies that can involve the private sector in efficiently extracting and monetizing this resource, while ensuring that the treasury is enriched in the process. This framework preserves the spirit of public stake-holding in the natural resources sector and can be a model for future development of gas and oilfields, large and small. This is also reflected in the new Marginal Fields Policy intended to be taken up by the government. By shifting towards a revenue-sharing model, the risks of

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excessive red-tape, cost-inflation, and project execution delays can be avoided. The Supreme Court of India has thus essayed a vital role in preserving constitutional autonomy, while still subscribing to that fundamental tenet of regulation – to avoid market, and perhaps more importantly, government failure.

Introduction

The onset of liberalization of industry in India in the past two decades has been accompanied by the emergence of a plethora of regulatory agencies that occupy a position at the intersection of legislative authority, executive policy, and jurisprudential evolution. One sector that is characteristic of this situation is the energy industry, under the aegis of the Ministry of Petroleum and Natural Gas (MoPNG) of the Government of India. This article seeks to investigate the role of the Directorate-General of Hydrocarbons (DGH) under the MoPNG, which has the stated objective of promoting the sound management of Indian petroleum and natural gas resources, by doing away with state monopolies in the sector and envisioning a future of private and joint ventures.[1]

An important issue of contention is the approach of the judiciary, particularly the Supreme Court of India, the High Court of Judicature at Bombay, and the High Court of Delhi at New Delhi, in overseeing the operations of the DGH and the role it plays in the management of natural gas reserves in India, and its policies vis-à-vis the exploration and marketing of this fuel resource. The Courts have utilized the opportunity presented by the disputes between Reliance Industries Limited and Reliance Natural Resources Limited, to further investigate the roles of the many stakeholders in this matter. In this regard, the DGH essays the role of *policy maker* in addition to being a mere *referee* in regulation. This role has manifested itself most explicitly in the approach adopted by it in fixing the price of the natural gas that private explorers sell among themselves.

This article seeks to analyse the emergence of the multi-stakeholder public-private model that has become the norm in the natural gas extraction and marketing sector. Particularly, the pricing models that have evolved, and their

1 The DGH was established by the Government of India vide Resolution No. O-20013/2/92-ONG, D-III, in 1993 as the principal regulator for all "upstream" activity in the sector. This is contrasted with the "downstream" regulator that deals with refining, marketing, and competition, which is overseen by the Petroleum and Natural Gas Regulatory Board (PNGRB), created by statute in 2006. *See* Chapters II and III, The Petroleum and Natural Gas Regulatory Board Act, 2006.

antecedent schemes will be evaluated to gauge their efficiency, sustainability, and most importantly, their legal and constitutional validity. Finally, emerging development models and pricing schemes will be studied, with the goal of appropriately evaluating their potential efficacy and legality.

Regulatory Approach

The DGH exercises oversight primarily of exploration and production activities of companies in engaged in the commercial exploitation of hydrocarbon resources. Considering the fact that these resources require substantial capital investment in order to be exploited, most companies involved in this sector are large enterprises, often in joint ventures with international corporations that are dominant players in the field. Indian policy-makers, citing the historical precedent of rampant inefficiency in the erstwhile monopoly of public sector undertakings in the Indian economy, appear to have migrated to this approach of economic development. The existence of regulators may often be with the stated goal of serving the public interest by allocating scarce resources towards collective advancement.

Agencies such as the DGH have been deemed to be necessary in order to protect the public interest in the grander scheme of policy-making by offsetting the ills of market-failure through what is supposed to be inexpensive public oversight, in the form of sector-specific regulators.[2] The Production Sharing Contracts (PSCs) entered into by the DGH highlight rate-of-return regulation where the calculation of the prices for natural gas will be determined vis-à-vis a perfectly competitive market which involves the costs of production augmented by a market-determined return on the capital invested by the private company.[3]

The question over the precise nature of ownership, exploration, and marketing of the country's natural resources was examined at length before the Bombay High Court and the Supreme Court of India in the disputes between two private corporations, namely Reliance Industries Limited (RIL) and Reliance Natural Resources Limited (RNRL).

2 Richard Posner, 'Theories of Economic Regulation' (Working Paper No. 6), (National Bureau of Economic Research , 1974).

3 For more information on rate-of-return regulation, *see* Johan den Hertog, Review of Economic Theories of Regulation, 15 (Discussion paper series nr: 10-18, Tjalling C. Koopmans Research Institute, Utrecht School of Economics, 2010).

The New Exploration Licensing Policy (NELP) was formulated by the DGH in 1997-98 to provide a level playing field to private and public companies in the production and exploration of hydrocarbons. In the first round of NELP auctions, the consortium led by RIL acquired the license to develop an exploration block in the Krishna-Godavari (KG) basin, off the coast of Andhra Pradesh, later named D6.[4]

Judicial Approach

Before the High Court of Judicature at Bombay

J. N. Patel J., in his opinion in the case of *Reliance Industries Limited v Reliance Natural Resources Limited, 2009*,[5] analyzed the facts of the dispute in detail. Following the death of the family patriarch, Mr. Dirubhai Ambani, the succession to the assets of the parent firm were in contention, and to this effect, a family-agreement was entered into on June 18, 2005. When the assets of the conglomerate were bifurcated, a new firm, RNRL, was created with which the parent firm of RIL executed a Gas Sale Master Agreement (GSMA) wherein 28 mscmd[6] of natural gas would be supplied at the rate of $2.34/mmBtu.[7] In 2006 the MoPNG, through the DGH, rejected such bilateral pricing agreements between private entities in matters pertaining to sovereign resources, and refused to accept this scheme. However, the Bombay High Court ordered that the GSMA must be honoured, and that the natural gas must be sold at privately negotiated rates as the case may be, regardless of any pricing terms that the government may seek to establish. The judgment restricted the scope of government pricing strictures only to small component of the total output from the gas field, namely 10% of extracted gas, termed *profit gas*. Further gas allotments by the government were restricted by the Court to only this 10% component. Finally, the claims of RNRL regarding an entitlement to 28mscmd of natural gas, were upheld by the Court for a period of 17 years.[8]

4 Directorate-General of Hydrocarbons, Hydrocarbon Exploration and Production Activities in India (2012-13), 6, (2013).

5 Reliance Industries Limited v. Reliance Natural Resources Limited, 2009 (111) Bom LR 2507.

6 Million Standard Cubic Metres per Day, a unit of volume.

7 Million British Thermal Unit, a unit of energy.

8 Supra note 5, at 320.

This judgment consequentially had resulted in several new conceptions of natural resource extraction policies in India. The power of the government to regulate extraction was rendered subsidiary to a memorandum of understanding signed between two private parties, as were the terms of the relevant PSC in the matter. On these grounds, appeals were preferred to the Supreme Court of India. Here, RIL impleaded the Government of India as a party to its petition. The government contended that natural gas is "national property" and that the GSMA was null and void, further augmenting the RIL appeal. In its order, the Supreme Court overrode the GSMA and granted the government the sole authority to price, utilize, and distribute natural resources.

Before the Supreme Court of India

Heard as *Reliance Industries Limited v. Reliance Natural Resources Limited* before the Supreme Court,[9] this judgment substantially revised and overturned the position of the High Court. The Supreme Court revisited the dispute through the lens of Art. 297 of the Constitution of India, which provides that things of value within territorial waters of continental shelf and resources of the exclusive economic zone shall vest in the Union of India.[10] In his concurring judgment, Sudarshan Reddy J. held that the mere fact that natural resources within Indian territory are vested in the government by the Constitution, does not mean that the Union of India enjoys unchecked discretion to deal with the same. Rather than "*own*", Reddy J. contends that the constitutional provisions on the matter "*are inscribed, nay genetically encoded and hardwired, in the commands 'to be held' and 'for the purposes of the Union'. The core and pure purport of the word 'hold' is to conserve, to preserve and to keep in place and it only secondarily means 'use' or 'disposal'.*"[11]

Consequently, it held that all natural gas reserves and extracted product shall be controlled by the government, up until the point of delivery on *terra firma*.[12] The Court also held that the power of the government to privatize and extract natural gas is subject to constitutional considerations and subsidiary instruments

9 Reliance Industries Limited v. Reliance Natural Resources Limited, (2010) 7 SCC 1.

10 Art. 297 (1) and (2), Constitution of India, 1950.

11 Supra note 9, at 182.

12 This is in line with Art. 27.1 of the PSC. *See* ¶ 148 (1); *See also* the case of CIT v. Enron Oil and Gas India Ltd. (2008)305 ITR 75.

such as the PSC, and no private agreement can impinge upon the same. Thus, the allocation norms set by the government, concerning matters of price and quantity, must be abided to by RIL. Further, the entitlement claimed by RNRL, to certain quantities of natural gas at privately negotiated rates for pre-determined periods of time, was struck down by the Supreme Court.

The superseding value of the PSC, and by extension, the natural gas allocation policy of the government is also supported by another line of legal justification. The Supreme Court, here draws a link between Art. 14 and Art. 39 (b) of the Constitution. A combined reading of the provisions on *equality before law of all persons*[13] as well as the constitutional directive to frame State policies concerning the control of ownership and distribution of material resources would mean that such policies will be subservient to the *common good*.[14] It is in this tenor that the Supreme Court makes use of the opportunity to outline broad guiding principles that should pertain to the government's appropriate regulatory regime.

For instance, Reddy J. highlights the reality that there are no absolutely unregulated resource markets in the world, and acknowledges the need for equitable access across sectors, adequate supply, equitable pricing (even with an expanding market-place model), national energy security, defense-sector requirements, and intergenerational equity.[15] With these stated guiding principles, the judgment also outlines specific considerations that must be kept in mind while the judiciary undertakes review of government policy, and related agreements between the State and private contractors. Specifically, the *intra vires* of the policy and its implementation is contingent upon satisfying the requirements envisioned under Art. 297 of the Constitution. The judgment prohibits the Union of India from transferring title of these resources upon extraction until and unless *adequate* and *just* compensation is provided; the development of a scenario that can deprive access, extraction without adequate conservation policies, extraction without periodic reevaluation, unchecked redistribution without express approval of the government, and unfettered continued access to any private users beyond prescribed time periods.[16]

13 Art. 14, Constitution of India, 1950

14 Art. 39 (b), Constitution of India, 1950.

15 Supra note 9, at 170.

16 Supra note 9, at 192.

Controversial Policies before the Courts

The bulk of the criticism that is often directed at natural resources regulation in India subscribes to the theory of *regulatory capture*, and this concern is particularly acute when it comes to natural gas and its pricing methods. Regulatory capture is a form of institutional failure on the part of the government, which provides avenues for private firms to act in such a manner as to produce negative market externalities.[17] This situation is often the result when the regulator ends up advancing the special interests of the parties concerned instead of regulating their actions in the public interest. With regard to the gas-pricing issue, the concurrent opinion of Reddy J. in the Supreme Court order best illustrates this concern. This opinion warns of dire consequences of unchecked privatization of natural resources given that "*they are owned by the people as a nation*" and that the inequitable concentration of resources in the hands of private conglomerates is "*inimical to the values of equality and justice in social action*".[18]

Yet, even the judiciary has been reluctant to fall back to the state-driven, centrally planned model of the decades pre-1991. Mineral resources were under the control of independent India for over four decades, yet their utilization was far from optimal when left to the direct operation of the government. While profiteering is an inevitable consequence of the involvement of the private sector, it serves as an incentive to create and sustain the framework that will result in the most efficient utilization of these resources. This is not to say that an unchecked market will not fail. Negative externalities can and must be offset by the intervention of the government through limited regulation. Even in its opinion in the present case, Reddy J. warns of the risks of excessive privatization, but acknowledges that the need of the hour is to have appropriate and efficient regulatory institutions.[19]

Noted economist Joseph Stiglitz, as cited by the Court, speaks of the curious phenomenon of the *resource curse*, where those under-developed countries with abundant mineral deposits, have not performed well in parleying gains from these sectors to improvements in living conditions for its peoples.[20] Reddy J. outlines

17 George Stigler, 'The Theory of Economic Regulation', 2(1) *The Bell Journal of Economics and Management Science,* 14, (1971).

18 Supra note 9, at 109.

19 Supra note 9, at 256.

20 Supra note 9, at 104.

these concerns in the context of the need for subscribing to the constitutional scheme in dealing with this, both from an adjudicatory position, as well as that from the perspective of the policy-maker.

The Present Natural Gas Pricing Regime

This issue of gas pricing perhaps best exemplifies the confluence of the morality of state-sanctioned market incentives and the notable goals of the public interest. Natural gas is a commodity that fuels a wide range of sectors including those indispensable to industrial and domestic production such as steel and power. Given that the Indian economy is in a stage of rapid advancement, the efficient utilization of natural gas resources ought to remain a primary priority. Concerns of regulatory capture and private profiteering, as important as they are, must remain subsidiary to this policy goal as long as sufficient regulatory mechanisms are in place.

The Production-Sharing Model

In light of the above, the pricing strategy adopted by the DGH seems appropriate. The PSC provides for sales of natural gas[21] at competitive, arms-length[22] price based on a formulation approved by the government. An Empowered Group of Ministers (EGoM) on this issue accepted an internationally benchmarked formula in 2010, upon the final verdict of the Supreme Court in the *Reliance cases* that granted the government the authority to do so, effectively raising the price of gas to $4.2/mmBtu.[23] Even so, these prices were deemed to be unsustainable in both the short-term and the medium-term, if the stated goals of increased output and government revenue were to be considered.[24]

It must be noted that no competitive market for natural gas will exist in India, at least in the near future, owing to a large demand-supply deficit. The immense demand from industries is unmatched, owing to the severe paucity of supply

21 Art. 21.6, Model Production Sharing Contract, NELP VIII, Ministry of Petroleum & Natural Gas (2009).

22 This refers to sales made in the open market between willing, unrelated sellers and buyers. *See* Art. 1.8, Model Production Sharing Contract, NELP VIII, Ministry of Petroleum & Natural Gas (2009).

23 Comptroller and Auditor General of India, Performance Audit of Hydrocarbon Production Sharing Contracts (Ministry of Petroleum & Natural Gas), 38, (Report No. 19 of 2011-12).

24 Government of India, Report of the Committee on the Production Sharing Contract Mechanism in Petroleum Industry, 76, (December 2012).

due to the absence of many producers. Hence, a domestic-market-oriented price determination will not succeed. The competitive price of Indian gas at the global level must be ascertained from global trade transactions in natural gas. Since no unified global market exists for this commodity, it was recommended that the average of prevailing prices at global trading points and the netback prices of Indian imports at the wellhead of exporters must be incorporated into the pricing formula.[25] This would serve as a reliable guide to the arm's length approximation of competitive prices that would be applicable in India.

This was widely criticized as raising costs for consumers, the state, and even other players in the market with prices breaching the $8.00/mmBtu barrier.[26] On January 10, 2014 the Government of India notified this pricing scheme, commonly referred to as the *Rangarajan formula*, named after the chairperson of the committee that recommended it, to be effective from April 1, 2014. However, the same was held in abeyance on account of the pending general election. The modalities of this formula can be altered keeping in mind the volatility of international markets. With the change of the political executive post the general election in May 2014, the new government tweaked the gas pricing formula such that average prices settled around $5.61/mmBtu in November of the same year.[27] This was a drastic reduction from the above notified *Rangarajan formula* which would have seen prices around $8.42/mmBtu for the year 2014 and then exceeding $10.00/mmBtu in the years to come. The new modified formula, effective from November 2014 has been forwarded only for a period of five years. The Government of India further modified the formula and adjusted the price to $ 3.82/mmBtu for the period ending March, 2016.[28]

25 Government of India, Report of the Committee on the Production Sharing Contract Mechanism in Petroleum Industry, 89, (December 2012).

26 Standing Committee on Petroleum & Natural Gas, Lok Sabha, ALLOCATION AND PRICING OF GAS, 38, (2013).

27 Several computation improvements have been effected including a more accurate weightage being awarded to Japanese imports, domestic benchmarks for the Russian market instead of UK benchmarks, while also demarcating the Canadian benchmark from the American one. *See* Government of India, New Domestic Natural Gas Pricing Guidelines, 2014, No. 22013/27/2012-ONG.D.V.

28 This mid-year review was precipitated by a fall in the relevant benchmark indices, owing to the tempering of natural resource prices in global markets in 2015. *See* Petroleum Planning & Analysis Cell, Ministry of Petroleum & Natural Gas, Government of India, PPAC/Gas Pricing/October, 2015-March, 2016.

Possible Judicial Finality

RIL and the Union of India have had differences over the overall regulatory regime enforced by the government, and its claims on royalties, cess, service tax, audits by the Comptroller and Auditor General of India. These differences were subject to arbitration proceedings in London, England[29] where the tribunal ruled broadly in favour of RIL. Subsequently, the Union of India appealed to the High Court of Delhi asking for the arbitral award to be set aside. In *Union of India v Reliance Industries Ltd.*,[30] the Court ruled that these matters were not arbitrable; this was subsequently overturned by the Supreme Court of India.[31]

Despite the varied nature of these cases, and others pending before the Supreme Court concerning arbitration claims on the gas pricing issue, the government has adopted the position that the judgment of the Court in *RIL v RNRL* is clear on the nature of ownership of natural resources in India and the obligations of the State to ensure equitable distribution for just compensation. The government has also continuously argued that these policy matters cannot be overridden by antecedent private contractual terms.[32] While the final judgment of the Court in that matter is awaited, the author believes that the claims of the government are likely to be sustained, considering the forceful nature of the position laid down by Court in *RIL v RNRL*.

Inherent Risks and Disincentives of the Present Scheme

The ultimate goal of a domestic market determination of gas prices is most optimal, but this can only be realized once the domestic gas market in India is mature enough. Even the best-case scenario does not envision this maturity to be in place in the coming decade.[33] While the stand adopted by the petroleum regulator and RIL in this episode suggests that higher prices for natural gas might increase revenues for the government, which receives marketing royalties under the PSC, it must

29 Art. 33.9 and a binding agreement entered on Sept. 11, 2011.

30 OMP No. 46/2013 (High Court of Delhi at New Delhi).

31 Reliance Industries Ltd. v. Union of India, (2014) 7 SCC 603 (Supreme Court of India).

32 SC Ends Hearings in K-G Basin Arbitration, *Business Standard* 8 (New Delhi edn, August 18, 2015).

33 Committee on Roadmap for Reduction in Import Dependency in Hydrocarbon Sector by 2030 (Ministry of Petroleum & Natural Gas), Towards a New E&P Regime and Roadmap for Market-Determined Pricing of Natural Gas, 18, (2014).

34 Art. 15, Model Production Sharing Contract (NELP VIII), Ministry of Petroleum & Natural Gas (2009).

be kept in mind that the same contract offers the licensee the opportunity to recoup production and exploration costs on preferential terms,[34] before a regulator-mandated marketing strategy would kick in. The initial development plan (IDP) approved by the DGH in November 2004 envisaged capital expenditure of $2.4 billion for the D6 block. An addendum to the IDP was submitted to the DGH in October 2006, asking for an upward revision to $8.8 billion.[35]

Several accusations were raised against this, as only being an attempt to defer royalties payable to the government by engaging in otherwise unnecessary capital expenses. Regardless of the veracity of these allegations of gold-plating, if the nature of the PSC entered into by the DGH did not discourage the prevention of inflated capital costs, this would show that a rate-of-return regulation approach of the government was leading to inefficiency in the exploration process. This risk of capital accumulation, which could effectively raise prices for consumers without a corresponding public advantage, is called the *Averch-Johnson effect.*[36] A stricter price-cap regulation could overcome this flaw by incorporating into the formula factors that are beyond the control of the firm, which has been adopted in principle by the MoPNG subsequently by using indices exogenous to the firms set in advance by the regulator.[37]

Marginal Fields Policy and the Way Forward

The Revenue-Sharing Model

A significant overhaul of the present policy towards resource extraction and marketing has been heralded by the position adopted by the government in September 2015. The Union Cabinet approved the new Marginal Fields Policy (MFP), under which 69 oilfields held by the Oil & Natural Gas Corporation Ltd. and Oil India Ltd., two public-sector enterprises, which were heretofore unexploited on account of scalability issues, high-development costs, technological costs, et cetera will be partially privatized. Under this policy,

35 Press Release of Directorate-General of Hydrocarbons, *Deep-water Development Project of KG-DWN-98/3* (August 4, 2009).

36 Harvey Averch and Leland Johnson, 'Behaviour of the Firm Under Regulatory Constraint', *The American Economic Review*, Vol. 52, No. 5 (Dec 1962), 1058.

37 Art. 15.10 Model Production Sharing Contract, NELP VIII, Ministry of Petroleum & Natural Gas (2009).

these marginal fields will be opened up for competitive bidding, and winners will be awarded twenty-year long licenses to exploit all hydrocarbons discovered, including petroleum and natural gas (as against the older policy of individual licenses for each). Most significantly, this policy signifies a movement away from the profit-sharing model where the government and the contractor were often at odds in estimating output, and costs incurred. Now, a gross-revenue from all sales of hydrocarbons from the respective fields will be paid to the government.[38]

Such a revenue-sharing regime can reduce delays, disputes, and stoppages while also leading to quicker approval timings, and limited intrusive regulatory procedures. While presently this is only applicable to the aforementioned small fields, a revenue-sharing model can be a blueprint for future exploration allotments and even renegotiation of past agreements under subsequent NELPs. The legality of this arrangement should satisfy the tests laid down in *RIL v RNRL* by the Supreme Court in order to be judicially sustainable. Reddy J. has held that the Union of India cannot transfer title of extracted gas until the State receives *just* and *proper* compensation. In the past, the DGH disallowed $1.2 billion of the total investments in KG-D6 so far to be valued towards costs, lending some credit to the accusation that RIL was inflating costs.[39] While this might suggest that the present DGH approach is sufficient to keep private operators in line,[40] the fact remains that such a model can raise transaction costs in realizing the revenue that is due to the government. The

38 Press Release of Ministry of Petroleum and Natural Gas, 'Policy for Marginal Fields of ONGC and OIL: Major expansion of role of private sector in oil and gas' (September 2, 2015). There is further talk of radical deregulation in the natural gas pricing regime for extraction from domestic sources, but the same is yet to manifest itself in any policy measure of the government. While it appears to suggest that deregulation may be feasible in the long-term, present policy is clearly in favour of the approaches outlined by the author throughout this essay. *See* Debajit Chakraborty, 'Govt said to be considering deregulation of natural gas prices', *Livemint* 6 (Bangalore edn, October 14, 2015).

39 In May 2012, the DGH advised the MoPNG against such valuation, on the basis that only 18 of the contracted 31 wells in the block. For more information on this, and other accusations of cost inflation, *see* Paranjoy Thakurta *et al.*, GAS WARS: CRONY CAPITALISM AND THE AMBANIS 54, (2014).

40 The recommendations of the CAG are shortsighted as the Investment-Multiplier model incentivizes private firms to invest in an otherwise capital-intensive industry. Removing it would impede India form attaining self-sufficiency in natural gas in the foreseeable future, unless more efficient revenue-sharing models are implemented. *See* Comptroller and Auditor General of India, *Performance Audit of Hydrocarbon Production Sharing Contracts (Ministry of Petroleum & Natural Gas)*, 62, (Report No. 19 of 2011-12).

MFP model avoids these costs by committing the private explorer and marketer to financial obligations, regardless of costs incurred. It is true that this serves as an incentive to be cost efficient, but this new model also better satisfies the spirit of the Reddy J. position. This present blanke t extraction policy only covers marginal fields, and thus cannot be held to be in violation of the Supreme Court's prohibitions against schemes that lack conservation policies and periodic reevaluation, while the license period is not indefinite owing to the twenty-year cap. Thus, it appears that the MFP satisfies the specific requirements of the Court, and the same is undoubtedly in compliance with the ideals of natural resource extraction policies, as laid out earlier in this article.

Towards a new contractual regime

The most striking indication towards radical overhaul in the natural resources extraction arrangements in India is the recently stated goals of the MoPNG in ushering a new contractual regime in the exploration and production sector.[41] Among other things, it is envisioned as a 'Uniform License Policy' that incorporates exploration of several types of natural resources such as natural gas, petroleum, coal-bed methane, shale gas, gas hydrates and so on, all under a combined license scheme, along with the deregulation of acreage limits on bidding. The government also seeks to explicitly implement the aforementioned revenue-sharing model by replacing the present production-linked model across new fields, under an 'Open Acreage Licensing Policy'.[42] This, as articulated earlier in the context of marginal fields, is a welcome step that can improve production, revenue, and efficiency for all stakeholders in the sector as a whole.

However, it appears that the government also desires to extend the same thread of deregulation as the MFP vis-à-vis the pricing and marketing of natural gas extracted from all fields in the country in the future.[43] It is here that there must

41 The Government of India seeks to formulate the new policy by April 2016, and consultations with a multitude of stakeholders have been initiated in that regard. *See* Press Trust of India, 'Oil & Gas Block Auction Policy to be Ready by FY16', *Business Standard* 1 (Bangalore edn, November 17, 2015).

42 *See* Ministry of Petroleum & Natural Gas, Government of India, Consultation Paper to Invite Comments from Stakeholders on New Fiscal & Contractual Regime for Award of Hydrocarbon Acreages, (2015), available at http://petroleum.nic.in/docs/exp/comments_invited_from_ stakeholders.pdf (last accessed on November 17, 2015).

43 Id.

exist some restraint, as the unique considerations applicable to small fields (as outlined in the MFP) may not translate well on a widespread commercial scale. As outlined earlier, there cannot be a truly competitive market for natural gas in India in the near future, owing to the demand-supply deficit. While the sentiment is laudable, deregulation in pricing must be a smooth, phased process. This can ensure that the requisite components of a competitive marketplace in natural gas may evolve, and be developed where such state assistance is necessary. Once such institutional goals are achieved, that is a multitude of natural gas producers and marketers on the sellers' side and a robust consumer base that consists of industrial users (such as those in the power, fertilizer, and such sectors) as well as domestic distribution agents and consumers, the government can then completely deregulate the pricing scheme. Until then, some state intervention is advisable in arriving at the price of the natural gas that is extracted in the major fields in India.

Conclusion

Any economic analysis of law should attempt to maximize efficiency, which can advance the promulgation of certain legal rules, at the cost of others that are deemed to be inefficient. Such *normative law and economics* might prefer the allocation of property rights and state monopolies inequitably, if such inequity can create the necessary framework that permits the most optimal utilization of the underlying resource, such that there would be an increase in net welfare in society. The takeaway from the judgment of the Supreme Court of India in dealing with the issue of natural gas extraction policy appears to subscribe to the above sentiment. Even though private-profiteering has become the order of the day in this sector, policies that permit or condone the same are to be held to the strict standards laid down by the apex judicial body in the *RIL v. RNRL* disputes.

The Constitution is clear in that the natural resources of India belong to the people of the country, and that the government of the day only holds and controls it on their behalf. It is this sentiment that Sudarshan Reddy J. and P. Sathasivam J. echoed when they held that the ultimate authority to price natural gas remains with the Union of India. The government may devise rational policies that can involve the private sector in efficiently extracting and monetizing this resource, but these policies must ensure that the treasury is enriched in the

process of its exploitation. It is within this premise, that the MoPNG has been able to devise a formula to arrive at a *just* and *proper* price for natural gas that will sustain the legal validity of its extraction policies in a post-*Reliance* judicial regime.

The amendments and modifications of the pricing scheme, from the original private agreement-based rate of $2.34/mmBtu to the modified *Rangarajan* rate $5.61/mmBtu has increased revenues both for the private firm of Reliance Industries Limited as well as the exchequer. This has been possible due to the new natural resource jurisprudence of the Supreme Court, as put forth eloquently by Reddy J. The author expects that such an approach will be solidified once the Court exercises final judgment in the gas-price related arbitration cases pending before it presently. This spirit of constitutional subservience in a globalized, market-based economy is well reflected in the new Marginal Fields Policy that the government intends to undertake. While preserving the spirit of public stake-holding in the natural resources sector, this can also be a model for future development of gas and oilfields, large and small. By shifting towards a revenue-sharing model, the risks of excessive red-tape, cost-inflation, and project execution delays can be avoided. The Supreme Court of India has thus essayed a vital role in preserving constitutional autonomy, while still subscribing to that fundamental tenet of regulation – to avoid market, and government, failure.

CONSERVATION OF NON- RENEWABLE ENERGY RESOURCES

NEED FOR INTERNATIONAL CO-OPERATION

Dr. Anu Prasannan[*]

Abstract

Energy laws gained recognition in international and Indian scenario following the 'Gulf oil shock' of the early 70s. While the Petroleum rich countries in the Middle East benefited from the increased prices and slowing production in the other areas of the world, the crisis led to stagnant growth in other countries resulting in increased disparity between developed and developing countries. In spite of awareness programmes in India for promoting energy efficiency to meet this crisis, not much headway was made and consumption spiralled. This resulted in the need for a legal framework, and the Energy Conservation Act, 2001, was enacted for encouraging energy efficiency and discouraging wasteful use of energy. Though India is heading towards energy efficiency by making use of its non-renewable resources by adopting innovative techniques for energy production, it is not absolved of problems. Misuse of energy is also rampant in the International scenario. It has close ramifications on environmental, health, and safety issues. The misuse of non-renewable energy is transcending the principles of intergenerational equity and permanent sovereignty over natural resources. The future existence of the biosphere depends on long-term availability of non-renewable resources in increasing quantities from sources that are dependable, safe, and environmentally sound. Even today all States are dependent on primary sources of energy, which are non-renewable in nature. In order to achieve the goals of sustainable development it is necessary to look into the means of ensuring the optimal utilisation of non-renewable resources. It is also necessary to raise awareness and to familiarise the population with the value of limited resources and to put them to optimal use. This can be achieved only through a Convention on conservation of non-renewable resources and strict adherence to the obligations imposed thereunder.

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Introduction

Energy laws that focus on the production, distribution, conservation, and development of energy resources like coal, oil, natural gas, nuclear power etc., gained recognition under the international scenario following the energy crises of the 1970s. The period witnessed a downturn slash in the economies of the major industrial countries of the world namely, United States, Canada, Western Europe, Japan, Australia and New Zealand because of petroleum shortage as well as the elevated price strategy. The two worst crises of this period were the 1973 oil crisis[1] and the 1979 energy crisis,[2] both related to the Organisation of Petroleum Exporting Countries (OPEC) controlling the flow of oil to the US. The western countries relied on the resources of potentially unfriendly countries in the Middle East and other parts of the world. History reveals that the period was not negative for all economies. While the Petroleum rich countries in the Middle East benefited from the increased prices and slowing production in the other areas of the world, the crisis led to stagnant growth in other countries. This disparity poses the following questions:

(i) Whether the concept of permanent sovereignty over natural resources is violated as it has resulted in unfair and inequitable exploitation for the States and people who own them, which in turn is contrary to the spirit and principles of the Charter of United Nations?

(ii) Whether there is violation of the principle of Inter-generational Equity?

(iii) Is the rift between the developing and developed countries widening?

(iv) Are the super powers misusing the natural resources at their disposal?

(v) What is the impact of environmental emissions in enhancing international environmental problems?

(vi) Why is there a shift in recent times from non- renewable to renewable energy sources?

In the process of answering these questions it is pertinent to dwell upon the uncharted or unexplored arenas of energy laws.

1 It was in the form of an 'embargo' when primarily the Arab countries cut down or stopped exporting oil to the US due to US's support of Israel in its wars with the Islamic countries.

2 The OPEC countries raised the price for a barrel of oil exported to the US until the price became untenable for the US oil companies to purchase.

Distinction between renewable and non-renewable energy

Natural resources are found abundantly on the earth's surface, and we use various kinds, including minerals, wood, coal, natural gas, wind, water, plants, animals, and many more. Some of these are renewable and some are non-renewable. The difference is that some renew faster than others, making them more sustainable than those that do not renew as fast.

- **Renewable resources**

  Renewable resources are resources that are replenished by the environment over relatively short periods of time. This type of resource is much more desirable to use because often a resource renews so fast that it will have regenerated by the time we have used it up. Resources of renewable energy are solar energy,[3] wind energy,[4] Bio energy,[5] Hydroelectric power generated from water and geothermal energy.[6]

- **Non-renewable resources**

  Resources that are not easily replenished by the environment are non-renewable in nature. Non-renewable resources can be brought under two main categories; fossil fuels and nuclear fuels.

  (i) Fossil fuels

  Fossil fuels are formed by natural processes such as anaerobic decomposition of buried dead organisms found in the earth's crust. They are derived from the remains of plants and animals that lived millions of years ago. The organic matter, typically plants, have decomposed and compressed over time, leaving

3 Electricity can be produced directly from photovoltaic cells (PV) using solar energy.

4 Wind turbines convert the kinetic energy in the wind into mechanical energy which in turn is used by the generator to produce electricity. Wind power or wind energy is used as an alternative to fossil fuels.

5 Biomass is a biological material derived from living organisms. It includes plant or animal matter that can be converted into fibres or other industrial chemicals including biofuels which can be used as a fuel for producing electricity.

6 This type of energy is derived from the thermal energy generated and stored in the earth wherein, 'Geo' means 'earth' and 'thermos' means 'heat'.

what are known as fossil fuel deposits.[7] They contain high percentage of carbon and include coal,[8] petroleum,[9] and natural gas.[10] These deposits and the materials produced from them tend to be highly combustible, making them an ideal energy source. They are difficult to obtain as they are typically retrieved through drilling or mining.

(ii) Nuclear fuels

Nuclear fuels are materials that can be burned by nuclear fission or fusion to derive nuclear energy. In the case of nuclear energy, very small amount of the fuel is required to produce large amount of power. This non-renewable resource used to produce energy is obtained primarily through the mining and refining of uranium ore.[11] In many senses nuclear energy is the cleanest of all non-renewable resources.[12] It does not produce gaseous emissions such as greenhouse gases which are harmful either to the population or to the environment.

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7 The International Energy Agency (IEA)is forecasting that fossil fuels will dominate the world's energy picture as it has in the past, representing almost 75% of global energy demand in 2040. *See* International Energy Agency, World Outlook 2014, Executive Summary, November 2014, available at http://www.iea.org/Textbase/npsum/WE02014SUM.pdf

8 American coal production is currently the second highest in the world behind China. According to the Statistical Review of World Energy, published in 2011 by BP, they produced an astounding 48.3% (3,240 million tons) of the world's coal in 2010, followed by the United States who produced a mere 14.8%.

9 The top three oil-producing countries are Russia, Saudi Arabia, and the United States.

10 The US is the largest producer of natural gas, amounting to 25.7 trillion cubic feet in 2014 as per US Energy Information Administration estimates.
available at http://www.eia.gov/todayinenergy/detail.cfm?id=20692EIA Feb 27 2014

11 Uranium is naturally occurring element found within the earth's core. Most uranium deposits occur in small quantities which miners gather together, refine, and purify. Once gathered, the uranium is brought together and compounded into rods. The rods are then submersed into tanks of water. When it reaches critical mass, uranium begins to break down and release energy which heats the water it is immersed in. This is known as "fission." The heated water then creates pressure and it is this pressure which drives the turbines that generate the electricity.

12 It is unfortunate that the nuclear industry has had bad reputation for safety. The overwhelming majority of nuclear reactors have functioned safely and effectively for their entire lifetimes. The two major nuclear accidents, at Three Mile Island and Chernobyl, were both in old style reactors, made worse in the latter case by poor Soviet safety standards.

Impediments in the conservation and maximization of energy efficiency under Indian scenario

In India the concept of energy conservation originated in early 70s after the "Gulf oil shock" in the same manner as it gained recognition in the International scenario. To meet this energy crisis, awareness programmes were initiated by Petroleum Conservation Research Association (PCRA),[13] and followed later by Energy Management Centre (EMC),[14] National Productivity Council (NPC),[15] National Thermal Power Corporation Ltd (NTPC),[16] National Council for Cement and Building Materials (NCCBM),[17] The Energy and Resources Institute (TERI),[18] and Confederation of Indian Industry (CII)[19] for promoting energy efficiency but not much headway was made and consumption spiraled.[20] However, these awareness programmes could make an impact through a legal framework for conservation of energy which culminated in the enactment of Energy Conservation Act, 2001.

In India the primary energy demand has grown from about 450 million tons of oil equivalent (toe) in 2000 to about 770 million toe in 2012. This is expected to increase to about 1250 to 1500 million toe in 2030.[21] The Government of India has undertaken a two-pronged approach to cater to the energy demands of the citizens by ensuring minimum increase in carbon dioxide emissions. On one hand, in power generation

13 PCRA is an organisation established in 1978 under the aegis of the Indian Ministry of Petroleum and Natural Gas engaged in promoting energy efficiency in various sectors of economy.

14 EMC was established in 1996 and promotes energy conservation in all sectors of the economy through scientific and technological research, education and training as well as professional consultancy and advice.

15 NPC was founded in 1958 by the Government of India and its services include consultancy, training and research in the area of productivity and energy.

16 NTPC was founded in 1975 and is engaged in the business of generation of electricity and allied activities.

17 NCB was established in 1962 and has been actively engaged in carrying out energy audit studies, rational utilization of energy, identification of potentials of energy saving etc.

18 The Energy Research Institute (TERI), formerly Tata Energy Research Institute was established in 1974 and has been actively working in close association with the Indian industry for developing solutions to the challenges posed by the growing demand for energy.

19 CII works to create and sustain an environment conducive to the growth of industry in India, partnering industry and government alike through advisory and consultative processes.

20 In India the Ministry of Power is charged with energy and energy conservation.

21 The Statistics was estimated by International Energy Agency in the Integrated Energy Policy Report.

in power generation the government is promoting greater use of renewable energy mainly through solar and wind and at the same time shifting towards supercritical technologies for coal based power plants.[22] On the other side, efforts are being made to efficiently meet the demand for energy through various innovative policy measures under the overall ambit of Energy Conservation Act (EC Act), 2001. This calls for a look into the domain of the Energy Conservation Act.

The Energy Conservation Act was enacted in 2001 with the goal of providing for efficient use of energy and its conservation and for matters connected therewith, reducing energy intensity of Indian economy.[23] The Act defines "energy" as any form of energy derived from fossil fuels, nuclear substances or materials, or hydro-electricity, and includes electrical energy or electricity generated from renewable sources of energy or bio-mass connected to the grid.[24] The Bureau of Energy Efficiency (BEE) was set up as a statutory body on 1st March 2002 at the central level to facilitate the implementation of the EC Act. The Act provides regulatory mandate for standards and labelling of equipment and appliances; energy conservation building codes for commercial buildings; and energy consumption norms for energy intensive industries. In addition, the Act enjoins the Central Government and the Bureau to take steps to facilitate and promote energy efficiency in all sectors of the economy. The Act also directs states to designate agencies for the implementation of the Act and promotion of energy efficiency in the state. The EC Act was amended in 2010 and the main amendments of the Act are as follows:

- The central government may issue the energy savings certificate to the designated consumer whose energy consumption is less than the prescribed norms and standards in accordance with the procedure as may be prescribed [Sec. 14 A (1)].[25]

22 Supercritical (SC) and ultra-supercritical (USC) power plants require less coal per megawatt-hour, leading to lower emissions including carbon dioxide and mercury, higher efficiency and lower fuel costs per Megawatt. The result is higher in efficiencies i.e., above 45 percent.

23 As a measure of energy conservation, "energy intensity" which is the amount of energy consumption per work unit is often used. Suehiro, Shireru,Energy Intensity of GDP as an Index of Energy Conservation, *IEEJ*,August,2007.

24 Section 2(h) of the Energy Conservation Act, 2001.

25 After Section 14 of the principal Act, new Sections 14 A and 14 B has been inserted.

- The designated consumer whose energy consumption is more than the prescribed norms and standards shall be entitled to purchase the energy savings certificate to comply with the prescribed norms and standards [Sec.14 A (2)].
- The central government may, in consultation with the Bureau, prescribe the value of per metric ton of oil equivalent of energy consumed [Sec. 14B].
- Commercial buildings which are having a connected load of 100 KW or contract demand of 120 KVA and above come under the purview of Energy Conservation Building Codes (ECBC) under EC Act [Sec. 2(c)].

  Ministry of Power, through Bureau of Energy Efficiency has initiated a number of energy efficiency initiatives in this regard. These initiatives have resulted in an avoided capacity generation of 10836 MW during the XI plan period.[26]

Though India is heading towards energy efficiency by making use of its non renewable resources by adopting innovative techniques towards energy production, it is not absolved of problems. India's power sector in nuclear power generation has been stymied by the political activism since the Fukushima disaster in Japan. Despite abundant reserves of coal, India is still facing a severe shortage of coal because mining activity in the designated tribal lands and protected forests, where most of India's coal reserves lie, has been rife with social activism and public interest litigations. India's coal-fired, oil-fired, and natural gas-fired thermal power plants are inefficient, but through better technology can offer significant potential for reduction of greenhouse gas emissions. In this regard, Ministry of Power, which is responsible for planning, policy formulation, processing of projects for investment decisions, monitoring project implementation etc, has to take adequate measures pertaining to effective utilisation of non-renewable resources, as the renewable energy sector in India is still in its infancy. Analysing the Indian scenario on energy sector compels one to venture into the areas of misuse of energy in the International field.

26 *See* Energy Efficiency, Ministry of Power, Government of India available at http://powermin.nic.in

Misuse of non-renewable energy under International Scenario

Compared to renewable resources, non-renewable resources are cheap for conversion from one type of energy to another. They are easy to use and face no competition. Energy is a time-tested and major cause of political conflicts. The rapid growth of energy demand, especially in the developing countries, is likely to lead to new tensions in the market unless appropriate preventive measures are taken. Preventing crises by ensuring energy security is an important contribution to world peace. This calls for a need to look into the instances of misuse of energy in the international scenario.

- While there has been a phenomenal expansion of international law from the 'traditional' to 'new international law', the transition is faced with a number of challenges. One of the greatest challenges in the third millennium is the danger of nuclear war. Some efforts, such as entering into International Nuclear Forces Treaty (INF), Strategic Arms Reduction Treaty (START), Non-Proliferation Treaty (NPT), and Comprehensive Test Ban Treaty (CTBT) have been made. Still the situation remains grim. Global powers like the US, which are permanent members of the United Nations Security Council, exercise their power of veto to prevent the adoption of 'substantive' draft council resolutions, regardless of the level of international support for the draft. These States refrain from signing International Conventions, especially the US, whose main barrier to signing treaties is the fear that these treaties will interfere with US sovereignty.

- Economically powerful nations enjoy power and energy along with technology. Though rich in energy resources, States like US are importing and hoarding natural resources. Americans still import about a fourth of the oil they use without thinking of a natural energy policy.[27] Though a national energy plan was created with the establishment of the Department of Energy in 1977, Federal energy laws and regulations aim to provide affordable energy by promoting competition in energy markets. Along with the Department of Energy, the Federal Energy

27 Buchele, Mose, "Why is the US still importing so much oil?" *State impact Texas, Energy and Environment Reporting for Texas,* October, 28, 2014.

Regulatory Commission (FERC)[28] was established. FERC regulates the transmission and sale of these energies except the sale of oil and provides licenses for hydroelectric plants and deals with related environmental matters. The nuclear power industry is regulated by the US Nuclear Regulatory Commission (NRC) whose mission is to protect the public health and safety from nuclear radiation and waste and promote the common defence through rulemaking, inspection, and licensing. There is a recent trend towards deregulation of various energy industries, especially in the electricity market. Deregulation aims to promote competition and lower energy prices by allowing consumers choices in energy suppliers. Though several mandates have been proposed including the mandate that US will never again import oil as it did in 1977, no comprehensive long term policy has been proposed. [29]Three Energy Policy Acts have been passed in 1992, 2005 and 2007. However, there is criticism that since the 1973 oil crisis, these policies have been dominated by crisis mitigating thinking and expensive solutions that ignore market and technology realities.[30]

- Depletion of ozone layer as a result of greenhouse effect is more serious than the challenge posed by nuclear weapons. The Ozone Treaty has been entered into in 1987 to face this challenge, the UN Conference on Environment and Development (UNCED), popularly known as Earth Summit, was held in 1992, and the Kyoto Climate Conference was also held in 1997. However, the real challenge is that of implementation. In the Kyoto Environment Summit on global warming it was decided that US, EU and Japan would reduce greenhouse gas emissions. US greenhouse gas emissions increased by 5% from 1990 to 2012 as we are heading towards a new 2015 Climate Treaty.[31]

- The misuse of non-renewable energy is transcending the principle of intergenerational equity (IGE) that has entered the corpus of customary

28 FERC is an independent regulatory agency that oversees the natural gas, oil, and electricity markets in the U.S.

29 Jimmy Carter, "Crisis of Confidence" Speech July 15, 1979. http://www.cartercenter.org

30 Peter Grossman, US ENERGY POLICY AND THE PURSUIT OF FAILURE 416 (Cambridge University Press, 2013).

31 US Greenhouse Gas Inventory Report: 1990-2013 available at http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html

international law. It is based on the recognition that human life results from the earth's natural resource base and its very survival is dependent on that resource base, whilst recognising that humans have a unique capacity to alter the environment upon which their existence depends.[32] This recognition places an obligation on the present generation to conserve and maintain the present resources by minimising long term and irreversible damage to the environment through conservation, and the conservation of the past and present natural and cultural heritage for future generations.[33]

- As a result of economic disparity, a considerable number of Asian and African countries including Sudan are facing poverty in spite of abundant resources at their disposal. During the second Millennium, though the concept of New International Economic Order was evolved, it could not make much headway due to the non-cooperation of developed countries. There is a wide gap and economic disparity between the rich and the poor countries. Past mechanisms to transfer technology from developed to developing countries have met with limited success. Evidence from the energy sector of developing countries has shown that many imported technologies do not reach their designated operational efficiencies and that efficiencies deteriorate over the productive life of the technology.[34]

Steps to preserve non-renewable resources

There is a shift in recent times from non-renewable to renewable resources. Since estimates are variable as to exactly how long fossil fuels will last, it is virtually impossible to determine / calculate how long these resources will last because there are undiscovered resources and their rate of use cannot be predicted accurately. It is possible that oil will be exhausted within 50 years and coal within 25 years. Hence there is a necessity to find a new source of energy rather than merely shifting to alternative sources. It is necessary that we must start to

32 The evolution IGE as Customary International Law has been demonstrated by ICJ in the Case Concerning the Gabčíkovo-Nagymaros Project (Hungary v. Slovakia) ICJ Report 1997and in the Case concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay) ICJ Report 2010.

33 Tina Hunter, "Equality for the Earth – The Role of Intergenerational Equity and Customary International Law," *The National Legal Eagle*: Vol. 17: Issue. 1, Article 6, (2011).

34 Pak Sum Low (ed), CLIMATE CHANGE AND AFRICA, 130 (Cambridge University Press, 2006).

convert to nuclear energy now, such that there may not be a major crisis when fossil fuels do run out, and invest in nuclear energy for the future. There are still vast unexploited resources in Canada and Siberia. In addition, some estimates predict that the lifetime of natural gas is about 350 years.[35] There is no need at the moment to search for alternative power source. That money would be better spent on creating technology to clean the output from power stations. Furthermore, as new technology becomes available to allow the more efficient use of nuclear fuel, less nuclear waste will be produced. A recent example is the development of the fast breeder reactor, which uses fuel much more efficiently. Judging from the pace of development of nuclear technology since its inception it is fair to say that with more investment nuclear energy will become an even more desirable source of energy with many of its current drawbacks curtailed.

Another phase of nuclear energy has close ramifications with security benefits. Spreading the peaceful use of nuclear power brings us important security benefits. Under the Non-Proliferation Treaty the declared nuclear weapons states, the USA, UK, Russia, France and China have promised to assist other countries in gaining access to civilian nuclear power providing that they in turn do not seek nuclear weapons. This has only happened to a limited extent, but as an increasing number of countries seek to use nuclear material for military purposes, it is in the interests of the declared nuclear weapons states to uphold their side of the bargain more vigorously, so that others can be held to theirs.

The instruments being set up within the framework of the Kyoto Protocol to the United Nations Framework Convention on Climate Change – emission trading, joint implementation, clean development mechanism – may be very useful for bringing about the desired change in energy paradigm, provided they are implemented in a way apt to stimulate the transfer and large-scale deployment of the most efficient and effective technologies with high environmental performance.

It is an ignored fact that the use of non-renewable resources will generate additional income and add to the nation's capital stock, so enhancing the future productive capacity. In many cases, exploitation of resources transforms rather than destroying the resources. In spite of these known facts, even when if there

35 Energy Crisis: Nuclear vs Renewable Sources, Debatewise, available at http://debatewise.org/debates/2499-energy-crisis-nuclear-vs-renewable-sources/

is transition to renewable energy to substitute fossil fuel and nuclear fuel, it will require profound changes in our economic patterns, approaches and also decision making. All these call for the need of an international convention on the conservation of non-renewable energy resources.

Recognising the principles of Friendly Relations and Co-operation among States and Intergenerational Equity, the broad objectives of the Convention should be:

- to foster the conservation and sustainable use of non-renewable resources
- enhance environmental protection by preventing gross pollution of ecosystem caused by accumulation of atmospheric green house gases
- making peaceful use of nuclear power and spreading awareness on misconceptions related to health, environment and safety attached to nuclear power
- to remove the disparity between developed and developing countries
- harmonize and coordinate policies in these fields with a view to achieve energy efficiency and conservation measures such that waste of primary resources is minimized.

Conclusion

Energy that is vital for our daily survival is being misused not only in national but also in international spheres which has an adverse effect on the developing countries as well. The generality underling the theme of conservation of the non-renewable energy sources can be traced to the principle of permanent sovereignty over natural resources which are derived from the underlying concept of territorial sovereignty under international law.[36] The future existence of biosphere depends on long-term availability of non-renewable resources in increasing quantities from sources that are dependable, safe, and environmentally sound. Even today all States are dependent on primary sources of energy which are non-renewable in nature. In order to achieve the goals of sustainable

36 The question of Permanent Sovereignty over Natural Resources was first brought up by the representative of Uruguay before the 7th Session (1952) of the UN General Assembly wherein, it was held that the right of people to use and exploit their natural wealth and resources is inherent in their sovereignty.

development[37] it is necessary to look into the means of conserving the utilization of non-renewable resources in an optimal way, as optimal exploitation of non-renewable resources is an important issue that needs to be appealed by the international community on an urgent basis. It is also necessary to raise awareness and to familiarise the population with the value of limited resources and to put them to optimal use. This can be achieved only through a Convention on conservation of non-renewable resources and strict adherence to the obligations imposed thereunder. The States are therefore bound to make changes in their domestic legislations on energy laws for the effective implementation of the Convention.

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37 International discussion on sustainability is based on the definition provided by Brundtland Commission in 1987.

Sustainable development is development that meets the needs of the present without compromising the ability of future generation to meet their own needs.

Competitive Bidding for India's Wind Sector

Deepthi Swamy[*], *Debapriya Das*[**]

Abstract

In countries with a high installed capacity of Renewable Energy (RE), Competitive Bidding (CB) is increasingly being used as a means for procuring energy generated from RE sources. In India, competitive means of procuring electricity generated from RE has been mandated in the Electricity Act of 2003, to reduce the overall cost of procurement of power. In the form of reverse auctions, CB has been successfully used to procure solar PV based capacity under the Jawaharlal Nehru National Solar Mission (JNNSM). In the wind sector, however, attempts by some states to implement CB have been stayed due to legal concerns, till there are central guidelines by the Government of India for its implementation. The Ministry of New and Renewable Energy (MNRE) has issued guidelines and standard bidding documents for the procurement of RE. However, these do not apply to the case of wind energy. In this context, this paper explores the application of competitive bidding mechanisms to the wind sector. In doing so, it evaluates the various types of bid mechanisms and discusses important learning's from international case studies, and the risks and concerns with implementation. It concludes with specific recommendations for the way forward in providing an appropriate framework for CB in the wind sector, to enable cost reductions and long-term growth of the sector.

Background

In the global context, competitive bidding as a mechanism for allocating renewable energy capacity is increasingly being implemented with varying degrees of success. Some developing countries that have conducted auctions for Renewable Energy (RE) include Brazil, China, Morocco, Peru and South Africa.[1]

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1 International Renewable Energy Agency (IRENA), Renewable Energy Auctions in Developing Countries, 6 (2013).

In India, competitive means of procuring electricity generated from RE has been mandated in the Electricity Act of 2003 (hereon referred to as the Act). The main objective for doing so is to reduce the overall cost of procurement of power for the distribution licensees and ultimately the consumer. As per Section 63 of the Act, "notwithstanding anything contained in Section 62, the Appropriate Commission shall adopt the tariff if such tariff has been determined through transparent process of bidding in accordance with the guidelines issued by the Central Government."

Subsequently, the Central Electricity Regulatory Commission (CERC) released regulations in the form of draft *Terms and Conditions for tariff determination from Renewable Energy Sources* in 2009.[2] These guidelines cover grid-connected RE sources excluding wind power. The specific objectives of the guidelines are to:

- Promote competitive procurement of electricity from RE sources by distribution licensees
- Introduce transparency and fairness in project allocation processes
- Reduce information asymmetry for bidders
- Protect consumer interests
- Increase standardisation and reduce the gestation period for projects
- Provide flexibility for sellers on internal operations while ensuring a minimum level of certainty on availability of power for buyers.

Additionally, the Union Cabinet has approved amendments to the National Tariff Policy, as of January 21, 2016. National Tariff Policy stipulates that "procurement (for RE sources) by distribution companies shall be done at preferential tariffs determined by the Appropriate Commission ... through competitive bidding process under Section 63 of the Act with suppliers offering energy from same type of non-conventional sources."[3]

2 Central Electricity Regulatory Commission (CERC), (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2009, available at http://www.cercind.gov.in/Regulations/CERC_RE-Tariff-Regualtions_17_sept_09.pdf (last accessed on September 15, 2015).

3 Ministry of Power (GoI), Tariff Policy, 2006: Clause 6.4(2), pp. 9, available at http://www.aegcl.co.in/Tariff_Policy%20.pdf; (last accessed on October 10, 2015). A recent amendment to this clause proposes replacement of the term *'non-conventional'* sources of energy sources with *'renewable'* sources – Ministry of Power (GoI), Amendments Proposed in the Tariff Policy, 11 (2015), available at http://powermin.nic.in/upload/Amendments_proposed_in_the_Tariff_Policy.pdf (last accessed on October 15, 2015).

Advantages of Auctions/Bidding

Auctions are a formal process to allocate resources at a competitive price. There are clear rules set up for auction procedures. One of the main characteristics of auctions/competitive bidding is transparency; this favours both the bidders and sellers. Transparency reduces potential corruption and initiates competition in the process. The advantage of an auction is that it assigns the resource to those who are best able to use it. Processes like "first come first serve" lack transparency and are vulnerable to corruption and favouritism. An auction procedure aims to enhance sustainability, improve transparency and have an effective allocation process.

Auctions are also cost effective. In natural resource auction, effectiveness can be interpreted as using minimum amount of natural resources to produce a given amount of output. As a procurement mechanism, reverse auctions are specifically considered to be effective in increasing cost efficiency and discovering the least price for generating electricity from a particular technology, due to their competitive nature. For instance, the reverse bidding mechanism has been used to successfully lower the price of electricity generation from solar technologies under the Jawaharlal Nehru National Solar Mission (JNNSM). While there still are issues prevalent in the actual completion of projects, it has proved to be effective in lowering prices. The reverse bidding scheme resulted in reductions of 39% and 50% in Batch 1 and Batch 2 of JNNSM, respectively, from the starting tariffs benchmarked by CERC.[4]

Types of Auctions

Auctions represent the valuations of bidders in the form of a bid. The most important part of an auction is its design and also the structure of the valuation of bidders; there are three standard valuation types for bidder preferences:

1. Private values: Each bidder's value for a good is independent of the private information of other bidders.

2. Common values: Goods have a same common value for all bidders, but the actual value is unknown and dependent on the bidder's private

4 Shrimali, G., Nekkalapudi, V, 'How Effective Has India's Solar Mission Been in Reaching its Deployment Targets?', *Economic & Political Weekly*, Vol. XLIX No. 42, (2014), 60.

information. The difference in the private and common value reflects the uncertainty in information. In common values a bidder's value for a good is entirely based upon others values. Valuation of a good is identical for all bidders.

3. Interdependent or correlated values: Each bidder's value for a good depends partly on the private valuation and partly on the other's value for the good.

Internationally, auctions fall into the categories mentioned in the table. It also includes features and settings in terms of bidder valuation.

Auction format	Features	Settings
First price sealed bid auction Example : NELP – simultaneous auction of multiple items	1. Easy to implement 2. No price discovery 3. Asymmetries in bidding/bidder – presence of weak competition – no scope of price signaling	1. Private values
English auction/open outcry/open ascending Example: 3G spectrum	1. Bidders valuation is revealed 2. How high should be the price? (uncertainty regarding the first bid)	1. Common values
Dutch auction – high price lowers to reserve price	1. Difficult to implement	1. Common and correlated values
Simultaneous ascending auction	1. Price discovery 2. Bidder uncertainty is reduced	1. Common value and correlated value
Clock auction/ simultaneous clock auction	1. Easy to implement 2. Price discovery	1. Correlated values
Reverse bidding – Solar, possibly wind	1. Price discovery	1. Common and correlated values

1. Sealed Bid Auctions

Here, the bidders submit their sealed bids to the auctioneer simultaneously. This is typically in the form of price e.g. the price per unit of electricity.

The sealed process ensures participating bidders are not aware of the bids made by others. The selected bids are ranked in ascending order, and project capacity is incrementally allotted to the ranked bidders till the targeted capacity is reached.[5]

2. *English Auction*

In this case, reserve price is the starting point. Reserve price is the lowest price decided by the seller of the good. The auction progresses with bids higher than the reserve price. There is an incremental rise between each successive bid. When no bidder is willing to raise the bid further, the highest bidder is awarded the item.[6]

3. *Dutch Auction*

In this case the auctioneer starts with a high price and gradually lowers it, step by step, until someone is willing to buy the item. As the auction progresses, the bid values goes on decreasing. The primary advantage of Dutch auctions is that they proceed rapidly.[7]

4. *Simultaneous Ascending Auctions*

Simultaneous ascending auctions have three main features; (1) open bidding, (2) simultaneous sale and (3) no package bids. This type of auction usually includes a large number of items. Bidders have the price information and they can switch among items based on the information. The bidding goes on till no bidder is willing to raise the bid on any item. The auction generates market prices. As the auction progresses the bidder has price information based on which the bidder can condition his/her bids. As this process continues, this helps the bidder to have some knowledge about the final price of the good and the bidder aligns his/her price based on this price information. More information leads to greater flexibility in response among the bidders. This type of an auction potentially improves efficiency if problems like collusions are addressed.[8]

5 IRENA Renewable Energy Auctions in Developing Countries, 6 (2013).

6 Varian H, INTERMEDIATE MICROECONOMICS, 316 (8th edition).

7 Varian H, INTERMEDIATE MICROECONOMICS, 316 (8th edition).

8 Crampton P, How Best to Auction Natural Resources, 2009, p. 13 - 14.

5. *Clock Auctions/Simultaneous Clock Auctions*

An alternative to price bidding auctions is clock auctions. The main difference in clock auctions is rather than bidding a price, the bidder must bid the quantity of the auctioned good at a given price.

Simultaneous clock auctions are suited where bidders have interdependent valuations and the good being auctioned is divisible into discrete amounts. Clock auctions have been a great success in several countries like Columbia, United States of America and Brazil for auctioning electricity, gas, pollution allowance and spectrum.[9]

6. *Reverse Auctions*

In reverse auctions, sellers compete to obtain business from buyers. In this case, many sellers compete for providing goods and services that a buyer requests for. This is a supply driven auction. The seller with the lowest bid wins the auction.

A combination of the types of auctions mentioned above can also be adopted in the form of *Hybrid Auctions.* For instance, the price discovered through a descending clock auction can be used as a ceiling price that is set to conduct a sealed bid auction to further lower the price. Brazil implemented a hybrid auction in 2009, and was found to be effective in setting the ceiling price for the sealed-bid round and preventing collusion between participants.[10]

Reverse Bidding for Wind Energy: India's Experience

In the wind sector, India has progressed significantly in the past decade, with the installed capacity having more than doubled between 2008 and 2015.[11] The policy environment has been conducive for this growth, in the form of two central policy instruments which have supplemented the Feed in Tariffs (FiTs) set by the states: Accelerated Depreciation (AD), a tax-saving benefit, and Generation Based Incentive (GBI), which results in increased revenues for wind projects. One of the two can be availed by any developer wishing to invest in wind farms. This has undergone a change in the recently announced Union Budget. The AD will be reduced by half from 2017, and the GBI will be no longer available after 2017. The former promotes capacity addition while the latter incentivises generation from the installed wind farm.

9 Crampton P, How Best to Auction Natural Resources, 2009, p. 14 - 15.

10 IRENA, Renewable Energy Auctions in Developing Countries, 43 (2013).

11 Global Wind Energy Council, Global Wind Report, Annual Market Update, 59 (2014).

The underlying mechanism of having fixed tariffs can have certain disadvantages. First, state-level tariffs are determined on a cost-plus basis which may result in in efficient cost of generation, due to asymmetric information on market and technology conditions. This can result in difficulty in realistically benchmarking input assumptions related to the performance of the plant, thus resulting in a higher price to be paid by the consumer because of inefficient utilisation of the finite resource.[12] Second, improvements in technology over time, such as benefits accruing from installing taller turbines with larger rotor diameters, are not suitably reflected in terms of how the cost can change within the lifetime of the plant.

Finally, it can also lead to a situation of creating windfall profits for developers when tariffs are set too high. It has been observed that internationally, fixed tariffs for wind decline over the life of the Power Purchase Agreement (PPA). However tariffs remain fixed for the entire life of PPA, even if the generation is higher in the future, than what is presently assumed while calculating it.[13] On the other hand, if the tariff is set too low, it can limit the entry of players in the market.

Given the concerns mentioned above and proven success of the reverse bidding mechanism in JNNSM, some states (such as Karnataka and Rajasthan) have attempted to discover the least price for wind generation through reverse bidding and bid bonds, and the use of fixed tariffs to inform the bidding process. However, these attempts have met with limited success.

India's Experience: Legal Positions

In India, Karnataka was the first state to initiate an auction for the process of wind energy project allocation. In 2005, the Karnataka Electricity Regulatory

12 For instance, if the tariff is fixed over an entire region, it will not account for differences in resource quality. Wind resource quality is not uniformly distributed across the state. There may be some regions where the resource is of superior quality, resulting in the wind turbines performing at a higher Capacity Utilisation Factor (CUF) and hence generating more energy annually. This difference is not captured in tariffs that are fixed uniformly across the state.

13 Ramesh M, 'Wind energy: is it time for competitive bidding?' *The Hindu Business Line* (Dec 10, 2014), available at http://www.thehindubusinessline.com/economy/wind-energy-is-it-time-for-competitive-bidding/article6680028.ece (last accessed on September 15, 2015).

Commission (KERC) issued a tariff order for the procurement of power from mini-hydel, bagasse-based co-generation and biomass-based RE sources.[14] Upon being challenged in the Appellate Tribunal for Electricity (APTEL) by petitioners, this was followed by an order in 2007, from APTEL, directing KERC to issue guidelines for procuring RE through competitive bidding.[15] However, it was finally stayed due to a petition filed by a number of stakeholders; which is discussed later in this section. More recently, the Rajasthan Electricity Regulatory Commission (RERC) issued the *Draft Terms and Conditions for Determination of Tariff (4th Amendment), Regulations 2012* as a step towards the procurement of renewable energy sources (including wind) through competitive bidding in the state and invited comments from stakeholders before finalising it.[16]

RERC's proposed amendment, which was envisaged in the form of a new sub-regulation under the Principal Regulations, states, "However, purchase of renewable energy could be made through transparent bidding process of bidding based on discount offered on generic tariff determined by the Commission. Such bidding process could be undertaken by the distribution licensee or the State Nodal Agency (SNA) or the Agency authorised by the distribution licensee for which approval of bidding documents or adoption of tariff by the commission would not be required". The draft was open to comments from stakeholders, based on which the following arguments for opposing the amendment emerged.[17]

14 Karnataka Electricity Regulatory Commission (KERC) Order dated January 18, 2005 in the matter of Determination of Tariff in respect of Renewable Sources of Energy 2005, available at http://www.karnataka.gov.in/kerc/Downloads/COURT-ORDERS-2005/ORDER-Tariff_in_respect_of_Renewable_Sources_of_Energy.pdf (last accessed on September 20, 2015).

15 Vide Civil Appeal No. 129 of 2005 in the matter of M/s Karnataka Power Transmission Corporation Ltd. v M/s South Indian Sugar Mills Association & Ors, decided on May 14, 2007 at 23, available at http://aptel.gov.in/judgements/judgment%20129%20of%202005.pdf (last accessed on October 5, 2015).

16 Rajasthan Electricity Regulatory Commission (RERC), Background Note for Fourth Amendment in RERC (Terms and Conditions for Determination of Tariff) Regulations, 2009, available at http://www.rerc.rajasthan.gov.in/cnpl/PDFs/tariff4th.pdf (last accessed on October 5, 2015)

17 RERC, Memo on Statement of objects & reasons and consideration of Comments/Suggestions, received from various stakeholders, 2012, available at http://rerc.rajasthan.gov.in/Orders/Order140.pdf (last accessed on October 5, 2015).

A number of stakeholders felt that the amendment was not consistent with Sections 62 and 63 of the Act. They argued that in the absence of central guidelines for competitive bidding of wind, not getting the bid documents approved by the Commission would be a violation of Section 63 of the Act, which clearly states that "the appropriate Commission shall adopt the tariff, if such tariff is determined through the transparent process of bidding in accordance with the guidelines issued by the Central Government".[18] With the central guidelines being a prerequisite for the adoption of Section 63, it was argued that tariffs should be determined under Section 62 (using a cost-plus tariff determination methodology), and that the unregulated control of the bidding process by the distribution licensee could have an adverse impact on the development of the wind industry.

Some stakeholders pointed out that the proposed amendment was in violation of Section 86 (1) (b) of the Act which stipulates that the State Commission has to regulate the power procurement process of licensees.[19]

From the industry's point of view, it was felt that the proposed Amendment could attract Primary Estoppel. The proposed process could be financially risky for wind projects in which investments over the life time of the project have been planned based on the tariffs announced for the five year control period of 2009 – 2014.[20] It was argued that the maturity of the wind sector is a pre-requisite condition for the successful implementation of competitive bidding. Lower prices discovered through the process could adversely impact the bankability of wind projects in the near-term, and make it difficult to benchmark performance to the cost of wind power in areas with low wind speed. It was also felt that the reverse bidding experience under JNNSM is yet to achieve complete success in terms of project implementation. They challenged the efficacy of bidding mechanisms, and argued that the existing progress under JNNSM may be due to supporting mechanisms such as payment security backed by the Central Government Guaranteed Fund, rather than the bidding mechanism itself. [21]

18 RERC, Memo on Statement of objects & reasons and consideration of Comments/Suggestions, received from various stakeholders, 2012 at 2.

19 Ibid, at 3.

20 Ibid.

20 Ibid, at 4.

21 Ministry of Power (GoI), Guidelines for Tariff Based Competitive Bidding Process for Grid Connected Power Projects Based on Renewable Energy Sources, 2012, available at http://mnre.gov.in/file-manager/UserFiles/guidelines_sbd_tariff_gridconnected_res/guidelines_tariff_grid_re.pdf (last accessed on October 7, 2015).

RERC, in response to the above concerns, noted that Section 63 of the Act indeed restricts its role in tariff setting through bidding, to be only in accordance with the Central Government's guidelines for the bidding process (which at present does not cover wind energy).[22]

Additionally, the analysis referred to a previous judgment dated May 14, 2007 of APTEL. In this order, APTEL had directed KERC to "issue guidelines within six months for procurement of electricity through a competitive bidding process from non-conventional sources separately for different types i.e. biomass, co-generation, wind mini-hydro etc." and that "with effect from April 1, 2008, future procurement of electricity generated from Renewable Sources including Biomass and Cogeneration plants will be through competitive bidding process".

In a subsequent affidavit filed by the Ministry of Power, Government of India (GoI) before the Delhi High Court, it was stated that the power to issue guidelines for competitive bidding rests only with the Central Government, and that APTEL did not have the legal competence to direct KERC to issue guidelines for competitive bidding.[23] The APTEL judgment was also challenged in the Supreme Court, with the order being stayed until further direction from the court.[24]

In consideration of the legal positions described above, RERC decided that the proposed Amendment need not be proceeded with, and that generic tariffs should be adopted for signing of PPA's for renewable energy sources.[25]

These developments have stalled the implementation of competitive bidding in states and the matter is sub-judice at present. As per this decision, the bidding process can only be initiated by the SNAs on the issuance of central guidelines for a reverse bidding process for wind energy. The Ministry of New and Renewable Energy (MNRE) has since issued guidelines and standard bidding documents for the

22 Civil Writ Petition No. 14587/2007 in the matter of Indian Wind Energy Association v. Appellate Tribunal for Electricity & Ors.

23 Vide Civil Appeal No. 5429-5430 of 2007 in the matter of M/s Karnataka Power Transmission Corporation Ltd. v. M/s South Indian Sugar Mills Association & Ors. The status of the case is pending as on August 11, 2015.

24 Supra note 18, at 8.

25 IRENA, Renewable Energy Auctions in Developing Countries, 36-41 (2013).

procurement of RE. However, as mentioned earlier, these do not apply to the case of wind energy at present. Additionally, the central guidelines would need to address the concerns of other stakeholders discussed earlier in this section to ensure successful implementation of reverse bidding.

International Experiences with Competitive Bidding in Wind

Below is a description of the international experiences with competitive bidding for wind energy:

South Africa: In 2011, South Africa conducted auctions in which the ceiling price was set based on previous FiTs. In the first round, prices did not come down as the ceiling price was disclosed, which was rectified in the second round. In both rounds, no projects were allocated to some technologies, which indicated that their ceiling price may have been set too low.[26]

Peru: The auctions were conducted in two rounds in 2009 and 2011. A price ceiling was determined based on a desired rate of return on the capital investment and operating costs for a project over its lifetime. It was revealed only if it was exceeded by at least one bid received (in case the total capacity was not allocated at the end of the first round). They were successful in bringing prices down for small hydro, wind and solar PV technologies. However, target capacities were not fully met for biomass and small hydro, indicating that the ceiling may have been set too low. [27]

United Kingdom: Under the Non Fossil Fuel Obligation (NFFO), wind generators were eligible to bid for PPA's above the market price in auctions, and electric utilities were required to purchase power from these generators. The incentives were directed towards the utilities for purchasing this power above the market price, rather than towards the generators. The difference in price was provided for by increasing the taxes on coal-based generation.[28] The

26 Ibid, at 33 – 35.

27 ABPS Infrastructure Advisory Private Limited, 'Enabling Competitive Bidding for Renewable Energy: Challenges and Implications', presented at Roundtable on 'Renewable Energy procurement through Competitive Bidding: Challenges and Way Forward', 2012 available at http://prayaspune.org/peg/publications/item/185.html

28 G. Cunha, *et al*, 'Fostering Wind Power Through Auctions: The Brazilian Experience', International Association for Energy Economics, (Second Quarter, 2012).

advantages of this design are that due to the gradual phasing-in of contracts from 1990 to 1998, the technologies have been able to mature with each round. The contracts have been awarded with a long tenure to allow cost recovery, which has facilitated financing of projects. This has resulted in a steady decline in the price of wind-based electricity. On the downside, all the winning bids have not translated to projects on the ground due to absence of penalties for non-development. Many projects faced issues in obtaining permits after the bidding process, and the aggressive reduction in prices limited the entry into the market to only big players.

Brazil: The Brazilian auctions for RE is a hybrid auction type, conducted across 2 phases. In Phase 1, a descending clock auction was executed, followed by a final pay-as-bid round for the winners (of Phase 1) in Phase 2. The auction was carried out in a highly controlled environment with detailed pre-requisites from participating developers. Technical prerequisites include a prior environmental license, grid access statement, financial qualification, and technology-specific documents such as certified wind production data, etc. Winning projects have to submit guarantees such as bid bonds and project completion bonds. Penalties are applicable in the case of delays in project completion. Starting from 2009, these auctions have been very successful, with an increase (by nearly 1.5 times) in capacity added between 2009 and 2011. The (per unit) energy price during this period reduced by nearly 38%. [29]

Some of the key lessons that have emerged from the international experiences described above are as follows:

- Penalties should be defined and enforced for non-performance and delays in project execution
- Project-level clearances and permits should be available to the developer before participating in the bidding process to avoid non-completion and delays in project execution
- Policies should be designed to incentivise a diverse mix of players in the development space, and not limit participation to major players

29 Gireesh Shrimali, *et al,* 'Reaching India's RE Targets: Effective Project Allocation Mechanisms', Climate Policy Initiative, 7 - 12 (May 2015).

- Implementation of policies should be reviewed after each round and inform the design of the bidding mechanism in subsequent rounds.

Risks and Concerns

Some of the main risks associated with auctions are summarised below.[30]

Auction-specific Risks

1. Faulty auction design: Flawed tariff design, such as setting a very low ceiling price for bids, or conducting technology-neutral auctions before the individual technologies are mature can discourage participation from bidders. It can be minimised by use of well-designed schemes such as pay-as-bid type of tariff determination, which allows developers to commission projects at tariffs that they determine if they win a project.

2. Underbidding and cartelisation: In this case, non-serious bidders who are not capable of executing the project can quote non-realistic bids or collude with other bidders in order to win the contract and gain from benefits such as tax evasion, thus defeating the purpose of promoting deployment through auctions. Aggressive bidding can be countered by enforcement of penalties on non-completion of projects after bidding.

Project-specific Risks

1. Completion risk: Here, the completion of the project can get stalled or run into unforeseen delays from hurdles faced in obtaining land for development, delayed environmental and regulatory clearances, and lack of ready transmission connections. This can be avoided through appropriate supportive measures such as ensuring complete resource assessments and availability of adequate transmission capacity before project development, as well as making the bidding process site-specific.

2. Financial risk and non-payment by off-takers: This is the inability of the project to secure adequate funding or achieve financial closure due to payment defaults from buyers like distribution companies which

30 Gireesh Shrimali, *et al*, 'Reaching India's RE Targets: Effective Project Allocation Mechanisms', Climate Policy Initiative, 7 - 12 (May 2015).

are not financially healthy. Payment guarantee mechanisms can mitigate this risk and make projects more bankable, as well as adequate research on the part of the government in screening applications to ensure that they have adequate financial capability to carry out the project.

Way Forward for Successful Bidding in India

Due to the long-term advantages of auction mechanisms, the authors recommend that competitive bidding should be adopted as one of the alternatives to procuring wind power in India through an incremental transitioning phase. In line with the objectives of the Electricity Act of 2003, GoI can transition to a competitive bidding framework for wind power procurement by initiating interim bidding through a pilot stage, before launching it completely. Based on the knowledge available about existing areas with high wind potential, wind power can be procured through competitive bidding once the following pre-requisites are addressed:

1. Availability of investment-grade wind resource assessments
2. Pre-identified land zones for development of projects
3. Transmission layout planning for evacuation, with proposed interconnections in the inter-state transmission system to ensure off-take of power among resource-rich and resource-deficit states
4. Clearances and approvals for pre-identified zones
5. Necessary conditions in PPAs with procuring entities such as payment guarantee – incentives could be linked to pre-identified clauses.

A two-stage competitive bidding process is possible for project development. The first bid/stage can be aimed towards allocating land/resource to wind developers and the second stage for tying up power sales to different off-takers, especially the utilities. This bidding can be on the basis of the most competitive tariff offered by a developer, or by setting a cap on the bid price which is based on a tariff set by the state regulator.

Single-stage bidding may be carried out, where a state electricity procurement agency or a specifically created Special Purpose Vehicle (SPV) can execute the bidding process to allocate a predefined capacity of wind power, and the required infrastructure is made available through the wind investment zone.

The table below provides the basic categories that apply to a project developer and the possible options that they can choose from to make their optimal business models for achieving capacity deployment targets.

<table>
<tr><th>Resource Assessment</th><th>Procuring Wind Turbines</th><th>Land Ownership</th><th>Project Allocation</th><th>Incentive</th><th>Power Procurement</th></tr>
<tr><td>NIWE + Research Agencies</td><td>100% indigenous products</td><td>Public</td><td>Single Source (SNA/ Urja Vikas Nigam Ltd.)</td><td>AD / GBI for the next 3 years for onshore and 8 years for off-shore wind power</td><td>Feed-in Tariff

Renewable Energy Certificate markets</td></tr>
<tr><td rowspan="3">PPP Model for investment grade resource assessment</td><td>Import products (Raw materials/ finished products) up to 50%</td><td>Private</td><td>Competitive Bidding</td><td>Revised market discovered tariff</td><td>Competitive bidding – utility based (case1)

Open access</td></tr>
<tr><td>Import products (Raw materials/ finished products) over 50%</td><td>Private-Public</td><td></td><td></td><td>Bilateral Agreement</td></tr>
<tr><td colspan="5">Competitive bidding for project allocation and power sale to utility (case 2)</td></tr>
</table>

Going forward, it is recommended that competitive bidding in the wind sector be implemented through a pilot stage, using the models proposed earlier in this section. It is important that the following factors be taken into consideration while formulating the central guidelines for the competitive bidding process for procuring power from wind energy:

- A phased approach, where learning from previous rounds is used to adjust the next round, can help in smoothly transitioning to a competitive bidding framework.
- While Case 1 bidding can be started faster since more developers have land banks with them, Case 2 bidding would put all the players on a level playing field and result in the growth of the sector in the long term.
- Risks to both the government and developer can be overcome with carefully designed bidding processes, and by addressing the necessary pre-requisites. The pre-requisite conditions include transparent availability of investment-grade resource information, and zones that are identified as ready for development.
    - o Bidding guidelines should be designed by the concerned authority in active consultation with stakeholders, and take into consideration state-specific aspects of the wind project development cycle
    - o Completion of pre-requisite conditions (resource assessment, pre-identified zones suited for development, transmission capacity and payment guarantees) will be crucial for successfully implementing the bidding process.

In conclusion, competitive bidding has the potential to procure wind power at the least possible cost to the consumer. This is because it incentivises higher electricity generation and efficiency in operation. This in turn will have a positive impact on the long-term sustainability of the wind sector. Implementation of competitive bidding can also help resolve issues with grid connectivity and dispatch, and provide the impetus required for increasing India's domestic manufacturing capability, if designed with appropriate supportive policies.

Renewable Purchase Obligation as an Instrument for Achieving India's Low Carbon Growth

Deepthi Swamy[*], *Sharada R. Shindhe*[**]

Abstract

Renewable Energy (RE) is poised to play a strategic role in achieving India's developmental goals of low carbon growthand inclusive growth. Over the past decade, targets for renewable capacity deployment have steadily increased, with the most recent being the commitment to install 175 Giga Watt by 2021-22 as part of India's Intended Nationally Determined Contribution (INDC) to the United Nations Framework Convention on Climate Change. National and state level efforts have been underway through introduction of suitable policy instruments, to create an enabling environment for the growth of RE. One such instrument is the Renewable Purchase Obligation (RPO). The Electricity Act of 2003, followed by the National Tariff Policy, empowers state regulatory bodies to make purchase of electricity from RE sources mandatory through the use of RPOs. This mandates obligated entities such as utilities to meet a minimum percentage of their anticipated energy demand through purchase of electricity generated from renewable resources. Successful implementation of instruments such as the RPO is crucial to timely achievement of the envisioned RE targets. However, since its introduction, most states have not been able to comply with their respective RPO targets. This has in turn adversely affected the success of dependent mechanisms such as the Renewable Energy Certificates (RECs) which enables inter-state exchange of RE power.

In the above context, this article analyses the RPO as a driver for the growth of renewables. At the outset, we establish the need for RE to achieve low carbon inclusive growth, and trace the evolution of the domestic policy and regulatory

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provisions that have been introduced for promoting increased share of renewable power in the country's energy mix. We then discuss RPO in further detail. The primary focus here is on an analysis of the potential of RPO to achieve RE deployment targets, the status of progress in achievement of state-level RPO targets, with the identification of major barriers faced in doing so. This is followed by a synthesis of specific legal issues faced inensuring RPO compliance. Based on the above, were commend the way forward to ensure successful implementation of the RPO instrument in achieving India's ambitious RE capacity addition goals.

Renewable Energy and its Role in Low Carbon Inclusive Growth

India aspires to grow at a Gross Domestic Product (GDP) rate of 8% in the 12th Five Year Plan (FYP) period of 2012-17.[1] Hence, the energy sector would need to provide for the growing needs of the economy, simultaneous with the objectives of cost-effectiveness and reliable supply as outlined in the Integrated Energy Policy (IEP) of 2006.[2] In addition to aiming for faster and more inclusive growth, India has committed to unilaterally reduce its carbon emissions intensity by 20-25% of its 2005 levels, by 2020,[3] The GDP emissions intensity reduction has been increased to a target of 33-35% by 2030, from 2005 levels. This is as per the recent INDC pledge and also included a chapter on 'sustainability' in the 12th FYP document.

In this context, there are multiple reasons why Renewable Energy (RE) sources are promising for achieving the country's energy goals in a sustainable manner. Firstly, India still faces shortages in its energy and peak power supply across various regions (as shown in Figure 1 for the year 2014–15).

1 Press Trust of India (PTI), 'National Development Council approves 12th Five Year Plan', *Indian Express* (December 27, 2012), available at http://archive.indianexpress.com/news/national-development-council-approves-12th-five-year-plan/1051012/.

2 Planning Commission (Govt. of India), Report of the Expert Committee on Integrated Energy Policy, 2006, available at http://planningcommission.nic.in/reports/genrep/rep_intengy.pdf

3 A Panagriya, 'The Copenhagen Accord and India', Brookings Institution, (Dec 21, 2009) available at http://www.brookings.edu/research/opinions/2009/12/21-copenhagen-india-panagariya.

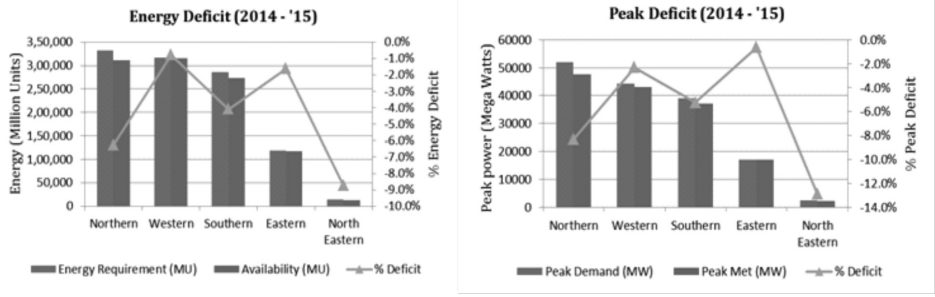

Figure 1: Energy and Peak Power Deficit (2014–15)[4]

According to IEP, energy security of the country is defined as below:

"We are energy secure when we can supply lifeline energy to all our citizens irrespective of their ability to pay for it as well as meet their effective demand for safe and convenient energy to satisfy their various needs at competitive prices, at all times and with a prescribed confidence level considering shocks and disruptions that can be reasonably expected."[5]

RE with its high untapped potential can contribute towards fulfilling this deficit and making India an energy secure country.

Secondly, there are several economic parameters that are positively impacted with the increase of RE in a country's electricity mix. RE still forms a minor share of India's energy mix, contributing 13% (36, 470 MW)[6] of the total installed capacity. However, global experience has shown that countries with a high share of RE penetration have started witnessing its benefits.[7] Increased power generation from RE sources has the potential to reduce trade deficit through a

4 Central Electricity Authority (Ministry of Power, Govt. of India), Load Generation Balance Report 2015 – 16, available at http://www.cea.nic.in/reports/yearly/lgbr_report.pdf

5 Supra Note 2, at 54.

6 Central Electricity Authority (Ministry of Power, Govt. of India), Monthly All India Installed Generation Capacity Report (July 2015), available at http://cea.nic.in/reports/monthly/inst_capacity/jul15.pdf

7 A Neslen, 'Wind power generates 140% of Denmark's electricity demand', *The Guardian* (July 10, 2015), available at http://www.theguardian.com/environment/2015/jul/10/denmark-wind-windfarm-power-exceed-electricity-demand.

reduction in the dependence on imported fuels. The current share of imports in India's primary energy mix is 31%. The country's fuel import dependence can be lowered to 26% of the primary energy mix by 2047 from the current level of 31%, under a scenario with increased renewable and clean energy sources.[8] Furthermore, RE can contribute towards India's GDP through the development of local manufacturing bases and exports. It can create jobs across various components of the RE sector value chain, and reduce fuel costs through the use of mature technologies such as onshore wind energy (which is already cost competitive with conventional sources).

Thirdly, nearly 400 million people in the country do not have access to grid-connected electricity.[9] This excludes the population which is connected to the grid but receives very irregular and unpredictable supply of electricity. RE power can be a solution to address these access concerns. Small-scale RE plants can provide a solution to issues of access as they are suitable for distributed generation in remote locations.

Finally, energy related emissions from India and China are expected to be 127 percent higher than in the developed economies by 2040 due to increased energy use. The fast economic growth of China and India is expected to play a central role in global energy demand, with the two countries being expected to account for half the world's total increase in energy use through 2040.[10] However, studies have shown that emissions can be reduced through increased usage of RE sources. For instance, in the Indian context, a wind power plant having an average annual generation of 4,000 kWh can save 300-500 tonnes of CO_2 emissions.[11] Thus, promotion of large-scale grid connected RE can be an effective carbon emission reduction strategy.

8 NITI Aayog, 'Maximum Clean and Renewable Energy Pathway' (India Energy Security Scenarios 2047), 2015, available at http://www.indiaenergy.gov.in/model_example2.php

9 As per the Census of India, 2011.

10 Reuters, 'Developing Countries' Carbon Emissions Will Vastly Outpace Developed Nations, U.S. EIA Says', *The Huffington Post* (July 25, 2013) available at http://www.huffingtonpost.com/2013/07/25/carbon-emissions-developing-countries_n_3651513.html?ir=India&adsSiteOverride=in

11 National Institute of Wind Energy (NIWE), General Information (2015), available at http://niwe.res.in/information_gi.php

The Ministry of New and Renewable Energy (MNRE), Government of India (GoI) envisaged a capacity addition target of 41,400 MW of grid-connected RE during the 12th Plan period[12] and GoI wanted to increase this to 72,400 MW by 2022. As per the latest news reports, this target has further been increased to 175,000 MW by 2022.[13]

The Final Report of the Expert Group on Low Carbon Strategies for Inclusive Growth (LCIG) estimates that in an LCIG scenario, India could reduce its electricity consumption to 3,200 billion kWh by 2030 (lower than the 3,600 billion kWh projected in the 12th FYP).[14] While coal will still continue to be the dominant source of power at 65% of the power generated even in the LCIG scenario, super-critical coal plants, which presently account for only 6-7% of the installed coal-based generation capacity, can account for more than half of the capacity by 2030.

Existing Legal and Regulatory Provisions for RE

Energy policy, rules and regulations with respect to energy use and generation in India are mainly geared towards providing and ensuring energy security to people, since it is at present one of the greatest challenges for the country. Additionally, dependence to a large extent on non–renewable energy for its energy requirements is not environmentally viable. Therefore, emphasis is also increasingly being given to encourage the use of RE.

The Electricity Act of 2003 is a central legislation enacted to provide energy justice to people. The entire Indian electricity sector is governed by this Act. The Act has de-licensed generation of electricity, promoted competition, and has attracted new investments. This Act has also laid emphasis on generation of electricity from RE sources.

12 MNRE (GoI), 'Strategic Plan for New and Renewable Energy Sector for the period 2011 – 17', 18 – 21 (2011), available at http://mnre.gov.in/file-manager/UserFiles/strategic_plan_mnre_2011_17.pdf

13 Anindya Upadhyay, 'Renewable Energy Sector Upbeat on Budget 2015 Proposals', *The Economic Times* (Feb 28, 2015), available at http://articles.economictimes.indiatimes.com/2015-02-28/news/59613084_1_energy-sector-welspun-energy-infrastructure-bonds. This target would comprise of 1,00,000 MW of solar, 60,000 MW of wind, 10,000 MW of biomass, and 5 000 MW from small hydroelectric plants.

14 Planning Commission (GoI), 'The Final Report of the Expert Group on Low Carbon Strategies for Inclusive Growth', 3 (2014), available at http://cstep.in/uploads/default/files/publications/stuff/7c69addd51202f84c560409daccb8a96.pdf

The Act, under Sec. 3 imposes an obligation on the Central Government to lay down a National Electricity Policy and Tariff Policy, in consultation with state governments for the development of a power system based on optimal utilisation of resources such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy.

The Central Government introduced the National Electricity Policy[15] in February 2005, which mandates State Electricity Regulatory Commissions (SERCs) to prescribe the percentage of power to be purchased by obligated entities to boost renewable and non-conventional energy sources and increase their percentage contribution to the electricity mix progressively.

The National Tariff Policy[16] 2006. This policy has been amended and revised, as of January, 2016 also mandates SERCs to purchase a minimum percentage of energy from renewable sources, taking into account the availability of such resources in the region and its impact on retail tariffs.

Section 86 (1) (g) of the Electricity Act empowers SERCs to frame regulations for the power sector. SERCs have enacted regulations exercising this power, making purchase of electricity from RE sources mandatory. These are referred to as Renewable Purchase Obligations (RPOs), i.e., the minimum percentage of their anticipated energy demand that the obligated entities have to purchase from renewable sources. It has also determined power tariffs. On non-compliance by obligated entities, SERCs levy surcharge in the form of compensation.

GoI introduced the Renewables Regulatory Fund (RRF) regulations in 2010 as per the provisions of the Indian Electricity Grid Code Regulations, 2010. The objective of this fund is to enable the uptake and improve the accuracy of resource forecasting tools for wind and solar generators, so that they are protected from paying penalties in the form of Unscheduled Interchange (UI) charges for deviating from planned generation schedules.

MNRE recently released the draft National Renewable Energy Act, 2015, with the objective of promoting generation of energy from RE sources in order to reduce dependence on fossil fuels, ensure security of supply and reduce CO_2 emissions.[17] It has, for the first time, defined the scope and ambit of Renewable

15 Press Information Bureau (GoI), National Electricity Policy, 5 (2005), available at http://pib.nic.in/archieve/others/2005/nep20050209.pdf

16 Ministry of Power (GoI), Tariff Policy, 9 (2006), available at http://www.aegcl.co.in/Tariff_Policy%20.pdf

17 National Renewable Energy Act, 2015, available at http://mnre.gov.in/file-manager/UserFiles/draft-rea-2015.pdf

Energy, which is inclusive of all possible types.[18] The proposed provisions of the act are summarised in the next Section.

In addition to the policies and regulations mentioned in this section, there have been state and central level interventions, some of which are an extension of these central legislations. Figure 2 depicts the evolution of state and central policies supporting the promotion of RE in the last decade.

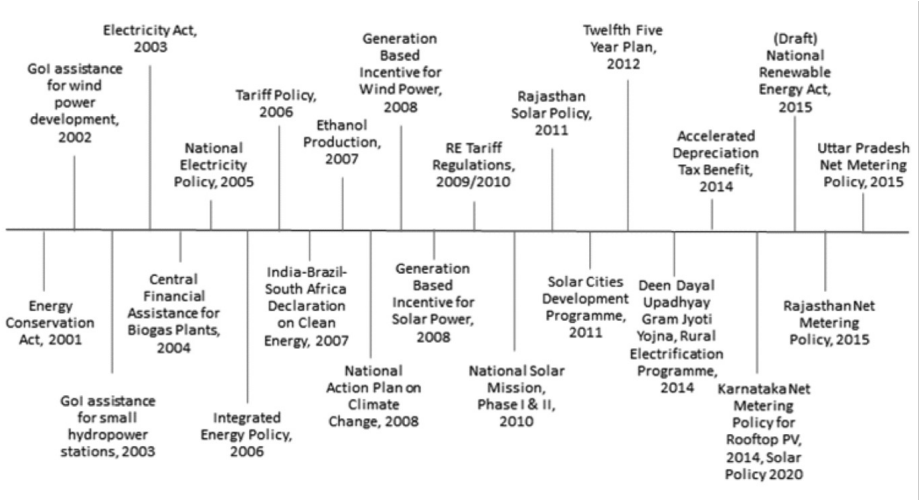

Figure 2: Evolution of State and Central Policies Supporting RE (2001–15)[19]

RPO as an Enabling Mechanism for RE

The previously discussed benefits of RE will accrue to the whole nation. However, the distribution of the resources is uneven and concentrated in a few

18 Renewable Energy (RE) Sources means energy derived from non-depleting resources and includes the following sources- Wind, Solar radiation, Mini hydro; Biomass; Biofuels; Landfill & Sewage gas; Municipal solid waste; Industrial waste; Geothermal energy; Ocean energy; Any other energy source, as may be notified by the Ministry; and Hybrids of above sources. [In this definition: solar radiation include photovoltaic and solar thermal generation; biomass comprises solid, liquid, and gaseous fuels from crop residues, including timber and harvest residues as well as waste wood and organic waste from food production and animal husbandry. It also includes feedstock from dedicated biomass plantations grown on degraded/waste lands deemed suitable for this purpose by relevant authorities; ocean energy includes wave, tidal and marine sources based on coastal land and/or shallow coastal waters; and industrial waste includes all solid, liquid and gaseous by products/effluents which can be used for energy generation, including agro-industrial wastes and by products.]

19 Collated from CEA, MNRE, IEA.

states. For instance, it is estimated that at present, Gujarat has the highest share of potential from all RE sources, at about 25%, followed by Karnataka (13%), and Tamil Nadu (11%).[20] This is mainly on account of wind potential, nearly 85% of which is concentrated in the six southern and western states of Andhra Pradesh, Gujarat, Karnataka, Maharashtra, Rajasthan and Tamil Nadu.[21] Hence, the capacity to meet national level targets is limited to the RE resource-rich states, unless there are enabling mechanisms which enable off-take of RE power in resource-deficit states. Unlike conventional sources like coal, the RE resource itself cannot be transported across regions to desired locations of generation - the generated power needs to be transported instead.

Hence, as a demand creation mechanism to enable inter-state off-take of RE power, India's National Action Plan on Climate Change (NAPCC) introduced RPOs. It envisages a national RPO target of 5% for 2010, with an annual increase so as to reach 15% by 2020.[22] Recently, MNRE also informally announced its plans to further increase the national RPO targets to 10.5%.[23] As mentioned in the previous section, the National Tariff Policy provision stipulates that SERCs issue state-specific RPO targets, taking into account the availability of RE resources in the region and its impact on retail tariff. Due to the difference in price between solar and other RE technologies, RPOs are at present classified into two main types – solar RPOs and non-solar RPOs. Obligated entities include licensee and state-owned distribution companies (DISCOMs), captive consumers, and open-access consumers. The state-wise solar-RPO targets till 2020 are listed in Table 1 below:[24]

20 Ministry of Statistics and Programme Implementation (GoI), Energy Statistics 2015, 5 (2015), available at http://mospi.nic.in/Mospi_New/upload/Energy_stats_2015_26mar15.pdf

21 NIWE, 'Estimation of Installable Wind Power Potential at 80 m level in India' (2015), available at http://niwe.res.in/department_wra_est.php. Note: the potential at 80 m has recently been revised to 302 GW as per news reports (http://www.thehindubusinessline.com/economy/indias-wind-energy-potential-estimated-at-302-gw/article7607860.ece). The state-wise breakdown of the potential is not yet available at the time of writing this article.

22 Forum of Regulators, 'Terms of Reference for Study on 'Preparing Incentive Structure for States for Fulfilling RPO targets', available at http://www.forumofregulators.gov.in/Data/study/TOR_Incentive%20structure%20for%20fulfillment%20of%20RPO.pdf

23 PTI, 'MNRE plans raising RPO requirement to 10.5%' *Business Standard* (December 4, 2014), available at http://www.business-standard.com/article/pti-stories/mnre-plans-raising-rpo-requirement-to-10-5-114120400698_1.html

24 MNRE (GoI), 'State-wise Solar RPO Targets', available at http://mnre.gov.in/file-manager/UserFiles/Solar%20RPO/state-wise-solar-RPO-targets.pdf. The overall national solar RPO target is expected to be revised to 10.5% considering the recently announced 100 GW solar target. The state level RPO revisions have not officially been announced yet. These targets are hence subject to change when CERC/SERCs officially revise the targets.

Table 1: State-wise Solar RPO Targets

State	2011 –12	2012 –13	2013 –14	2014 –15	2015 –16	2016 –17	2017 –18	2018 –19	2019 –20
Andhra Pradesh	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%			
Arunachal Pradesh	Not specified by SERC								
Assam	0.10%	0.15%	0.20%	0.25%					
Bihar	0.25%	0.25%	0.50%	0.75%	1.00%	1.25%	1.5%	1.75%	2.00%
Chhattisgarh	0.25%	0.50%							
Delhi	0.10%	0.15%	0.20%	0.25%	0.30%	0.35%			
Goa and UTs	0.30%	0.40%							
Gujarat	0.50%	1.00%							
Haryana	0.00%	0.05%	0.75%						
Himachal Pradesh	0.01%	0.25%	0.25%	0.25%	0.25%	0.25%	0.50%	0.75%	1.00%
Jammu and Kashmir	0.10%	0.25%							
Jharkhand	0.50%	1.00%							
Karnataka	0.25%								
Kerala	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%
Madhya Pradesh	0.40%	0.60%	0.80%	1.00%					
Maharashtra	0.25%	0.25%	0.50%	0.50%	0.50%				
Manipur	0.25%	0.25%							
Mizoram	0.25%	0.25%							
Meghalaya	0.30%	0.40%							
Nagaland	0.25%	0.25%							
Orissa	0.10%	0.15%	0.20%	0.25%	0.30%				

Punjab	0.03%	0.07%	0.13%	0.19%					
Rajasthan	0.50%	0.75%	1.00%						
Sikkim	Not specified by SERC								
Tamil Nadu	0.05%								
Tripura	0.10%	0.10%							
Uttarakhand	0.03%	0.05%							
Uttar Pradesh	0.50%	1.00%							
West Bengal	0.25%	0.30%	0.40%	0.50%	0.60%				

Source: SERCs Orders on RPO Regulations

The obligated entities can meet the RPO requirements by self-generation or purchasing renewable power from RE generators by entering into long-term power purchase agreements with them, from short-term transactions in the power exchange market, or from trading of Renewable Energy Certificates (RECs) which correspond to a unit generation of RE-based electricity. RECs are designed as a market mechanism to provide impetus on the supply-side, and issued to solar and non-solar RE generators. A certificate is issued by the National Load Dispatch Centre (NLDC), for every Mega Watt hour (MWh) of electricity generated, and can be traded in Power Exchange of India and the Indian Energy Exchange (IEX). [25] CERC declares the floor and ceiling prices of the RECs to ensure a minimum return on investment for generators, and the certificates are traded within the limits of these prices.[26]

In accordance with the NAPCC target of achieving 15% renewables in the energy mix by 2020, and an assessment of the wind, solar, hydro, and biomass resource potential in the country, national trajectories for RPOs can be estimated, as shown in Figure 3.

25 IEX, Renewable Energy Certificates Overview, available at http://www.iexindia.com/products.aspx?id=19&mid=2

26 CERC, 'Order on Determination of Forbearance and Floor Price for the REC framework to be applicable from 1st April 2012', available at http://www.cercind.gov.in/2011/August/Order_on_Forbearnace_&_Floor_Price_23-8-2011.pdf

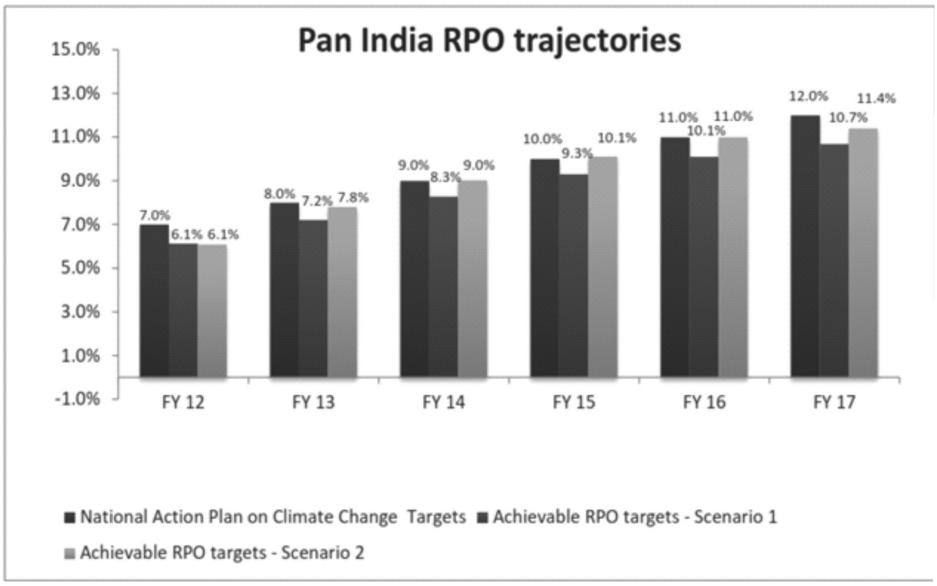

Figure 3: Pan India RPO Trajectories[27]

The graph provided above shows the achievable targets for two scenarios, compared to those set by NAPCC for 2020. In Scenario 1, the likely capacity addition is based on the assumption that existing regulatory and policy support continues over the 12th FYP. In Scenario 2, the likely capacity addition for the 12th Plan can be achieved only if barriers to deployment are addressed by GoI, in addition to making both mechanisms available for inter-state transmission of RE and evacuation infrastructure.

In terms of implementation, only a few states have been able to comply with the RPO targets. Table 2 illustrates the compliance levels of solar-RPOs by most of the states as of 2014.

27 CRISIL, 'Assessment of achievable potential of new and renewable energy resources in different states during 12th Plan period and determination of RPO trajectory and its impact on tariff'12 (Forum of Regulators, 2012), available at http://www.forumofregulators.gov.in/Data/Reports/Final_Report_FOR_RPO_Study.pdf

Table 2: Compliance of State-wise Solar RPO Targets

State	Solar RPO target (%)	Compliance Level (%)
Gujarat	**1.50%**	**112%**
Uttar Pradesh	1.00%	3%
Maharashtra	0.50%	49%
Rajasthan	**1.00%**	**188%**
Madhya Pradesh	0.80%	71%
Haryana	0.75%	4%
Andhra Pradesh	0.25%	58%
Karnataka	0.25%	30%
Chhattisgarh	0.75%	5%
West Bengal	0.25%	3%
Bihar	0.50%	0%
Jharkhand	1.00%	37%
Goa & UTs	0.50%	4%
Punjab	0.13%	23%
Delhi	0.20%	8%
Kerala	0.25%	0%
Orissa	0.20%	50%

Source: MNRE[28]

As can be observed, only two states - Gujarat and Rajasthan, which happen to be resource-rich states, have achieved the RPO targets set by their SERCs while most others have shown varying degrees of compliance. One of the key causes for non-compliance of RPOs by distribution licensees is the poor financial health of the DISCOMs resulting in their inability to purchase more expensive RE power, as well as trade in the REC market.

28 MNRE, 'Solar RPO/REC: Challenges and Issues'(Aditya Birla Group, 2014), available at http://mnre.gov.in/file-manager/UserFiles/Workshop-RPO-RECs-24022014/Aditya-Birla-Group.pdf

For instance, in Karnataka, the high share of cheap hydel power is the primary contributor of affordable power. In 2014, the state received 22% of its electricity from large hydroelectric plants at an average tariff of INR 0.59 per unit. In comparison, the average cost of purchase from RE sources is INR 3.5. Further, the low performance of state-owned thermal power plants (average PLF of about 65%), results in their high cost of electricity generation. While the average cost of electricity from the Central Generating Stations (CGS) was INR 2.96 per unit, the average cost of coal-based electricity from KPCL was as high as INR 3.73. This poses a challenge to reducing the consumer tariffs in the state and acts as a primary barrier for DISCOMs to purchase expensive RE power.

Some of the other issues with regards to compliance of RPO targets are lack of long-term visibility of RPO targets and REC prices for the development of the certificate trading market, and inadequate transmission capacity for inter-state transfer of RE power resulting in congestion of networks.

Legal Issues with RPO Compliance

As can be observed from the previous section, imposition of RPO has largely been observed in its non-compliance. Many obligated entities have raised questions before State Commissions and Appellate Tribunal that SERCs lack power to frame such regulations and RPO violates the basic object and intendment of the Act.

Recently, in 2015, the Supreme Court in *Hindustan Zinc ltd*. v. *Rajasthan Electricity Commission*[29] upheld the validity of RPOs. The appellants – obligated entities – challenging the regulations framed by the Rajasthan Electricity Regulatory Commission (RERC) argued that since the Electricity Act of 2003 de-licensed generation of electricity, RERC has no jurisdiction to impose RPO on open-access consumers and Captive Power Consumers, hence RERC acted beyond the object of the Act. They argued that RPO militate the purpose for which they were de-licensed. The appellants also contended that the State Commission only has power to regulate electricity purchase, procurement process and prices but not impose surcharge on them in case of non-compliance.

The Supreme Court, stating the object of Electricity Act as promotion of generation of electricity from renewable sources of energy as against the polluting sources of energy, held that the imposition of RPO is within the object of

29 Civil Appeal No. 4417 of 2015 arising out of S.L.P. (c) No. 34063 of 2012.

fulfilling the constitutional mandate with a view to protect the environment and prevent pollution in the area by utilising RE sources as much as possible in larger public interest.

The Supreme Court held that the impugned Regulation is neither ultra vires nor violative of the provisions of the Act of 2003 and cannot in any manner be regarded as a restriction on the fundamental rights guaranteed to the appellants under the Constitution.

The imposition of surcharge on non-compliance of RPO was also argued by appellants on the ground that it amounts to imposition of tax, and tax cannot be levied without the authority of law and is contrary to Article 265 of the Constitution. The Supreme Court held that the deposit of RPO charge is compensatory in nature. Sections 142 and 147 of the Act of 2003 provide the statutory back-up for penal consequences in contravention of the impugned Regulations. The penalty imposed by impugned Regulations is not in the nature of 'tax' but it is a 'surcharge' levied under Section 39(2) of the Act to achieve the laudable object and intendment of the Act of 2003.[30]

The appellants also argued on the issue of cost effectiveness of RPO on the ground that it adversely affects their business. Para 49 of the judgment specifically states the purchase of nominal quantum of energy from renewable resources cannot adversely affect the cost effectiveness of the Captive Power Plant. Moreover, the object being reduction of pollution by promoting renewable source of energy, larger public interest must prevail over the interest of the industry.

The Supreme Court further said that Article 51A (g) of the Constitution of India casts a fundamental duty on the citizen to protect and improve the natural environment. The RPO obligations through the impugned Regulation cannot in any manner be said to be restrictive or violative of the fundamental rights conferred on the appellants under Articles 14 and 19(1) (g) of the Constitution of India.[31]

30 Para 43 of the judgment.

31 Para 50 of the judgment.

This is a positive development towards RPO compliance. This judgment has highlighted the need to reconsider the generation of electricity through conventional mode and has emphatically stated the Indian policy on use of renewable sources of energy.

Legislative Summary: Draft Renewable Energy Act of 2015

MNRE recently released the much awaited draft National Renewable Energy Act, 2015, with the objective of promoting generation of energy from RE sources and reducing carbon emissions. The proposed Act provides a comprehensive national framework to promote RE. This Act empowers the Central Government to formulate, review and monitor RE policies and plans and also formulate guidelines for State RE polices and plans.

RE is marginally governed by the Electricity Act, 2003 and the rules thereunder and the National Electricity Policy, 2005. Sections 61 (h) and 86 (1) (e) of the Electricity Act are the only provisions making mention of RE. The procurement and other aspects are governed by rules and regulations framed by regulatory bodies. There is no enforcement mechanism provided under the Act.

Reinsuring the commitment to Green Energy, the draft National Renewable Energy Act 2015 is comprehensive and aims to promote the production of energy from RE sources, in order to reduce dependence on fossil fuels, ensure energy security and reduce local and global pollutants, keeping in view economic, financial, social and environmental considerations.

The proposed Act of 2015 comprehensively addresses the RE sector. It has, for the first time defined Renewable Energy, which is inclusive of all possible types. It has clearly defined the enforcement mechanisms to ensure implementation of RE targets.

The proposed Act contains several initiatives namely, establishment of Renewable Energy Corporation of India, National Renewable Energy Fund, State Green Fund, creation of RE Investment Zones, mandatory forecasting, financing for RE projects, etc. This Act speaks of mandatory grid connectivity for all RE generation units. It also speaks of Integrated Energy Resource Planning (IERP), which is a strategic plan for securing reliable

and cost-effective energy resources. In this plan, an exhaustive, research-based examination of potential risks and opportunities in procuring future energy supplies will be worked out to evaluate environmental impacts and maximise energy security.

On the RPO front, the proposed Act has made RE targets and compliances mandatory. This is in line with the recent Supreme Court judgement in the Rajasthan case. The Act has a provision of imposing penalty for non-compliance of RPO. This provision imposes penalty not exceeding INR 1 crore for RPO non-compliance by obligated entities, and in case of continuing failure, an additional penalty which may extend to INR 1 lakh for every day. This provision has given a much needed impetus for generation of RE.

On procurement of RE, the proposed Act mandates all obligated entities to formulate a 5 year plan to meet their current and future RPO trajectories. It speaks of Competitive Bidding for RE procurement which is in order to bring in parity. However, the Act further says that Competitive Bidding is one among different methods used for procurement. The proposed enactment will reinsure the national commitment to sustainable energy.

Conclusion: Way Forward for RPO Implementation

Recently, MNRE has informally announced its plans to increase the national RPO targets to 10.5%,[32] which further necessitates that the concerns with RPO implementation are duly addressed. The following issues need to be resolved in addition to stricter enforcement of RPO targets by SERCs:

- The barrier of poor financial health of state-owned utilities can be addressed by completing their financial restructuring plans. On the supply side, financing schemes that further reduce the price of solar generation need to be introduced till solar power reaches grid parity.
- GoI can incentivise RPO compliance through a graded incentive structure for state utilities, with a minimum threshold compliance (linked to their state-level targets for RE capacity addition).

32 This is the expected revision for national level targets, and will be followed by state-specific targets once it has been officially revised by CERC.

- Most states have currently not declared their long-term RPO trajectories. This adversely impacts the bankability of RE projects as investors do not get a clear sense of the ensured demand for purchase of RE power. Hence, state governments should clearly communicate the long-term trajectories for RPO.

- Similarly, the floor and ceiling prices of RECs need to have longer-term visibility to encourage participation in the REC market by sending clear price signals to investors whose project revenue streams are impacted by the trading of RECs, as well as buyers' participation in the REC market. For instance, the uncertainty in REC prices such as the drop from INR 12/kWh to INR 3.6/kWh within a short period can pose a high risk for an investor.

- Considering that RPO enforcement was not stringent in several states, even the REC mechanism has had limited success. Thus, at present no viable market mechanism exists for the sale and/or procurement of non-solar power. Thus, one of the priority tasks for the RE power sector is to develop a viable market mechanism for sale and purchase. This needs to include procurement of balancing power, such as ancillary services, to support the grid with increased penetration of variable wind and solar power.

- Since RPO is a mechanism to encourage transfer of RE-based electricity between resource-rich and resource-deficit states, the inter-state transmission and evacuation capacity should be in place for successful off-take of power by demanding states.

In conclusion, it can be observed that the RPO is, in principle, an effective policy to reach the country's RE deployment targets. However, the challenge lies in its implementation. The legal judgments with regard to RPO compliance have effectively concluded that enforcement of compliance is within the rights of the State in the spirit of protecting the larger public interest, with the objective of reducing pollution by promoting RE sources. This has been reinforced by the recently revised penalties under the proposed Draft RE Act of 2015.

While it is evident that strict enforcement of RPO compliance across all states is necessary to achieve any national level targets for RE, it is important to recognise existing barriers to compliance. Some factors that are critical to the success of the demand creation mechanism are long-term clarity on state-level

RPO targets and REC prices, along with the assurance of the DISCOMs' ability to pay for the electricity produced from RE generators, and adequate inter-state transmission capacity. Mandating RPO compliance without resolution of these key issues could lead to a situation where states may set low RPO targets in anticipation of severe implementation concerns, thus defeating the intended objective of the mechanism. Hence, it is important that the RPO policy is re-designed to look beyond mere revision of RPO targets and duly address the above concerns, in order to achieve the intended outcomes of high RE capacity addition.

Legal Challenges to Energy Security

Policy and Legal Dimensions of Energy Security in India

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Abstract

Indian energy sector has shown critical environmental concerns. India cannot ignore the fact that 'sustainable development' of the energy sector is the key to the growth and development goals of our economy. Balancing economic interest with the interest of future generations for a clean environment can never be lost sight of, especially with the threat of climate change looming large in the Indian sub continent. Use of clean energy, including hydropower, should be a priority. The capping of nuclear liability has diluted the much evolved 'Absolute Liability Principle' in hazardous industrial activity. It is hoped that the new CSR provision in the Companies Act will result in this sector investing on environmental issues that plague the outcome of energy production. Enron and its legal challenges left India at least 10 to 20 years behind in the energy globalization market. What Enron did was also a wakeup call on privatization and private participation in the energy sector. Though privatization comes at a cost, the energy security needs must balance the aspiration of businessmen and the needs of the common man, especially the rural farmers in India, who now find energy a costly commodity. Inefficiency in the energy sector is probably the biggest threat to energy security. Three main objectives of the Government in the Energy sector should be: accessibility to all citizens; less dependence on imported fuel - i.e self-sufficiency and energy security; and how to balance energy with environment, especially in the climate change threat scenario. In all this the State or the government cannot be the sole provider and hence privatization is the way forward. PPP has been working well, both of the Indian consumer and for the Government whose political will and intentions, coupled with corruption and license raj system has meant that PPP is here to stay and continue either in the existing form, which has some loopholes or a modified form.

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Introduction

In order to mitigate the rising demands of clean energy for industries as well as households and to save the planet from implications of global disasters, energy security is the need of the hour. As the world strives to secure energy resources in consonance with preserving the environmental concerns of the planet, India being a developing nation, is no stranger to the challenges of energy conservation.[1] All forms of Conventional energy sources like wood, coal, oil, hydro and nuclear have environmental ramifications. This brings us to the need for proper evaluation of benefits and costs, even ecological concerns which have long term effects. The energy crises and associated ecological and environmental problems have forced us to think that: a) conventional sources of energy are not going to bail us from the energy crises; b) we cannot totally depend on fossil fuel for our energy needs; and c) hence, alternate sources which are non-conventional, non-polluting are necessary.

In fact, the key issues are – accessibility, dependence and self security in energy. According to US Energy Information Administration,[2] by 2025 India would be the fourth largest energy consumer in the world after Japan, US and China. India relies heavily on coal energy to produce electricity. A strong second is closely shared between hydropower and natural gas.[3]

The Indian energy market faces two critical issues namely, energy security and climate change. India's primary energy consumption is dominated by fossil fuels-coal, oil and natural gas altogether account for 93% of consumption.[4] The rising demand for energy has prompted companies to look into the feasibility of acquiring coal mines in foreign countries, while the government tries to balance the energy requirements and its conservation initiatives for future simultaneously. To contour the issue of limited sources of energy production, the government is now increasingly investing in renewable forms of energy to

1 For more read, National Energy Policy 1986, Lok Sabha Secretariat, New Delhi, 1986.

2 PTI, 'India to overtake Japan to become third-largest oil consumer: US' *Live Mint* (May 13, 2014), available at http://www.livemint.com/Industry/9dYI7IYqh3AmR67Rj1kPKJ/India-to-overtake-Japan-to-become-thirdlargest-oil-consumer.html (last accessed on December 11, 2014).

3 Anil Kamboj, 'Energy Security: Challenges and Likely Way Ahead', *World Focus*, October 2014, p 6.

4 Dr. Chanchal Kumar, 'India's Energy Security and Climate Change: Challenges, Responses and Recommendations', *World Focus*, October 2014, p 42.

counter the demands of energy accessibility and self-sustainability. India's National Action Plan on Climate Change[5] serves as a critical forum for discussion on sustainable and conservational approach towards energy efficiency and protecting the natural ecology of the country from the deplorable state of environmental degradation caused by man-made interventions.

While the developed countries took time to understand the need for conservation, as they were busy in extracting and exploiting limited natural resources, the onus of balancing the equation of conservation and economic upliftment was on the developing nations who were expected to be torch bearers in guiding the world out of the danger zone. Necessity paved the way for invention and in turn inventions paved the way for exploitation of natural resources to meet the tremendous demands of the evolving civilization.

Energy conservation and environmental challenges go hand in hand. We have seen the transformation of fossil fuel into crude oil and coal into black diamond. The extraction of varied forms of energy, be it from coal, fossils, solar or nuclear stages, the use of the term "sustainable" has become a buzzword of all nations and economies.

Three main objectives of the Government in the Energy sector should be: accessibility to all citizens, less dependence on imported fuel i.e. self sufficiency and energy security and how to balance energy with environment, especially in the climate change threat scenario. In all this, the State or the Government cannot be the sole provider and hence privatisation is the way forward. This article critically examines the legal and policy dimension of the Energy sector in India. The second part of the article explores energy conservation and energy security challenges that India as a developing economy will face. The third part of the article will focus on socio-legal challenges that the energy sector poses towards the protection and conservation of environment.

Conservation and Security of Energy: The Indian Scenario

Energy conservation has emerged as a major policy objective, and the Energy Conservation Act 2001, was passed by the Indian Parliament in September 2001. This Act requires large energy consumers to adhere to energy consumption

5 National Action Plan for Climate Change, GOT, Prime Minister's Council on Climate Change, available at http://www.moef.nic.in/downloads/home/Pg01-52.pdf (last accessed on December 11, 2014).

norms; new buildings to follow the Energy Conservation Building Code and appliances to meet energy performance standards and to display energy consumption labels. The Act provides for institutionalizing and strengthening of delivery mechanism for energy efficiency services in the country.

The Act also created the Bureau of Energy Efficiency to implement the provisions of the Act.

International Energy Agency (IEA) defines 'Energy Security' as "*the uninterrupted availability of energy sources at an affordable price. The term energy security has two aspects, namely, longterm energy security aspect which deals with timely investments to supply energy in line with economic developments and environmental needs. While a short term aspect focuses on the ability of the energy system to react promptly to sudden changes in supply demand balance*".[6]

Energy Security, as defined by the Integrated Energy Policy of India, encompasses three critical dimensions: (a) meeting India's large energy demand to sustain an annual economic growth rate of 8-9 percent through 2031-32 (b) meeting lifeline energy needs of all citizens to address social development, health and safety of the energy poor and (c) ensuring sustainability in energy supply and use. In the current context energy security also encompasses an overlapping element of energy efficiency across all aspects related to energy security. Energy security thus entails a complex set of coordinated initiatives along with the need for energy strategies, policies and regulations to align in making specific choices in charting a low-carbon and energy-secure growth path for the country.

PART- 1 : Energy Sector- Law & Policy in India

Gaining independence in 1947 brought with it a huge task before the Indian government to simultaneously protect both the social status as well as the economic status of the country. Since Indian policy makers had placed a strong faith in the ideology of socialism, it was natural that "State" played a dominant role in procuring the socio-economic foundation for the country.[7] Therefore, the pre 1991 era witnessed an economy of larger share of public sector and big monopoly capitalists as compared to small private entities in the economy.[8] As

6 International Energy Agency, available at http://www.iea.org/topics/energysecurity/ (last accessed on December 8, 2014).

7 Dr. Kapil Jain, 'Economic Reforms in Indian Economy: A Step Towards Change', *iJARS* Vol 2, Issue 11, Nov 2013.

8 Ibid.

a result, Industrial Policy Resolutions of 1948 were adopted which later on led to the Industrial Policy Resolution of 1956. The highlights of this era were centralized economic planning, huge amount of public investments, exorbitant tariff rates, strong adherence to licensing and extreme land reforms. Thus, economic activities and industries that emitted energy or required energy for their functioning were incurring huge investment costs, while the output was still not satisfactory to meet the rising demands of households and businesses. Also, the Indo-China war of 1962 and the Indo-Pak war of 1965 had forced India to come within extreme financial crisis of World Bank and International Monetary Fund.[9] This incident followed the droughts of 1965-67[10] that terrified the Indian stand on World Trade Forum; besides damaging lives, this also moved the country into huge budgetary crisis and slow industrial production. Hence, the Indian monopolistic model was broken to introduce nationalization of banks in 1969 and Monopolies and Restrictive Trade Practices (MRTP) Act 1969[11] was enacted.

The biggest reform came with the Oil Shock of 1973[12] that had resulted in economic stagnation and inflation of the Indian economy. As a result, Indian policy makers were forced to resort to liberalization in their Industrial Policy of 1973 for participation of private players in the economy and thus abandoning the policy of import substitution.[13] This was perhaps the darkest era of energy accessibility and affordability in the country as it challenged the future availability of energy resources in the country. Subsequent years of 1977-1982 & onwards[14] saw reduction in industrial licenses, and by 1982-83 onwards, foreign collaborations were invited to reform the economy of the country.

9 Ibid, pg 2.

10 Ibid, pg 2.

11 The MRTP Act 1969 is now replaced by Competition Act 2002. It was a grim reminder of the "licence-quota- permit-raj" of 1970's & 1980's. The Act had become redundant post July 1991 when the new economic policy was announced and Chapter III of the MRTP Act dealing with restrictions on M&A activities was made inoperative.

12 The 1973 oil crisis began in October 1973 when the members of the Organization of Arab Petroleum Exporting Countries (OAPEC, consisting of the Arab members of the OPEC, plus Egypt, Syria and Tunisia) proclaimed an oil embargo. By the end of the embargo in March 1974, the price of oil had risen from $3 per barrel to nearly $12. The oil crisis, or "shock", had many short-term and long-term effects on global politics and the global economy.

13 Supra note 9.

14 Ibid.

Over the years, India has portrayed itself as an investment destination and outward investor in terms of its strategic business relations with respect to energy security with other countries.[15] In its post-independence era, India joined hands with Russia, who greatly supported it in ensuring energy movement and forms of energy extraction and industrialization.[16] The latter helped India in building several hydropower stations, coal based industries like thermal power plants in east and south India, finding oil in Indian soil and off-shores and most importantly establishing the major energy firm ONGC.[17] Later, Indo-Russian cooperation helped India in staking a 20% claim in London based energy industry Sakhalin1 in Tomsk region.[18] The reign for nuclear forms of energy demands has seen India collaborating with the US in 2008 on mutually agreed terms and conditions to envisage the enhancement of the nuclear capacity from 4.8 GW to 30 GW by 2030.[19] This means that apart from the usual environmental hazards of earthquakes and cyclones, the country has risen to the severe threats of civil and nuclear hazards that accompany the road to energy conservation and security. Conflicts between public and private energy sectors and inflation in global prices of energy resources are other serious issues that India needs to address simultaneously.

Post 1991 era marked a visible progress towards liberalization and globalization of industrial sectors in India. This meant that resources like coal and fossil fuel which formed the most important raw material of most heavy industries, witnessed rising demand for securing energy requirements and production. The changing power sector dynamics introduced issues to improve efficiency, reduce losses, reliable accessibility by smart system, segregating network assets and subsidizing electric tariffs to meet the demands of households, industries and agriculture. Henceforth, the government allowed private players to engage in heavy industries, mining, electricity, telecommunications etc. through privatization and as a result reform the economy. The government established

15 International Energy Agency, Understanding Energy Challenges in India - Policy, Players & Issues, 2012, available at http://www.iea.org/publications/freepublications/publication/India_study_FINAL_WEB.pdf (last accessed on December 11, 2014).

16 Russia & India Report, available at http://in.rbth.com/articles/2012/10/11/energy_cooperation_between_india_and_russia_policy_and_approach_18291.html (last accessed on December 10, 2014).

17 Ibid.

18 Ibid.

19 Ibid.

various corporations viz State Electricity Boards (SEB), National Thermal Power Corporation (NTPC), National Hydro-Electric Power Corporation (NHPC) and Power Grid Corporation Limited (PGCL)[20] etc. to regulate the rising demand of energy and power in the country which constantly failed in supplying adequate energy as compared to demand. Finally, the government also invited, in addition to private firms, independent power producers and foreign companies to build power generation projects in India. However, it was agreed that all these projects would be regulated by "Regulatory Commission" established under the title of "Central Electricity Regulation Commission (CERC) & State Electricity Regulation Commission (SERC)"[21]; which would look into the matters of compliances, transmission & distribution among the consumers. Thereafter, in one of the most promising joint ventures between the government and foreign collaboration, USA based Enron was invited into the Indian economy to invest into clean and reliable source of energy generation by setting up the Dabhol project in Maharashtra.

Privatization of the Energy Sector: The Good, The Bad and The Ugly

Numerous policy reforms over the past twenty years have shifted India's energy sector from a predominantly government owned system towards one based on market principles, offering a more level playing field for both public and private sectors. Political complexity and a tradition of socialist economic practices, however, hindered the complete liberalization of India's energy sector, leading to sub-optimal outcomes.

Liberalization of the Indian economy in 1991 meant that the Government could allow for Multi -National Companies to invest in different sectors in India, including the energy sector. In 1991, Houston-based Enron Corporation, service provider for natural gas and one of the fast growing companies at the international level, was invited by the Government of Maharashtra to create innovative and efficient mechanism for energy solutions and better environment. The company, through one of its subsidiaries Enron Development Corporation, identified Dabhol

20 S. Jindal, A. Kushwaha, R. Gupta & D. Prasad, 'Performance Evaluation of Power Sector: Pre & Post Electricity Act, 2003 and Their Implications', *International Journal of Emerging Technology and Advanced Engineering*, ISSN 2250-2459, Volume 4, Special Issue 1, Feb 2014.

21 Ibid.

district in Maharashtra (the only deep water port) to set up its 2015 MW power plant.[22] The Maharashtra State Electricity Board (MSEB) was selected to aid the corporation in building and running the ambitious largest invested plant in India. The Enron-funded Dabhol Power Project, owing to glitches found in the contract, was prevented from being fully implemented. It was found by the Munde Committee[23] (appointed specially for investigation) that there was no transparency and accountability maintained on the accounts, less attribution to environmental concerns and issues, and an absence of competitive bids. As a result, Enron decided to pull out its operations and slammed India at international level arbitration for violating the terms of contract and non-payment of its dues.[24] Eventually, it was found out that Phase 1 project failed in securing power to its local consumers at cheaper rate as against the agreed quotation. This incident grossly affected the financial resources of India's economy and eventually pushed India into a long legal battle at the International Court of Arbitration.

Enron Case & The Legal Challenges – Lessons Learnt?

The key issues that emerged out of this entire episode raising serious questions about energy security are as follows:

a) The most important question it posed was - whether stepping in, of private entities through "Public- Private Partnerships (PPP)" is actually worth the investment in the field of energy sector? In the given place, Dabhol in no way assured and rewarded local people with any cheap cost for electricity in its 1st phase of implementation. In fact, it made MSEB financially bankrupt while increasing the expenditure expenses of locals on costly power units. As a result, large scale unrest followed that, worsening the faith between citizens and the government on the idea of liberalization.

b) The Dabhol project is one of those exposed corruption laden projects that shows the stiff resistance of Indian political parties towards the issue of privatization and globalization. Even bureaucrats and technocrats

22 Preeti Kundra, 'Looking Beyond the Dabhol Debacle: Examining its Causes and Understanding its Lessons', *Vanderbilt Journal of Transnational Law* Vol. 41, pp 907- 935.

23 Infra note 47, at 917.

24 Infra note 47, at 923-926.

failed to stand up as whistle-blowers to the impending damages that would harm the environment and the safety of the people and stepped aside in the name of minor techno-economic clearance.

c) Even the Indian judiciary – Bombay High Court and Supreme Court overlooked the gross violations of laws in the Dabhol contract, failing to take the opportunity of securing and saving the lives of affected citizens who were getting crushed in the race to privatization of energy generation and consumption.[25]

d) Acceptance of hydrocarbon route – naphtha and liquefied natural gas as fuels for Dabhol project and linking this energy prices to the volatile international prices of oil, was certainly an error apparent on the face of the record.[26] By guaranteeing a minimum offtake quote to pay fixed costs, the executive added to the worries of the local people. This is because, for MSEB to save its financial downtrend, there is a need to increase the tariffs by more than double to meet its required outflows, while at the same time the cost of Enron power would increase likely every year as the rupee depreciates against the dollar.

e) The PPP venture, hit by the high cost of oil in international market, disturbed the ambition of changing India's fuel policy from indigenous coal to imported hydrocarbon. The episode also affected the finances assured towards subsidy in agriculture, transmission and distribution of entitlements.

Lessons Learnt

While the Enron case was definitely a failure, some suggestive lessons that could be useful for India in looking forward past the debacle have been the introduction of natural gas and LNG as cheaper and cleaner fuels for energy generation as compared to naphtha and coal. Several other PPP projects that run in the field of energy sector are verified and cross-verified as per their environmental impact and their (units of) energy generating ability on par with national guidelines and international standards to assure quality services at affordable rates. The contribution of CSR reforms in this area can be helpful in keeping transparency and quality in services. This is because firms working in energy sector are investing a certain share of their

25 Infra note 47.

26 Ibid.

profits to CSR activities that are accountable and verified, both by the government and NGOs working for the cause. This tripartite participation would ensure glitches are studied and pointed out rightly to the public. With liberalization of investment policies and National Acts surveying the energy sector reforms, the firms are trading at international level. Along with promising better infrastructure for setting up units, the technology advancement boasts better linkages to several stakeholders at once. The need for generating additional capacity of power and energy would keep growing in days to come. With rapid growth in economy, demand for electricity and energy would grow manifold. One can lower the need for generating capacity if we reduce waste, follow energy conservation measures and increase efficiency of energy usage. Another option of expanding the generating capacity cheaply is through repair and renovation of old, derated power plants.[27] This would help India in pursuing its energy security plans in a better way without investing additionally on incorporation of a new enterprise. Investing wisely in conventional and non-conventional plants has to be taken up.

The processes of reforming and restructuring in the Indian power sector begun in the early 1990s with a few State Governments enacting State-Level legislations to reform and restructure integrated State Electricity Boards (SEBs) prior to enactment of the Electricity Act, 2003 ("the 2003 Act").[28] The first state to restructure its integrated SEB under a State-Level legislation was Odisha in 1995.[29] Though power is a Concurrent subject in the Constitution, the first major policy thrust from Central Government came only in 1998 when it enacted the Electricity Regulatory Commission Act, 1998 to pave way for formation of Central and State Electricity Regulatory Commissions and distancing the Government from tariff determination. The most significant and[30] wide-ranging

27 Infra note 33.

28 In India, the power sector is the joint responsibility of State and Central government and it is currently governed by three principal Acts: •The Indian Electricity Act, 1910 •The Electricity (Supply) Act, 1948 •The Electricity Regulatory Commission Act (ERCA), 1998.

29 Supported by the World Bank they started a) un-bundling the integrated utility into three separate sectors of generation, transmission and distribution; b) privatisation of generation and distribution companies; and c) to establish independent regulatory commissions to regulate these utilities. Soon afterwards, several other states like Haryana,Uttar Pradesh and Andhra Pradesh followed.

30 Entry 38, Concurrent List, Seventh Schedule Constitution of India.

change in legislation was the promulgation of the 2003 Act, which superseded all the previous electricity-related legislations and created a more open environment for investment and competition in the sector.[31] The Electricity Act (EA) 2003 was amended to fully allow for private investment[32] in the energy sector.[33] The Electricity Act does not cover atomic energy, which is regulated by the Atomic Energy Act, 1962.[34]

This Act consolidated all existing laws and introduced provisions with respect to new developments in the power sector to improve competition, end-use efficiency and reliability of ensuring energy accessibility and affordability. Some salient features of the Act are:[35]

- "*Generation was delicensed and captive generation was freely encouraged and permitted.*
- *For hydro projects, an approval of state government and clearance from the CEA (Central Electrical Authority) was needed to approve the safety aspects and the optimum utilization of water resources.*
- *Provision for private transmission licensee was made in this Act. Distribution licensees were free to undertake generation and generating companies were free to take up distribution licenses.*
- *Open access in transmission with provision of surcharge for cross subsidy and this surcharge was to be gradually phased out.*
- *For rural and remote areas stand-alone systems for generation and distribution was permitted and provisions were to be made to allow*

31 Emerging Opportunities and Challenges: India Energy Congress, January 2012. p. 35 [http://www.pwc.in/assets/pdfs/power-mining/energing_opportunities_and_ challenges.pdf]

32 Section 5.2.20 of India's National Electricity Policy 2005 promotes private participation in renewable energy. "Feasible potential of non-conventional energy resources, mainly small hydro, wind and bio-mass would also need to be exploited fully to create additional power generation capacity. With a view to increase the overall share of non-conventional energy sources in the electricity mix, efforts will be made to encourage private sector participation through suitable promotional measures."

33 With the passage of the Electricity Laws (Amendment) Act 1991, private sector participation in generation was permitted for the first time.

34 Atomic Energy is the 4th largest source of energy in India. For more visit http://dae.nic.in?q=node/91.

35 P. Bajpai & S. N. Singh , "An Electric Power Trading Model for Indian Electricity Market", Member, IEEE.

distribution through rural-level local bodies like panchayats and co-operative societies.

- *Regulatory commissions were authorized to issue licenses for power trading and they were to fix the upper limit on power trading margins to introduce healthy competition among the business entities in the market for energy security*."

The Electricity Regulatory Commissions Act 1998 saw the establishment of regulatory Commissions at both Central and State levels and these were entrusted with the responsibility of tariff fixation as a principal function, along with regulatory oversight in their areas of jurisdiction. The Electricity Amendment Act of 2003 also recognized the role of regulatory bodies, set up under the Act, to facilitate strong competition of energy business models in the market, with the hope to strengthen the rising demands and tariffs[36] of electricity in the economy.[37] The powers and functions of the Electricity Regulatory Commissions are also covered under the Electricity Act, 2003.

As there is a split between the electric power sector and other parts of the energy sector (coal, petroleum fuels, natural gas), the conventional power generation sector is subject to an array of rules and regulations emanating from various Central ministries. These do not necessarily apply to the renewable energy sector; nevertheless they underline the need to have a central renewable energy law for India in order to have a clear demarcation of the subject matter, activities, policies and regulations, particularly in the context of portfolio standards and obligations.

Further, we have seen the creation of the government notified National Electricity Policy (NEP) in February 2005 and National Tariff Policy in January 2006 and Rural Electrification Policy in August 2006 to improvise upon pro-competitive measures.[38]

Now, private companies like Reliance or Tata Power, account for 27 percent of India's total power generation. Power transmission and distribution are still

36 Section 61 of the EA 2003 relates to tariff determination.
37 Ibid.
38 'Competition in India's Energy Sector, Final Report 2007', The Energy and Resources Institute 2007, pg xvii.

mostly in the hands of government's firms.[39] Caught between complete privatization and government monopoly the Government has currently adopted the PPP mantra. PPP has been working well, both of the Indian consumer and for the Government whose political will and intentions, coupled with corruption and license raj system has meant it [PPP] is here to stay and continue, whether in the existing form, which has some loopholes or with a modified form.

Price Dynamics

Pricing of energy vis-à-vis its accessibility has always stood at centre stage in both pre & post liberalization era. While monopolistic market, as aforesaid, was heavily marked by state regulations and licenses, the post-liberalisation era opened avenues of harnessing energy from various sources that required huge investments, strategic planning and coordination in terms of infrastructure, money, manpower, laws and policies to develop the energy potential of India. For e.g. introduction of private participation in oil & gas sector (in 1979), conservative licensing of government policies could not make investments fruitful. Therefore, the government had to revise its policy in 1997 to announce, New Exploration Licensing Policy (NELP) under which the ONGC and OIL were required to compete with the private players to obtain oil blocks instead of being given the same on a nomination basis.[40] Thereafter, successive NELP rounds incorporated more competition-enabling provisions, and this led to an increase in private participation. By 2002, the government dismantled the existing Administered Pricing Mechanism to decontrol prices of all petroleum products except LPG for domestic consumption and kerosene for public distribution.[41] This meant that firms were investing their own inputs into harnessing the resources and had to incur several costs in order to survive in the market. Since profit is still the major target of the companies; it was natural that tariffs and hidden costs of taxes and distribution were passed onto customers to meet the pricing strategies of the companies. Another point of concern has been that sectors like agriculture and heavy industries required steady supply of power and energy for their survival. As a result, to mitigate the losses of subsidies that were usually allocated to these sectors, private firms indulged in bypassing of

39 Deepal Jayasekera, Following Grid Collapse: Indian Bourgeoisie Demands Privatisation of Power Sector, International Committee of the Fourth International (ICFI: August 11, 2012), available at http://www.wsws.org.

40 Supra note 34, at xviii.

41 Ibid.

grid system to tap into the captive generation of power system,[42] which impacted the revenues due from distribution licenses that the government allocated to them. Others factors like uneven geographic terrain, climate issues, corruption and multiplicity of prices, as observed especially in case of natural gas pricing, left several opportunities for a tilt in pricing mechanism and inflation of tariffs.[43] Dependence of India on exports for petroleum and fuel has always seen constant shift in prices whenever there is an increase in international oil prices.

In the context of accessibility of energy security, apart from shifting policies and investment costs, factors like low employment opportunities, low agricultural production, high population pressure have also contributed to rise in price issues of energy security and conservation.[44] This is attributed to the fact that they don't have access to energy resources like cold storage, power for irrigation etc. and are mostly dependent upon traditional sources like biomass, wood, dung and kerosene for livelihood. For population still living in rural areas, low purchasing power, geographical disadvantage and limited investments eventually make tariffs high for the consumers. In the urban context, high rental rates of infrastructure, labour, resources and limited areas for generation burdens the existing tariffs with increased pressure of rising demands. Limited accessibility to clean fuels and widened gap between macro-level perceptions of energy security also raises the concern of pricing of energy.[45] Addressing these concerns would be helpful to achieve sustainable models of energy pricing and security in the long run.

In the 2G spectrum case,[46] Hon'ble Supreme Court had ruled that the attractive and better method of allocation of all natural resources, across all sectors and in all circumstances, must be by the conduct of auction. The ultimate objective being that service must be provided efficiently and at a relatively affordable price. But it did leave space to comment that it can't be the only method of resource allocation. For instance, when a natural resource is transferred to a private entity for commercial purpose, then bidding is the best option. But, when it's transferred for meeting the obligations of social objectives & welfare, the State is free to consider any method

42 Supra note 28.

43 Ibid.

44 N.P.K. Reddy, 'Accessibility Matters Rural Energy: Policies, Regulations & Challenges', *IJATER*, ISSN No 2250-3536, UGC, New Delhi.

45 Ibid.

46 Centre for Public Interest Litigation v UoI : Writ Petition (CIVIL) NO. 423 OF 2010, para 94-96.

it wishes.[47] Now, all companies that exist in the market have two very important functions to perform, namely – earn profits by performing commercial activities, and secondly, social objectives to be given back to the society. Given the dual purpose of existence of a business entity today, how should one decide, in such circumstances, which method to adopt? Also, companies that win the bidding may not always prove to be best in providing energy services at cheaper tariffs. Factors such as huge investments, fluctuating market policies, unforeseeable situations, manpower etc. may change the role of an energy project in due course and increase the input costs. In such situations, the promoter will have no option but to raise its prices to meet the demands of his business and its sustainability. How do we maintain the status quo of quality services & energy security paradigms at affordable rates?

So, the question that arises is whether securing private participation is a good option in energy sector? Well, the history of economic development of the country (aforementioned) bears testimony to this fact, and due to the costly alternatives, we do require private participation to tap into energy generation in India. Plus, given the huge market and the feasibility risks that are associated with extraction, mining, transportation, distribution, policy compliances and procurement of resources, multi-level stakeholders have no option but to pool into a common venture of public-private partnership model to support energy sustainability in the environment. However, there lie a spate of challenges under privatization that require redressal time and again by interested business parties to harness energy opportunities.

Energy Security: Challenges Under the Realm of Privatization

Opening of trade relations in energy sectors for private business entities also entails responsibility on the government for keeping strict regulations and compliances of laws, since any deviation from it has always left room for man-made environmental disasters. As a result, huge losses in terms of life, property, finances and environmental hazards take place, the impact of which, lasts for ages. The key issues emerging over the years are:

1) Increase in the prices of services associated with energy – the bills for basic facilities like electricity & water have seen sharp increase every

47 "Auctions: Constitutional Clarity", CNBC TV 18 (September 29, 2012).

year. This is despite the fact that several pockets in India still live without it and are dependent on traditional sources like lamps and candles, and rivers and wells, to live their lives. The business major Reliance was once given license by the Indian Government to foray into setting up its own petrol pumps across the country. However, additional inflated price mechanism in comparison to already inflating government regulated prices were burning holes in the citizen's budget. Therefore, the government was forced to pull back its license and Reliance had to quit this business due to depreciating profits.

2) Increase litigation on land acquisitions and forced displacements of communities – Land has always been a State subject. Hence, by the rule of eminent domain under the earlier Land Acquisition Act, 1984, State is the sole owner of land and its resources. Similarly, forest laws have prevented local communities from dwindling the natural resources, for their livelihood. The private companies often pitch in with government authorities to grab land either for setting up their industries or to built hydro-power plants, nuclear or wind farm projects in potentially beneficial geographical locations. Power, coupled with fraud and inadequate rehabilitation and compensation, has forced evictions and displacement of several communities while simultaneously corroding the environment for exploitation. The legislators introduced the Seventy-third[48] and the Seventy-fourth[49] Amendments to the Constitution to improvise the role of Panchayati Raj bodies in mineral-rich areas, especially the North-East zones of the country. It was seen that public notice as per provisions of law was hardly met and violence was often used in quick eviction

48 The 73rd Amendment of Article 243 of the Constitution in year 1992 declared Panchayat Raj institutions as bodies of self-governance for rural areas of the country. It also laid down the functions, responsibilities and mode of formation of the panchayat body. It divided the village into three effective tiers,- at the lowest level is the Gram Panchayat (GP, headed by *Pradhan/ Sarpanch/Mukhia*). The intermediary level, Panchayat is called Block Panchayat/*Panchayat Samiti/Taluka Panchayat* (PS, headed by President/*Sabhapati*). At the district level, there is the District Panchayat/*Zilla Parishad/Zilla Panchayat* (ZP headed by Chairman/ *Sabhadhipati*).This amendment is not applicable in some special areas and in states like Nagaland, Mizoram, etc. and in areas where regional councils exist (The Constitution 73rd Amendment Act 1992, GoI).

49 The 74th Amendment Act, 1992 incorporated a separate chapter on Urban Local Bodies, which seeks to redefine their role, power, function and finances (The Constitution 74th Amendment Act 1992, GoI).

attempts. The Vedanta judgment, the Narmada & Cauvery water disputes,[50] the Samatha[51] judgment among others, bear testimony to this fact.[52]

3) Increase in pollution and environmental degradation – dialogue on climate change, change in the food production, depletion of green cover from vast areas of the country, extinction of flora and fauna and reduction in fertility of soil have added to concerns of energy security and its efficacy for sustainable development.

4) E-wastes and nuclear wastes' threat – the strife for alternative energy production has introduced us to the world of human induced e-wastes and nuclear wastes that pose serious threat to mankind and environment not just in the present generation but for generations to come as well. Disposal of radioactive wastes and its problems, radiation from nuclear materials, it's transportation from one place to another and thereafter, decaying of air, water and land along with the flora and fauna have increased our energy security concerns to a different altitude all together. The Department of Atomic Energy Commission (AEC), under the supervision of the Prime Minister, has been functioning to ensure private companies and public companies adhere to severe regulations and safeguards while venturing into this zone.

5) Failure in controlled and constant Government introduced regulations – there has always been a huge gap in rational, unified ways of dealing with energy-related issues. At one point, government allowed licenses to private and foreign private investors in order to revolutionize its energy demands. On the other hand, political resistance from people and governments have forced companies to abandon their projects or have resulted in glitches and environmental accidents that have affected lives as well as the economy of the country. The Enron case, one of the largest foreign financial investments in India in setting up natural gas

50 Tamil Nadu Cauvery v UoI : 1990 AIR 1316.

51 Samatha v State of Andhra Pradesh : 1997 8 SCC 191.

52 'The Fifth Schedule of the Constitution and the Samatha Judgment', available at http://www.samataindia.org.in/documents/SAMATA_EDIT1.PDF (last accessed on December 12, 2014).

pipelines and the controversy that led to its pulling apart from the country, resulted in India owing a hefty sum in an international arbitration legal battle till date.[53] In another such example, the Government formed the State Electricity Board (SEB) and enacted the Electricity Act, 1948, (amended in 2003) to manage the affairs of electricity production, generation and distribution in India. The Board initiated steps towards liberalizing the energy market through private participation. This was however subject to strict rules and regulations which often stopped private companies to diversify in this section owing to complex compliances. The unprecedented blackouts observed in July 2012, that left approximately 640 million people without power, raised serious concerns that the Government will seek a quick fix to energy shortages by pushing fossil fuels and nuclear energy rather than to continue substantial renewable energy investments.[54] Shortage of fuel and ailing functioning of archaically poignant rules of ailing distribution companies created complicated lock out at policy levels. In fact, in May 2013,[55] Ministry of New and Renewable Energy (MNRE) reported that 7 solar projects with a capacity of 470MW were halted and delayed due to lack of water, financial and equipment shortages that could not be procured both by public and private sectors in time.

Energy Security- The Legal Framework

Realizing the importance of conserving the energy resources and save the planet from devastating calamities, both man-made and natural, India has entered into several treaties and deals to join efforts relating to energy security and sustainable development.

International Level

At the international level, the most common form of treaties entered into by developed and developing countries was Bilateral Investment Treaties (BIT).

53 Kirit S Parikh, 'Thinking through the Enron Case', Centre for Civil Society, New Delhi, available at http://globalregulatorynetwork.org/Resources/IPPmaterials/Presentations/Enron.pdf (last accessed on December 12, 2014).

54 India: Renewable Energy in the Asia Pacific: A Legal Overview (India, 3rd edition) available at http://www.mondaq.com/india/x/261450/Renewables/Renewable+energy+in+the+Asia+Pacific+a+legal+overview+3rd+edition+India (last accessed on November 9, 2014).

55 Supra note 34.

Since 1990s, this is followed till date so as to allow for protection, promotion and free foreign investments among the consenting countries.[56] However, it has posed complications for India over the years, affecting the economy and energy initiatives of the country. The belief by India on BITs is that it did not "[*p*]*lace any restrictions on host countries in following their own foreign direct investment policies in the light of each country's unique needs and circumstances*".[57] In fact, post-2011/12, India has been witnessing a slew of legal battles on the energy security front over issues such as delay in payments, enforcement of arbitral awards, violation of contract terms and regulations in various sectors ranging from oil and gas, mining, power, energy, water and sanitation, construction, tourism, agriculture and fisheries, and finance and services.[58] For eg. in 2011, Coal India lost an arbitration battle over energy-related issues against the Australia-based White Industries; an inordinate delay of nine years in enforcing the Court award and hence liable to pay a huge sum along with interest.[59] Similarly, an UK-based investment fund, in 2012, entered into litigation against Coal India claiming that the former must be allowed to price and sell its coal supplied under Fuel Supply Agreements (FSAs) at market prices and not government-determined prices, which are substantially lower than the price the company has been able to receive in limited duration.[60]

At the nuclear energy level, the International Atomic Energy Agency (IAEA), World Nuclear Agency (WNA) and Nuclear Energy Agency (NEA) work for the development, safety and security of nuclear power plants. India is a party to

56 Mahnaz Malik, 'The legal monster that lets companies sue countries', *The Guardian* (November 4, 2011) available at http://www.guardian.co.uk/commentisfree/2011/ nov/04/bilateral-investment-treaties.

57 Department of Economic Affairs, Govt Of India, 'Background and Salient Features of Bilateral Investment Promotion and Protection Agreement (BIPA)', available at http://finmin.nic.in/the_ministry/dept_eco_affairs/icsection/Background_and _salient _features.asp.

58 The ICSID Caseload – Statistics (Issue 2013-2), available at: https://icsid.worldbank.org/ICSID/FrontServlet?requestType=ICSIDDocRH&actionVal=Show Document&CaseLoadStatistics= True&language=English42 (last accessed on December 11, 2014).

59 White Industries of Australia v the Republic of India : ICC Case No 12913/MS, IIC 43 (2005), judgment available at http://ilcurry.files.wordpress.com/2012/02/white-industries-award-ilcurry.p om/overview-energy.html (last accessed on December 10, 2014).

60 Children's Investment Fund v Coal India Ltd, *reported as* Ashoka Smokeless Coal India (P) Ltd. v UoI : (2007) 2 SCC 640: available at http://coal4india.com/Coal4India/(S(ciyyxscp53aq0dd40r3wramy))/c4i5.pdf?AspxAutoDetectCookieSupport=1 (last accessed on December 12, 2014).

Vienna Convention on Civil Liability for Nuclear Damage (1963), Comprehensive Test Ban Treaty (1963), Convention on the Control of Transboundary Movement of Waste and their Disposal (1989) etc. Apart from these, treaties on environment protection and climate change and the commitment of India to United Nations Framework on Climate Change and Millennium Development Goals 2015 are other areas that focus upon attaining energy security and sustainable solutions to degrading environmental concerns.

Apart from the aforesaid, the launch of European Union (EU) – India Environment Forum and EU-India Initiative on Clean Development and Climate Change are some of the key commitments undertaken by India in the past to strengthen bilateral cooperation on sustainable environmental development[61] specifically in regards to energy security and climate change.

National Level

In 1972 and 1979, India constituted the Fuel Policy Committee to study the energy policy for the country regarding its sustainable usage and development.[62] Thereafter, the Energy Conservation Act, 2001 (amended in 2010) has been taking initiatives and advocacy activities to fulfil the objectives of energy consumption and conservation in the country. For e.g. during the 9th Five-Year Plan, policies were adopted by the Indian government to include private sector in order to mobilize additional power generation and supply. The Act also provides for institutionalizing and strengthening the delivery mechanism for energy efficiency programs in the country and provides a framework for the much-needed coordination between various government entities. In fact the Act also formed a 'Bureau of Energy Efficiency" to look into the affairs of energy conservation.[63] The Electricity Regulatory Commission Act 1998 which was amended in 2003 and 2010 was envisaged in the 7th Schedule of the Constitution to meet the changing demands of the electricity sector and compliances. In the Energy Conservation (Amendment) Act, 2010, the Central government has been entrusted with the power to state the guidelines on issuance and purchase of energy savings

61 Available at http://eeas.europa.eu/delegations/india/eu_india/environment/index_en.htm (last accessed on December 11, 2014).

62 'Challenges and Law Reform in Indian Energy Sector' (August 12, 2014), available at http://lawyerslaw.org/challenges-and-law-reforms-in-indian-energy-sector/ (last accessed on December 12, 2014).

63 Supra note 42.

certificates to the consumers, in accordance with their (customers) energy consumption.[64] Energy Conservation Building Code (ECBC) and strengthening institutional capacity of State Designated Agencies (or SDAs) are specifically stated in the Act as subject to the State and Central Government policies.[65] Moreover, legislations like Air (Prevention and Control) of Pollution Act, 1981 and Water (Prevention and Control) of Pollution Act, 1974 along with Environmental Protection Act, 1986 and National Policy on Biofuels have been initiated under the respective ministries of the government to look into the area of energy security and provide opportunities for clean and sustainable forms of energy capacities and usage. Additionally, for the purpose of dealing with harmful and toxic nuclear wastes that result from high radioactive combustion of elements like Uranium and Thorium, the government enacted the Nuclear Waste Policy Act of 1982 to provide a timetable and procedure for establishing permanent, underground repository for high-level radioactive wastes generated by the plants. In addition to the above, bodies such as National Atomic Energy Regulatory Board (NAERB), Department of Atomic Energy (DAE) and Atomic Energy Commission (AEC) have been formed to look into the affairs of energy consumption and generation by this sensitive and threatening alternative form of power supply. However, laws relating to nuclear power plants in India still need further improvisation to meet the current arising challenges.[66]

Though there are several laws, Indian history is full of examples where strategic relations on energy security have failed due to archaic regulatory rules, laws or practices of the legislators. Factors like corruption and religious-cum-political resistance have affected or delayed several projects, which if implemented properly, could have benefitted the country generously and also have secured India's prominent position at the global sustainability and trade index. One such case which grossly affected the energy security ambition of India was the Enron case that resulted in the loss of not just energy security, but also sickened the financial stability of the country.[67]

64 Section 2(iv)(ma) of the Energy Conservation (Amendment) Act, 2010, Gazette of India, 25 Aug 2010.

65 Available at http://peda.gov.in/eng/energy_conservation.html (last accessed on December 12, 2014).

66 Harinder Singh, 'Nuclear Energy and Environmental Sustainability: Issues and Challenges', *IJAER*, ISSN 0973-4562, Vol. 8, No 18 (2013) pp 2101-2106.

67 Preeti Kundra, 'Looking Beyond the Dabhol Debacle: Examining its Causes and Understanding its Lessons', *Vanderbilt Journal of Transnational Law*, Vol. 41, pp 907- 935.

PART-II - Connecting the Ecology Trail through the Business Lines

Section 86 of the Electricity Act, 2003 promotes renewable energy by ensuring grid connectivity and sale of renewable electricity. The Section creates an exigency for renewable energy by requiring State Electricity Regulatory Commissions (SERCs) to specify percentages for renewable energy for purchased within the area of a distribution licensee. "The State Commission shall discharge the following functions, namely-promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licence."

Section 6.4 of the National Tariff Policy, 2006 requires all SERCs to specify minimum percentages for electricity to be purchased from renewable energy sources by 1 April 2006.

The concept of Corporate Social Responsibility (CSR) as part of the social existence of a business entity is not new to our country. CSR is a management concept whereby companies integrate social and environmental concerns in their business operations and interactions with stakeholders. According to the World Business Council for Sustainable Development, "*CSR is the continuing commitment by a business to behave ethically and contribute to its economic development while improving the quality of life of the workforce and their families, as well as of the local community and society at large...*".[68]

The new Companies Act of 2013, under Section 135,[69] has made the rule active and obligatory for entities to follow. The Act is expected to bring about a tripartite association of government, businesses and NGOs to collectively discharge duties towards securing a sustained model of development. The rules framed under this Section by the Ministry of Corporate Affairs are now ensuring that companies develop a robust framework to put its efforts in giving back to the society and equitably improving the resources for sustainable growth and development. However, private participation in energy sectors has always

68 This definition was developed in 1998 for the first WBCSD CSR dialogue in The Netherlands, available at www.wbcsd.org (last accessed on December 10, 2014).

69 The Companies Act, 2013, GoI, August 30, 2014, available at http://www.mca.gov.in/SearchableActs/Section135.htm (last accessed on December 10, 2014).

been under strict scrutiny of government, mostly confined to sectors like power generation, electricity, thermal plants and nuclear plants. In fact, the power sector was opened to private players in 1991. From this era, India has seen a series of public-private partnerships in the energy sector of the country. For example - Tata Powers is one of the largest public-private venture to ensure power generation through its subsidiaries like North Delhi Power Limited (NDPL) and Govt. of Delhi's Maithon Power plant set up between Tata Powers and Damodar Valley Corporation (DVC). Similarly, the amended Electricity Act, 2003 has allowed several other private companies to step into the energy sector. Today, firms are collaborating through unique ideas to demonstrate their activities and business relations, as per the CSR rules of the government. The blueprint behind this law is to make companies more responsible towards the society and not just become entities of profit gains. Also, for the fact that sustainable models of development, both economical and environmental-friendly, require huge investments, labour relations and strategic planning, partnering with private entities would provide thrust to innovative solutions and skills for development of projects to be undertaken by the government. Also, given the limitations of resources, knowledge and infrastructure, a joint partnership will avoid duplication of efforts, finances and resources. The new NDA government has realized the importance of public-private partnerships for securing energy efficient projects and has been making several avenues and policies to bring about positive strategic deals in this context.[70] Various sectors like – railways, defense, mining, iron & steel industries, thermal power stations, hydropower plants, wind farms and even part of agriculture has been identified as potential zones to bring reform and security for sustainable development.[71]

Some innovative projects undertaken under the CSR concept by prominent firms are: Hindustan Power had planned to initiate a 1200MW power project in the small district of Anuppur in Madhya Pradesh to focus on the needs of the local population while simultaneously generating power for its industry.[72]

70 'India in Business', Ministry of External Affairs, GoI, Technology and Investment Promotion Division, available at [http://indiainbusiness.nic.in/newdesign/index.php?param=newsdetail/8673] (last accessed on December 11, 2014).

71 Supra note 11.

72 CSR Times News, 'The Power of Good CSR, follow Hindustan Power's Initiative' (September 24, 2014) available at http://www.csrtimes.com/news/the-power-of-a-good-csr-follow-hindustan-power-s-initiative/210 (last accessed on December 11, 2014).

They wished to increase food sufficiency through promotion of activities like paddy production and backyard poultry intervention to a whopping tune of 50%. This scheme yielded 19 quintals per acre of food production and helped the firm to raise its electrostatic precipitator to "zero discharge" from its Anuppur thermal plants.[73] In another fine example, the Andhra Pradesh Chief Minister has approached IT firms and private power generating firms like Vishakhapatnam Steel Plant, National Thermal Power Corporation (NTPC), GVK, Aditya Birla, Adani Group, Reliance and Wipro to contribute towards redevelopment of the cyclone "Hudhud" affected Vizag area through CSR initiatives wings of the respective companies[74] thus, setting the standard for responsible business behavior in the economy.

Energy Security: Roadmap to the Future

Given the historical background of traditional efforts and liberalization efforts of securing access to energy security for the rising demands of energy, it brings us to strengthen our focus, upon the three main objectives of the government and the means of working upon these lines.

1) Accessibility to all citizens – improvisation, transmission, and additional capacity generation of energy resources are keys to ensuring accessibility to the citizens. This means apart from our dependence on conventional sources of energy, huge outlay with efficient generating capacity of plants needs to be set up to tap energy from non- conventional sources like air, water and nuclear energy. Investments in natural gas sector, both by public and private sector, are a smart business idea to tap effective energy resources without compromising upon the environmental concerns. Also known as "Green Fuel", it is the most essential energy choice for future generations, and private entities through their CSR policies can pool in infrastructure to secure and spread awareness about this idea. The New Exploration and Licensing Policy of 1990 opened avenues for public- private participation in exploring the system of green fuel.[75] ONGC, Oil India Ltd and GAIL have been working upon this

73 Supra note 13.

74 CSR Times News, 'Vizag Colonies' (September 24, 2014), available at http://www.csrtimes.com/news/vizag-colonies/227 (last accessed on December 11, 2014).

75 Supra note 33.

area of energy generation, distribution and conservation for several years, as per the rules of Petroleum and Natural Gas Regulatory Board Act, 2006 and under the directions of Ministry of Oil & Petroleum.[76] In fact, government allows for tax holidays and exemptions to companies to encourage their investment in this sector.[77] Elimination, segregation and disposal of generated wastes at proper locations and through strict procedures would ensure gaining higher energy conversion efficiency. A common window clearance would be helpful in managing industries more efficiently rather than several overlapping regulations in management of energy security. Investing in solar energy - cells, panels, ovens, photovoltaic cells - is definitely a viable option given that India receives maximum sunlight for major part of the year and in abundance. Alternatively, geothermal heating and electricity obtained from within the heat of the earth and tidal river basins is a better option to tap into non-conventional sources of energy and transmitting them to local areas by the help of well-planned transmission system. The government has identified around 300 geothermal beds, but needs steady operations to tap in the energy for the long run.[78] Installation of Captive Power Plants (CPP) is also helpful in generating clean power for self-consumption. The Electricity Act allows CPPs the right to open access to transmission lines to transfer self-generated electricity to destinations for their own use and to sell surplus electricity to the grid at an agreed tariff. Also, rural electrification has been considered key to accelerating economic growth, employment, elimination of poverty and human development. The Electricity Act, 2003, since 2005, has mandated the formulation of a National Rural Electrification Policy.[79] The Jawaharlal Nehru National Solar Mission (JNNSM) launched in 2010 is one of eight missions under the National Action Plan on Climate Change aimed at achieving solar

76 Supra note 33.

77 Supra note 42.

78 RE feature, 'Geothermal Energy', Vol 5, Issue 6, June 2012 pg 26; available at http://mnre.gov.in/file-manager/akshay-urja/may-june-2012/EN/25-27.pdf (last accessed on December 11, 2014).

79 Available at http://www.powermin.nic.in/whats_new/national_electricity_policy.htm (last accessed on December 11, 2014).

power sufficiency by grid-parity by 2022 and coal thermal power parity by 2030.[80] The JNNSM also has a strong focus on providing solar energy in rural areas. As solar power can be stand-alone and close to the residents in remote areas, off-grid and mini-grid solar power is an economical option that does not necessitate grid connection. The National Biomass Cook-stoves Initiatives (NBCI) is also one of the major policy programs of the Ministry of New & Renewable Energy (MNRE), which aims to make biomass consumption more efficient and cost effective, for the poorer sections of the community.[81] Thus, replacing subsidized kerosene with this form of renewable energy would bring financial benefits to the government in long run.[82] There is a significant potential in India for generation of power from renewable energy sources - wind, small hydro, biomass and solar energy. This is because India is situated close to the equator and receives maximum sunshine for most parts of its geography. Similarly, presence of several rivers, lakes and ponds in the country can provide feasibility of access to the energy derived from them. India is the world's fifth largest producer of wind power after Denmark, Germany, Spain and the USA.[83] This means India has huge potential to improve upon its accessibility to energy security through effective policies and transparent activities.

2) Less dependence on imported fuel i.e. self-sufficiency – realizing the importance of renewable forms of energy and taking stock of the limited non-renewable forms of energy sources, India has shifted its concern on growing the former sources of pooling in energy security. However, major part of the Indian society are still not aware of non-conventional sources of energy and are dependent on coal, oil

80 Jawaharlal Nehru National Solar Mission, 'Towards Building Solar India', GoI, available at http://www.mnre.gov.in/file-manager/UserFiles/mission_document_JNNSM.pdf (last accessed on December 10, 2014).

81 NBCI, 'National Biomass Cook stoves Programme' Ministry of New & Renewable Energy, GoI, available at http://www.mnre.gov.in/schemes/decentralized-systems/national-biomass-cookstoves-initiative/ (last accessed on December 10, 2014).

82 Supra note 60.

83 Available at http://www.indiacore.com/overview-energy.html (last accessed on December 10, 2014).

and fossil fuel to meet their demands for energy. In this respect, both public and private sector industries can use their CSR wings, in association with partnered and trusted NGOs to spread awareness on new forms of energy. Additionally, government needs to stabilize the price mechanism to ensure cheap availability of the resources. Besides, stakeholders like estate owners, builders and manufacturers of electric appliances have started to build energy efficient buildings as per international standards and ISO certifications.[84] "Low cost, maximum efficiency" mantra has to be pooled into all these sectors to regulate the demand and supply in the sector.

Promotion of competition among the energy service providers through creation/maintenance of Low Pass Filters in their products are great options to improvise on clean and sustainable energy opportunities for long run. Widening access and promoting equity as an obligation for generators and grid transmitters to supply energy to the distributors can adequately meet the needs of small consumers. Integrated Resource Planning coupled with smart "Research and Development" in the field of sustainable and renewable charging of wastes generated could help in rebirth of several dumping sites into useful industrial beds.[85] For e.g., Hyderabad-based corporate Ramkya Enviro Engineers Ltd. has undertaken comprehensive bio-methanation projects to secure composting and landfills. They are also involved in incineration and presently operating India's largest waste incinerator at Taloja, Maharashtra.[86]

Similarly, New Delhi-based East Delhi Waste Process Co. Pvt Ltd. has implemented setting up of 10MW incineration power plant with MSW derived RDF pellets as fuel to regenerate waste power.[87] At an operational level, commensurate investment is required in developing infrastructure viz. rail, road, port and power transmission which are critical for efficiency in the energy

84 Supra note 62.

85 TERI, 'Low- Carbon Development in India and China', available at http://www.teriin.org/pdf/TERI-NCSC-CUFE-ZU_China-India-LCD-book-new.pdf (last accessed on December 10, 2014).

86 EAI, available at http://www.eai.in/ref/ae/wte/comp/companies.html (last accessed on December 10, 2014).

87 Supra note 66.

value chain. In one such context, Mohali-based Zanders Engineers Ltd. as a collaborative gasification technology to process multiple feed stocks to generate power and energy for usage, reducing the burden on coal for meeting the demand for energy.[88] In Germany, "Agnion Energy Start-up" has developed a gasification process that can turn trash into energy.[89] In one of the most innovative research, even human waste can be utilized to regenerate power to meet energy requirements for small industries like fertilizers.[90] Private entities must be invited to invest in traditional sources for energy generation through setting up incubators and composting to generate bio-gas and hydrogen-based fuels. IT major "Infosys" have been excellent champions for Green Power Purchasing and they understand the energy security value of renewable energy.[91] The government is toying with the idea of cross-linkages between different energy segments and comprehensively planning on integrated energy policies to obtain uniform and standard sustainability efforts in the field of energy security and climate change. For e.g. the government developed a comprehensive planning framework through the "*Indian Hydrocarbon Vision 2025*" that provides a detailed road map for Indian hydrocarbon industry to enhance the country's energy security.[92]

The principal objectives of this project include:[93]

- Develop the sector as a globally competitive industry, ensure healthy competition and improve product standards.
- Ensure energy security keeping in view strategic and defence issues.
- Creating infrastructure to meet the demands for coal, petroleum products and natural gas.

88 EAI, 'Prominent Companies in the Waste to Energy Sector', available at http://www.eai.in/ref/ae/wte/comp/companies.html (last accessed on December 10, 2014).

89 Engineering for Change, '10 ways to put Human Waste to Use', available at https://www.engineeringforchange.org/news/2012/11/21/ten_ways_to_put_human_ waste_to_use.html (last accessed on December 12, 2014).

90 Supra note 68.

91 Sonia Luthra, National Bureau of Asian Research, available at http://www.nbr.org/research/activity.aspx?id=409 (last accessed on December 10, 2014).

92 India Hydro-Carbon Vision 2025, GOI, Vol II.

93 Available at http://www.indiacore.com/overview-energy.html (last accessed on December 10, 2014).

- Rationalizing tariff and pricing policy to promote investment.
- Putting in place necessary regulatory system.
- Exploring new resources of hydrocarbons such as CBM and Gas hydrates.

The country is also engaging in acquiring "Energy equity" in overseas assets to acquire energy security. Several Indian companies such as ONGC, Coal India, GAIL, Reliance etc. have been acquiring or seeking to acquire equity through joint ventures in oil and coal-rich nations.[94] By pursuing strategic alliances with other developed and developing nations, for e.g. China, Bangladesh, US, Russia, Sri Lanka, Canada etc., the government aims to build self-dependence in the energy sector for long run. However, overseas investments need careful strategic planning as any default can cost the Indian exchequer heavily. For e.g. the 2009 investment of $2.1 billion by ONGC Videsh Ltd (OVL) in Siberia-based Imperial Energy Corporation PLC[95] ran into troubled waters when the Comptroller and Auditor General (CAG) raised serious concerns over the accountability and efficiency over this most expensive resource purchased project. Similarly, OVL has faced serious challenges and losses of approximately 78,000 Crore over its energy securing projects in countries like Venezuela, South Sudan and Syria.[96] In a joint venture investment in Mozambique's deep-water basin by OVL and Bharat Petroleum Corp., the contract resulted in favouring China, Japan and Thailand over India for distribution of natural gas first to these nations, through pipelines obtained from the river bed.[97]

Conclusion

Having put forward the arguments and observations above, the rationale that develops is -

94 Supra note 72.

95 Utpal Bhaskar, 'Tough Choices Ahead for India's Energy Security', *Live Mint* (July 04, 2014) available at http://www.livemint.com/Industry/l5wOJA3LbNvIx9LvReZ5zI/Tough-choices-ahead-for-Indias-energy-security.html?utm_source=ref_article (last accessed on December 10, 2014).

96 Supra note 72.

97 Supra note 74.

- Can India secure an environment for energy security without compromising on its environment and climate change?
- How far are joint ventures of the nature of PPP model sustainable for development in energy sector?

For the first premise, let the arguments be in the following way -

Today India is witnessing a spur of growth in all of its sectors - population, industries, public-private-foreign investments, financial policies, technology and perhaps everything that goes on to run the country. Since electricity, power, energy, air, water, land and minerals are the basic resources that build the foundation of development in the country, it is a certitude that demand for them will keep rising in near future. While we cannot cut down on our policies and opportunities of growth, we can certainly adopt eco-friendly, environment-friendly practices to lead our lives. Environmental taxes and green incentives must go hand in hand, especially at the 'end user'. A consistent application of the polluter pays principle or consumer pays principle should be made to attain environmental objectives, at least cost-wise.[98]

Traditional practices like switching off unnecessary electrical appliances, installing energy efficient lighting systems and regulating the use of home & office appliances can go a long way in contributing to the safety of the environment. Imagine if every household starts adopting practices of saving wastage of energy resources, CO_2 emissions and related toxic emissions would come down. We cannot do away with vehicles. However, installing energy efficient tools in them which produce low & clean emissions can similarly help in the sharp decline of toxic gases in our environment. Perhaps, the venture requires not just presence of infrastructure regarding the same, but also spreading awareness regarding the same. At present, there are several such products available in the market but consumers have little or no knowledge about them. Working upon these lines would benefit us in the long run.

As mentioned earlier, dependence on energy has to shift from non-renewable forms to renewable forms of energy. India's geographical features are optimal to benefit from solar, hydel and tidal projects. Let's quote it in this way - "Solar

98 Dr. Sudhanshu Tripathi, Energy Security and Sustainable Development in India, *World Focus*, October 2014, p. 29.

energy is infinitely renewable. The sun is indeed guaranteed to be available as the largest and most reliable source of clean and free energy for many billions of years to come. It can be used directly on location with no transport cost and no appreciable conduction losses involved in the complete transaction".

The true measure of security is not command over natural resources but technological competence. The Energy Race that India must try and win is not so much from oil and gas concessions, but for access to, and competence in, carbon-saving technologies besides other eco-friendly and cost-effective modern technologies.[99]

Investments made in designing green buildings by Indian Green Building Council, formed by Confederation of Indian Industry (CII[100] in 2001, is definitely a good initiative and if implemented seriously can potentially contribute to solving climate change issues. Also, including smart urban planning techniques - higher density, more spatially compact and mixed-use urban design that allows growth near city centres and transit corridors to prevent urban sprawl - can substantially reduce energy demand and CO_2 emissions.

We know that India needs land for setting up industries and building residential colonies, but the government has to do away with concept of land acquisition. This is because the practice affects several disadvantaged colonies and communities who are left to die at the mercy of the State in inhuman settlements and conditions. Coupled with poverty, they too depend upon traditional energy sources like coal and wood, or take to electricity thefts to meet their demand of cooking and living.

There is an urgent need to conserve the green belts of the country. The forests are homes to not just flora and fauna but also human settlements. Removing them means raising the demands for energy while simultaneously overcrowding our cities! Preserving our sacred groves and medicinal plants will help in preserving the biosphere reserves. Apart from that, governments in consonance with private entities and foreign partnerships have brought in several ISO standards and ratings for clear and efficient fuel for several categories of industries

99 Ibid, at 32.

100 Green Buildings in India, available at http://en.wikipedia.org/wiki/Green_building_in_India (last accessed on December 12, 2014).

and products. Our strict adherence to them will also be helpful in contributing to the cause. Most importantly, it's absolutely necessary to introduce market-based pricing reforms that are fundamental to an efficient, sustainable and secure energy sector. The energy pricing is crucial for stimulating energy efficiency improvements, discouraging energy wastes, mitigating rebound effects and encouraging clean fuels for future. Moreover, pricing and fiscal policies should go hand in hand with regulations, and their strict enforcement can go a long way in balancing the act between energy security and climate change.

PPP model is definitely the "*in thing*" in India's pursuance of energy efficient socio-economic development. This is because for the kind of infrastructure, expertise and know-how that is required to put into any project, while being very wide in its ambit, demands huge investment. Since these projects are also risky investments, a joint venture ensures that risk is shared mutually between the parties. On the other hand, such partnerships open opportunities for wide range of research and developments across the global platform. Technological advancement facilitates movement of people and expertise across the nations, while also ensuring dialogues on mutual cooperation at a common global platform. Henceforth, we can rope in better models of energy security and environmental protection practices. However, it is important for the government to carefully analyze such projects and business models to ensure laws are not violated and compliances related to environmental protection are followed. At the most, a transparent mechanism needs to be assured to avoid a fraud contract, like Enron, or a disaster, like Bhopal gas tragedy, witnessed yet again!

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Market-based Mechanisms, Energy Efficiency and Climate Change Mitigation: Legal Considerations

Mr. Jai Mohan[*], *Ms. Surya Binoy*[**]

Abstract

Carbon markets, a practical application of the 'Coasian analysis', work on the presumption that the market itself will provide adequate price signals to encourage reduction of greenhouse gas emissions. Ergo, the fall in the price of carbon was not a failure of the market but a consequence of neglecting the role of 'property rights'. Based on this premise, the chapter examines legal considerations involved in the creation of a 'new market' which, though similar to the existing cap-and-trade mechanism, attempts to 'commodifying' energy-efficiency. The Paper concludes by developing a case for the energy-efficiency markets as it combines allocativ efficiency with clear environmental goals.

Introduction

There is extensive scholarship linking emissions trading schemes and carbon-markets to the Coasian analysis (the 'grandfather of pollution trading'[1]). Carbon-markets are an undoubtedly application of the Coasian analysis and the extant scholarship studies the application the Coasian analysis through cap-and-trade evidenced in United Nation's Clean Development Mechanism [hereinafter, 'CDM'] and the European Union's [hereinafter, 'EU'] Emissions Trading Scheme

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1 Sanja Begovic, 'Ending the Honeymoon: Deconstructing Emissions Trading Discourses', *Journal of Environmental Law* 21:3 (2009) 443, at 446 citing L Lohmann, Carbon Trading: A Critical Conversation on Climate Change, Privatisation and Power (2006), at 55.

[hereinafter, 'EU ETS'].[2] The understanding that market-based mechanisms 'deliver environmental outcomes at the least cost'[3] is a result of hasty generalisations overlooking the purely economic objectives of the carbon-market (and the emphasis on allocative efficiency).

This Paper argues that the presumption that the carbon-market would provide adequate price signals to encourage reduction of greenhouse gas emissions, and the consequent fall in the price of carbon, was a consequence of neglecting the role of 'property rights'[4] and the failure to recognize the purely economic motivations of the Coasian analysis, and by extension, of the carbon-market in its current form.[5]

The Paper examines market-based mechanisms which function on the lines of cap-and-trade, but create a '*new market*' through the commodifying 'energy-efficiency'. However, unlike the carbon-market, energy-efficiency markets represent a genuine attempt to combine allocative efficiency with clear environmental goals. But it is not without flaws and the case-studies highlighted in the Paper underscore different perspectives and learnings on how certain factors could influence the creation of property rights.

In studying 'energy-efficiency market', this Paper undertakes case studies of India's Perform, Achieve and Trade ['PAT'] Mechanism, USA's Energy Efficiency Resource Standard ['EERS'] policy, Europe's White Certificate Energy Market. The focus, however, is the critical case study of areas fundamental to the Coasian analysis, namely, the study of creation and allocation of property rights, the legal issues surrounding the creation of such rights, and finally applying the learnings in implementing such schemes.

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2 Noga Morag-Levine, Problem of Pollution Hotspots: Pollution Markets, Coase, and Common Law, 17 Cornell J. L. & Pub. Pol'y 161 (2007-2008) [hereinafter, 'Morag-Levine'], at 167; Gumley and Stoianoff, "Carbon Pricing Options for a Post-Kyoto Response to Climate Change in Australia" (2011) 39 *Fed. L. Rev.* 131 [hereinafter, 'Gumley and Stoianoff'], at 142.

3 Patricia Birnie, Alan Boyle, Catherine Redgwell, International Law and the Environment (2009), at 364-365.

4 This Paper uses the phrases such as 'allowances', 'property rights', 'legal rights' et al synonymously.

5 See Eban S. Goodstein, Economics and the Environment (2011) [hereinafter, 'Goodstein'], at p. 44. Quoting, "The point is that free-market forces do not provide the right incentives to ensure that adequate care is taken to protect our environment."

The Paper concludes by developing a case for the energy-efficiency markets, but is restricted to an examination of whether such a market can be integrated into the existing carbon-market framework, or as a part of what Stewart, Oppenheimer and Rudyk call 'bottom-up strategy' (BUS) or the 'building-block approach'.[6]

Economic Objectives of Market-Based Mechanisms

An Introduction to Coasian Analysis

In *the Problem of Social Cost,*[7] Coase argued that in the absence of transaction costs[8] (a 'very unrealistic assumption'[9]), private parties will always arrive at an efficient bargain[10] independent of the initial allocation of legal entitlements.[11] The analysis is generally expressed as follows: 'absent transaction costs, the initial allocation of legal entitlements does not matter from an efficiency perspective (in an aggregate

6 Richard B Stewart, Michael Oppenheimer and Bryce Rudyk, Building Blocks for Global Climate Protection, 32 Stan. Envtl. L. J. 341 (2013) [hereinafter, 'Stewart et. al.']. See also Richard B Stewart, Michael Oppenheimer and Bryce Rudyk, Building a More Effective Global Climate Regime Through a Bottom-Up Approach, 14 Theoretical Inq. L. 273 (2013) [hereinafter, 'Oppenheimer et. al.']. Both these articles offer a bottom-up strategy (or BUS) that "relies primarily on the incentives of governments, firms, and other institutions to take action to achieve objectives other than climate protection, such as energy security, lower energy costs, development of commercially viable technologies, or pollution control, which would generate reductions of GHGs as an intended or collateral consequence." Oppenheimer et al, at 274.

7 Ronald H Coase, Problem of Social Cost, 3 *J L & Econ* 1 (1960) [hereinafter, 'Coase'].

8 Coase defines transaction costs as those involved in undertaking an efficient bargain. Coase, at 15. Quoting, "In order to carry out a market transaction it is necessary to discover who it is that one wishes to deal with, to inform people that one wishes to deal and on what terms, to conduct negotiations leading up to a bargain, to draw up the contract, to undertake the inspection needed to make sure that the terms of the contract are being observed, and so on."

9 Coase, at 15. Quoting, "These operations are often extremely costly, sufficiently costly at any rate to prevent many transactions that would be carried out in a world in which the pricing system worked without cost."

10 Coase, at 11. This interaction may also be understood as an attempt to 'optimize conflicting issues'. See SJ Schwab, Coase's Twin Towers: The Relation between the Nature of the Firm and The Problem of Social Cost, 18 *J. Corp. L.* 359 (1992-1993) [hereinafter, 'Schwab'], at 367-368.

11 Coase, at 8. As Coase observes, "...without the establishment of this initial delimitation of rights there can be no market transactions to transfer and recombine them. But the ultimate result (which maximizes the value of production) is independent of the legal position if the pricing system is assumed to work without cost."

social wealth sense)'.[12] Coase's underlining premise, i.e., the reciprocal nature of 'choice' when dealing with actions having harmful effect on others,[13] is predicated upon 'avoiding more serious harm'.[14] As a result, this 'choice' depends upon the economic value of 'what is obtained as well as the value of what is sacrificed to obtain it.'[15] In addressing the question of 'choice', Coase converts 'avoiding serious harm' into an 'economic problem' of maximising the 'value of production'.[16] The actual focus of the Coasian analysis, and by extension, of market-based mechanisms, therefore, is not the prevention of harm but rearrangement of rights to prevent harms '*that inflict greater losses than benefits*'[17] and result in maximum value.[18]

Indeed, it is merely a 'social arrangement for dealing with harmful effects'[19] with the ultimate objective being an economic one, an efficient rearrangement of the initial delimitation of legal rights.[20]

Market-Based Mechanisms in the Climate Change Mitigation

The influence of the Coasian analysis on market-based mechanisms, particularly on the carbon-market, has been explained in terms of transaction costs and rearrangement of legal entitlements. Most of the discussions centre on how mechanisms such as 'can-and-trade', where market-players are allocated legal rights/ allowances that permit them to pollute,[21] is a practical manifestation of

12 *See generally*, Cooter, Coase Theorem, in J. Eatwell, M. Milgate & P. Newman (eds.) *The New Palgrave: A Dictionary of Economics* (1987) at p. 457 as cited in Calkins, Do Pigs Need Wings - Introductory Thoughts on Law Reviews, Errors, and the Coase System, 38 *Wayne L. Rev*. 1 (1991-1992) , at p. 6.

13 Coase, at p. 1-2.

14 Coase, at p. 2.

15 Coase, at p. 2.

16 Coase, at p. 15-16.

17 Morag-Levine, at p. 175.

18 Cento Veljanovski, Economic Principles of Law (2007) [hereinafter, 'Veljanovski'] at p. 32.

19 Coase, at p. 18.

20 Coase, at p. 16.

21 Ann E Carlson, Designing Effective climate Policy: Cap-and-trade and complementary policies, 49 Harv. J on Legis. 207 (2012) [hereinafter, 'Carlson'], at p. 209. Quoting, "A total amount of allowable pollution is set (the cap). Those subject to the cap are allocated allowances (in sum equal to the cap) that allow them to pollute (typically one of the pollutants per allowance, with the total number of allocated allowances equal to the cap). Emitters may meet their allocated amount in one of three ways. They may use all their allowances. They may cut their pollution to

the Coasian analysis, and their consequent interplay with transaction costs and efficient outcomes.[22]

Since the philosophy underlining the carbon-market is rather straight-forward, there is no reason why that philosophy cannot be reapplied in the sphere of climate change mitigation.

'Energy Efficiency' Market

Why Energy-Efficiency?

This Paper studies the extended applications of the market-based mechanism in 'energy-efficiency' which can seamlessly amalgamate the twin objectives of a well designed carbon-market, namely, environmental protection and allocative efficiency. While the traditional carbon-market sets a cap for allowable pollution/ emissions, the model studied in this Paper sets 'efficiency-targets'. Of course, market-based mechanism in energy-efficiency, in and of itself, is not new.

Generally speaking, there are many ways to incorporate energy efficiency in climate change mitigation strategy. In 2012 American Council for an Energy Efficient Economy [hereinafter, 'ACEEE'], 'a well-respected non-partisan think tank',[23] analysed the 'economy-wide, long-term scenarios to explore the potential contributions that more energy-efficient behaviours and investments might play in reducing overall energy use by 2050.'[24] Relying on realistic efficiency improvements,

levels below the amount they have been allocated and trade/sell the excess allowances to those who need them. Or they may pollute in excess of the amount of allowances allocated and make up the differences by purchasing allowances from those emitters who don't need all of theirs."

22 See generally, Timothy B Heinmiller, The Politics of Cap and Trade Policies, 47 *Nat. Resources J.* 445 (2007), at p. 456; Lesley K McAllister, Beyond Playing Banker: The Role of the Regulatory Agency in Emissions Trading, 59 Admin. L. Rev. 269 (2007), at p. 274; Gregg P Macey, Coasean Blind Spots: Charting the Incomplete Institutionalism, 98 Geo. L.J. 863 (2009-2010), at p. 911; Mamlyuk, at p. 49; Lee Anne Fennell, Revealing Options, 118 Harv. L. Rev. 1399 (2004-2005), at p. 1473; McNish, at p. 397; DeLay, at p. 67-68.

23 Trisolini, at p. 681.

24 John A. Laitner, *et al*., Am. Council for an Energy Efficient Econ., The Long-Term Energy Efficiency Potential: What the Evidence Suggests (2012), available at http://www.aceee.org/research-report/e121 (registration required) (last accessed on 28 June 2014) [hereinafter, 'ACEEE Report'], at p. 2-3.

the ACEEE Report predicted almost 60% decrease in United States' energy consumption by 2050 compared to 2010 level.[25] In fact, based on the available evidence, the ACEEE Report observed the enormous capacity to improve energy efficiency 'than the public and most policymakers understand or believe,'[26] whilst also highlighting the economic benefits a change in outlook may bring about.[27]

In a European context, observations akin to those made by the ACEEE have been made with reference to Europe's 2020 growth strategy, of which energy-efficiency is a key component.[28] The strategy is essentially premised on the assumption that 'investment in energy efficiency will not only reduce energy consumption costs, but also the social costs related to pollution caused by fossil fuels, such as health expenditures.'[29] The EPA Report on trends and projections in Europe, which supports and complements 'the annual report of the European Commission to the European Parliament and the Council on the progress of the EU and its Member States towards set targets',[30] specifically comments on the energy efficiency targets. The legal foundation for the same can be found in the Energy Efficiency Directive [hereinafter, 'EED'][31] which was enacted as a reaction to EU M7ember States' failure to meet the political objectives of reducing EU's energy consumption.[32] The EED requires the

25 ACEEE Report, at p. v-vi.

26 ACEEE Report, at 66-67.

27 Quoting the ACEEE Report, at 66, '... larger well-being of the economy has been powered in good measure by historical gains in our nation's overall level of energy efficiency.' This represents a striking contrast to the US Energy Information Administration's outlook which predicts 'strong growth in domestic crude oil production and an expanding natural gas market' but fails to consider energy-efficiency a key priority. See US Energy Information Administration, Annual Energy Outlook 2013: With Projections to 2040 (April 2013), available at http://www.eia.gov/forecasts/aeo/pdf/0383(2013).pdf (last accessed on June 28, 2014).

28 European Environmental Agency, Trends and projections in Europe 2013 – Tracking progress towards Europe's climate and energy targets until 2020, Report No. 10/2013, available at www.eea.europa.eu%2Fpublications%2Ftrends-and-projections-2013%2Ffull-report-ghg-trends-and-1 (last accessed on June 28, 2014) [hereinafter, 'EPA Report'], at 8.

29 Europe 2020 Targets: Climate and Energy, available at http://ec.europa.eu/europe2020/pdf/themes/16_energy_and_ghg.pdf (last accessed on June 28, 2014).

30 EPA Report, at p. 8. See also, Article 21 of the EU Monitoring Mechanism Regulation (MMR) (EU, 2013a).

31 Directive 2012/27/EU. Article 3(1)(a) of the EED states as follows: "Union's 2020 energy consumption of no more than 1 474 Mtoe primary energy or no more than 1078 Mtoe of final energy".

32 EPA Report, at 124.

Member States to set national energy-efficiency targets to be achieved by 2020, and having them translated into 'primary and final energy consumption' for wider application and understanding.[33] It reemphasises the understanding captured in ACEEE Report that Energy efficiency improvements can deliver benefits across a large number of sectors, in particular through GHG emission reductions in both the EU ETS sectors and the non†ETS sectors (e.g. households and transport).'[34]

The global recognition energy-efficiency targets as workable option arises from the understanding that it provides an additional avenue to mitigate climate change. But unlike the existing carbon-market which focuses achieving allocative efficiency through emission reduction, energy-efficiency markets provide greater tractability and elasticity by targeting energy supply and demand, and consequently, greenhouse gas emissions themselves.[35] But at the same time they encompass 'a broad range of technologies which increases resilience to climate change impacts.'[37] Indeed, '... efficiency measures reduce reliance on electrical transmission and fuel distribution that are likely to experience increased disruption due to climate change impacts. Moreover, efficiency measures avoid the need for increased production that often relies on flammable, explosive, or toxic materials.'[39] Trisolini touches upon the importance energy efficiency including in 'improving supply and distribution efficiency'[38] and green building standards through building codes.[39] Observing that carbon-markets that promote market-efficiency are 'indifferent to the technological or behavioural changes', Trisolini highlights the importance of energy-efficiency from climate change adaption standpoint.[40]

33 *See generally*, Europe 2020 Targets: Climate and Energy, available at http://ec.europa.eu/europe2020/pdf/themes/16_energy_and_ghg.pdf (last accessed on June 28, 2014).

34 EPA Report, at 13.

35 Trisolini, at 680.

36 Katherine Trisolini, Holistic Climate Change Governance: Towards Mitigation and Adaption Synthesis 85 *U. Colo. L. Rev*. 615 (2014) [hereinafter, 'Trisolini'], at 682.

37 Trisolini, at 682-683.

38 Trisolini, at 634.

39 Trisolini, at 636. *See also*, Katherine Trisolini, All Hands on Deck: Local Governments and the Potential for Bidirectional Climate Change Regulation, 62 *Stan. L. Rev*. 669, at p. 705 where she discusses the various types of incentives promoting energy efficiency through green building standards.

40 Trisolini, at 639-640.

Keeping these benefits of energy-efficiency, not just as a means, but as an end as well, the following part undertakes a case study of existing energy-efficiency markets which flawlessly merge environmental objectives with allocative efficiency.

Case Studies

The following part examines three market-based mechanisms which target energy-efficiency.

Briefly explained, an 'energy-efficiency' market functions like the carbon-market, but instead of emissions it concentrates on reducing energy consumption by polluting industries, or by encouraging efficient generation, transmission and use of electricity by energy utilities and the end users.[41] The market-players in the energy-efficiency market are given to energy-efficiency targets, the achievement of which entitles them to 'certificates'. These certificates constitute 'property' and are akin to the allowances in the carbon-market. As with the carbon-market, the certificates can be traded/ sold to those entities which fail to achieve their energy-efficiency targets.[42]

As the carbon-market taught us, tradable certificates represent a meaningful option only if there are buyers/sellers. The demand for tradable certificates depends upon how the property rights are created through legislation (e.g., grandfathering, auction etc.) and by incentivising voluntary demand.[43] To this end, the case-studies survey the legislative framework and the creation of property rights by looking at the market-players, target-setting, award of certificates and the market performance; and not the administrative infrastructure in place (e.g., functioning of the registries, auditing and verification etc.) to reduce transaction costs.

41 For a formal definition of 'energy-efficiency' see Art. 2(b) of Council Directive 2006/32/EC on energy end-use efficiency and energy services and repealing Council Directive 93/76/EEC [2006] OJ L 114/67 [hereinafter, 'End-Use Efficiency Directive']. Quoting, 'energy-efficiency: a ratio between an output of performance, service, goods or energy, and an input of energy'.

42 *See generally*, Hoffmann, Auctioning of CO2 Emission Allowances in the EU ETS, (2006) available at http://ec.europa.eu/clima/policies/ets/docs/ets_co2_emission_auctioning_en.pdf (last accessed on June 12, 2014).

43 ECS Report, at 40.

A. India's Perform Achieve Transfer (PAT) Mechanism

The PAT Mechanism emerges from India's recognition of the challenges of pursuing economic development 'in a sustainable manner'.[44] It is the flagship program[45] and has been introduced as part of India's National Action Plan on Climate Change forming part of four other initiatives focussing on promoting energy efficiency.[46]

In fact, it is first of its kind to be administered and implemented by developing country with the objective of adopting an 'energy efficiency trading scheme that uses market-mechanism.'[47]

The legal mandate for the PAT can be found in India's Energy Conservation Act, 2001 [hereinafter, 'ECA']. Under the ECA, the Ministry of Power, Government of India notifies the Designated Consumers and prescribes the efficiency targets. PAT Mechanism identifies three key stakeholders, namely, (i) Administrator who sets the target and compliance period, (ii) Designated Consumers, chosen from nine (9) energy intensive sectors (Thermal Power Plant, Steel, Cement, Fertilizer, Pulp & Paper, Textile, Aluminium, Chlor-alkali,

44 Neelam Singh, World Resource Institute/ Climate & Development Knowledge Network, Inside Stories on Climate Compatible Development (January 2013) available at http://r4d.dfid.gov.uk/PDF/Outputs/CDKN/India-PAT_InsideStory.pdf (last accessed on June 30, 2014) [hereinafter, 'Neelam Singh'], at 1.

45 Neelam Singh, at 1.

46 *See* Bureau of Energy Efficiency, PAT Consultation Document 2010-2011 (January 2011), available at http://beeindia.in/NMEEE/PAT%20Consultation%20Document_10Jan2011.pdf (last accessed on June 30, 2014) [hereinafter, 'PAT Consultation Document']. The three other initiatives are as follows:

- Accelerating the shift to energy efficient appliances in designated sectors through innovative measures to make the products more affordable. (Market Transformation for Energy Efficiency);
- Creation of mechanisms that would help finance demand side management programmes in all sectors by capturing future energy savings. (Energy Efficiency Financing Platform);
- Developing fiscal instruments to promote energy efficiency (Framework for Energy Efficient Economic Development).

See generally the presentation by Saurabh Kumar, Secretary, Bureau of Energy Efficiency, at the World Bank Workshop on mitigation actions and role of market instruments, Seoul, March 2010 [hereinafter, 'BEE Presentation'].

47 Neelam Singh, at 1.

Railways), and (iii) Independent[48] auditing agencies, which monitor, verify and certify the data.[49] India has notified four hundred and seventy eight (478) Designated Consumers in the aforementioned nine (9) sectors which consume approximately one hundred and sixty five (165) million Tonne of Oil Equivalent [hereinafter, 'toe/s'] energy.[50] From an environmental perspective, the PAT Mechanism seeks to achieve 'annual fuel savings in excess of twenty three (23) million toe, cumulative avoided electricity capacity addition of nineteen thousand (19,000) MW and emission reductions to the tune of ninety eight (98) million tons per year'.[51]

The aforementioned objectives are sought to be achieved through a market-based mechanism with the objective of enhancing the 'cost effectiveness in improving the Energy Efficiency in Energy Intensive industries through certification of energy saving which can be traded'.[54] Like the EU ETS and the existing carbon-market, the PAT Mechanism operates on simple Coasian principles. Each of the Designated Consumers are given efficiency targets to be achieved within a specific time-frame. Through an artificial, or quasi-market, exhibiting market mimicking behaviour, the PAT mechanism envisages market transactions in an energy efficiency instrument.[55]

The participants, however, are limited to the Designated Consumers and the market functions on the platform provided by 'Power Exchanges'.[56] If the Designated Consumer achieves more than the specified efficiency targets, it is

48 The auditing firms were identified through a bidding process, and were trained to collect data in a specific format, 'ensuring transparency, consistency and standardisation.' See Neelam Singh, at 3.

49 Presentation by Mr. Arun Kumar, Director (Planning & Policy, Transmission) Ministry of Power, Government of India available at https://www.thepmr.org/system/files/documents/8_Kumar_India's_PATs.pdf (last accessed on June 30, 2014) [hereinafter, 'MoP Presentation'], pg. 3; BPAT Consultation Document, at 9.

50 MoP Presentation, at 6, 10; BEE Presentation, at 5.

51 BEE Presentation, at 3.

52 *See generally*, MoP Presentation.

53 MoP Presentation, at 3.

54 MoP Presentation, at 3.

55 MoP Presentation, at 11, 15.

56 MoP Presentation, at 6.

57 MoP Presentation, at 9.

provided an energy savings certificate, or 'ECScerts', for every toe.[57] Those Designated Consumers which fail to achieve the specified efficiency targets have to either purchase ECScerts or pay monetary penalties.[58]

With respect to the creation of property rights, as with existing carbon-markets, the efficiency targets are determined based on baseline production, and commences from the year 2009-2010, the baseline year. The baseline production is an average of the energy consumption for the years 2007-2008, 2008-2009 and 2009-2010, with the targets to be achieved by the year 2014-2015.[57] The influence of the existing carbon-market, especially the EU ETS, is evident in the execution of the PAT Mechanism in cycles.[58] The PAT Mechanism incorporates further lessons from the EU ETS by ensuring that the plant-level data is credible.[59] The Designated Consumers have a mandatory reporting requirement to the Bureau of Energy Efficiency which is then monitored and verified by accredited energy auditors.[60] This ensures design-stability and provides both domestic and international credibility to the market. [61]

However, the most interesting aspect of the PAT Mechanism is that it creates differential targets within the nine (9) sectors taking into consideration the peculiar requirements of each of the sectors.

B. US' Energy Efficiency Resource Standard (EERS)

The EERS offers a unique perspective to the application of market-based mechanism[62] through efficiency-targets from a US perspective. It effectively provides a voluntary umbrella policy[63] which is adopted by the state legislatures and are monitored, documented, implemented and managed by electricity and

58 MoP Presentation, at 15.

59 Neelam Singh, at 3.

60 BEE Presentation, at 4.

61 Neelam Singh, at 4

62 Sandy Glatt & Beth Schwentker, US Department of Energy - State Energy Resource Standards Analysis (July 2010), available at http://www1.eere.energy.gov/manufacturing/states/pdfs/eers_web_final.pdf (last accessed on July 8, 2014) [hereinafter, 'USDE Report'], at 5.

63 Timothy J. Brennan and Karen Palmer, Resources for the Future - Energy Efficiency Resource Standards: Economics and Policy (February 2012), RFF DP 12-10, available at http://www.rff.org/RFF/Documents/RFF-DP-12-10.pdf (last accessed on July 8, 2014) [hereinafter, 'Brennan and Palmer'], at 2.

64 USDE Report, at 4-5.

gas utilities including electricity and gas distributors[64] Thus, the policy encourages end-user energy-saving improvements[65] as opposed to the actual emitters, using market-based means to 'promote more efficient generation, transmission, and use of electricity and natural gas.'[66] But instead of providing a cap on the use of energy, it relies on an energy saving goal with the electricity and natural gas utilities incentivizing the customers to reduce their energy consumption by a specific amount within a given time frame.[67]

As the EERS is implemented on a state-level, analysing state-specific enactments in detail would be quite time consuming. This Paper, therefore, focuses only on the broad framework of the EERS, and the common threads linking the target-setting mechanism and its impact on the functioning of the market.

EERS promotes a simple 'market-based mechanism to encourage more efficient use of electricity and natural gas'.[68] As Glatt and Schwentker observe, the most common goal setting method under the EERS requires utilities to achieve a set percentage of energy savings relative to their average energy sales in the preceding two years,[69] usually in terms of absolute energy savings. These goals are based on the savings estimates outlined by the states and are specific to the proposed energy efficiency measures.[70] At the initial stages of implementation, the utilities are given smaller targets to allow them to gain experience in administering energy-efficiency programs.[71]

The state-level legislations are administered by the State Utility Commission[72] with the utilities reporting their savings to the Public Utilities Commission.[73] The reporting requirement is particularly important for those states which include penalties in their EERS legislations. Under the EERS, impositions of

65 USDE Report, at 5.

66 USDE Report, at 5.

67 Brennan and Palmer, at 1; USDE Report, at 5.

68 See generally, http://www.aceee.org/sector/state-policy/energy-efficiency-resource-standard (last accessed on June 30, 2014)

69 John Laitner *et al*, The National Energy Efficiency Resource Standard as an Energy Productivity Tool, available at http://www.aceee.org/energy/national/EERS_article09.pdf (last accessed on July 7, 2014) [hereinafter, 'Laitner *et. al*.'], at 2; USDE Report, at 6.

70 USDE Report, at 8.

71 Laitner *et. al.*, at 6.

72 USDE Report, at 7.

73 USDE Report, at 8.

penalties on the utilities which fail to meet the specified targets, apart from forcing utilities to save,[74] guarantee efficiency.[75] But as with any market-based mechanism, the EERS offers utilities an additional mechanism to meet their obligations as well as a revenue stream to counter the additional costs.[79]As Glatt and Schwentker, in their report for the US Department of Energy, note, '[U]tilities can offset those penalties in states that allow the market-based credit system, however, they are still held accountable for savings goals each year and the policies are typically laid out so that it is not to their benefit to buy credits year after year.'[77] These allowances can be purchased from utilities which over-perform and exceed their targets and enables the market to find the 'lowest cost savings'.[78]

From an environmental perspective, the policy may be considered a success. As the April 2014 EERS Policy Brief highlights, 'twenty-five (25) states have enacted long-term (3+ years), binding energy savings targets and make up nearly 60% of electricity sales in the US.'[79] And 'if each of these states maintains its current EERS target out to 2020, the total annual savings would be more than 232,000 GWh by 2020, equivalent to over 6% of projected 2020 sales nationwide.'[80]

Interestingly, the market-based mechanism proposed by the EERS does not base itself on the structural foundation of the EU ETS but on what are commonly referred to as the 'white certificate market'.[81] These 'white certificates' are equivalent to EERS' tradable credits and PAT Mechanism's ECScerts, and is awarded to those entities which show verifiable energy savings.

C. White Certificate Energy Markets

The objective of creating a 'White Certificate' [hereinafter, 'WhC/s'] energy

74 Laura Furrey & Sarah Black, ACEEE, Energy Efficiency Resource Standards: A State Model (November 2009), available at http://www.aceee.org/files/pdf/white-paper/eers_statemodel.pdf (last accessed on July 10, 2014), at 21.
75 USDE Report, at 9.
76 Steven Nadel, Energy Efficiency Resource Standards: Experience and Recommendations (March 2006), ACEEE Report E063 [hereinafter, 'Nadel'], at 32.
77 USDE Report, at 9.
78 Nadel, at 32.
79 EERS Policy Brief (April 2014) available at http://www.aceee.org/policy-brief/state-energy-efficiency-resource-standard-activity (last accessed on July 5, 2014) [hereinafter, 'EERS Policy Brief'].
80 EERS Policy Brief.

market, as Bertoldi & Rezessy write in the report prepared for by the Joint Research Centre of the European Commission, is to establish long-term synergies between meeting energy efficiency objectives coupled with a market-based mechanism dealing in energy savings certificates or WhCs.[82] For a formal definition of WhCs, reference may be had to the End-Use Efficiency Directive which provides the legislative basis WhCs.[83] The End-Use Efficiency Directive defines WhCs as "certificates issued by independent certifying bodies confirming the energy savings claims of market actors as a consequence of energy efficiency improvement measures".[84]

The basic idea behind WhCs, as with most market-based mechanisms focussing on 'energy efficiency' targets, e.g., the EERS, is to establish specific energy saving targets for energy utilities which must achieve these requirements by implementing energy efficiency measures.[85] As with the PAT Mechanism and the EERS, the fulfilment of the targets is acknowledged through the issuance of WhCs.[86] The excess WhCs can be sold to the utilities which have failed to achieve their targets.[87] As with the PAT Mechanism, only those measures which been independently verified can be utilized in the schemes. While this can hinder innovation, France, Italy and the UK have introduced an option whereby the market players can self-monitor new technologies, savings from which can be

81 Nadel, 32-33. Indeed, Nadel performs an introductory analysis of the 'EERS-like' policies that exist in the United Kingdom, Italy and France. See Nadel, 16-19.

82 Paolo Bertoldi and Silvia Rezessy, Energy Saving Obligations and Tradable White Certificates (December 2009) available at http://ec.europa.eu/energy/efficiency/studies/doc/2009_12_jrc_white_certificates.pdf (last accessed on July 8, 2014) [hereinafter, 'Bertoldi & Rezessy'] at 4.

83 Indeed, while some of the white certificate schemes were operational before the End-Use Efficiency Directive was adopted, most Member States of the EU refer to these schemes in their first National Energy Efficiency Action Plans under the End-Use Efficiency Directive. See Bertoldi & Rezessy, at 6.

84 End-Use Efficiency Directive, art. 3(2); ECS Report, at 13.

85 Energy Charter Secretariat, Market Trading Mechanisms for Delivering Energy Efficiency (March 2010) [hereinafter, 'ECS Report'], at 7.

86 ECS Report, at 7.

87 ECS Report, at 7.

88 Eoin Lees, European and South American Experience of White Certificates: WEC-ADEME Case study on Energy Efficiency Measures and Policies (March 2010), available at http://www.worldenergy.org/documents/ee_case_study__obligations.pdf (last accessed on July 8, 2014) [hereinafter, 'Lees'], at 10.

claimed subsequently.[88]

However, these schemes are nuanced and different schemes exhibit 'different design characteristics and ambition levels."[89] Like the PAT Mechanism, the scheme is defined in terms of end-use sectors, the nature of projects and the technologies being used.[90] However, while Italy expresses its energy obligations in primary energy, France expresses them in terms of final energy output and UK in terms of carbon-dioxide emissions. Similarly, in terms of target-setting, while UK and France have cumulative multi-annual targets, Italy has progressively increasing annual targets.[91] Indeed, even the market players vary with UK and France imposing the obligations on suppliers and retail entities, while Italy placing energy distributors and utilities under obligation.[92] The specificity of the obligations and technical requirements in the creation of legal rights, being a product of national choices and key policy objectives,[93] highlight the flexibility offered by market-based mechanisms trading in energy-efficiency certificates.

This Paper analyses the specifics of the market-based mechanisms implemented in the UK, Italy and France.

C1. United Kingdom

The legislative framework for the WhC market in the United Kingdom [hereinafter, 'UK'] can be found in its 1994 household energy supplier levy.[94] The energy-efficiency targets are imposed upon electricity and gas suppliers which enforce them through improvements in the residential sector.[95] But unlike most energy-efficiency schemes, the creation of legal rights depends upon the savings in terms carbon-dioxide emissions and is weighted by the carbon content in the energy (or fuel) saved.[96]

True to its market-based approach, the legislation does not describe how to

94 Bertoldi & Rezessy, at 7. The current obligations on the utilities in its current form came about in 2002 and arise from the Utilities Act 2000 and the Electricity and Gas (Energy Efficiency Obligations) Order 2001.

95 Lees, at 23, 44.

96 Lees, at 9.

97 Lees, at 44.

targets are to be achieved.[97] But it adds to the regulatory burden by making it their responsibility for registering/ accrediting schemes to enable participation in the market.[98] This has made the market closed and opaque in its functioning, and restricting third-party speculation.[99] While this may provide an apt environment for the market to grow organically, it also means that trading has been rarely used. In absolute terms, market activity accounts for less than 1% of the efficiency targets.[100] The lack of market activity can be attributed to 'banking' or 'carry forward' of the property rights[101], particularly in UK where about twenty (20) % of the Energy Efficiency Commitment [hereinafter, 'EEC'] period (2005-2008) [hereinafter, 'EEC2'] targets were met in EEC period (2002-2005) [hereinafter, 'EEC1'] period itself, and twenty five (25) % from EEC 2 to Carbon Emissions Reduction Target [hereinafter, 'CERT'].[102]

C2. Italy

In Italy, the energy efficiency obligations arose with the implementation of the

98 ECS Report, at 47.

99 ECS Report, at 47.

100 Lees, at 13; ECS Report, at 47.

101 Here 'property rights' are used synonymous to the rights created under the energy savings certificates'.

102 ECS Report, at 47; Bertoldi & Rezessy, at 23. For the legislative background, see Jan Rosenow, Analysis of the history of environmental Supplier Obligations: A report for Energy UK (November 2012), available at http://www.energy-uk.org.uk/publication/finish/5-research-and-reports/762-analysis-of-the-history-of-environmental-supplier-obligations-a-report-for-energy-uk-november-2012.html (last accessed on July 9, 2014), at i. Quoting, "Although there has been a succession of different schemes, the basic logic has remained the same. The first Obligation was called Energy Efficiency Standards of Performance (EESoP) and ran from 1994 to 1998. It applied to electricity suppliers only. EESoP was succeeded by EESoP 2. EESoP 3 extended the Obligation to gas suppliers as well. In 2002 the schemes name changed to Energy Efficiency Commitment (EEC). EEC1 lasted from 2002 to 2005 and EEC 2 from 2005 to 2008. To bring the Obligations in line with the UK climate change targets, EEC was eventually evolved in 2008 to the Carbon Emissions Reduction Target (CERT) that is currently running until 2012."
Post-CERT, a new scheme called the Energy Company Obligation (ECO) was introduced in the UK. It places 'legal obligations on the larger energy suppliers to deliver energy efficiency measures to domestic energy users and operates alongside the Green Deal which is designed to help people make energy efficiency improvements to buildings by allowing them to pay the costs through their energy bills rather than upfront.'
See https://www.ofgem.gov.uk/environmental-programmes/energy-companies-obligation-eco(last accessed on July 10, 2014.

103 Ministero dell'Industria, del commercio e dell'artigianato. Legislative Decree of 16th March 1999, n.79, 1999; Ministero dell'Industria, del commercio e dell'artigianato. Legislative Decree of 23rd May 2000, n. 164, 2000. See Bertoldi & Rezessy, at 6.

initial European directives liberalizing the electricity and natural gas market through obligations on distribution companies.[103] The trading scheme became operational in 2005 and was extended in 2007.[104] Under the Italian scheme, the energy-efficiency targets are allocated to large electricity and gas distributors on the basis of their market share,[105] and are expressed in terms of toes.[106] However, the most interesting aspect of the Italian experience is the acceptance of market-players other than energy utilities that can independently obtain and trade in WhCs,[107] so long as they can satisfy the regulator that they have installed appropriate energy-saving measures.[108]

From a market perspective, Italy has implemented long-term targets, perhaps in an attempt to observe and stabilize the market. The achievement of efficiency-targets is set at five (5)/ eight (8) years.[109] As with the UK, banking of WhCs is allowed as it allows the distributors additional flexibility in meeting the obligations,[110] and the imposition of penalties is determined on a case-to-case basis.[111] Given the possible involvement of market-players who may be outside the distribution chain, the rules require the registration of the prices as well as the quantities of the trade but not authorization for the trade.[112] While this increases transparency and ensures easier monitoring of the market,[113] it undoubtedly increases the transaction costs as well. However, it does show that

104 Decreto del Ministero delle attività produttive 20 luglio 2004, "Nuova individuazione degli obiettiviquantitativi nazionali di risparmio energetico e sviluppo delle fonti rinnovabili, di cui all'art. 16, comma 4, del d.lgs attività produttive 164/2000" (G.U. n. 205 del 1 settembre 2004); d.m. attività produttive 20 luglio 2004, "Nuova individuazione degli obiettivi quantitativi per l'incremento dell'efficienza energetica negli usi finali di energia, ai sensi dell'art. 9, comma 1, del d. lgs industria, commercio e artigianato 79/1999" (G.U. n. 205 del 1 settembre 2004); d.m. attività produttive 20 luglio 2004 "Modificazione del d.m. attività produttive 20 luglio 2004, recante nuova individuazione degli obiettivi quantitativi per l'incremento dell'efficienza energetica negli usi finali, ai sensi dell'art. 9, comma 1, del d.lgs. Industria, commercio e artigianato 79/1999 (G.U. n. 2 del 3 gennaio 2007). See Bertoldi & Rezessy, at 6-7.

105 Distributors which serve more than fifty thousand (50,000) households.

106 Lees, at 35.

107 Lees, at 13.

108 Lees, at 40.

109 ECS Report, at 45-46; Bertoldi & Rezessy, at 8.

110 ECS Report, at 45-46.

111 Bertoldi & Rezessy, at 32-33.

112 Lees, at 13; ECS Report, at 46.

113 Lees, at 13.

114 ECS Report, at 46.

trading is central to the scheme, not just from a quantitative perspective but from an administrative aspect as well.[114]

Trading occurs both through 'spot market' as well as 'over the counter' in terms of the rules prescribed by the regulator, 'guarantee market liquidity, transparency and security of market deals'.[115] But in terms of market activity, the Italian experience has been slightly more positive when compared to the UK. More than twenty (20) % WhCs were traded on the market, mostly through arrangements between energy utilities and efficiency installation companies.[116] However, more than eighty (80) % of the WhCs were issued to 'non-energy obligated parties'.[117]

C3. France

The legislative background to the energy-efficiency market-based mechanism was laid out in 2005 defining the main objectives and obligations.[118] The French scheme places an obligation on the suppliers of electricity, gas, and other domestic fuels to become energy-efficient in commercial and residential markets.[119]

As with the Italian approach, the energy-efficiency market-players include not just the energy utilities, but also entities that can demonstrate *suo-moto* energy-efficiency and energy savings.[120] Once the energy savings are recorded, the WhCs are issued by the regulator.[121] The WhCs are valid for three compliance periods with their banking being allowed.[122] Interestingly however, unlike the UK and Italian approach, non-compliance entails payment of a fixed penalty [two (2) Eurocents/ kWh). Indeed, from a property rights perspective, the French

114 ECS Report, at 46.

115 ECS Report, at 46.

116 Lees, at 13, 40.

117 Lees, at 14.

118 No 2005-781 of 31 July 2005, articles 14 to 17. See Lees, at p. 30. Also see Bertoldi & Rezessy, at 6-7. Quoting, "Details, such as precise thresholds, are provided in three Decrees (2006/05/23) – one on obligations, one on certificates, and one on registry. Five sub-decrees set the the implementation details, namely Cumac kWh definition and eligible bodies conditions (2006/05/30), 93 standardized actions methodologies (2006/06/19 and 2006/12/19), administrative rules to obtain certificates (2006/06/19), and list of obliged bodies and individual obligations (2006/09/26)"

119 Lees, at 30.

120 Lees, at 33.

121 Lees, at 33.

experience highlights the importance of not just the targets but also the influence of the quantum of penalty imposed. As Lees records, the 'average market price has been 0.32 Eurocents per kWh cumac which is well below the penalty price of 2 Eurocents/kWh.'[123] Low targets enable the market-players to obtain too many WhCs. These WhCs can either be banked for future use, or sold in the market, resulting in significant price variations.

France has not seen too much market-activity in terms of trading (less than four (4) % of all WhCs issued).[124] A reason for this is perhaps the absence of a formal trading platform, with trading being permitted 'over the counter' amongst obligated parties and between obligated parties and project implementers 'which can generate energy savings and receive certificates'.[125] On the positive side, this shows the willingness of the regulators to learn from the experience.

Lessons Learned

The case studies provide an interesting perspective to market-based mechanisms in general. Given the limited scope, this Paper highlights the learnings in respect of (i) the factors affecting 'property rights' and (ii) the implantation of the 'energy-efficiency' market. The first part of this sub-chapter addresses the legal issues concerning 'property rights' while the second part looks at ways in which the 'energy-efficiency' market can be implemented.

Legal Considerations

Allocation of Property Rights

Perhaps the most significant issue concerning the creation of property rights was whether grandfather of allowances amounts to state-aid or subsidiary. In

122 ECS Report, at 48.
123 Lees, at 33.
124 Bertoldi & Rezessy, at 24.
125 Bertoldi & Rezessy, at 24; ECS Report, at 48, 50.
126 Article 87(1) of the European Union, Treaty Establishing the European Community (Consolidated Version), Rome Treaty, 25 March 1957, available at: http://www.refworld.org/docid/3ae6b39c0.html (last accessed on July 20, 2014) [hereinafter, 'EC Treaty'] reads as under: Save as otherwise provided in this Treaty, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, insofar as it affects trade between Member States, be incompatible with the common market.

the context of the EU, there exists a general prohibition (which exceptions) under Article 87(1) of the EC Treaty for any aid which distorts or threatens to distort competition.[126] Analysing the environmental considerations as well as the principle of proportionality, Johnston had concluded that grandfathering does 'involve an element of state-aid'[127] While Johnston's argument does have strong moral backing,[128] its legal strength has been dented by the adoption of the Guidelines on State-Aid in the field of environment protection and energy 2014-2020 which makes an exemption for 'state aid measures which contribute to the 2020 targets'.[129]

On a global scale this becomes even more important given the lack of an international standard on what may constitute state-aid in the context of a quasi-market inasmuch as the UNFCCC, the Kyoto Protocol and the Cancun Agreements fail to provide an obligation to introduce a market-based mechanism or trading scheme. Consequently, there is no point of reference on how to allocate allowances. Considering this absence of binding international standards, we have to look elsewhere.

Under the agreements of the World Trade Organisation [hereinafter, 'WTO'], grant of state-aids and subsidiaries are governed under the Agreement on

127 Angus Johnston, Free allocation of allowances under the EU emissions trading scheme: legal issues, Climate Policy 6 (2006) 115–136 [hereinafter, 'Johnston'], at 132-133.

128 Grandfathering, especially through National Allocation Plans, will always have some form of distorting effect on the competition. This is further conditions stipulating state-aid as laid out in the judgment of the European Court of Justice in Case C-280/00 Altmark Trans GmbH v Nahverkehrsgesellschaft Altmark GmbH [2003] . Quoting Para 75, "First, there must be an intervention by the State or through State resources. Second, the intervention must be liable to affect trade between Member States. Third, it must confer an advantage on the recipient. Fourth, it must distort or threaten to distort competition."

See K. Neuhoff & M. Grubb, Allocation and Competitiveness in the EU Emission Trading Scheme: Policy Overview, Climate Policy 6 (2006) 7-30, at 24; Daniel Bhen, Methods for allocating allowances under the EU Emissions Trading Scheme: assessing their interaction with EU state aid rules, available at www.dundee.ac.uk/cepmlp/gateway/files.php?file=cepmlp_car13 (last accessed on July 20, 2014)

129 State Aid Communication, Art. 1.1. Quoting, "These Guidelines apply to State aid granted for environmental protection or energy objectives in all sectors governed by the Treaty in so far as measures are covered by Section 1.2. They therefore also apply to those sectors that are subject to specific Union rules on State aid (transport, coal, agriculture, forestry, and fisheries and aquaculture) unless such specific rules provide otherwise."

130 Article VI pertains to 'Anti-Dumping and Countervailing Duties', and Article XVI to 'Subsidies'.

Subsidies and Countervailing Measures [hereinafter, 'SCM Agreement']. The SCM Agreement builds upon Articles VI and XVI of the General Agreement on Tariffs and Trade [hereinafter, 'GATT'][130] with the objective of 'establishing multilateral disciplines on the premise that some forms of government intervention distort international trade.'[131] As with EU ETS, the existing scholarship seems to suggest that SCM Agreement does not 'satisfactorily resolve the issue.'[132] While a detailed study into the factors determining state-aid or subsidies in the context of GATT, i.e., specificity, preferentiality and injury, and its defences, is beyond the scope of this Paper, there is an acknowledgment that allowances are considered as property having an economic value.[133] Grandfathering of allowances, therefore, can be said to involve a transfer of securities/ financial instruments opening it to challenge under the WTO regime.[134] This is where auctioning of allowances comes into the picture.

131 Panel Report, Canada-Measures Affecting the Export of Civilian Aircraft, WT/DS70/R (14 April 1999), at Para 9.119.

132 James Windon, 'The Allocation of Free Emissions Units and the WTO Subsidies Agreement', 41 *Geo. J. Int'l L*. 189 (2009-2010) [hereinafter, 'Windon'], at 208.

133 In the context of WTO, this understanding is derived from the United States – Final Countervailing Duty Determination With Respect To Certain Softwood Lumber From Canada, WT/DS257/AB/R (19 January 2004). The appellate body found that the 'harvesting rights granted by Canadian provincial governments in respect of standing timber constituted 'goods' under the SCM Agreement.' (Para 66)For a summary of the proceedings, see http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds257_e.htm (last accessed on July 20, 2014)

See also, Armstrong DLW GmbH v. Winnington Networks Ltd., [2012] EWHC (Ch) 10, at Para 48 where emission allowances were considered property rights. Quoting, "As a matter of substance, I do not consider that the holder of an EUA has a "right" which he or she can enforce by way of civil action. It is not a "right" (in the Hohfeldian sense) to which there is a correlative obligation vested in another person. It does not give the holder a "right" to emit CO2 in this sense. Rather it represents at most a permission (or liberty in the Hohfeldian sense) or an exemption from a prohibition or fine. But for the entitlement to the EUA, the holder would either be prohibited from emitting CO2 beyond a certain level or at least would be required to pay a fine if he did so. In this way, the holding of the EUA exempts the holder from the payment of that fine."

134 Ingrid Jegou and Luca Rubini, ICTSD, The Allocation of Emission Allowances Free of Charge: Legal and Economic Considerations, Issue Paper No. 18 (August 2011) available at http://www.ictsd.org/downloads/2011/11/the-allocation-of-emission-allowances-free-of-charge.pdf (last accessed on July 20, 2014) [hereinafter, 'Jegou and Rubini'], at 30-31.

135 Jegou and Rubini, at 6-7.

The EU ETS has considered grandfathering as the rule, and auction of allowances as the exception, despite the difficulties in creation of rights/ allowances being the cause of the fall in carbon prices.[135] The advantages of auctioning are quite obvious. Firstly, it has the effect of negating windfall profits.[136] While a lot depends on the price elasticity of demand, auctioning does reduce the chances of over-allocation of property rights whilst creating definite legal rights to ensure smooth functioning of the market. Secondly, it is another way of implementing the 'polluter-pays principle'. Since the allocations have to be purchased by market players, it also negates the 'state-aid' concerns.[137] A lot, however, depends upon how auctions are designed.

Interestingly though, the case-studies indicate a third possibility, namely, letting the market-players create the property rights. Under the PAT Mechanism, each of the Designated Consumers is given energy-efficiency targets with the ECScerts being awarded to only those market-players which out-perform their targets. As a result, the power of the Government is limited to setting targets. The creation of the property rights, *i.e.*, ECScerts, depends solely on the performance of the market-players. This seemingly negates the problems arising from both grandfathering (by overcoming over-allocation) as well as auctions (by putting every market-player on the same initial footing). In fact, the PAT Mechanism goes a step further by creating differential targets to negate any element of favouritism. Consequently, the market functions organically through the trade in allowances, the creation of which requires energy-efficiency targets to be met. Each allowance is, therefore, legally defined, but is subject to the capabilities of the market-player. We see a similar approach in the EERS and the WhC market. UK and France legislations provide short-term energy-efficiency targets, whereas Italy has opted for long-term objectives. Interestingly, in UK's case, this has been one of the criticisms for the poor performance of the market, i.e., it can only take place when the market-player's own targets were met.[138] The first criticisms of the market-based mechanisms ignores the fundamental premise leading up to the creation of property rights as the rights are only created on achievement of the policy objectives, be it in terms of energy savings, or savings in terms of carbon-dioxide emissions (as in the case of the UK). While some authors may consider this as a design flaw, it is in fact a

136 Stefan Weishaar, Auctions: The Solution to Windfall Profits and End of All State Aid Problems? 2 *Amsterdam L.F.* 3 (2009-2010), at 4-5.

137 Jegou and Rubini, at 19.

138 ECS Report, at 47.

practical application of the lessons learned from the EU ETS. Property rights are not 'allocated', but literally created.

Unlike the EU ETS, the case-studies highlight a design element wherein legal rights can be created by the market-players themselves. Further, limiting the role of the government to benchmarking, and not allocation, could also represent significant savings in transaction costs.

The idea, therefore, is not to create an artificial demand by *assigning* property rights to players but to make it contingent upon achieving the energy-efficiency targets. Arguably, by limiting the government's role to benchmarking and target setting, the market becomes more *organic* in its functioning while facing reduced distortion. This organic development of the market could be fundamental to its smooth functioning of the energy-efficiency markets.

Factors Affecting Creation of Property Rights

Benchmarking

Benchmarking is a process of gathering sectoral data and information on the market-players,[139] and is the foundation to the creation of property rights. Unlike the carbon-market, energy-efficiency markets exhibit greater flexibility in terms of benchmarking. The benchmarking mechanism under the EERS highlights one such design. Under the EERS smaller targets are given to the market-player to give them time to adjust. This offers certainty and predictability in terms of target-setting, a factor necessary for the creation of strong property-rights. WhC schemes also rely upon historic data to create targets. On the other hand, the PAT Mechanism creates differential targets arising from the implicit recognition of the difficulties in defining standardised norm/conditions given the lack of homogeneity 'amongst units in a sector'.[140] This has the effect of standardising the marginal abetment costs, and ensures that one sector does not get preferential treatment over others.

While energy-efficiency markets promote the organic creation of property rights, they are still dependent on achievement of targets, which in-turn depends upon

139 See https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/290759/scho0708bogk-e-e.pdf (last accessed on June 20, 2014)

140 BEE Presentation, at 7.

benchmarking. This makes the market amenable to the same ailment that plagues the carbon-market albeit in a slight skewed way. An easily achievable energy-efficiency target could lead to an over-supply of allowances similar to what we seen in the EU ETS. This is evident in UK's WhC experience, especially its inability to achieve a transparent market. Keeping the energy-efficiency target too high would mean imposition of penalties, resulting in a public outcry against the policy; keeping the targets too low would result in the market-player banking its property rights for future use. From the perspective of the market, both the aforementioned scenarios result in diminished market activity.

Clearly, benchmarking is as important a factor as creation and allocation of property rights through grandfathering or auction. Indeed, the practical implications are strikingly similar. However, the PAT Mechanism provides an example of how benchmarking can be tailored to standardise efficiency-targets across sectors, ensuring that the property rights are not valued differently.[149]

Penalties

It is the fear of penalties on failure to achieve efficiency-targets that actually drives a market-based mechanism. While the PAT Mechanism, the WhC scheme in France, and the EERS takes a straightforward approach to imposition of penalties (i.e., either indulge in trade of allowances or pay monetary penalties), the WhC experience presents another dimension and design tweak to promote market-activity.

On the imposition of penalties and the EERS experience, Glatt and Schwentker write that 'it is a best practice to keep those costs [i.e., penalties] higher than the value in the market-based trading sys-tem to minimize the number of penalty situation.'[142] They also write that the policies are structured by the states in such a manner that 'it is not to their benefit to buy credits year after year'.[143] While these statements appear logical and increasing the penalties would result in a logical push towards increased participation in the market. In fact, a significant monetary penalty may even push the utilities into banking allowances negatively impacting the market as we see from the WhC experience in the UK. At the same time, increased

141 *See generally* Veljanovski, at 46 on how efficiency of the market depends on how the property rights are 'valued' by the market-players.

142 USDE Report, at 9.

143 USDE Report, at 9.

144 USDE Report, at 9.

penalties would push the demand for allowances affecting its market-price. Interestingly, the policies are structured so that the utilities bear the full blunt of penalties by 'restricting them from recovering the costs from consumers'.[144] This adds to the transaction costs involved in evaluating the existing infrastructure and processes to meet the EERS requirement, costs which add to the financial burden of the utilities and affect its productivity.[145]

The WhC scheme in the UK and Italy sees a slight design tweak where the penalties determined on a case-to-case basis. [146] This could make the market susceptible to external influence and unpredictable. But at the same time, it ensures that market-players which make genuine attempts to attain the energy-efficiency goals are not forced to bear additional costs in form of penalties. This is a very thin line and the authorities have to be careful in exercising discretion.

Market-Players

The size of the market is very important in the smooth functioning of a market. As Cooter and Ulen write, '[T]he efficient solution to the problem of internalization depends on the number of affected people.'[147] Indeed, this finds support in Coase's own observation that, '[W]hen large numbers of people are involved, the argument for the institution of property rights is weakened and that for general regulations becomes stronger.'[148]

As the case-study highlights, the market-players in an energy-efficiency market can be quite varied. PAT Mechanism has a relatively few but well identified market-players in form of the Designated Consumers; the WhC market in France is open to any entity which can demonstrate energy savings; Italy sees a similar approach and any entity which has installed appropriate measures may participate. UK market, however, is restricted only to energy utilities and distributors.

A closer inspection reveals the peculiarities of the PAT Mechanism, the EERS

145 USDE Report, at 13.

146 Bertoldi & Rezessy, at 32-33.

147 Cooter and Ulen, at 174.

148 Coase FCC, at 29.

and the White Certificate schemes in comparison to each other. Firstly, while PAT Mechanism is extremely transparent but limited in scope, the end-users in EERS and the WhC market are not limited to designated industrial establishments and also include residential and commercial consumers.[149] Further, under the EERS, the electricity and gas utilities are responsible for assisting consumers in reducing their energy use by providing technical resources and assistances, as well as providing financial assistance.[150] Of course, the utilities themselves are not exempt and states are free to incorporate efficiency objectives for the distribution systems as well.[151] The advantage such an approach, when compared to the more traditional Coasian approaches of the PAT Mechanism and the WhC markets is the flexibility if offers. For instance, depending upon the projected savings, the utilities concerned may be inclined to offer financial assistance in form of low-interest loans to incentivise change in technology being used, creating a win-win situation for both the utility (in achieving energy efficiency targets) and the consumer (by reducing the financial burden it faces).[152] Indeed such incentives can provide the necessary impetus to make necessary changes in the infrastructure and processes involved. Indeed, in fact, governmental intervention may be permitted once the market is operational in order to stabilize the markets, or if the price of the allowances is deemed too low.[153]

Implementation

There could be two ways in which an 'energy-efficiency' market may be implemented, (i) linking it to the existing carbon-market, and (ii) a bottom-up approach.

Carbon-market approach

Linking the energy-efficiency market to the existing carbon-market is perhaps

149 USDE Report, at 7.

150 USDE Report, at 7. The USDE Report further observes that the assistance provided by the utilities 'helps their residential, commercial, and industrial customers identify and implement energy-savings opportunities. Utilities also provide rebates or low-interest loans to make implementing those measures more affordable.'

151 USDE Report, at 5.

152 USDE Report, at 7.

153 Windon, at 212.

154 Bertoldi & Rezessy, at 8, 54.

the most obvious choice. It provides an avenue to promote 'genuine carbon reductions' from sectors otherwise not covered under the carbon-market or where there may be political opposition (e.g., residential sector).[154] The benefits of linking the carbon-markets on a global scale are even greater, and include, *inter alia,* 'reducing the cost of cutting emissions, increasing market liquidity, making the carbon price more stable, levelling the international playing field and supporting global cooperation on climate change.'[155] While the legal framework for emissions trading on a global scale can be found in Article 17 of the Kyoto Protocol, experience suggest that it is much easier develop an international carbon market through a bottom-up approach.[156] In fact, there is

155 For a brief introduction to the international carbon market, see http://ec.europa.eu/clima/policies/ets/linking/ index_en.htm (last accessed on July 20, 2014)

156 See https://unfccc.int/kyoto_protocol/background/items/2880.php (last accessed on July 24, 2014). Quoting, "A global "stock market" where emissions units are bought and sold is simple in concept — but in practice the Protocol's emissions-trading system has been complicated to set up. The details weren't specified in the Protocol, and so additional negotiations were held to hammer them out. These rules were among the workaday specifics included in the 2001 "Marrakesh Accords." The problems are clear: countries' actual emissions have to be monitored and guaranteed to be what they are reported to be; and precise records have to be kept of the trades carried out. Accordingly, "registries"— like bank accounts of a nation's emissions units — are being set up, along with "accounting procedures," an "international transactions log," and "expert review teams" to police compliance."

The factors identified above by the UNFCCC are predominantly institutional and administrative in nature, and contribute to the transaction costs in establishing a functioning market. However, these costs, and indeed most of the administrative issues, are much reduced in cases where a functioning market exists on a smaller scale. The question then becomes one of merging (or linking) two markets dealing in the same commodity. In fact, such an approach is not beyond the realm of practical application is evident through the attempts to establish a two-way link between the EU ETS and the Australian emissions trading scheme. For a greater understanding of the 'pathway' towards linking of the two schemes, see http://ec.europa.eu/clima/news/articles/news_2012082801_en.htm (last accessed on July 24, 2014).

157 George W. Downs, David M. Rocke and Peter Barsoom, Managing the Evolution of Multilateralism, 52 Int'l. Org. 397 (1998), at 398. Quoting, "The resulting path-dependent process produces a multilateral organization that will often be deeper at every stage of its development than would be obtained by an inclusive strategy: and it mitigates, even if it does not fully eliminate, the breadth-depth trade-off so prominent in the existing literature. As a result, large multilaterals that start out small will tend to become considerably "deeper" in a cooperative sense than those that start out with many members.^ This outcome holds whether or not sequential growth has been pursued for strategic reasons."

158 Stewart *et al*, at 355.

some scholarship to suggest that a bottom-up approach, and perhaps merger of mechanisms, would lead to greater cooperation[157] and be a stepping stone to larger regimes.[158] This is significant as the flexibility offered by the energy-efficiency market may result in different 'currencies'. In the context of market-based mechanisms, 'currency' refers to 'unit of obligation', e.g., in terms of toe or carbon-dioxide emission reduction. The consideration is, of course, a product of the domestic policy. As Bertoldi & Rezessy observe, setting carbon-dioxide emission reduction targets may complement the carbon-market, but that is 'not the only benefit of energy-efficiency market-based mechanisms'.[159]

The bottom-up approach through an extended application of market-based mechanisms finds support and governmental backing in terms of promotion of activities other than emissions trading. In case of the WhC market, legislative support may be found in Article 24 and 24a of the EC Directive 2009/29/EC dated 23 April 2009.[160] Under the said Articles, Member States can 'apply emission allowance trading... to activities and to greenhouse gases which are not listed in Annex I, taking into account all relevant criteria, in particular the effects on the internal market, potential distortions of competition, the environmental integrity of the Community scheme and the reliability of the planned monitoring and reporting system',[161] and may implement 'measures for issuing allowances or credits in respect of projects administered by Member States that reduce greenhouse gas emissions not covered by the Community scheme...'.[162]

159 Bertoldi & Rezessy, at 8.

160 Council Directive 2009/29/EC amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community [2009] OJ L 140/63 [hereinafter, 'Directive 2009/29/EC']. See also, Moritz von Unger and Jelmer Hoozgaad, CDC Climate, Domestic Offsets under Article 24a: Offsetting under Article 24a EU ETS and European Country Approaches: a Roundtable (22 February 2010), available at http://www.climatefocus.com/documents/files/roundtable_on_article_24a_of_the_revised_eu_ets_directive_.pdf (last accessed on July 20, 2014), at 2. Quoting,
"Article 24a EU ETS could bring a new instrument to European emissions trading: a domestic offset mechanism by which a project, approved by the Member State in which it is located, generates emission reductions which subsequently translate into carbon credits. These credits could be used for compliance purposes under the EU ETS."

161 Article 24(1) of Directive 2009/29/EC.

162 Article 24a(1) of Directive 2009/29/EC.

However, in the case of other energy-efficiency markets including EERS and the PAT Mechanism, a bottom-up approach would need to be established from scratch.

Bottom-Up Approach

Based on the 'theory of clubs',[163] Stewart, Oppenheimer and Rudyk suggest a bottom-up approach which focuses on 'creating transnational regimes that produce economic or other non-climate benefits either exclusively or primarily for the regime participants.'[164] Their suggestions, while premised on the recognition of the obstacles surrounding global action to mitigate climate change, namely, the inherent difficulties of conducting cost-benefit analysis of climate change mitigation,[165] the near impossibility of establishing an immediate direct link between reduction of greenhouse gases by a State to the adverse effects on climate change,[166] and the innate top-down approach of the UNFCCC,[167] recognises the importance of 'special purpose regimes' and its ability to 'readily develop institutional arrangements that generate trust-worthy information about performance, monitor each other's performance, and address non-performance.'[168] Stewart et. al., suggest two other approaches, namely, (i) linkage strategy and (ii) dominant market actor strategy. Unlike the 'clubs' approach, these two models require identification and active participation of 'pockets of support for mitigation' and the promotion of interests by a dominant player.[169] Further, they presuppose cooperation and support of the market-players which, as the carbon-market has shown, is not easily achievable. The 'club strategy', on

163 For an economic analysis of the 'theory of clubs', see James M. Buchanan, An Economic Theory of Clubs, 32 Economica 1 (1965).

164 Stewart *et al*, at 344.

165 Stewart *et al*, at 347-349.

166 As compared to the direct relationship between reduction in ozone-depleting substances and instances of cancer. See Stewart et al, at 350-251.

167 Stewart *et al*, at 353-354.

168 Stewart *et al*, at 355.

169 Stewart *et al*, at 356, 358.

170 Stewart *et al*, at 344.

the other hand, is premised on generation of creation of benefits available only to those who participate.[170]

Conclusion

Bentham defined property rights as a 'pure creature of law'. 'Take away laws, and property ceases'.[171] This of course, means that property rights can be modified by amending the laws which delineate and allocate them, or even be disputed, destroyed, or violated.[172] Consequently, the Coasian analysis undertook a limited investigation of the role of property rights and as this Paper explains, focussed on the purely economic motives of market-based mechanisms. The carbon-market continued the trend of ignoring the impact of property rights on the functioning of a market, particularly because it was focussed on allocative efficiency. Consequently, as this Paper argues, the carbon-market did not 'fail'.

Property rights are only important if the resources are scarce.[173] Energy-efficiency underscore this point and, unlike the extant carbon-market involving creation and allocation of property rights by the Government through grandfathering, creation of property rights is organic, depending upon achievement of energy-efficiency targets. However, the importance of benchmarking, penalties and the size of the market cannot be ignored.

Energy-efficiency markets, unlike the carbon-market, represent a genuine attempt to combine allocative efficiency with clear environmental goals. It is not without flaws and the case-studies underscore different perspectives and learnings on how certain factors could influence the creation of property rights. But at the same time, and perhaps more importantly, it highlights the greater flexibility of market-based mechanisms both in terms of design as well as implementation.

In terms of implementation, energy-efficiency markets undeniably represent an ideal specimen to build 'blocks' around as it principally seeks to achieve

171 Jeremy Bentham, Theory of Legislation 111-113 (1802), cited in Thomas Merrill & Henry E Smith, The Morality of Property, 48 *Wm. & Mary L. Rev.* 1849 (2006-2007).

172 Veljanovski, at 54.

173 Veljanovski, at 58.

174 Stewart *et al*, at 356-357, 359-360.

'non-climate incentives' through domestically motivated economic or energy policy objectives with 'climate co-benefits'.[174] The advantage it offers to the market-players is an opportunity to participate in the 'energy-efficiency market'. Once blocks are been created, they could very well be linked to the UNFCCC regime, making the energy-efficiency market a globally relevant and credible transnational market, providing a viable alternative to the existing carbon-market.[175]

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175 The objective is to link the 'green industry with governmental objectives of climate change mitigation'. See generally, Oppenheimer et. al., at p. 282. Furthering quoting Oppenheimer et al, at 286, 288, in context of greenhouse gas reductions, "The ambition and efficacy of domestic and subnational measures that have GHG reduction co-benefits could be significantly enhanced if linked transnationally with similar measures in other countries. The transnationally linked BUS regimes can address competitive and free-riding concerns, promote mutual learning, and potentially lead to increases in regulatory ambition among the regime participants. A number of such programs are already emerging, but at this early stage, they do not yet include a strong regulatory element.

Beyond harmonizing or linking domestic programs, including at the sub-national level, BUS regimes may also be established initially at the transnational level without waiting for a sufficient number of national programs to develop. Many of these regimes will be established and maintained by networks among domestic government officials, firms, trade associations and CSOs, including hybrid arrangements involving different categories of actors. Others will be established by international or regional organizations."

Ecological Concerns, Climate Change and Energy

Analyzing Law and Policy on Renewable Energy in midst of Energy – Environment Debate

Dr. Uday Shankar[*] and Niladri Mondal[**]

Abstract

The climate change debate and green enthusiasm have given a great motivation to renewable energy worldwide. There are numerous factors which are considered to be important in determining world energy consumption and production, including population growth, economic performance, consumer tastes, technological developments, government policies concerning the energy sector, and developments on world energy markets. The urge of sustainable development ideally requires utilization of only energy resources that cause no or less environmental impact. India, emerging very fast on the landscape of economic growth, has also been exploiting the non-renewable source of energy for meeting the demand for industry and individual. Rapid urbanization and urge to improve standards of living for millions of Indian households, is making the demand grow significantly.

At present, the dependency on fossil fuels has been dramatically increased to improve the quality of life, to give impetus to industrialization, and the need of growing population. It has long been recognized that this excessive fossil fuel consumption not only leads to an increase in the rate of diminishing fossil fuel reserves, but it also has a significant adverse impact on the environment, resulting in increased health risks and the threat of global climate change.

Though the energy sector has witnessed comprehensive revision of legislative framework to address the challenges of new millennium, the provisions on

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renewable sources are scant. The chapter identifies relevant provisions in the Electricity Act, 2003 which deals with cleaner sources of energy. Before the identification and elaboration of those provisions, the chapter builds a case for renewable energy by examining different phases of the 5-year plan document. It also elaborates on policy initiatives design from time-to-time to give necessary thrust to renewable energy.

The study concludes that, a critical part of the solution will lie in promoting renewable energy technologies as a way to address concerns about energy security, economic growth in the face of rising energy prices, competitiveness, health costs and environmental degradation. At the same time, India has recognized that tackling climate change is in its own national interests.

Introduction

There are numerous factors which are considered to be important in determining world energy consumption and production, including population growth, economic performance, consumer tastes, technological developments, government policies concerning the energy sector, and developments on global energy markets. The over-dependence on fossil fuels for energy generation has been contributing massive damage to the human environment. Use of fossil fuels for meeting energy requirement emits carbon dioxide or monoxide which causes irreparable harm to the ecosystem.[1] The demand of energy for achieving faster economic growth has been stimulating every nation to exploit readily available sources of energy for furthering industrialization process. The deteriorating health of environment accords a chance to explore the possibility of exploitation cleaner sources of energy for meeting human need. The urge of sustainable development ideally requires utilization of only energy resources that cause no or less environmental impact.

India, emerging very fast on the landscape of economic growth, has also been exploiting non-renewable source of energy for meeting the demand for industry

1 The CO2 emissions of India in 2013 increased by 4.4% which is about 2.1 billion tonnes, thus making it to be the fourth largest CO2 emitting country, closely behind the European Union, but well ahead of the Russian Federation, which is the fifth largest emitting country, (China (29%), the United States (15%), the European Union (EU28) (11%), India (6%), the Russian Federation (5%), see - http://edgar.jrc.ec.europa.eu/news_docs/jrc-2014-trends-in-global-co2-emissions-2014-report-93171.pdf (last accessed on August 28, 2015).

and individual. Rapid urbanization and urge to improve standards of living for millions of Indian households, making the demand grow significantly. In order to sustain the production, industries have opted for inefficient diesel-fuelled backup power also. India's energy planning, which is based on the twin objectives of high economic growth and providing electricity to all, is failing to meet either.

India's increasing appetite for quality and quantity of energy services is a result of rising economic activity, growing population and improved living standard. India's fast expanding economy (Government of India's 12th Five Year plan for 2013-17) aims at an annual economic growth rate of around 8% (Planning Commission, 2011)) and to sustain this level of growth, energy generation capacity should be added quickly.[2] Around 300 million Indians lack access to electricity, where per-capita electricity consumption is one-fourth of the world's average.

Access to clean, easy, and affordable energy is an important factor which is considered as crucial for sustainable development and poverty reduction. However, still after the 100 years of Edison's statement that "*we will make electricity so cheap that only the rich will burn candles*" we still have 1.6-2 billion people who do not have access to electricity and 2.5 billion people still depend on traditional biomass for their domestic energy need. There are huge amount of potential available in the renewable energy system which can be explored and harnessed to meet the energy demand without further affecting the climate.

In the light of this, the chapter begins by drawing a causal connection between fossil fuels and the environment, including climate change issues. Further, it examines the statutory provisions and policy framework on renewable energy. It details out the policy initiatives undertaken for the promotion of renewable energy and analyses the Bill in order to highlight the connection with the environment.

Effects of Generation of Electricity from Fossil Fuel on Environment:

Since historical times, wood used to be burnt to obtain the high-temperature heat necessary for various purposes such as melting metals, extracting chemicals,

2 (MNRE, 2013) available at http://mnre.gov.in/file-manager/UserFiles/report-on-developmental-impacts-of-RE.pdf (last accessed on August 28, 2015).

converting heat into mechanical power, as well as cooking and heating. During burning, the carbon in wood combines with O_2 to form CO_2, which is then absorbed by plants and converted back to carbon for use as a fuel again.

The Industrial Revolution replaced manual labour with machine labor, which needed other sources of high-temperature heat in addition to coal combustion. Oil, natural gas, and coal then started to be used extensively.

At present, consumption of fossil fuels is dramatically increasing along with improvements in the quality of life, industrialization of developing nations, and an increase of the world population. It has long been recognized that this excessive fossil fuel consumption not only leads to an increase in the rate of diminishing fossil fuel reserves, but it also has a significant adverse impact on the environment, resulting in increased health risks and the threat of global climate change.[3] Increasing consumption of fossil fuel to meet our current energy demands, and alarm over the energy crisis have generated a resurgence of interest in promoting renewable alternatives to meet the developing world's growing energy needs.[4] Excessive use of fossil fuels has caused global warming by carbon dioxide; therefore, renewable promotion of clean energy is eagerly required.

The production of electricity from fossil fuels makes adversely impacts the environment. According to recent estimates, these activities contribute to approximately 80% of the total global emission of the carbon dioxide, a major greenhouse gas that is considered to affect global climate change.[5] The production of electrical power by using coal as source of energy gives rise to pollutants like fly ash and harmful gases. Environmental impacts and polluting effects of the energy sector are classified broadly as local and general and as those emanating from production and consumption cycles.

As per the notification of the gazette on 3rd January 1989, the Ministry of Environment and Forest (MOEF) issued the first amendment rules to the

3 S. Farhad, M. Saffar-Avval and Younessi-Sinaki, Efficient design of feedwater heaters network in steam power plants using pinch technology and exergy analysis *International Journal of Energy Research*, 32 (2008), 1–11.

4 I. Youm, J. Sarr, M. Sall, M.M. Kane, Renewable energy activities in Senegal: A Review, *Renewable and Sustainable Energy Reviews*, 4 (1) (2000), at 75–89.

5 (IEA, 2006b) available at http://www.worldenergyoutlook.org/media/weowebsite/2008-1994/weo2006.pdf (last accessed on September 19, 2015).

Environment Protection Act of 1986, which stipulated the particulate emission limits for thermal power stations as:

Generation Capacity(MW)	Emission limits(mg/nm^3)
> 210	150
<210	350
Units located in protected area	150

It is a matter of concern that the calorific value of coal has deteriorated to around 4000 kcal/kg and the specific coal consumption has increased to 0.7 kg/kWh; consequently, the percentage of ash content has also increased.[6] Around coal based thermal power stations, water pollution is generally the result of the discharge of a boiler blow down and cooling water into the surrounding water bodies. The water generally contains chlorine and other pollution, which affects aquatic life adversely. Further, as a result of thermal pollution, the elevated temperature of the surrounding water may increase the metabolic rate of aquatic life or may kill some of the most sensitive species. A high metabolic rate in turn would have an impact on the quantity of CO_2 emitted.

Over-reliance upon conventional sources of energy to meet the requirement of economic growth has been emitting greenhouse gases beyond permissible limit making the country the fourth largest emitter in the world. Climate change is another indicator evolved over a period of time to remind the pressing need for exploration of cleaner sources of energy for mitigating the damage to the environment. India has a number of policies, discussed below, that contribute to climate mitigation by reducing or avoiding GHG emissions.

STEERING OF RENEWABLE ENERGY IN INDIA

The renewable energy planning was started from the *6th Plan (1980-85)* wherein the energy strategy was for the exploitation of renewable sources of energy like forestry and biogas specially to meet the energy requirements of rural communities.[7] This Plan focused on building a fresh strategy of exploration of

6 N. Mohammed, ENERGY LAW IN INDIA, 236 (Walter Kluwer Publication, Netherlands, 2010).

7 http://planningcommission.nic.in/plans/planrel/fiveyr/6th/6planch15.html (last accessed on September 20, 2015).

alternative sources of energy for meeting the energy requirements. The experience in this Plan guided the nation towards the 7th Plan. The *7th Plan* i.e. for the year (1985-90) focused on the development and acceleration utilization of renewable energy sources technically and economically.[8] Significant progress was achieved in the generation of electric power from solar photovoltaics for lighting and pumping systems, micro hydel schemes, gasifiers based on wood and agricultural waste and wind generation, including wind farms and 'stand alone' wind, turbines. Indian Renewable Energy Development Agency' (IREDA) was set up. A National Solar Energy Centre has also been set up. At the *8th Plan (1992-97)* a new ministry i.e. Ministry of Non-Conventional Energy Sources, dealing with renewable energy resources came into existence. The Planning Commission also took comprehensive attempt to plan the renewable resource from this period.[9] In this Plan, a significant portion of cooking and heating needs of the rural areas of the country was aimed at to meet through the programme of Biogas, improved chullas, low grade solar thermal device. At least 750 to 1000 MW of power capacity was to be installed on the basis of NRSE technologies of wind energy, micro hydel, urban/agricultural wastes, solar photovoltaics and also cogeneration programmes wherever feasible. In the *9thPlan i.e. (1997-2002)* the planners gave importance of commercialization and of the introduction of private partners in exploiting renewable energy resources.[10] Regarding rural energy, biomass energy programme including biomass production, biogas, improved chulhas, gasifies, solar energy etc got importance in 9th Plan along with wide extension of National Project on Biogas Development (NPBD) also, the programme like National Programme on Improved Chullas was being considered to transfer to the States. The rural energy, urban applications, and R & D programmes had been implemented during the *10th Plan i.e. (2002-2007).* During this plan it was noticed that the solar thermal power programmes were lagging while wind power programmes were very successful. The rural electrification programme with the help of renewable energy was also effective in this period. Various programmes of the MNRE for the *11th Plan (2007-2012)* have been drawn up in the light of recommendation made by Planning

8 http://planningcommission.nic.in/plans/planrel/fiveyr/7th/vol2/7v2ch6-1.html (last accessed on September 20, 2015).

9 http://planningcommission.nic.in/reports/publications/mta_8fyp.pdf (last accessed on September 20, 2015).

10 http://planningcommission.nic.in/plans/planrel/fiveyr/9th/vol2/v2c6-1.html (last accessed on September 20, 2015).

Commission. Research, development, and demonstration programmes in new technologies such as geothermal, hydrogen energy, fuel cells, alternative fuels for surface transport, etc., are also undertaken by MNRE.[11] *The 12th plan (2013-2017)* has provisions to ensure sustainable development of the power sector, considering the energy security concern and commitment for a 'Low Carbon Growth Strategy'. In order to reduce GHG emissions, the development of nuclear power, hydropower as well as power from renewable sources is being properly emphasized by the Government. Renewable energy solves the sustainability problem associated with conventional fuels used for power generation as these sources are non-exhaustible, free and relatively clean, hence more sustainable.[12] Though theoretically, these sources will be able to guarantee secure energy supplies for generations to come. Development of Renewable Energy resources is being accorded special emphasis in this 12th five-year plan in view of not just its inherent advantages of cleaner power production but also the social benefit of providing energy access and energy security to remote areas.

Legal Framework on Renewable Energy

Renewable energy sources are those resources which can be used to produce energy again and again, e.g. solar energy, wind energy, biomass energy, geothermal energy, etc. and are also often called alternative sources of energy. The existing legal frameworks do not spell in detail about different sources of renewable sources, and laws dealing with non-renewable attempts to address the cause of cleaner sources also.

Though, In India, there is no specific legal framework to promote generation, distribution and transmission of renewable energy, the existing law on electricity addresses the issue in a sporadic manner. Various provisions of the Electricity Act, 2003 deals with renewable energy are elaborated in this section.

Prior to the Electricity Act of 2003, the power sector in India was governed by three important legislations viz. The Indian Electricity Act, (1910) the Electricity (Supply) Act, 1948 and the Electricity Regulatory Commission (ERC) Act, 1998. Prior

11 http://planningcommission.nic.in/plans/planrel/fiveyr/11th/11_v3/11th_vol3.pdf (last accessed on September 25, 2015).

12 http://planningcommission.gov.in/plans/planrel/12thplan/pdf/12fyp_vol2.pdf (last accessed on September 25, 2015).

to the enactment of the ERC Act, 1998, the regulatory function at the central level was performed by the Central Electricity Authority (CEA) / Government of India and at the state level was performed by the SEBs / state government. The authority of the CEA was exercised through the process of grant of techno-economic clearance and the stipulation of various norms. The Government of India was responsible for the tariff setting of central generating stations. At the state level, the state governments and the SEBs were responsible for the regulatory function of the sector.

The Electricity Act, 2003 was enacted to transform the power sector in India which covers major issues involving generation, distribution, transmission and trading in power. In the Act, which has outlined several provisions enabling to accelerate the development of renewable energy based generation are as follows:

Section 3 (1)- "The Central Government shall from time to time, prepare the National Electricity Policy and tariff policy, in consultation with the State Governments and the Authority for development of the power system based on optimal utilization of resources such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy."[13]

Section 4- "The Central Government shall, after consultation with State Governments, prepare and notify a national policy, permitting standalone systems (including those based on renewable sources of energy and other non-conventional sources of energy) for rural areas."[14]

Section 61- Tariff Regulations by Regulatory Commission to be guided by promotion of generation of electricity from renewable energy sources in their area of jurisdiction.[15]

Section 66- Appropriate Commission shall endeavor to promote the development of market (including trading) in power in such a manner as may be specified and shall be guided by National Electricity Policy in Sec 3.[16]

Section 86(1)(e)- Provides Statutory Framework and Mandates SERC for taking steps for promotion of Cogeneration and Generation of Electricity from Renewable Sources of Energy.[17]

13 Electricity Act, 2003, Government of India [No. 36 of 2003]

14 Id.

15 http://www.cea.nic.in/reports/electricity_act2003.pdf (last accessed on September 26, 2015).

16 Id.

17 Id.

Above stated provisions integrates the agenda of renewable energy with conventional energy. In the area of renewable energy, the Central Government has been made responsible for preparing, publishing and revising, in consultation with state governments, national policy for stand-alone systems for rural areas based on renewable and non-conventional energy sources.[18] The State Electricity Regulatory Commission is required to consider the promotion of co-generation and generation of electricity from sources of renewable energy while specifying the terms and conditions of the tariff.[19] Further, the Commission has also been entrusted with the functions, *inter alia*, to promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person. The Commission is also required to specify for the purchase of electricity from such sources, a percentage of the total electricity consumption in the area, from cogeneration and renewable sources of energy.[20] To meet the challenges in the emerging competitive environment, the Act promotes electricity generation from co-generation and renewable energy sources through following enabling provisions: The SERCs to specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee and to promote co-generation and generation of electricity through renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any persons.[21]

These provisions ushered in a new progressive environment for the proponents of renewable energy. The Electricity Act of 2003 is the backbone of the legal renewable energy framework in India. It mandates State Electricity Regulatory Commissions to specify a Renewable Purchase Obligation (RPO) target on obligated entities, which include distribution licensees, open access consumers and captive consumers.

18 Section 4 of the Act.
19 Section 61 of the Act.
20 Section 81 of the Act.
21 Section 86 (1) (e) of the Act.

Policy Framework on Renewable Energy

A. National Electricity Policy 2005

With a mandate in the 2003 Act, the National Electricity Policy 2005 has been formulated for the development of a power system based on optimal utilization of resources.[22] The National Electricity Policy, formulated by the Ministry of Power, in pursuance of the provisions of the Act, also stresses the need for the promotion of non-conventional energy sources. Paragraph 5.12 of the policy stipulates that non-conventional sources of energy being the most environments friendly there is an urgent need to promote the generation of electricity based on such sources of energy. For this purpose, efforts need to be made to reduce the capital cost of projects based on non-conventional and renewable sources of energy. The cost of energy can also be reduced by promoting competition within such projects. At the same time, adequate promotional measures would also have to be taken for development of technologies and a sustained growth of these sources. Further, it is specified that progressively the share of electricity from non-conventional sources would need to be increased as prescribed by State Electricity Regulatory Commissions. Such purchase from distribution companies shall be through competitive bidding process. Considering the fact that it will take some time before non-conventional technologies compete, in terms of cost, with conventional sources, the Commission may determine an appropriate differential in prices to promote these technologies.

B. Tariff Policy 2006

Pursuant to the Act, the tariff policy has been formulated to obligate the purchase of renewable power for distribution companies. The State Electricity Commission is directed to fix certain percentages for the purchase. The Policy requires fixation by SERCs of a minimum percentage of RPO from such sources taking into account availability of such resources in the region and its impact on retail tariffs. Then the cost of renewable power at this stage is higher than the cost of power generated from the conventional energy sources. Consequently, the State Commission also determines a Feed-in tariff in promoting renewable energy. Feed-in tariffs (FITs)

22 National Electricity Policy, 2005 http://pib.nic.in/archieve/others/2005/nep20050209.pdf (last accessed on September 15, 2015).

23 Para 6.4 of the Policy.

are minimum prices at which REP must be purchased from the generating companies or private producers through contracts (power purchase agreements) with transmission or distribution utilities or with trading licensees.

The Tariff Policy also states that procurement of renewable power for future requirements shall be done through a competitive bidding process and in the long-term, renewable energy technologies would need to compete with other sources in terms of full costs.[23] To this effect, the MNRE brought out the guidelines and standard bidding documents for grid-connected renewable energy in December 2012 after several rounds of consultations with stakeholders. Advancing the key objectives of the Act, the guidelines stated that "the power purchase costs constitute the largest cost element for distribution licensees. Competitive procurement of electricity by the distribution licensees is expected to reduce the overall cost of procurement of power and facilitate the development of power markets. Internationally, competition in wholesale electricity markets has led to the reduction in prices of electricity and in significant benefits for consumers."[24] While the allocation for solar has already been done through competitive bidding under the National Solar Mission and state solar policies, these guidelines seek to also cover all other renewable energy sources, such as the wind, small hydro, geothermal, biomass, tidal, etc. The guidelines seek to create competition in the grid-connected renewable energy sector, bring transparency and fairness in allocation, reduce information asymmetries among bidders, bring standardization, and hence reduce ambiguity in the whole process of project allocation.[25]

For the implementation of the renewable power procurement obligation, the Act provides a specific provision. In case, the obligated entities (the utilities which are bound to purchase a certain amount of electricity from renewable power project mentioned above) fail to oblige to meet RPO they are subject to

24 http://mnre.gov.in/file-manager/UserFiles/guidelines_sbd_tariff_gridconnected_res/guidelines_tariff_grid_re.pdf (last accessed on August 21, 2015).

25 P R Krithika and Siddha Mahajan, Background paper Governance of renewable energy in India: Issues and challenges, March 2014, TERI-NFA Working Paper Series No.14, available at http://www.teriin.org/projects/nfa/pdf/working-paper-14-Governance-of-renewable-energy-in-India-Issues-challenges.pdf (last accessed on August 21, 2015).

the liability determined by the concerned State Commission under Section 142 of the Electricity Act, 2003.[26]

C. Rural Electricity Policy, 2006

Electricity Act, 2003 imposes an obligation on the governments to supply electricity to all areas which also cover the rural areas.[27] In addition, this standalone power generation and distribution system have been freed from the licensing in the rural areas (including those based on renewable sources of energy and nonconventional sources of energy).[28] Finally, section 5 of the Act mandates for the formulation of a National Rural Electrification Policy to develop and manage rural distribution networks utilizing local institutions. In pursuance of these provisions the Rural Electricity Policy, 2006 came into light.

The Policy has been formulated for the purpose to appropriate and optimize utilization of natural sources of energy which includes renewable sources of energy such as solar, the wind, biomass, small hydro, geothermal, tidal etc. to make available reliable supply of electricity to each and every household. Accordingly, the Policy encourages the use of isolated lighting technologies like solar photovoltaic in any rural areas where off-grid or standalone system of electrification is not feasible. In addition to this, the Policy promotes decentralized distributed generation facilities together with local distribution networks base on renewable energy source resources. The implementation of the Policy is largely depending on a Yojana and a corporation. The 'Rajiv Gandhi Grameen Vidhyutikaran Yojana' (RGGVY) is a Central Government programme which has been launched to electrify all un-electrified villages/un-electrified hamlets and provide access to electricity to all households. Rural Electrification Corporation Limited (REC) under the Ministry of Power is the nodal agency for the purpose of financing and co-coordinating of the electrification programme.

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26 In case any complaint is filed before the Appropriate Commission by any person or if that Commission is satisfied that any person has contravened any of the provisions of this Act or the rules or regulations made there under, or any direction issued by the Commission, the Appropriate Commission may after giving such person an opportunity of being heard in the matter, by order in writing, direct that, without prejudice to any other penalty to which he may be liable under this Act, such person shall pay, by way of penalty, which shall not exceed one lakh rupees for each contravention and in case of continuing failure with an additional penalty which may extend to six thousand rupees for every day during which the failure continues after contravention of the first such direction.

27 Section 6 of the Electricity Act, 2003.

28 Section 4 of the Electricity Act, 2003.

D. National Action Plan on Climate Change (NAPCC)

The United Nations Development Conference on Human Development held in Stockholm in 1972, the formation of Intergovernmental Panel on Climate Change (IPCC), the adoption of United Nations Framework Convention on Climate change (UNFCCC) at the Rio summit in 1992 shows that there has been an increasing concern among all countries about the climate change and emission.[29] The threat of climate change due to man-made emissions is now a serious global concern.

Dealing with the global threat of climate change, India is faced with the challenge of sustaining its rapid economic growth. This threat emerged from accumulated greenhouse gas emission in the atmosphere, anthropogenically accumulated through long-term and intensive industrial growth. Engaging with the international community, India needs a national strategy to deal with this threat by adapting to climate change and further enhancing the ecological sustainability of India's development path. National Solar Mission is one of the Eight National Missions formed as a core of National Action Plan which is known as Jawaharlal Nehru National Solar Mission (JNNSM). As such to rapidly increase the share of solar energy in the total energy mix while realizing the need to expand the scope of other renewable energy and non-fossil option such as nuclear energy, wind energy and biomass.

National Solar Mission or the aim of NAPCC is for promoting the development of the use of solar energy for generation of power and other uses with the ultimate objective of making solar competitive with fossils based energy options.

E. Jawaharlal Nehru National Solar Mission (JNNSM)[30]

Jawaharlal Nehru National Solar mission is a policy statement issued by the Government of India in respect of initiating a major initiative of planning and executing solar energy projects to produce power and other applications in India.

29 K. Rajesh et al, 'Least cost generation expansion planning with solar power plant using Differential Evolution algorithm', *Renewable Energy* Vol 85, January 2016, at 677–686, available at http://www.sciencedirect.com/science/article/pii/S0960148115301221?np=y (last accessed on September 20, 2015).

30 Available at http://www.mnre.gov.in/solar-mission/jnnsm/introduction-3/ (last accessed on September 20, 2015).

Objectives of JNNSM

The Jawaharlal Nehru National Solar Mission, named after independent India's first Prime Minister, provided a strong start to solar deployment in India.[31] The National Solar Mission will be a major contribution by India to the global effort to meet the challenges of climate change. In order to promote ecologically sustainable growth while addressing India's security challenge through creating adequate solar power is a major initiative of the Government of India and the State Government.[32]

Based on this vision Jawaharlal Nehru National Solar Mission has been launched in India with the objective of producing 20,000 MW Solar power by 2022.The whole period is divided into 3-phase as up to 2012-13as Phase 1, 2013 to2017as Phase 2 and from then till 2022 as the last Phase.

The target of the mission was to achieve the following goals by the year 2022:

- Grid connected with 20000 MW of solar power,
- Off-grid solar applications which includes 20 million solar lights
- 20 million sq. of solar collector area,
- The technological development through Research & Development to achieve grid parity.

Within this period of its First phase the mission got the necessary approval from the Cabinet on 19th November 2009 a target to set up 1,100 MW grid connected solar plants, including 100 MW capacity plants as rooftop and other small solar power for the first phase of the Mission until March 2013.[33] This grid-connected solar power projects have two components as:

- 1000 MW of large grid solar plants connected to 33 KV and above grid line and

31 Available at http://www.semi.org/en/node/51381(last accessed on September 20, 2015).

32 JNNSM available at http://www.mnre.gov.in/solar-mission/jnnsm/mission-document-3/ (last accessed on September 20, 2015).

33 http://s3.amazonaws.com/zanran_storage/www.mnre.gov.in/ContentPages/2522937654.pdf (last accessed on September 20, 2015).

- 100 MW of rooftop and small solar plants, connected to grids bellow 33 KV.

Then in the case of Off-grid solar applications 200MW capacity has been approved. In addition to this, the Cabinet has also approved 7 million square meters as solar thermal collector area.

The mission's target in Phase II for the period of 2013 to 2017 was set as follows:

- Grid connected solar power of 4000 to 10000 MW,
- Off-grid solar applications of 1000 MW and
- Solar collectors of 15 million sq. m.

The Solar Energy Corporation of India (SECI)[34] is a company established in 2011. The corporation is administered under the MNRE. The corporation was created for the purpose of implementation and facilitation of the JNNSM. The project of Carbon neutral solar lighting[35] is also in line with the Jawaharlal Nehru National Solar Mission (JNNSM).

Solar Power offers a potential solution to the pervasive problem of energy poverty and also the climatic changes in developing countries. The production of solar energy is clearly a way to diminish our dependency to fossil fuels, and is a good way to mitigate global warming by lowering the emission of greenhouse gases. Although grid extension has been the traditional approach to meet the power needs of the rural population in industrialized and developing countries alike and rapid decrease in the photovoltaic solar power generation have made distributed power generation an increasingly attractive alternative.[36]

The government is looking at a solar power generation target of 100,000 MW by 2022, up from the 20,000 MW goal planned by the UPA government. This

34 Available at http://seci.gov.in/content/ (last accessed on September 20, 2015).

35 Kolkata is the first city in the country to have an automated carbon-neutral solar lighting system in its public parks to be illuminated by it, in order to reduce the carbon footprint and electricity bills. To explain the concept of carbon neutrality the experts say that the system would push the solar energy generated during the daytime into the main grid with the aid of micro converter.

36 http://www.sciencedirect.com/science/article/pii/S0960148115300975 (last accessed on August 31, 2015).

improves upon the targets embedded its Twelfth Five-Year Plan published in 2013. The centralized and integrated national economic program aims to reduce emission intensity of GDP in line with a target of 20 per cent to 25 per cent reduction over 2005 levels by 2020 and to add 30,000 MW of renewable energy capacity during 2012-2017.

In a press release, (17th June 2015), the Union Cabinet chaired by the present Prime Minister, Shri Narendra Modi, gave its approval for stepping up of India's solar power capacity target under the Jawaharlal Nehru National Solar Mission (JNNSM) by five times, reaching 1,00,000 MW by 2022. The target will principally comprise of 40 GW Rooftop and 60 GW through Large and Medium Scale Grid Connected Solar Power Projects. With this ambitious target, India will become one of the largest Green Energy producers in the world, surpassing several developed countries.[37]

The new solar target of 100 GW is expected to abate over 170 million tonnes of CO_2 over its life cycle. This Solar Scale-up Plan has a target of 40 GW through Decentralized Solar Power Generation in the form of Grid Connected Rooftop Projects. While Decentralized Generation will stabilize the grid, it will minimize investment on power evacuation. Considering its international commitment towards Green and climate friendly growth trajectory, the Government of India has taken this path-breaking decision.

F. Trade Subsidy and Renewable Energy

The total investment in setting up 100 GW will be around Rs. 6,00,000 Cr. In the first phase, the Government of India is providing Rs. 15,050 crore as capital subsidy to promote solar capacity addition in the country. This capital subsidy will be provided for Rooftop Solar projects in various cities and towns, for Viability Gap Funding (VGF) based projects to be developed by the Solar Energy Corporation of India (SECI) and for decentralized generation through small solar projects. The Ministry of New and Renewable Energy (MNRE) intends to achieve the target of 1,00,000 MW with targets under the three schemes of 19,200 MW.

37 Available at http://pib.nic.in/newsite/PrintRelease.aspx?relid=122566 (last accessed on August 31, 2015).

In the last two to three years, the rapid development of installed solar capacity in the sector increased rapidly from 18 MW to about 3800 MW during 2010 - 15. The price of solar energy has come down significantly from Rs.17.90 per unit in 2010 to under Rs.7 per unit, thereby reducing the need of VGF / GBI per MW of solar power. With technology advancement and market competition, this Green Power is expected to reach grid parity by 2017-18. These developments would enable India to achieve its present target of 20,000 MW.[38]

Though renewable energy may seem to be expensive, but in the due process, it scores over conventional energy. The subsidy regime needs to be more robust, targeted and sustainable. In order to lead the revolution in the renewable energy sector, the government of India stands committed. Thus, it sought for a pragmatic approach in balancing the need for development and dealing with issues concerning the environment.

Renewable Energy and its Future in India

India is on the rise for power generation from renewable energy sources where the share of renewable energy in the country's total energy mix raised from 7.8% to 13% in the year 2008 to 2014. India has about 34 GW of grid-connected installed renewable energy capacity as on 31 December, 2014. The wind accounts for about 66% of the capacity, with 22.5 GW of installed capacity, making India the world's fifth-largest wind energy producer. Small hydropower (4.0 GW), bio-energy (4.2 GW) and solar energy (3.0 GW) constitute the remaining capacity.[39] With the scarcity of fossil fuel reserves, energy security and climatic changes, it is expected that renewable energy will play a significant role in reducing the dependency on imported and polluted energy sources. To meet both the challenges of energy and environmental front, India is faced with no other option but to work towards increasing the role of renewable in the future energy system. As renewable energy is at the take-off stage and businesses, industry, government and customers have a large number of issues to address before these technologies could make a real penetration in India. India with large renewable energy resources

38 Available at http://pib.nic.in/newsite/PrintRelease.aspx?relid=122566 (last accessed on September 18, 2015).

39 http://www.ireda.gov.in/writereaddata/CompendiumRegulationTariffOrders/Data/executive%20summary.pdf (last accessed on August 31, 2015).

(solar PV, the wind, solar heating, small hydro and biomass) is to set to have large-scale development and deployment of renewable energy projects.[40]

The Ministry of Environment, Forest and Climate Change, Government of India, has announced, October 2015, its commitment to reduce greenhouse gases in furtherance of Conference of Parties (COP) of United Nations Framework Convention on Climate Change (UNFCCC) at 19th Session held in Warsaw in November 2013 wherein all Parties are invited to initiate domestic preparations for their Intended Nationally Determined Contribution (INDC) towards achieving the objective of the Convention and to communicate them, well in advance of the 21st session of the Conference of Parties.[41] The INDCs centre around India's policies and programmes on promotion of clean energy, especially renewable energy, enhancement of energy efficiency, development of less carbon-intensive and resilient urban centres, promotion of waste to wealth, safe, smart and sustainable green transportation network, abatement of pollution and India's efforts to enhance carbon sink through creation of forest and tree cover. Despite facing enormous development challenges like poverty eradication, ensuring housing, electricity and food security for all, India declared a voluntary goal of reducing the emissions intensity of its GDP by 20–25%, over 2005 levels by 2020, despite having no binding mitigation obligations as per the Convention.

India commits to harness renewable sources of energy by building the necessary institutional framework for furthering Renewable Purchase Obligations and Renewable Generation Obligations. It realizes the importance of the renewable source of energy to improve air quality, to reduce dependency on fossil fuels and to protect environmental values.

Need of Comprehensive Legislation on Renewable Energy

Aiming to consolidate the renewable energy sector and give it an institutional structure, the Union government has drafted the National Renewable Energy Bill, 2015.[42] India is a party to the Kyoto Protocol and part of UN Resolution A/RES/58/

40 Maithani, PC, Renewable energy policy framework of India 41–54 (Narosa Publication, Delhi, 2008).

41 http://www.moef.gov.in/content/press-statement-india%E2%80%99s-intended-nationally-determined-contribution-indc-02-10-2015 (last accessed on October 2, 2015).

42 *mnre.gov.in/file-manager/ UserFiles/draft-rea-2015.pdf (last accessed on September 23, 2015).*

210,[43] which obligate India to undertake sustainable development and eventually widen the strengthening of the commitment for the exploitation of renewable energy in India. The Renewable Energy Bill, 2015 (*hereinafter* the Bill) may be an effective tool in response to this commitment. The Bill addresses issues like enhancement of energy efficiency and research on, promotion, development and increased use of new and renewable forms of energy throughout the nation with the help of advanced and innovative environmentally sound technologies. In order to implement these, the Bill provides for a comprehensive renewable policy (National Renewable Energy Policy) for the country to counter obstacles to the sound growth of the renewable energy industry in India (for example, lack of private financing, enforcement and weak compliance measures for renewable purchase obligation etc.). The mandatory provisions after the enactment of Renewable energy Law will provide the requisite backbone framework to facilitate increase in the use of renewable energy for all relevant applications including electricity, heat and transport in an effective and coordinated manner, which is well integrated with the energy and electricity system, and to do so by developing a supportive ecosystem, laying down a institutional structure ,and by creating framework for transparent and effective incentive structure.

The Bill provides for a National Committee on Renewable Energy to look into and advice the government all related matters including the issues arising in the course of implementation of the provisions of the Bill (if it becomes an Act). The members of the committee are from the academic, administrative and judicial fields and they coordinate all the mechanisms involved in the promotion of renewable energy in India. It proposed to create Renewable Energy Corporation of India to enable procurement renewable energy and to develop renewable energy investment zones. It establishes National Renewable Energy Fund for extending financial support to the industry.

Scaling up renewables at par with conventional sources in terms of consumption, the Bill provides for mandatory renewables targets and compliances in grid connectivity, purchase obligations, off-grid generations to be qualified for Purchase Obligation fulfillment,

43 Available at http://research.un.org/en/docs/ga/quick/regular/58 (last accessed on September 23, 2015).

Another important aspect of the Bill is that private financing is required to be encouraged by providing adequate funding options, incentives and financing means on the part of the Government for renewable energy projects. Private companies are brought under an obligation to contribute in the promotion of renewable energy through various means like renewable purchase, linking CSR spending to renewable energy installation, purchase of RECs, captive generation. In addition to this, the Bill also focused on the promotion of renewable energy in rural India.

Conclusion

Environment protection, energy security, and economic growth are national energy policy driver of any country. Fossils fuels are the world biggest energy source but burning them produces heat-trapping green-house gases that contribute to global warming. India's energy woes, deteriorated in recent years by delayed environmental approvals and other mandatory clearance, fuel shortages and land acquisition obstacle have meant that the country had been hard pressed to generate enough power to keep its economic engine chugging, and at a price that makes its manufacturing competitive. A critical part of the solution will lie in promoting renewable energy technologies as a way to address concerns about energy security, economic growth in the face of rising energy prices, competitiveness, health costs and environmental degradation.

As India's economy charges ahead, the country needs to produce more energy to provide a better life for its people, many of whom live in rural areas and are very poor. At the same time, India has recognized that tackling climate change is in its own national interests. The nation is taking concrete measures to constrain its own emissions and to protect its people from climatic disruptions.

Also the proposed Renewable Energy Act will not only help in streamlining many aspects of renewable energy, like power generation, supply and tariff, grid usage, etc., but also reduce environmental impact from unbridled industrial growth. The proposed Bill is likely to create a plethora of opportunities for all the RE stakeholders to exercise their might to contribute towards a greener and cleaner India.

ENERGY, ENVIRONMENTAL POLLUTION AND THE LAW: INDIAN PERSPECTIVE

*Dr. T. Raghavendra Rao**

Abstract

Energy and environment are closely interlinked. Energy has become an irreplaceable of one's life. On par with industrialization, destruction of environment also causing serious concern. In the recent years environmental pollution has become one of the constraints of India's economy. From the Indian context there are many environmental and energy issues. Energy is considered to be a key player in the generation of wealth and also a significant component in the economic development. This makes energy resources are immensely significant for any country like India.India has a vast supply of renewable energy resources which has got its impact on environment. Non-renewable sources of energy are also contributing to environmental pollution. From the legal perspective the Constitution of India 1950, is one of the most sacred legal document which can control and use of various energy resources by the states and the Centre.The Energy Conservation Act of 2001 could be considered as a welcome step in the right direction. The other legislations like Coal Mines Act of 1974, Coal Mines (Conservation and Development) Act of 1974, The Electricity Supply Act of 1948, Essential Commodities Act of 1955, The Indian Electricity Act of 1910, The Mines Act of 1952 and The Mines and Minerals (Regulation and Development) Act of 1957, Motor Vehicles Act of 1939, Oil Industries (Development) Act of 1974, The Oilfields (Regulation and Development) Act, 1948, The ONGC Act of 1959 and the Land Acquisition Act of 1894 are very much pertinent and praise worthy.The impact of environmental damage in the infra-structure development needs special mention. There are various reasons for the energy crisis like the gap between demand and supply. Hence, there is every need for accountability of the government and comprehensivepolicies on energy. Further suitable actions and strategies have to be adopted to remedy the crisis pertaining to environmental

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pollution and energy consumption. It is the need of hour that, unless further effective measures are taken on urgent basis in orderto conserve and rationalize the energy sources and protect the environment, the gap between demand and supply of energy will undoubtedly leads to severe energy crisis in India in days to come.

Introduction

Emerging and developing countries have 80% of the world's population but consume only 30% of global commercial energy. As energy consumption rises with increases in population and living standards, the need to expand access to energy in new ways is growing as is the awareness of the environmental costs.

India has a vast supply of renewable energy resources, and it has one of the largest programs in the world for deploying renewable energy products and systems. Indeed, it is the only country in the world to have an exclusive ministry for renewable energy development, the Ministry of Non-Conventional Energy Sources (MNES). Since its formation, the Ministry has launched one of the world's largest and most ambitious programs on renewable energy. Based on various promotional efforts put in place by MNES, significant progress is being made in power generation from renewable energy sources.

2.1 RENEWABLE SOURCES OF ENERGY AND IMPACT ON ENVIRONMENT

2.1.1 Wind Energy

It is hard to imagine an energy source more benign to the environment than wind power; it produces no air or water pollution, involves no toxic or hazardous substances (other than those commonly found in large machines), and poses no threat to public safety.And yet a serious obstacle facing the wind industry is public opposition reflecting concern over the visibility and noise of wind turbines, and their impacts on wilderness areas.

Wind power development can create serious land-use conflicts. In forest areas it may mean clearing trees and cutting roads, a prospect that is sure to generate controversy, except possibly in areas where heavy logging has already occurred. And near populated areas, wind projects often run into stiff opposition from people who regard them as unsightly and noisy, or who fear their presence may reduce property values.

2.1.2 Solar Energy

Materials used in some solar systems can create health and safety hazards for workers and anyone else coming into contact with them.In particular, the manufacturing of photovoltaic cells often requires hazardous materials such as arsenic and cadmium. Even relatively inert silicon, a major material used in solar cells, can be hazardous to workers if it is breathed in as dust. Workers involved in manufacturing photovoltaic modules and components must consequently be protected from exposure to the materials.There is an additional probably very small danger that hazardous fumes released from photovoltaic modules attached to burning homes or buildings could injure fire fighters.

None of these potential hazards is much different in quality or magnitude from the innumerable hazards people face routinely in an industrial society. Through effective regulation, the dangers can very likely be kept at a very low level.

2.1.3 Geothermal energy

Geothermal energy is heat contained below the earth's surface. The only type of geothermal energy that has been widely developed is hydrothermal energy, which consists of trapped hot water or steam.

The various geothermal resource types differ in many respects, but they raise a common set of environmental issues. Air and water pollution are two leading concerns, along with the safe disposal of hazardous waste, siting, and land subsidence. Since these resources would be exploited in a highly centralized fashion, reducing their environmental impacts to an acceptable level should be relatively easy. But it will always be difficult to site plants in scenic or otherwise environmentally sensitive areas.

2.1.4 Biomass

Biomass power, derived from the burning of plant matter, raises more serious environmental issues than any other renewable resource except hydropower. Combustion of biomass and biomass-derived fuels produces air pollution; beyond this, there are concerns about the impacts of using land to grow energy crops. How serious these impacts are will depend on how carefully the resource is managed. The picture is further complicated because there is no single biomass

technology, but rather a wide variety of production and conversion methods, each with different environmental impacts.

A. Air Pollution

Inevitably, the combustion of biomass produces air pollutants, including carbon monoxide, nitrogen oxides, and particulates such as soot and ash. The amount of pollution emitted per unit of energy generated varies widely by technology, with wood-burning stoves and fireplaces generally the worst offenders. Modern, enclosed fireplaces and wood stoves pollute much less than traditional, open fireplaces for the simple reason that they are more efficient. Specialized pollution control devices such as electrostatic precipitators (to remove particulates) are available, but without specific regulation to enforce their use it is doubtful they will catch on.

Emissions from conventional biomass-fueled power plants are generally similar to emissions from coal-fired power plants, with the notable difference that biomass facilities produce very little sulfur dioxide or toxic metals (cadmium, mercury, and others). The most serious problem is their particulate emissions, which must be controlled with special devices. More advanced technologies, such as the whole-tree burner (which has three successive combustion stages) and the gasifier/combustion turbine combination, should generate much lower emissions, perhaps comparable to those of power plants fueled by natural gas.

B. Greenhouse Gases

A major benefit of substituting biomass for fossil fuels is that, if done in a sustainable fashion, it would greatly reduce emissions of greenhouses gases. The amount of carbon dioxide released when biomass is burned is very nearly the same as the amount required to replenish the plants grown to produce the biomass. Thus, in a sustainable fuel cycle, there would be no net emissions of carbon dioxide, although some fossil-fuel inputs may be required for planting, harvesting, transporting, and processing biomass. Yet, if efficient cultivation and conversion processes are used, the resulting emissions should be small (around 20 percent of the emissions created by fossil fuels alone). And if the energy needed to produce and process biomass came from renewable sources in the first place, the net contribution to global warming would be zero.

Similarly, if biomass wastes such as crop residues or municipal solid wastes are used for energy, there should be few or no net greenhouse gas emissions. There would even be a slight greenhouse benefit in some cases, since, when landfill wastes are not burned, the potent greenhouse gas methane may be released by anaerobic decay.

2.1.5 Implications for Agriculture and Forestry

One surprising side effect of growing trees and other plants for energy is that it could benefit soil quality and farm economies. Energy crops could provide a steady supplemental income for farmers in off-seasons or allow them to work unused land without requiring much additional equipment. Moreover, energy crops could be used to stabilize cropland or rangeland prone to erosion and flooding. Trees would be grown for several years before being harvested, and their roots and leaf litter could help stabilize the soil. The planting of coppicing, or self-regenerating, varieties would minimize the need for disruptive tilling and planting. Perennial grasses harvested like hay could play a similar role; soil losses with a crop such as switchgrass, for example, would be negligible compared to annual crops such as corn.

If improperly managed, however, energy farming could have harmful environmental impacts. Although energy crops could be grown with less pesticide and fertilizer than conventional food crops, large-scale energy farming could nevertheless lead to increases in chemical use simply because more land would be under cultivation. It could also affect biodiversity through the destruction of species habitats, especially if forests are more intensively managed. If agricultural or forestry wastes and residues were used for fuel, then soils could be depleted of organic content and nutrients unless care was taken to leave enough wastes behind. These concerns point up the need for regulation and monitoring of energy crop development and waste use.

2.2 NON RENEWABLE SOURCES OF ENERGY AND IMPACT ON ENVIRONMENT

2.2.1 Coal

Coal is the most abundant fossil fuel in the world with an estimated reserve of one trillion metric tons. Most of the world's coal reserves exist in Eastern Europe and Asia, but the United States also has considerable reserves. Coal formed slowly over millions of years from the buried remains of ancient swamp plants.

During the formation of coal, carbonaceous matter was first compressed into a spongy material called "peat," which is about 90% water. As the peat became more deeply buried, the increased pressure and temperature turned it into coal.

Coal mining creates several environmental problems. Coal is most cheaply mined from near-surface deposits using strip mining techniques. Strip-mining causes considerable environmental damage in the forms of erosion and habitat destruction. Sub-surface mining of coal is less damaging to the surface environment, but is much more hazardous for the miners due to tunnel collapses and gas explosions. Currently, the world is consuming coal at a rate of about 5 billion metric tons per year.The main use of coal is for power generation, because it is a relatively inexpensive way to produce power.

Coal is used to produce over 50% of the electricity in the United States[1]. In addition to electricity production, coal is sometimes used for heating and cooking in less developed countries and in rural areas of developed countries. If the consumption continues at the same level, the current reserves will last for more than 200 years[2]. The burning of coal results in significant atmospheric pollution. The sulfur contained in coal forms sulfur dioxide when burned. Harmful nitrogen oxides, heavy metals, and carbon dioxide are also released into the air during coal burning. The harmful emissions can be reduced by installing scrubbers and electrostatic precipitators in the smokestacks of power plants. The toxic ash remaining after coal burning is also an environmental concern and is usually disposed into landfills.

2.2.2 Oil

Crude oil or liquid petroleum is a fossil fuel that is refined into many different energy products (e.g., gasoline, diesel fuel, jet fuel, heating oil). Oil forms underground in rock such as shale, which is rich in organic materials. After the oil forms, it migrates upward into porous reservoir rock such as sandstone or limestone, where it can become trapped by an overlying impermeable cap rock. Wells are drilled into these oil reservoirs to remove the gas and oil. Over 70 percent of oil fields are found near tectonic plate boundaries, because the conditions there are conducive to oil formation.

Oil does cause environmental problems. The burning of oil releases atmospheric pollutants such as sulfur dioxide, nitrogen oxides, carbon dioxide and carbon

1 www.ucsusa.org (last accessed 10th September, 2015)

2 www.ecoearth.org (last accessed 10th September, 2015)

monoxide. These gases are smog-precursors that pollute the air and greenhouse gases that contribute to global warming. Another environmental issue associated with the use of oil is the impact of oil drilling. Substantial oil reserves lie under the ocean. Oil spill accidents involving drilling platforms kill marine organisms and birds. Some reserves such as those in northern Alaska occur in wilderness areas. The building of roads, structures and pipelines to support oil recovery operations can severely impact the wildlife in those natural areas.

2.2.3 Oil shale and Tar Sands

Oil shale and tar sands are the least utilized fossil fuel sources. Oil shale is sedimentary rock with very fine pores that contain kerogen, a carbon-based, waxy substance. If shale is heated to 490° C, the kerogen vaporizes and can then be condensed as shale oil, a thick viscous liquid. This shale oil is generally further refined into usable oil products. Production of shale oil requires large amounts of energy for mining and processing the shale. Indeed about a half barrel of oil is required to extract every barrel of shale oil. Oil shale is plentiful, with estimated reserves totaling 3 trillion barrels of recoverable shale oil. These reserves alone could satisfy the world's oil needs for about 100 years. Environmental problems associated with oil shale recovery include: large amounts of water needed for processing, disposal of toxic waste water, and disruption of large areas of surface lands.

Tar sand is a type of sedimentary rock that is impregnated with a very thick crude oil. This thick crude does not flow easily and thus normal oil recovery methods cannot be used to mine it. If tar sands are near the surface, they can be mined directly. In order to extract the oil from deep-seated tar sands, however, steam must be injected into the reservoir to make the oil flow better and push it toward the recovery well. The energy cost for producing a barrel of tar sand is similar to that for oil shale. The largest tar-sand deposit in the world is in Canada and contains enough material (about 500 billion barrels) to supply the world with oil for about 15 years. However, because of environmental concerns and high production costs these tar sand fields are not being fully utilized.

2.2.4 Nuclear Power

In most electric power plants, water is heated and converted into steam, which drives a turbine-generator to produce electricity. Fossil-fueled power plants produce heat by burning coal, oil, or natural gas. In a nuclear power plant, the fission of uranium atoms in the reactor provides the heat to produce steam for generating electricity.

Originally, nuclear energy was expected to be a clean and cheap source of energy. Nuclear fission does not produce atmospheric pollution or greenhouse gases and it proponents expected that nuclear energy would be cheaper and last longer than fossil fuels.Unfortunately, because of construction cost overruns, poor management, and numerous regulations, nuclear power ended up being much more expensive than predicted. The nuclear accidents at Three Mile Island in Pennsylvania and the Chernobyl Nuclear Plant in the Ukraine raised concerns about the safety of nuclear power. Furthermore, the problem of safely disposing spent nuclear fuel remains unresolved. The United States has not built a new nuclear facility in over twenty years, but with continued energy crises across the country that situation may change.

Over the years, the energy policy has clearly demarcated between commercial energy and non-commercial energy. Under commercial energy, it recognizes coal, oil and natural gas, hydro-electric power, nuclear fuels. Forest resource, vegetable waste, solar energy, geothermal energy, wind energy, tidal energy are recognized as non-commercial energy sources. It further recognizes the trend of commercial fuels gaining dominance over non-commercial fuels as the focus of Indian economy.This trend is determined by three factors, namely, substitution of non-commercial forms; increase in intensity of use of energy; increased level of activity.

India is trying to shift its focus on renewable energy sources for the reasons of increase in oil prices; uncertainties in supply; difficulties in production and transport of increasing amount of fossil fuels; and environment degradation caused by conventional fuels. The policy recognizes hydro power, solar energy, wind energy, ocean energyand animal energy as some of the important sources of renewable energy. India has taken a lead in promoting and developing New and Renewable Sources of Energy (NRSE). Commission for Additional Sources of Energy (CASE) and Department of Non-Conventional Sources of Energy were set up in 1981 and 1982 respectively. While the former has the overall responsibility for formulating the policies and programmes, the latter makes arrangements for implementation. The concern can be clearly exemplified by the affirmative steps being taken to promote bio energy and solar energy. National Project for Biogas Development (NPBD) was sanctioned in 1981 as it was realized that the use of biogas improves sanitary conditions, checks environmental pollution and arrests denudation of forests. Central grants were made available to the states for giving subsidy to those who

wanted to set up biogas plants. Steps were also taken to improvise chulah for more efficient use of cooking energy. Priority is being accorded for application of solar energy in agriculture and industrial sector. The need for a legal framework is there.

The policy also identifies the reluctance of switching to renewable energy, as the initial capital cost of renewable energy system is high. Conventional energy structure is artificially priced. The capital investment in conventional energy supply is borne by the energy supplier while for renewable energy utilization, user bears the initial investment. No infrastructure is available for renewable energy sector while a well built one already exists for conventional fuels. Also, habits and cultural practices have to be drastically changed for usage of renewable devices on a wide scale.

The energy situation and supplies has been under constant review and scrutiny. Critical analysis and policy prescriptions and strategies have been taken into account while formulating energy programme in successive plans. Various committees were formulated to advice on the above issues. The Energy Survey of India Committee (ESC) was set up in 1961, which carried out a comprehensive energy survey of the country. It stressed that it would be 'desirable to keep constantly under review the trends of energy consumption and reformulate policies as circumstances changes'. The study helped in creating a strategy for energy development during the sixties. Fuel policy committee reiterated the recommendation of the ESC. Based on reports of the Committee, Energy Policy was formulated in 1976. It underlined coal as principle source of energy and encouraged reduction in reliance on imported oil. It emphasized on exploring and increasing indigenous oil production. Priority was also given for development of new and renewable sources of energy. The Working Group of Energy Policy (WGEP) was set up in 1977 with the following terms of reference:

- To estimate the prospective energy demand in the different sectors of the economy and regions of the country by 1982-83 and a decade thereafter;
- To survey the present and prospective suppliers of energy;
- To recommend measures for optimum use of available energy resources;

- To outline the national energy policy for the next five years, fifteen years and the longer term conservation policy.

The study pointed out that the energy consumption in the different sectors of the economy indicates that there is a considerable scope for conservation without restraining our economic growth; in fact, the economic growth rate might well be higher if the outlays on the energy sector on the energy sector were more prudently managed. Alternative sources of energy need to be explored as long term economic growth might be hampered by availability of conventional fuels.

The Report of Committee on Power (1980) set up by the Government of India emphasized the point that since power projects have long gestation period, it was necessary to formulate plans for power development on the basis of perspective of 15 to 20 years and to build five year plans into such perspectives.

In this context, the Advisory Board on Energy was set up in 1984 to make energy demand and supply projections for the next 20 years. It suggested several steps to improve availability of energy in the short run. It also suggested reduction of dependence on oil, by replacing reliance on hydel and coal resources. The substance of these committees with regard to energy policy is essentially supply, substitution and conservation oriented.

It was against this backdrop that the Energy Policy was enunciated and incorporated by the Government of India in the Sixth Five Year Plan in 1980. It aimed at ensuring adequate energy supplies and protecting the environment from adverse impact of unregulated utilization of energy resources. The main element of the Energy Policy was accelerated exploitation of domestic conventional energy resources.

LEGAL FRAMEWORK

3.1 Constitutional Provisions

The Constitution of India is a recent legislation vis-à-vis the oldest electricity legislation in India. However, post-Independence, the Constitution of India, 1950 is the most sacred legal document in the country. All the power/ duties/ legality of any legislation flows from the Constitution. India follows a federal set up, which has been recognised in the Preamble to the Constitution.[3] There

3 The term 'federal' has been there in the Preamble to the Constitution since 1950.

is a clear division of powers between the Centre and the State. Schedule VII of the Constitution provides for a clear demarcation of subjects between the Centre and the State for the purpose of avoiding any situation of overlap. List I contains 97 subjects over which the Centre has the power of legislate. List II contains state subjects, over which only the respective States have the authority to legislate. List III is the concurrent list, which contains those subjects over which both the Centre and the State can legislate. Entry 38 of List III contains 'Electricity'.[4] Therefore, both the Centre and the State can legislate in this subject area.

By virtue of the powers to legislate been given to the Centre and the State, there can be a situation wherein both have legislated on a subject. The Supreme Court in several cases has opined and propounded the 'Doctrine of Eclipse', according to which the Union legislation shall prevail over the one enacted by the State. In case of overlap, the state law shall be inoperative to the extent of inconsistency. The rest of the law shall be applicable. An example of the above situation is the State Electricity Reform Laws which were enacted before the enactment of the Electricity Act, 2003. After the enactment of the latter, the former were inapplicable to the extent of inconsistency.

3.2 The Energy Conservation Act 2001

The increasing preference of commercial energy has led to considerable spurt in the demand for electricity and fossil fuels. There is enormous potential for reducing energy consumption by adopting energy efficiency measures in various sectors.

The Energy Conservation Act is a statutory measure to regulate the energy efficiency and conservation due to an increase in the demand for electricity and fossil fuel and an increasing dependence on commercial energy. The Act tries to promote energy efficiency in the commercial sector, which is the largest user of energy. This would reduce the pressure on already existing resources and would be beneficial to the environment, as there will be drastic reduction in greenhouse gas emissions. This Act is very similar to the Environment Protection Act, 1986 with regard to delegated legislation.

4 Entry 38, List III, Schedule VII, Constitution of India, 1950.

The legislation for efficient use of energy and its conservation purposes to provide for a Bureau by merging existing Energy Management Centre to effective co-ordinate with designated consumers and agencies for performing such functions and exercise such powers which may be necessary for efficient use of energy and its conservation. Further, the Act confers power upon the Central Government and state government for enforcing the provisions of the legislations; establish a fund called the Energy Conservation Fund separately by the Central Government and the state governments; impose penalties in case of contravention of provisions of the proposed legislation; and prescribe the procedure for adjudication of the penalties and appeal to the High Court.

The Act clearly states the objective for 'providing for efficient use of energy and its conservation and for matters connected therewith or incidental thereof', where energy is defined as any form of energy derived from fossil fuels, nuclear substances or materials, hydroelectricity and includes electrical energy or electricity generated from renewable sources of energy or bio mass connected to the grid. A statutory authority 'Bureau of Energy Efficiency' is established under the Act.[5] The management of the Bureau is vested in the Governing Council.[6] The Central government can appoint twenty to twenty six members which includes the Secretary of various Resource Departments related with energy and representing the state governments, industry, equipment and appliance manufacturers, architects and consumers. The Act specifies the structure of the Bureau clearly in the subsequent provisions. The Energy Management Centre is completely made a part of the Bureau. The powers and functions of Bureau in promoting the objectives of the Act is that the Bureau shall coordinate with designated consumers, designated agencies and other agencies and utilize existing resources and infrastructure in performing the functions assigned to the Bureau.[7]

The Bureau has recommendatory power to recommend to the Central Government the norms for process and energy consumption standards, particulars for labeling on equipment or appliance, for notifying any user or class of users as designated consumers. The Bureau shall prescribe guidelines for the energy conservation code, prescribe qualifications for appointment of energy

5 Section 3 of the Energy Conservation Act, 2001.
6 Section 4 of the Energy Conservation Act, 2001.
7 Section 13 of the Energy Conservation Act, 2001.

manager and engagement of accredited energy auditors by the designated consumers and other functions specified to promote energy conservation.[8]

Powers have also been given to the Central Government to enforce efficient use and consumption of energy in consultation with the Bureau regarding the norms for process and energy consumption standards for any equipment or appliance which consumes, generates, transmits or supplies energy; specify equipment or appliance for purpose of the Act; prohibit manufacture or purchase or sale of certain equipment or appliance unless it conforms to energy consumption standards; direct display of certain particulars on the label of equipment or appliances; specify a designated consumer; direct them to comply with energy consumption standards or norms; direct energy audit to be conducted by energy intensive industries specified in the Schedule to the Act or by the designated consumer; prescribe energy conservation code; direct designated consumer to prepare scheme in respect of conservation of energy and implement such scheme and to get energy audit conducted in the building and with concerned state governments in relation to energy consumption building code.[9]

Power has also been conferred upon the state government to enforce relevant provisions, in consultation with Bureau, for efficient use of energy and its conservation. It may amend the energy conservation building codes, notify a designated consumer who is an owner or occupier of a building or building complex to comply with the provisions of the codes and to get an energy audit conducted by an energy auditor, notify to furnish the information with regard to energy consumed by adesignated consumer, take measures to create awareness and disseminate the information for efficient use of energy and its conservation etc.[10] A state Energy Conservation Fund is established to meet the expense incurred for implementing the provisions of the Act.[11]

The Central Government and the State Government have been given the powers to issue the directions, which will bind the person concerned to further the

8 Section 13 of the Energy Conservation Act, 2001.
9 Section 14 of the Energy Conservation Act, 2001.
10 Section 15 of the Energy Conservation Act, 2001.
11 Section 16 of the Energy Conservation Act, 2001.

purpose of the Act.[12] The penalty for non-compliance for certain provisions is specified. The penalty is Rs. 10,000 and below for each failure and continuance of failure to comply may extend to Rs. 1000 for every day of such failure. The proviso to the section on penalty lays down that no person shall be liable to pay penalty within five years from the commencement of the Act. The amount, if not paid, may be recovered as if it were arrears of land revenue.[13] Under the Act, appellate tribunal shall be established to hear appeals against the orders of the adjudicating officer or the Central Government or the State Government.[14] Civil Court has not been given jurisdiction explicitly. The structure of the appellate tribunal has been specified[15].

Also, specifications for appeal to appellate tribunal have been clearly stated. An appeal to Supreme Court lies on the decision or order of the appellate tribunal.[16] Power has been conferred upon the Central Government to supersede the Bureau in specified circumstances.[17] Default by companies is covered, where the person in-charge shall be liable to be proceeded against and penalty can be imposed unless the person in-charge proves that the failure of compliance waseither without his knowledge or that he had exercised all due diligence required to prevent the contravention.[18] The power to exempt only the designated consumer or class of the designated consumer is with the Central Government or the State Government based on the public interest. The exemption should be in consultation with the Bureau and should not exceed five years.[19]

The power to make rules has not been specified for the Central and State Government.[20] Central Government has been given the power to issue directions to the State Government or Bureau for the execution of this Act in the state. The power of the Bureau to make regulations has also been specified. Every rule and regulation needs to be laid before Parliament and state legislature in

12 Section 18 of the Energy Conservation Act, 2001.
13 Section 26 of the Energy Conservation Act, 2001.
14 Section 30 of the Energy Conservation Act, 2001.
15 Section 32 of the Energy Conservation Act, 2001.
16 Section 45 of the Energy Conservation Act, 2001.
17 Section 47 of the Energy Conservation Act, 2001.
18 Section 48 of the Energy Conservation Act, 2001.
19 Section 53 of the Energy Conservation Act, 2001.
20 Section 56 of the Energy Conservation Act, 2001.

accordance to the specification laid down. Power to remove any difficulty, which may arise in giving effect to the provision, is being given to the Central Government. The Act explicitly excludes the application of the Act on certain ministries or as may be notified by the Central Government1.[21]

3.3 OTHER PERTINENT LEGISLATIONS THAT IMPACT ON ENERGY CONSERVATION

The Energy Conservation Act fails to address the issue of conservation of energy at a source point and in other sectors. This can be fairly addressed by amending various Acts which directly concern the energy resources. The non-existence of this aspect in the laws is because energy conservation was never prioritized as a matter of urgent concern. With the urgency felt today, the laws need to be amended for satisfying the objective of efficient use of energy and its conservation. The list of laws is innumerable. Several other amendments need to be brought about in various other laws to fill the lacunae of the New Energy Conservation Act.

3.3.1 The Coal Mines (Conservation and Development) Act 1974

The Act directs the owners of the coal mines to conserve coal.[22] Section 2 specifically of the Act may be amended to include the definition of conservation.

3.3.2 Electricity (Supply) Act 1948

The Preamble of the Act should itself contain the objective of conservation. An amendment should be brought in this regard by making electricity boards furnish annual reports showing action taken by them in regard to energy conservation. The electricity board should be made responsible for efficient supply of electricity. Similar responsibility should be placed on the licensee.[23] Further, the Act should make it clear that nothing in the Section shall apply to any energy generated by means of cogeneration[24]. Also, the Act should be amended so as to include licensee or any other person to pay all fines.

21 Section 61 of the Energy Conservation Act, 2001.

22 Section 2 of The Coal Mines (Conservation and Development) Act, 1974.

23 Section 41 of Electricity (Supply) Act, 1948.

24 Section 43 of Electricity (Supply) Act, 1948.

3.3.3 The Essential Commodities Act 1955

The Act should be amended to include conservation and efficient production with maintaining or increasing supplies of any essential commodity[25].

3.3.4 The Indian Electricity Act 1910

The Preamble to the Act should include conservation of electrical energy. Under the Act, the Central Electricity Board may make rules to regulate the generation, transmission, supply and use of energy. This should be amended so that all these processes are regulated for energy efficiency.[26] Either amendment to this effect should be brought to explicitly mention energy efficiency or regulation should be read so as to include energy efficiency. Also, the Act may be amended to secure efficient supply of energy.

3.3.5 The Mines Act 1952

The Act provides for one manager to be responsible for the control, management, supervision and direction of the mine. The Act should also include conservation as one of the responsibilities of the manager.[27]

3.3.6 The Mines and Minerals (Regultion and Development) Act 1957

Provisions need to be made to conserve petroleum and coal resources.[28]

3.3.7 Motor Vehicles Act 1939

Under the Act, every motor vehicle should be so constructed so as to meet the fuel efficiency standards prescribed by the government under this Act or any other law. A new clause may be added to include fuel efficiency as one of the criteria for which Central Government may make regulating rules.[29]

3.3.8 The Oil Industries (Development) Act 1974

Under the Act provision should be added as scientific research for conservation of oil in industries and appliances and prescribing conservation wherever

25 Section 3 of The Essential Commodities Act, 1955.
26 Section 37 of the Indian Electricity Act, 1909.
27 Section 17 of Mines Act, 1952.
28 Section 18 of The Mines and Minerals (Regulation and Development Act), 1957.
29 Section 69 of the Motor Vehicles Act, 1939.

necessary so that the Board may render assistance for the promotion of such a measure.[30]

3.3.9 The Oilfields (Regulation and Development) Act 1948

The Preamble of the Act should be so amended to include conservation with development of mineral oil resources.[31]

3.3.10 The Oil and Natural Gas Commission Act 1959

Under the Act, the Commission has the function of planning, promoting, organizing and implementing programs for development of petroleum resources. The section should be so amended to include development in the most efficient manner.[32] The Commission should also take such steps so as to conserve petroleum resources where possible. The Commission has to furnish returns and statements and particulars regarding any proposed or existing programme for development. This section should be so amended to include development and conservation.

3.3.11 The Land Acquisition Act 1894

Under the Act, the definition of 'public purpose' should be expanded to include the provision of land for promoting energy conservation programme.[33]

The Dabhol Power Company was a company based in India, formed to manage and operate the Dabhol Power Plant. The Dabhol plant was built through the combined effort of Enron, GE, and Bechtel. GE provided the generating turbines to Dabhol, Bechtel constructed the physical plant, and Enron was charged with managing the project through Enron International.

ENVIRONMENT DAMAGE IN THE INFRASTRUCTURE DEVELOPMENT

The plant was to be constructed in two phases. In March 1995, the ruling Congress Party in Maharashtra lost to a nationalist coalition that had campaigned on an anti-foreign investment platform. In May, hundreds of protesting villagers swarmed over the site, and a riot broke out. Human Rights Watch and Amnesty

30 The Oil Industries (Development) Act, 1974.

31 Sections 14 and 23 of The Oilfields (Regulation and Development) Act, 1948.

32 Section 6 of The Oil and Natural Gas Commission Act, 1959.

33 Section 9 of the Land Acquisition Act, 1894.

International eventually charged the security forces guarding Dabhol for Enron with human-rights abuses; Human Rights Watch blamed Enron for being complicit. On August 3, the Maharashtra ordered the project to be halted because of "lack of transparency, alleged padded costs, and environmental hazards." Construction ground to a halt. By then, Enron had invested about $300 million into the project.

Phase One

Phase one was set to burn naphtha, a fuel similar to kerosene and gasoline. Phase one would produce 740 megawatts and help stabilize the local transmission grid. The power plant project was started in the year 1992 and finally completed in two years behind schedule.

Phase Two

Phase two would burn liquefied natural gas (LNG). The LNG infrastructure associated with the LNG Terminal at Dabhol was going to cost around $1 billion. In 1996 when India's Congress Party was no longer in power, the Indian government assessed the project as being excessively expensive and refused to pay for the plant and stopped construction. The Maharashtra State Electricity Board (MSEB), the local state run utility, was required by contract to continue to pay Enron plant maintenance charges, even if no power was purchased from the plant. The MSEB determined that it could not afford to purchase the power at Rs. 8 per unit charged by Enron. The plant operator was unable to find alternate customers for Dabhol power due to the absence of an open free market in the regulated structure of utilities in India. From 1996 until Enron's bankruptcy in 2001 the company tried to revive the project and spark interest in India's need for the power plant without success. The project was widely criticized for excess costs and deemed a white elephant. Socialist groups cited the project as an example of corporate profiteering over public good. Over the next year Enron reviewed its options. On February 23, 1996, Maharashtra and Enron announced a new agreement. Enron cut the price of the power by over 20 percent, cut total capital costs from $2.8 billion to $2.5 billion, and increased Dabhol's output from 2,015 megawatts to 2,184 megawatts. Both parties committed formally to develop the second phase. The first phase went online May 1999, almost two years behind schedule, and construction was started on phase two. Costs would now ultimately climb to $3 billion. Then everything

came to halt. The MSEB refused to pay for all the power. Although Maharashtra still suffers from blackouts, it says it does not need and cannot afford Dabhol's power. India's energy sector still loses roughly $5 billion a year. Today, Dabhol, in which Enron had invested some $900 million, sits silent. This plant was taken over by Ratnagiri Gas and Power Private limited in July 2005.

Dabhol Today

The power plant Phase I which was re-named Ratnagiri Gas and Power Pvt Ltd (RGPPL) started operation in May 2006, after a hiatus of over 5 years. However, the Dabhol plant ran into further problems, with RGPL shutting down the plant on 4 July 2006 due to lack of naphtha supply. Qatar based RasGas Company Ltd. started supplying LNG to the plant in April 2007.

The Dabhol Power plant consists of 3 blocks, each consisting of two GE make frame 9 gas turbines and one GE steam turbine. Block 2 commissioning work and Gas turbine 2A trial runs started on 25 April 2007. The Dabhol Power Plant Project is operational as of April 2009 with 900 MW RLNG fired running capacity but there are problems due to non-availability of operational insurance, also the decision is largely dependent upon political developments in the country as well as performance of newly repaired rotors. As 1 each of the combined cycle generator unit (total 3) is under shutdown.[34]

The power plants are considered to cause so much of damage anyways to the environment. Such an elaborate infrastructure of the power plants is causing grave danger to the land and the other aspects of the environment, such as causing enough air pollution, the noise pollution and also waste is being dumped into the water bodies thereby causing the water pollution. Therefore, there is a requirement to keep a watch on power plants wherein there is so much of money invested that it is essential that such projects are cost effective and ecofriendly with sound equipment's in addition. Also, Environmental Impact Assessments (EIA) which is a mechanism to investigate and evaluate the potential impacts of a proposed development project or activity should place stringent measures in order to make sure that no damage is caused to the environment by such projects.

34 www.rgpl.com(last accessed September 10, 2015).

In India, the National Energy Policy exists but an effective policy is not possible without corresponding changes in the national economy, in prevailing popular values and in the structure of public administration.

REASONS FOR THE ENERGY CRISIS

Demands upon energy resources have been increasing more rapidly than the supplies. Shortages of both natural gas and electricity have already been experienced. Controversies over the environmental effects of oil extraction, burning of fossil fuels, surface mining and nuclear reactors have complicated efforts to increase the output of energy. The "energy gap" thus created is expected to widen in the years ahead if present trends continue and no countervailing measures are adopted.

Accountability of the Government Necessary

Government, therefore, cannot indefinitely evade the issue; its own security and ability to function are at stake. And regardless of whether the political leaders are prepared to cope with the energy crisis and its implications, the Government will be held accountable for any massive failure of energy supply. This crisis, therefore, presents political leadership with an uncomfortable dilemma. If the public official evades the crisis for a time, power failures may ultimately catch up with him and expose him to the recriminations of an angry public. If he acts forthrightly to resolve the problem, he finds that every solution alienates some sector of society.

Even if the supply of energy could be indefinitely expanded, it is not certain that the utilization of energy could continue unabated or that the people would be willing to tolerate the environmental and other social costs of unlimited energy production. Unlimited energy consuming activities could pre-empt large areas of the human environment, rendering it unavailable for other needs. For example, inadequately controlled surface mining has scarred large areas of the earth, leaving much of the land valueless for further human purposes. Acid drainage from subsurface mines and discharges from oil wells have polluted surface waters over extensive areas.' Thermal discharges from a greatly expanded electrical generating system could significantly degrade the nation's supply of fresh water and to extract nuclear fuels residual in granite could require disposal of 220 million tons of rock per year on the basis of projected user demand.'[35]

35 www.repository.law.indiana.edu (last accessed September 10, 2.015).

Moreover, the supply of available energy does not appear to be indefinitely expansible by any technology now in prospect. Sources of energy, practically unlimited for human purposes, are theoretically available from solar radiation or from geophysical forces latent in the mass of the earth . But no practicable means of utilizing these resources in relation to existing needs are in prospect. Atomic fusion might provide a greatly expanded supply of power, but fusion technology is still in an experimental stage and no certain remedy for its thermal and radioactive hazards has been found. In addition, the siting of fusion reactors and the transmission of vastly increased amounts of electricity would pose major technical, environmental and economic problems that would not be easily resolved.The theoretical ultimate necessity for controlling energy demand appears to be unavoidable, and a future-oriented policy for energy thus becomes a present practical necessity."

Need for a Comprehensive Policy for Energy

The following four points summarize the need for a comprehensive policy for energy:

(1) The amount of all energy resources now available is limited. Sources of coal, oil, natural gas, water power, uranium and combustible cellulose are finite. For the near future, some of these resources may be sufficient for many purposes. Ultimately, however, all fossil fuels are exhaustible and the yield of renewable resources may diminish or even disappear in the face of growing demands.

(2) The ability of our present technologies to capture and utilize energy is limited. The most abundant sources of energy in solar radiation and geophysical forces are not attainable in significant amounts by technologies now present or in prospect. The full effects and potentialities of breeder reactors and atomic fusion are as yet conjectural.

(3) The capacity of the environment to absorb the residual products of energy without ecological damage is limited. All present forms of energy produce pollutants in the form of heat, particulate matter, toxic substances or radioactive emissions. Moreover, the extraction and transmission of energy scar the environment with strip mines, slag heaps, high-voltage electric lines and electrical generating plants. The polluting effects of energy production and consumption may be more intractable

barriers to the expansion of energy than the finite nature of available energy resources.

(4) The social and economic costs of obtaining energy would remain limiting factors even if resources and technology could satisfy all power demands. When men find the exploitation of energy sources more expensive or hazardous than they are willing to support, an effective limitation is placed on the total energy demand of society.

IMMEDIATE ACTIONS TO REMEDY THE CRISIS

The practical necessity for limiting energy demands lies in the future, but action to implement this necessity and also to maintain or improve the quality of life for people must begin in the present. Qualities of foresight, commitment, planning and innovation are now required. Unfortunately, principles and values which in the past have helped the people to accept policies that they disliked do not appear to avail in this case. Under the stress of war, free -societies have accepted the rationing of energy.They are much less likely to accept restrictions or to develop new industrial processes or lifestyles in anticipation of some hypothetical future need. Thus, the makings of confrontation are present between the ultimate necessity for limiting energy demands and the commitment of the people to an ever more abundant economy.

When all needs cannot be freely met, questions of choice and priorities arise and necessitate the formulation of a policy. There are now no built-in limitations on the demand for energy in our society. The citizenry assumes both that all energy demands will somehow be met and that it is the responsibility of government to insure that the flow of energy meets all expectations. These assumptions, joined to the growth of population, affluence and industrial activity, are pushing energy demand toward the limits of supply. A critical situation thus arises to which government must respond, and that response, whether fundamental or expedient, becomes the energy policy. Therefore, the following actions should be taken:

- Enacting a renewable energy Law with time bound legal targets for Renewable energy uptake, both at the grid, and at standalone level, in every state as well as nationally.

- The law should provide incentives for investment in RE technologies, such as offering potential tariffs, open transmission, as well as incentives for buying green energy.
- A shift from subsidiaries from fossil fuel to renewable energy.
- National feed-in-tariffs for renewable energy without a cap.

Coal fired generation currently provides two thirds of the generation capacity, and hydropower supplies the other third. Yet, India is blessed with vast resources of renewable energy in solar, wind, biomass and small hydro. In fact, the technical potential of these renewables exceeds the present installed generation capacity.

Unique in the world, India has the only Ministry that is dedicated to the development of renewable energies: Ministry of Non-Conventional Energy Sources (MNES). This bodes well for the acceleration of renewable development throughout the nation — both to meet the underserved needs of millions of rural residents and the growing demand of an energy hungry economy.

The development and deployment of renewable energy, products, and services in India is driven by the need to

- decrease dependence on energy imports
- sustain accelerated deployment of renewable energy system and devices
- expand cost-effective energy supply
- augment energy supply to remote and deficient areas to provide normative
- consumption levels to all section of the population across the country
- And finally, switch fuels through new and renewable energy system/ device deployment.

In a report on the Indian economy by Deutsche Bank, in which countries were ranked by attractiveness for outsourcing and off-shoring, India came in #1, well ahead of China[36]. With all promising future of renewable energy potential in India,

36 Report of the Deutsche Bank on Indian Economy, available at www.dbresearch.com (last accessed on September 10, 2015)

a separate renewable energy law is expected to play the role of a catalyst in the sector. It is important to note that India is one of the few countries that pioneered the development of renewable energy and initiated reforms at institutional and policy framework in early 1990s. The anomaly of the situation lies in the fact that the administrative machinery at the Centre as well as at the states level for dealing with the activities of the renewable energy sector has been in place for a fairly long period of time but no concrete legislative policy exists. Moreover, there is a specialized financial agency, the Indian Renewable Energy Development Agency (IREDA) to cater the financial requirements of the renewable energy sector in India. So, perhaps a concrete, comprehensive legal framework on renewable energy will stimulate growth and provide greater opportunities in the area.

India is currently experiencing strong economic growth, while at the same time attempting to extend modern power services to millions still in poverty. Expanding electrical capacity is essential. Renewable energy remains a small fraction of installed capacity, yet India is blessed with over 150,000MW of exploitable renewables. Therefore, it is essential that the country exploits the abundant renewable sources of energy and protect the environment from getting damaged as a result of excessive utilization of the non-renewable sources of energy. Therefore, it is incumbent to make full utilization of the abundant sources of energy and protect the environment from getting hampered by the excessive utilization of the non-renewable sources of energy.

The growing population of India and the rapid expansion of its economy has inevitably led to its faster consumption than what the country can afford. Unless effective measures are urgently taken to conserve and rationalize the energy sources, the gap between the demand and supply of energy will rise considerably leading to a severe energy crisis. While the industrial sector needs to take primary initiative in this regard, the management of needs for energy resources in rural areas is also crucial. In this context, it is important to appreciate the legal framework concerning conservation and rational use of all forms of energy.

Mitigating Climate Change: Indian Perspective

Dr. Ashish Kumar Srivastava[*] *& Mr. Anurag Kumar Srivastava*[**]

Abstract

Climate change is the order of the day which is showing its disastrous forms in tornado, cyclones, global warming, extinction of flora and fauna & mangroves, immersion of coastal areas, deltas & islands in sea, melting of glacier. All climate change is anthropogenic, and man has to mitigate the same. Mitigating climate change has always been topsy-turvy as the damage to ecology and environment is not uniform globally. Negotiations in the form of United Nations Framework Convention on Climate Change in 1992 was a starting point which was followed by Kyoto Protocol in 1995 wherein 195 and 192 nations respectively have shown their commitment. Since then 19 Conference of Parties have been held wherein developed and developing nations have been playing the odyssey in the form of negotiations about their roles in climate change mitigation. Climate change mitigation has been responded to by developing nations keeping their national interests of industrial growth in mind on the principles of 'Common but differentiated responsibility' but the developed nations now argue that since most of the developing nations like India, China, Venezuela, Brazil etc. are emitting HFCs at very high volume, the scenario of the early nineties in terms of responsibility of climate change mitigation via reduction of carbon emission, reforestation, erection of dikes against sea-level rise, energy efficiency, geo-engineering which needs a large amount of money to be pumped in so 'common but differentiated responsibility' etc do not fit for now. The road ahead in the COP 19 has been that developing nations shall also have to see the legitimate claims of developed nations. COP 19 is emphasizing on strategy from 2014 to 2020 in the form of Green Climate Fund, reduction of carbon emission in

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systematic way, Warsaw International Mechanism for Loss and Damage but India has shown its bewilderedness on COP 19. India failed to prove its stand on mechanism for loss and damage which results in loss of faith in COP 19 for other developing nations as they watch India as a flag-runner of interests of developing nations. This paper aims to highlight the journey of climate change mitigation with all its milestones and success and failures of developing nations especially India.

Introduction

Climate change is ocular, opulent and omnipresent in its gigantic tentacles in the form of disturbance of monsoon, melting of glacier, rise in sea level, tsunami, earthquakes, global warming etc. Reasons of climate change are mostly anthropogenic and effects are catastrophic.

UNEP Report of 2012 discusses about certain glaring effect of climate change. Between 1906 and 2006, Africa's glaciers lost 82% of land area; over last 25 years, 25% of global land area has seen productivity hit due to soil carbon loss and the Japan tsunami produced 6.15 million tons of debris in one city, equal to 103 years of normal waste.[1] Greenhouse gas emissions could reach 58 gigatonnes annually in 8 years if no action taken.[2] In Asia and India in the Indo-Gangetic Plains of South Asia there could be a decrease of about 50% in the most favourable and high-yielding wheat area as a result of heat stress at 2 times CO_2. Sea level rise will inundate low-lying areas and will especially affect rice growing regions. Many potential adaptation strategies are being practiced and proposed but research studies on their effectiveness are still few.[3] Figures are disappointing and disheartening.

To mitigate the effect of climate change, the United Nations Conference on the Human Environment took place in Stockholm in 1972. The conference had the effect of initiating worldwide participation,[4] by urging governments all over

1 United Nations Environment Programme Report, 2012

2 Ibid.

3 http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap24_FINAL.pdf (last accessed on July 21, 2015).

4 G.S. Karkara, 'Environment: Development as Human Rights Imperative' in Satish C. Shastri (ed) HUMAN RIGHTS, DEVELOPMENT AND ENVIRONMENTAL LAW- AN ANALOGY (Bharat Law Publications, New Delhi, 2006) at 49.

the world to consider that the environment must be protected in order to operationalize the right to life.[5] The manifesto 'protect environment to save mankind' saw a worldwide evolution as a result of this conference.[6] It had a profound impact on the way in which environment and environmental protection would be addressed by member countries in the future. The first few to recognize the connection between life and environment were regional conventions like African Charter,[7] Protocol of Salvador,[8] American Convention on Human Rights[9] and the Convention on the Rights of the Child (1989).

Apart from Stockholm Conference The Antarctic Treaty (Washington , 1959),[10] Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (Ramsar, 1971);[11] Convention concerning the Protection of the Word Cultural and Natural Heritage (Paris, 1972);[12] Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington, 1973);[13] Protocol of 1978 Relating to the International Convention for the Prevention of pollution from Ships, 1973 (MARPOL) (London, 1978);[14] Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979);[15] Convention on the Conservation of Antarctic Marine Living Resources (Canberra, 1980);[16] United Nations Convention on the Law of the Sea (Montego Bay,1982);[17] Convention for the protection of the Ozone Layer (Vienna, 1985);[18] Protocol of Substances That Deplete the Ozone Layer (Montreal, 1987):[19] Amendments to the Montreal Protocol on Substances That Deplete the Ozone

5 Sarath Chandran, 'Human Rights and Environment Protection', 2002 *Cochin University Law Review,* at 175-176.

6 Supra note 4 at 59.

7 Article 24.

8 Article 11.

9 Article 24.

10 Entered into force June 23, 1961. India ratified with qualifications, August 19, 1983.

11 Entered into force December 21, 1975. India acceded October 1, 1981.

12 Entered into force December 17, 1975. India signed, November 16, 1972.

13 Entered into force July 1, 1975. India signed July 9, 1974: ratified July 20, 1976.

14 Entered into force October 2, 1983; India ratified with qualifications, September 24, 1986.

15 Entered into force November 1, 1983. India signed, June 23, 1979: ratified May 4, 1982.

16 Entered into force April 7, 1982. India ratified June 17, 1985.

17 Entered into force November 16, 1994. India signed December 10, 1982.

18 Entered into force September 22, 1988. India ratified March 18, 1991.

19 Entered into force January 1, 1989. India acceded June 19, 1992.

Layer (London, 1990):[20] Convention on the control of Trans-boundary Movements of Hazardous Wastes and Their Disposal (Basel, 1989):[21] United Nations Framework Convention on Climate Change (Rio de Janeiro, 1992);[22] Convention on Biological Diversity (Rio de Jeneiro, 1992);[23] Convention to Combat Desertification in Those Countries Experiencing Serious Drought and /or Desertification, particularly in Africa (Paris, 1994);[24] International Tropical Timber Agreement (Geneva, 1994);[25] and Protocol on Environmental Protection to the America Treaty (Madrid, 1991)[26] were signed and ratified by many countries under the auspices of United Nations.

Stockholm Conference declared that, "*Man is both creature and moulder of his environment and has the fundamental right to freedom, equality and adequate conditions of life, in an environment of quality that permits a life of dignity and well being*."[27] Driven by such force and ideology, many International instruments in the form of conventions, protocols, bilateral and multilateral agreements were signed after 1972 but failed to achieve what we desired for until UNFCCC came in to being in 1992.

Climate Change

Climate change plainly means change in climatic conditions. More precisely, "Climate change" means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.[28] There has been debate that climate change is not due to

20 Entered into force August 10, 1992. India acceded June 19, 1992.

21 Entered into force May 5, 1992. India signed March 5, 1990: ratified June 24, 1992.

22 Entered in to force March 21, 1994. India signed, June 10, 1992: ratified November 1, 1993.

23 Entered into force December 29, 1993. India signed June 5, 1992: ratified February 18, 1994.

24 Entered into force December 26, 1995: India signed 14 October 1994: ratified December 17, 1996.

25 Entered into force 1 January 1997. India signed September 17, 1996: ratified October 17, 1996.

26 Entered into force January 15, 1998.

27 Principle 1 of Stockholm Declaration, 1972.

28 Article 1(2) of United Nations Framework Convention on Climate Change, 1992.

anthropogenic reasons but IPCC says that, "The IPCC is now 95 percent certain that humans are the main cause of current global warming."[29]

The IPCC[30] is assigned the task of making Assessment Report. IPCC defines, "climate change as a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically decades or longer). Climate change may be due to neutral internal processes or external forcings, or to persistent anthropogenic changes in the composition of atmosphere or in land use."[31]

As is now widely understood, human activities, especially in the industrialized countries, release a number of gases mainly carbon dioxide, CFCs, methane and nitrous oxide that slow the escape of infrared radiation (heat) from the surface of the earth in to space. It is estimated that due to the increased human emission of greenhouse gases, earth will warm up at an average of nearly 2 degree Fahrenheit by 2025 and 5 degrees by 2100. This may not seem much. However we cannot lose sight of the fact that the earth has warmed up only by 9 degrees since the coldest period of the last ice age, about 18000 years ago. Moreover the predicted range of increase during the next 100 years will be over 0.5 degree per decade which is much faster than any climate change recorded in the history.[32]

In 2004 IPCC submitted its Assessment Report 4 and Working Group I of Assessment Report 5 came with their report in 2014, January. In this report the indicators of global warming are very alarming like anthropogenic radiative forcing (RF) which is an indicator of global warming is for 2011 relative to 1750 is 2.29 W/m and it has increased more rapidly since 1970 than during earlier decades, the report points out.[33] The atmospheric concentrations of CO, CH and NO are now the highest recorded in ice cores in the last 800,000 years, and the rates of

29 http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full.pdf (last accessed on July 21, 2015).

30 Intergovernmental Panel on Climate Change was established in 1988 by WMO and UNEP. It produces Assessment Report with the help of Different Working Group.

31 IPCC, WGI, AR3.

32 http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full.pdf (last accessed on July 21, 2015).

33 IPCC, WG I, AR5.

increase in the atmospheric concentrations of these GHGs are unprecedented in the past 22,000 years. Quantitatively, in 2011, the concentrations of CO, CH and NO were 391 parts per million, 1,803 parts per billion and 324 ppb respectively and these exceeded the pre-industrialisation levels (before 1750) by 40 per cent, 150 per cent and 20 per cent respectively. The increase in CO has largely been due to human activities, chiefly from fossil fuel emissions and land use changes. The oceans have absorbed 30 per cent of this anthropogenic CO, leading to their acidification.[34] Annual CO emissions from "*fossil fuel burning and cement production*", averaged over 2002-11, were 8.3 gigatonnes of carbon (GtC) per year and were 9.5 GtC/yr in 2011 alone, 54 per cent above the 1990 level (1 GtC corresponds to 3.67 GtCO). Annual net emissions from land use changes were 0.9 GtC/yr on the average during 2002-11.[35]

Impact of Climate Change

Monsoon cycle is facing turbulence due to climate change in the form of weakening of winds, increase in atmospheric moisture will likely lead to intensification of monsoon precipitation. The monsoon season could get longer in many regions, with onset dates likely to be earlier or not change much and withdrawal dates likely to be delayed. The El Nino-Southern Oscillation (ENSO) will continue to be the dominant mode of inter-annual variability in the tropical Pacific, with global effects in the 21st century.[36]

Limiting the warming caused by anthropogenic CO emissions alone to less than 2° C with a probability of >33 per cent, >50 per cent and >66 per cent since the period 1861-80 will respectively require cumulative emissions from all anthropogenic sources to stay below 1,560 GtC, 1,210 GtC and 1,000 GtC since that period. However, emissions until 2011 have already touched 531 GtC. "A large fraction of anthropogenic climate change resulting from CO emissions is irreversible on a multi-century to millennial time scale, except in the case of a large net removal of CO from the atmosphere over a sustained period."[37] "Surface temperatures," it adds, "will remain approximately constant at elevated levels for many centuries after a complete cessation of net

34 Ibid.
35 Ibid.
36 IPCC, WG I, AR5.
37 Ibid.

anthropogenic CO emissions.... Depending on the scenario, about 15-40 per cent of emitted CO will remain in the atmosphere longer than 1,000 years."

Climate Change and Poor

The poor are more vulnerable than the rich for several reasons. Flimsy housing, poor health and inadequate health care mean that natural disasters of all kinds hurt them more. When Hurricane Mitch swept through Honduras in 1998, for example, poor households lost 15-20% of their assets but the rich lost only 3%. Global warming aggravates that. It also increases the chances of catching the life-threatening diseases that are more prevalent in poorer countries. In many places cities have been built just above a so-called "malaria line", above which malaria-bearing mosquitoes cannot survive (Nairobi is one example). Warmer weather allows the bugs to move into previously unaffected altitudes, spreading a disease that is already the biggest killer in Africa. By 2030 climate change may expose 90m more people to malaria in Africa alone. Similarly, meningitis outbreaks in Africa are strongly correlated with drought. Both are likely to increase. Diarrhoea is forecast to rise 5% by 2020 in poor countries because of climate change. Dengue fever has been expanding its range: its incidence doubled in parts of the Americas between 1995-97 and 2005-07. On one estimate, 60% of the world's population will be exposed to the disease by 2070.[38]

Climate Change Mitigation & UNFCCC

The UN Framework Convention on Climate Change (UNFCCC) was adopted in 1992 to apply legal brakes to the growing environmental problem of climate change. The framework convention was supplemented by Kyoto Protocol in 1997. The Johannesburg Summit, 1992 expedited the Kyoto Protocol. The UNFCCC has been given a boost by several Conferences of Parties (COP).

UNFCCC under its Article 3 says that, "The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost. To

38 "Developing Countries and Global Warming, A Bad Climate for Development," *The Economist*, Sep 17, 2009.

achieve this, such policies and measures should take into account different socio-economic contexts, be comprehensive, cover all relevant sources, sinks and reservoirs of greenhouse gases and adaptation, and comprise all economic sectors. Efforts to address climate change may be carried out cooperatively by interested Parties."[39]

UNFCCC also castes duty on its 195 member countries under Article 4 which says that All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, shall:

(a) Develop, periodically update, publish and make available to the Conference of the Parties, in accordance with Article 12, national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, using comparable methodologies to be agreed upon by the Conference of the Parties;

(b) Formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, and measures to facilitate adequate adaptation to climate change;

(c) Promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol in all relevant sectors, including the energy, transport, industry, agriculture, forestry and waste management sectors;

(d) Promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases not controlled by the Montreal Protocol, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems;

39 Article 3(3) of UNFCCC, 1992.

(e) Cooperate in preparing for adaptation to the impacts of climate change; develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods;

(f) Take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example impact assessments, formulated and determined nationally, with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change;

(g) Promote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies;

(h) Promote and cooperate in the full, open and prompt exchange of relevant scientific, technological, technical, socio-economic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies;

(i) Promote and cooperate in education, training and public awareness related to climate change and encourage the widest participation in this process, including that of non-governmental organizations; and

(j) Communicate to the Conference of the Parties information related to implementation, in accordance with Article 12.

Conference of Parties (COPs)

To monitor, supervise and expedite the climate change mitigation UNFCCC establishes under Article 7, a Conference of the Parties.[40] The Conference of

40 Article 7 of UNFCCC.

the Parties, as the supreme body of this Convention, shall keep under regular review the implementation of the Convention and any related legal instruments that the Conference of the Parties may adopt, and shall make, within its mandate, the decisions necessary to promote the effective implementation of the Convention.

A historical evolution is required to show the course of action of UNFCCC. In 1979, the first World Climate Conference (WCC) takes place; in 1988 IPCC was established, in 1990 first assessment report of IPCC was released, in 1992 UNFCCC was established, in 1994 UNFCCC comes in force, in 1995 the first Conference of the Parties (COP 1) takes place in Berlin, in 1997 Kyoto Protocol was formally adopted in December at COP3, in 2001 IPCC third Assessment Report released and COP7 took place, in 2005 Kyoto Protocol comes in to effect, in 2007 fourth Assessment Report of IPCC was released and COP13 took place in Bali, in 2009 COP 13 took place, in 2010 COP 15 took place in Cancun, in 2011 COP 16 took place in Durban, in 2013 Key decisions adopted at COP19/CMP9 include decisions on further advancing the Durban Platform, the Green Climate Fund and Long-Term Finance, the Warsaw Framework for REDD Plus and the Warsaw International Mechanism for Loss and Damage.[41] In December 2014 in Lima COP 20 took place and COP21 is scheduled in December 2015 in Paris.

COP 19: An Analysis[42]

At the UN Climate Change Conference in Warsaw, governments took further essential decisions to stay on track towards securing a universal climate change agreement in 2015. The objective of the 2015 agreement is twofold:

1. First, to bind nations together into an effective global effort to reduce emissions rapidly enough to chart humanity's longer-term path out of the danger zone of climate change, while building adaptation capacity.

2. Second, to stimulate faster and broader action now.

To these ends, governments agreed to communicate their respective contributions towards the universal agreement well in advance of the meeting in Paris in

41 www.unfccc.int.

42 www.unfccc.int.

2015. Further, the required monitoring, reporting and verification arrangements for domestic action have been finalized for implementation, thereby providing a solid foundation for the 2015 agreement.

Importantly, further progress was also made in helping countries, especially the poorest, adapt to the impacts of climate change and build their own sustainable, clean energy futures. In a breakthrough outcome, the rulebook for reducing emissions from deforestation and forest degradation was agreed, together with measures to bolster forest preservation and a results-based payment system to promote forest protection. The *Green Climate Fund*, planned to be a major channel of financing for developing world action, will soon be ready for capitalization. Additionally, governments agreed on a mechanism to address loss and damage caused by long-term climate change impacts. The most recent climate science shows that human-generated climate change is beyond doubt, but we have a limited time to keep warming to a *maximum of under two degrees*. However, global greenhouse gas emissions need to peak this decade, and get to zero net emissions by the second half of this century. To achieve this, it is critical that action is taken and coordinated swiftly at all levels: international, domestic, business and finance.

For this reason, COP19 in Warsaw also provided a showcase for climate action by business, cities, regions and civil society. The solutions to climate change are already clear and the world has the money and technology, the knowledge and models to succeed. The results of effective climate action are also clear: immediate, shared benefits to all economies and citizens and a sustainable future for all.

Below is an overview of key outcomes that governments agreed in Warsaw:

i. Universal Agreement in December 2015, which will enter into force in 2020

ii. Closing the Pre-2020 Ambition Gap:

iii. The Urgency To Support Peoples Affected By Climate Change Impacts

iv. Strengthening Efforts to Mobilize USD 100 Billion by 2020

v. Cutting Emissions from Deforestation – "the Warsaw Framework for REDD+"

vi. Progress on Driving Adaptation

vii. Progress towards Accountability

viii. Technology to Boost Action on Climate Change

COP 20 Lima

In Lima conference parties agreed to raise Green Climate Fund (GCF) past an initial $10 billion target. In the Multilateral Assessment system, one can now inquire about the level of emissions in industrialized countries which brings more transparency. Lima conference highlighted the role of education and women in climate change mitigation process and asked the members to include climate change mitigation in curriculum. Lima also provided for National Adaptation Plans which shall now be available at UNFCCC website. Manuel Pulgar-Vidal, the COP President, launched a NAP Global Network involving Peru, the US, Germany, the Philippines, Togo, the UK, Jamaica, and Japan. China and Germany locked their commitments to contribute towards Adaptation fund. Lima conference was INDC (Intended Determined Contributions) centric.[43] But if we analyse the Lima conference we find the biggest emitters of GHGs are china 17% and US 27% and their commitment to keep the temperature below 2 degree by the century seems like a false hope.[44] The INDC does not also seem right which is basic of UNFCCC post 2020 and adaptation aspect has been included in a wishy-washy manner as part of the INDCs and there is no financial road map to scale up commitments.[45]

COP 21 Paris

The Synthesis Report (SYR) was released on 2nd November 2014 in Copenhagen at crucial time. Policymakers met in December 2014 in Lima at the 20th Conference of Parties under the United Nations Framework Convention on Climate Change (UNFCCC) to prepare the groundwork for the 21st Session

43 See http://newsroom.unfccc.int/lima/lima-call-for-climate-action-puts-world-on-track-to-paris-2015/ (last accessed on August 3, 2015).

44 R. Ramchandran, "More Hot Air" *Frontline,* January 23, 2015 available at http://www.frontline.in/environment/more-hot-air/article6751498.ece (last accessed on August 3, 2015).

45 Meena Menon, "A Watered Down Deal at Lima" *The Hindu,* December, 14 2014 available at http://www.thehindu.com/news/international/climate-deal-struck-after-marathon-talks-indias-concerns-met/article6690841.ece (last accessed on August 3, 2015)..

in 2015 in Paris, when they have been tasked with concluding a new agreement to deal with climate change.[46]

Climate Change Mitigation: Indian Perspective

However, continuing mitigation in these and other developing nations can by no means be taken for granted. In climate change mitigation the role developing nations is not very clear, as there has been a sea change from the concept of "Common but differentiated responsibility" to "loss and damage". The following issues play crucial role in climate change mitigation in developing nations: *Lack of information; Lack of capacity; Market distortion; Lack of technology and investment; Promotion of continuous market reforms; Mobilization of investment; and Promotion of environmental improvements.*

India, which is a representative of developing nations, has two way responsibilities i.e. development and climate change mitigation. Development means more carbon emissions and without carbon emissions development is not possible. This is a very strong reason of Indian bewilderedness on COP19. 'India is a large developing country with a rural population of nearly 700 million directly depending on climate sensitive sectors and natural resources for their subsistence and livelihoods. Climate change is likely to impact all the natural ecosystems as well as socio-economic systems. In fact, developing countries like India are facing the dual burden of climate change and globalization.'[47]

The potential impact of climate change is often diverse and the immediate need to address these adverse effects is widely recognized. Similarly different regions have different vulnerabilities to climate change, therefore different approaches need to be applied that are specific to context and region. However, allocating responsibilities for mitigation is a complex task and involves international negotiations. It has been increasingly recognized that a joint approach addressing the issues of adaptation and mitigation together is the most appropriate one for countries like India.'[48]

46 http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full.pdf (last accessed on July 21, 2015).

47 Climate Change Mitigation in India, Report of Ministry of Environment and Forests, 2011.

48 Ibid.

In India the net GHG emissions including Land Use and Land Use Change and Forestry in 2007 was 1727.71 million tones of CO_2 equivalent.[49] In 1994 it was 1904.73 million tones of CO_2 equivalent which is very alarming but compulsory for development also. GHG emission may increase 1.7 tCO_2 equivalent to 2.1 tCO_2 equivalent in 2020 and 3.5 tCO_2 equivalent in 2030.[50]

In the backdrop of these alarming emission figures the stark reality is that the topmost priority for India is economic development and poverty alleviation. Energy is needed for economic growth, for improving the quality of life and increasing opportunities for development. Some 600 million Indians do not have electricity and about 700 million use biomass as primary energy resource for cooking. But Indian Government is not blind on the issue of climate change mitigation as clean energy and reduction of carbon emissions are also top priorities. These are well reflected in policy of Indian Government[51] like use of 10% ethanol in petrol, increase of renewable energy use to 23%, setting up National Energy Fund, lowering GHG emissions by 20% up to 2016 etc.

National Action Plan on Climate Change

In June 2007 National Action Plan on Climate Change (NAPCC) was set up under the chairmanship of Prime Minister to co-ordinate national action for assessment, adaptation and mitigation of climate change. Apart from this, the Clean Development Mechanism (CDM) under the Kyoto Protocol has also played a very important role in funding mitigation efforts. CDM fosters to investment, growth, development and creates sustainable sources of energy. CDM was adopted in Kyoto Protocol but as the year 2012 approached, the window of opportunities created by the first commitment period narrowed down and eventually closed. CDM lost its way after 2012.[52] The withdrawal of developed nations like Australia and USA from Kyoto Protocol proved to be the nail in the coffin of Kyoto.

49 Indian Network for Climate Change Network Assessment, MoEF, Government of India, 2010.

50 Ibid.

51 Eleventh Five Year Plan 2007-2012.

52 K. Capoor & P. Ambrosi , State and Trends of the Carbon Market, The World Bank, Washington, D.C.

In November 2014, National Action Plan was reconstituted with following objectives:

(i) Coordinate national action plans for assessment, adaptation and mitigation of climate change.

(ii) Advise government on pro-active measures that can be taken by India to deal with the challenge of climate change.

(iii) Facilitate inter-ministerial coordination and guide policy in relevant areas.

The NAPCC is comprised of eight National Mission like; Jawaharlal Nehru National Solar Mission, National Mission for Enhanced Energy Efficiency, National Mission on Sustainable Habitat, National Water Mission, National Mission for Sustainable Agriculture, National Mission for Sustaining the Himalayan Ecosystem, National Mission for Green India, National Mission on Strategic Knowledge for Climate Change.

Under its National Solar Mission India wants to create an enabling policy framework for the deployment of 20,000 MW of solar power. National Solar Mission target to promote for off Grid Application reaching 2000 MW. The mission wants to achieve 20 million sq. meters' collector area and deploy 20 million solar lighting systems for rural areas. The budget for the mission in 12th Five Year plan is Rs.8,795 crore. India has till now installed 2970 MW of gird connected solar generation capacity. It has installed 364 MW of off gird solar generation capacity. It has installed 8.42 million squire meters' of solar thermal collectors.

Under National Mission for Enhanced Energy Efficiency India has adopted an attitude which makes India a highly energy efficient, cost-effective and ecologically sustainable country. It focusses on Perform, Archive and Trade (PAT) wherein obsolete techniques shall be shelved and new energy efficient techniques shall be encouraged. India wants to transform its market for energy efficiency. India also wants to develop energy efficient financing platforms. The budget under this mission under 12th FYP is Rs. 190 crore. The PAT cycle 1 has been launched. India distributed 2.8 million LED bulbs and is going to launch super-efficient ceiling fans in 2015.

Under the National Mission for Sustainable Habitat, India wants to promote sustainable urban housing with solid and liquid waste management and recycle and public transport. India under this programme wants to make high end urban planning with sustainable public transport and litter management system. In 12th FYP Rs. 950 Crores have been allocated. It has made Energy Conservation Building Code 2007 mandatory for sustainable habitats[53] and has started 100 smart city projects in 2015. It has also sanctioned 760 water supply projects (Cost of which is Rs. 35, 650 Crores) under Jawaharlal Nehru National Urban Renewal Mission (JNNURM).

Under National Water Mission, India wants to conserve water, minimise wastage and ensure better distribution by integration of water resources amongst its states. India wants to develop a comprehensive water database and assess the impact of climate change on water resources. It wants to promote water management and minimise wastage for which in 12th FYP Rs. 89, 101 crores have been allocated. In the line of implementation India has thoroughly revised its National Water Policy (2012) and created 1,082 new ground water monitoring wells.

Under the National Mission for Sustainable Agriculture, India wants to transform its Monsoon based chemical controlled cultivation to an ecologically sustainable climate resilient production system. Under this mission India wants to develop rainfed areas, on farm water management, soil health management and climate change and sustainable agriculture. In 12th FYP Rs. 1,08,000 Crores have been allocated. The volume of amount shows that India wants to focus on the issues of water and agriculture more. Till now India has developed 11000 hectares of degraded land and brought 1 million hectares under micro irrigation and created 5.4 million metric tonne agricultural storage capacity.

Himalayas maintain the ecosystem in Asian subcontinent so Indian Government cannot turn a blind eye to it. Under National Mission for Sustaining the Himalayan Ecosystem India wants a sustainable programme for better management of Himalayan Glaciers which is having the worst impact of climate change. Under this mission India wants to create of fund of approximately Rs. 1, 650 Crores and establish a National Centre for Himalayan Glaciology. It wants to train and indentify 100 experts including 2 glaciologists to train and

53 Available at http://envfor.nic.in/sites/default/files/press-releases/Indian_Country_Paper_Low_Res.pdf (last accessed on July 21, 2015).

collect standard data for protection of Himalayan glaciers and ecosystems. In 12th FYP Rs. 1695 Crores have been allocated for it. Under this mission till now India has established 6 new centres for climate change in Himalayan states with other ongoing institutions. It has created an observational network to monitor the health of Himalayan ecosystem.

Forests are inevitably important for mankind. India under its National Mission for Green India wants to blend the adaptation and mitigation in enhancing carbon sinks in sustainably manages forests. India under this mission wants to increase 5 million hectares of forest. It wants to maintain the biodiversity, hydrology and carbon sequestration of an area of 10 million hectares. It wants to improve the forest based livelihood of 3 million families depending on forests for livelihood. In 12th FYP Rs. 46000 crores have been allocated. Till now 27 states have submitted their preparatory activities. 11 states have made a plan for 85000 hectares.

Seeing the importance of climate change mitigation process and being a pioneer negotiating country and representative of developing nations, Indian government changed its name of Ministry of environment and forests to Ministry of Environment Forests and Climate Change. India sees its big role in UNFCCC so it started National Mission on Strategic Knowledge for Climate Change. Under this mission it wants to concentrate on research and technological developments pertaining to climate change. Under this mission India wants to form well designed knowledge network, enhance research capacity, position a technology watch system etc. under 12th FYP Rs. 2,500 Crores have been allocated and till now India has established 12 thematic knowledge networks, developed 3 regional climate models and trained 75 high quality climate change professions.

The Government of India created the National Clean Energy Fund in 2010 for climate change mitigation activities.[54] On October 14, 2009 Indian Network for Climate Change Assessment (INCCA) was launched. A new National Institute for Climate Change Studies and Actions (NICCSA) is being set up by the Government of India under the Climate Change Action Programme (CCAP) of the Ministry of Environment, Forests and Climate Change.[55]

54 http://envfor.nic.in/sites/default/files/press-releases Indian_Country_Paper_Low_Res.pdf (last accessed on July 21, 2015).

55 Ibid.

COP19 in 2013 made some sea change in the climate change mitigation process for which so many new mitigation processes on the line of 'loss and damage' principle has been suggested as developed nations are contending that 'common but differentiated responsibility' does not meet the ground realities of present world wherein the largest CFC or GHG emissions are being made by developing nations so according to loss and damage efforts must be made for mitigation. It shall take some time to India to come with a standing on Warsaw. Developed nations even now are the biggest GHGs emitters and they have been emitting the same way right from 1850. This haggling looks unjust, unfair to developing nations and India as a champion of them is taking time to study the situations and reciprocate the same after Warsaw COP19. Indian view is that inclusive growth and sustainable development is the most important factors in climate change mitigation. Indian Government sees a greater role of common man, industry, NGO, Civil Society Organisations for climate change mitigation. India is extremely vulnerable to the impacts of climate change and significant measures are needed to build climate resilience and assist communities with adaptation. Several programmes are already underway in many parts of India, often in partnership with local financial institutions and grassroots non-governmental organisations that are working with local communities on project implementation.

Conclusion

There is a change in the Earth's climate and its adverse effects are a common concern of humankind and there are anthropogenic reasons like GHGs, CFCs emissions that this will result on average in an additional warming of the Earth's surface and atmosphere and may adversely affect natural ecosystems. Largest share of historical and current global emissions of greenhouse gases has originated in developed countries, and per capita emissions in developing countries are still relatively low and the share of global emissions originating in developing countries will grow to meet their social and development needs.

The role and importance in terrestrial and marine ecosystems of sinks and reservoirs of greenhouse gases cannot be negated and there are many uncertainties in predictions of climate change, particularly with regard to the timing, magnitude and regional patterns thereof. Global nature of climate change calls

for the widest possible cooperation by all countries and their participation in an effective and appropriate international response, in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions. Declaration of the United Nations Conference on the Human Environment, adopted at Stockholm on 16 June 1972 was the most progressive step of the mankind. The Charter of the United Nations and the principles of international law clears that the sovereign countries have right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction. Steps required to understand and address climate change must be environmentally, socially and economically most effective if they are based on relevant scientific, technical and economic considerations and continually re-evaluated in the light of new findings in these areas. Low-lying and other small island countries, countries with low-lying coastal, arid and semiarid areas or areas liable to floods, drought and desertification, and developing countries with fragile mountainous ecosystems are particularly vulnerable to the adverse effects of climate change and mitigation in these areas are required. IPCC has warned in such words, "Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems. Limiting climate change would require substantial and sustained reductions in greenhouse gas emissions which, together with adaptation, can limit climate change risks."[56]

Developing countries' economies are particularly dependent on fossil fuel production for development. The constant haggling between developing and developed nations about responsibilities emanating from climate change mitigation has resulted in confusing international policies of climate change mitigation. We hope that in the near future a common stable system of climate change mitigation shall be arrived at for better climate change mitigation. IPCC understands that *Adaptation* and *mitigation* are complementary strategies for reducing and managing the risks of climate change. Substantial emissions

56 http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full.pdf (last accessed on July 21, 2015).

reductions over the next few decades can reduce climate risks in the 21st century and beyond, increase prospects for effective adaptation, reduce the costs and challenges of mitigation in the longer term and contribute to climate-resilient pathways for sustainable development. COP 21 (30th November to 11th December, 2015) will determine the future of climate change mitigation wherein countries like India will agitate the real concerns of developing nations.

Environmental Perspectives in Thermal Power Plants in India

Dr. Subir Kumar Roy[*]

Abstract

A nation neither can develop its economy nor can inform hospitality and comfort into the life of its pupil without having the affordable source of energy. However the contrast in between energy poverty and vulnerability of the environment cannot be overlooked rather needs to be addressed properly. This article gives stress on the needs of having proper energy policies which must be benign to environment. As per the estimation of International Energy Agency (IEA) 80% of global energy consumption is derived from fossil fuels and particularly the pollutants emitted from the coal based thermal power plants are positive threat to our environment. Apart from affecting the ecology as a whole the pollutants from coal based thermal power plants seriously affect the health of the human being and may cause pre- matured death or acute problem related to pulmonary, reproductive, nervous and immune system. This article has made an in depth discussion about the energy scenario of India as it is the largest producers and consumers of energy in the world. Indian power sector is witnessing a salutary and radical growth since independence and is gradually increasing in pace with its dynamic economic growth and modernization. In India near about 60% of electricity is generated through coal based Thermal Power Plants (TPP). TPPs are the major source of pollution in India. on the other hand In Indian legal system right to get wholesome environment has attained the Constitutional status This article discuss at length about the mitigation measures in Indian legal system to curb pollution from TPP and scanned the relevant green statutes incorporated in Indian legal system. It has been discussed here of EIA of thermal power plant with special reference to the environmental jurisprudence enshrined in the constitution. It also deals with the relevant rules and G.O. regarding suspended particulate matters (SPM), CO2, SOx, NOx and other pollutants and also about cooling

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process, discharge of effluents, sewage system etc. This article also evaluates the role of MoEF, CPCB, SPCB, CEA etc to curb the pollution emitted from TPP and a comprehensive study about the judicial notion on operation of TPPs in India. Finally, this article concludes with indicating the flaws, lacuna in the legal system in India regarding operation of thermal power with suggestions.

Introduction

Energy security and development are closely associated with each other and both are complementary in nature. A nation in order to develop its economy requires secure, reliable and affordable source of energy to build its economy. Though energy holds an important place just after food and shelter but without energy neither it is possible to enhance the rate of production nor it is possible to maintain the comfort and hospitality of life, what we are enjoying today. It has become proverbial that a life lived without energy, is a life lived in poverty. Energy is the building block of life and critical to sustainable development but environmental concerns should be given the paramount importance. It is a grim reality that energy security is essential for human development and a balanced environment is sin-qua-non for human existence. "*Environment, ecology, population, poverty and life in luxury, all have an impact on the escalating Global disorder. Compassion towards ecology and environment is a casualty if we jettison the imperatives of environmental preservation prompted by myopic avarice*.[1]" "*With the ideal of power over Nature, demanded passion seeks to programme the technological golden goose for speedier and speedier outputs of whatever we desire. Perfection has limits. Power has none. Need has limits. Greed has none. The limits of this biosphere are set by the laws of Nature. In the laws of Nature, we should hail our saviors. Our only chance of resurrection lies in total alignment with them*.[2]" It is the need of the hour to address the challenge of energy poverty but at the same time it should not make the environment vulnerable. Energy and climate change issues should be given equal importance. In order to meet the demands of a vast and growing population coupled with rapid economic activities and materialistic development, demands of energy escalated and in turn have led to electricity generation which no doubt proved effective in enhancement of the GDP or GNP but with an adverse environmental impact.

1 V.R. Krishna Iyer, 2298, EPW, August 24-31, 1996.

2 G Naganathan Animal Welfare and Nature: HINDU Scriptural Perspectives at 22, quoted by V.R. Krishna Iyer, 2298, *EPW*, August 24-31, 1996.

Hence, energy policy should be framed in harmony with the environment to minimize negative development.

Thermal power plants are the prime source of generation of electricity of the developing countries. Out of the 6 billion people nearly 2.5 billion people depends on biomass for their daily energy needs[3] but coal has been the world's fastest growing major fuel of the 21st century. Coal is the only fossil fuel resource available in abundance and with low cost of production. Consequently it is used largely as a source of thermal energy as well as fuel for thermal power plants generating electricity. It is the backbone of the generation of the electricity of the world and as per the projection of the International Energy Agency coal will provide more than half of the 'on- grid' electricity of total consumption of energy[4]. The above data signifies the commanding contribution of coal in supporting modern base load electricity. As per the study of the International Energy Agency (IEA) coal has driven the world's best economies raising hundreds of millions out of energy poverty in recent years. As per the IEA Report, 2013 coal provides 40% of the world's electricity and becomes the main source of electricity though it is recognised as second source of primary energy in the world after oil[5]. As per the study of World Coal Association in India also 60% of electricity is generated through thermal power plants. But above all we should not be ignorant of the fact that coal fired power plants are the cause of largest source of pollution in any country. Beside emission of huge CO_2 the toxins produced by the fire plants cause severe damage to the environment and have proved injurious to human life and other living creatures.

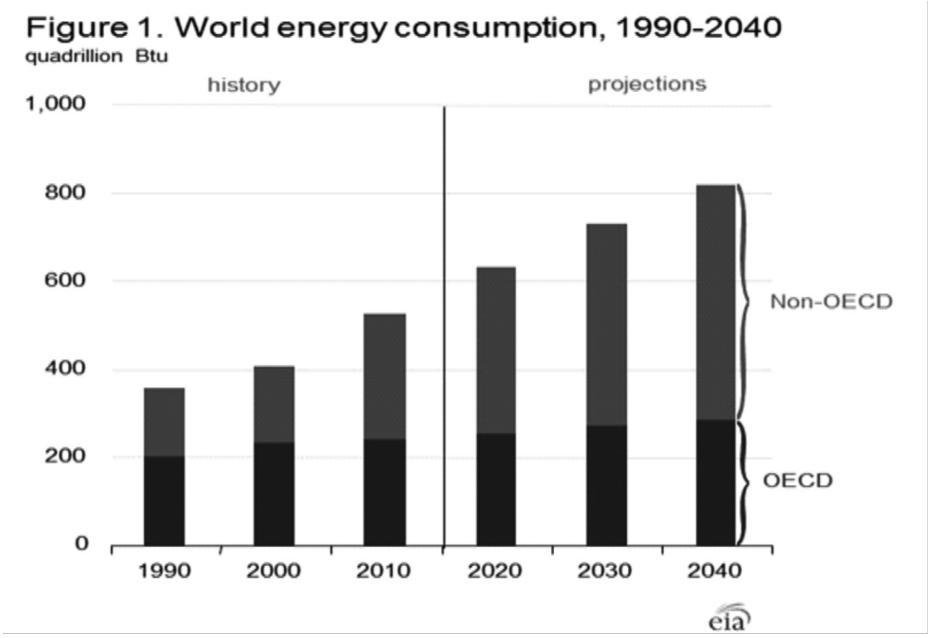
The importance of electricity cannot be overlooked as it is an important facet of our life. It becomes a basic human need and closely associated with the socio-economic development of a region. The *International Energy Outlook, 2013* projects that world energy consumption will grow by 56 percent between 2010 and 2040. Total world energy use rises from 524 quadrillion British thermal units (Btu) in 2010 to 630 quadrillion Btu in 2020 and to 820 quadrillion Btu in 2040.[6]

3 http://www.worldenergyoutlook.org/resources/energydevelopment/energyaccessdatabase.

4 International Energy Agency, World Energy Outlook, 2011. See also the report of World Coal association, titled, 'Coal Energy for Sustainable Development, 2012' available at www.worldcoal.org.

5 https://www.ieaorg/topics/coal & www.worldcoal.org/resources/coal-statistics/.

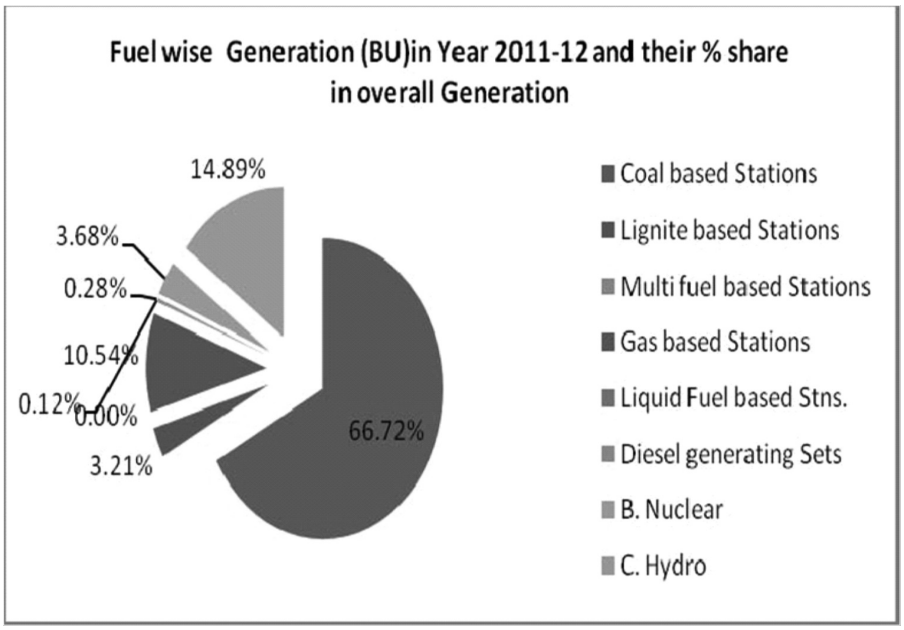
6 US Energy Information Administration (EIA); International Energy Outlook, July25, 2013, www.eia.gov (last accessed on July 14, 2015).



Source: US Energy Information Administration (EIA)[7]

In India also electricity has been recognised as a key driver for rapid economic growth, poverty eradication and generation of growth of service sector. Therefore, the emphasis has been given for generation of reliable and quality power and a time bound target has been fixed. Indian power sector is witnessing a radical growth since independence. As per the booklet on Growth of the Electricity in India from 1947 to 2011 has been brought out by Data Management & Load Forecasting (DMLF) Division of Central Electricity Authority the Power Sector in India has made salutary growth during the last six decades in the field of generation, transmission, distribution and utilization of electricity. The installed generating capacity in the country which was only 1362 MW in 1947 had grown manifold to 173626 MW at the end of March 2011. According to the Performance Review of Thermal Power Stations 2011-12, prepared by the Central Electricity authority (CEA) shows that During the financial year 2011-12, the highest ever capacity addition of 20501 MW altogether from Thermal, Nuclear and Hydro based plant was achieved, out of which 18404 MW of capacity was of Coal/Lignite based plants.

7 Ibid.



Source: Performance Review of Thermal Power Stations 2011-12, prepared by the Central Electricity authority (CEA)

As per the latest report of the US Energy Information Administration (EIA)[8] India was the fourth largest energy consumer in the world after China, the United States and Russia and its need for the energy is gradually accelerating in pace with its dynamic economic growth and modernization. Though due to the global economic recession India's annual inflation-adjusted gross domestic product (GDP) growth reduced from a high of 10.3% in 2010 to 4.4% in 2013 but still according to the International Monetary Fund (IMF) India was third largest economy in the world in 2013, reckoned on the basis of purchasing power parity[9]. Primary energy consumption has more than doubled between 1990 and 2012 and it reaches to 32 quadrillion British thermal units (Btu)[10]. EIA projects India and China will share half of global energy growth through 2040[11]

8 www.eia.gov/beta/international/analysis_includes/countries_long/India/india.pdf (last accessed on July 15, 2014).

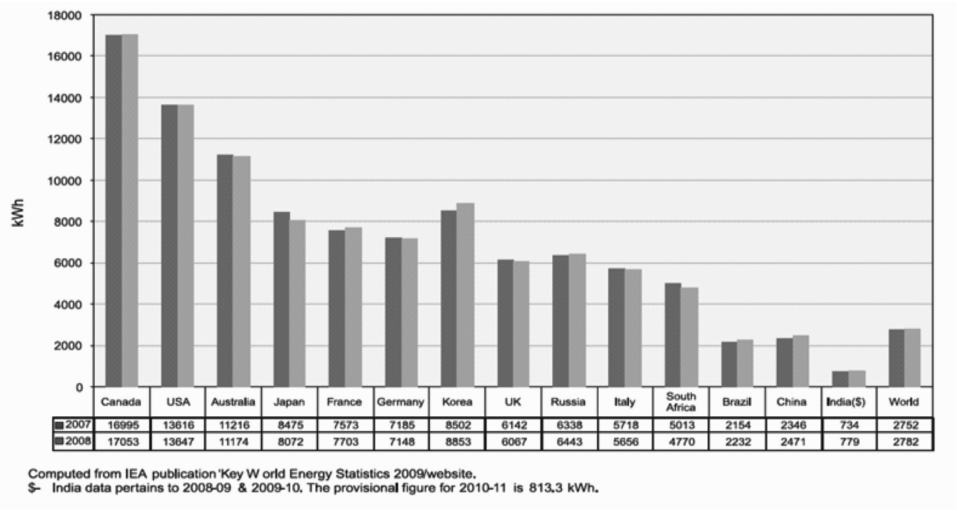
9 Ibid.

10 Ibid.

11 Ibid.

Though India ranks amongst the largest producers and consumers of energy in the world but the per capita consumption of energy is lowest even in comparison with most of the Asian countries.

Per capita Electricity Consumption in various countries in 2007-2008



	Canada	USA	Australia	Japan	France	Germany	Korea	UK	Russia	Italy	South Africa	Brazil	China	India($)	World
2007	16995	13616	11216	8475	7573	7185	8502	6142	6338	5718	5013	2154	2346	734	2752
2008	17053	13647	11174	8072	7703	7148	8853	6067	6443	5656	4770	2232	2471	779	2782

Computed from IEA publication 'Key W orld Energy Statistics 2009/website.
$- India data pertains to 2008-09 & 2009-10. The provisional figure for 2010-11 is 813.3 kWh.

Source: Booklet on Growth of the Electricity in India from 1947 to 2011 has been brought out by Data Management & Load Forecasting (DMLF) Division of Central Electricity Authority

The above chart shows that the where the per capita energy consumption in 2008 in world was 2782, it was only 779 in India. As per the study of CEA as of May India had 249 gigawatts (GW) of utility based installed electricity generating capacity mostly from coal-fired power plants. India's largest energy source is coal, though petroleum, biomass, waste etc. play vital role in generation of electricity. The table given below substantiates the above statements.

Impact of thermal power plant on environment

As per the findings of IEA 80%of global energy consumption is based on fossil fuels. Environmental pollutants emitted from thermal power plants specially coal based thermal power plants are potent threat to the general aesthetics of environment in terms of air, soil, land use, water pollution and leads to serious health hazards. Energy-related carbon dioxide (CO_2) emissions are the prime elements of global greenhouse gas (GHG) emissions, responsible for global warming. *Meeting the*

emission goals pledged by countries under the United Nations Framework Convention on Climate Change (UNFCCC) would still leave the world 13.7 billion tonnes of CO_2 – or 60% – above the level needed to remain on track for just 2°C warming by 2035[12]. As per the observation of IEA the CO_2 emission from power plants were 31.6Gt which was a historic high.

Total Carbon Dioxide Emissions from the Consumption of Energy (Million Metric Tons)[13]

	2007	2008	2009	2010	2011
World	29,733.483	30,256.223	30,236.152	31,502.374	32,578.645

CO2 Emissions from the Consumption of Coal (Million Metric Tons)[14]

	2007	2008	2009	2010	2011
World	12,577.947	12,958.266	13,234.690	13,784.951	14,416.246

Per Capita Carbon Dioxide Emissions from the Consumption of Energy (Metric Tons of Carbon Dioxide per Person)[15]

	2004	2005	2006	2007	2008	2009	2010
World	4.241	4.365	4.430	4.484	4.510	4.456	4.59

The thermal power plants specially, the coal based power plants emits mainly, carbon dioxide(CO_2), nitrogen oxide (NO), sulphur oxides (SO_x), chloro floro carbon (CFCs), other trace gases, suspended particulate matter (SPM), fly ash, Mercury and other heavy metals including methyl mercury, volatile organic compounds(VOCs), etc.

12 International Energy Agency (IEA), www.iea.org (last accessed on July 18, 2015).

13 US Energy Information Administration (EIA); International Energy Outlook, July25, 2013, www.eia.gov (last accessed on July 18, 2015).

14 Ibid.

15 Ibid.

Estimated Emissions from Fossil Fuels in 1999 (kg per TJ energy input)

Pollutant	Natural Gas	Oil	Coal
Carbon dioxide (CO2)	50,295	70,499	89,413
Carbon monoxide (CO)	17	14	89
Nitrogen oxides (NOx)	40	193	196
Sulfur dioxide (SO2)	0	482	1,114
Particulates	3	36	1,180
Mercury	0	0.003	0.007

Source: U.S. Energy Information Administration (1999; converted from lb/ billion BTU).

Note: TJ = terajoule.

Thermal power plant adversely affect the environment during both construction and operation stage. During construction change occurs in land use plan by the activities like leveling, excavation, earth moving, de-watering, dredging and / or impounding streams and other water bodies etc. which may adversely affect the environment by causing erosion, loss of biodiversity, loss or change of soil quality and quantity, change in habitat etc. Noise pollution, dust pollution etc. may occur during site clearing civil works in construction stage.

Thus, coal based power generation comes with considerable costs to environment and human health. During operational stage it becomes potential source of Air Pollution, Water Pollution, Soil Pollution, Noise Pollution etc.

Air Pollution

As already mentioned that pollutants like Particulate matters(PM), SO2, NOx, and CO_2 etc are emitted from the combustion of fuels in a thermal power plant(TPP) and thus largely remain responsible for producing greenhouse gasses, causes global warming. As per the study of Central Pollution Control Board large emission of SO_2, NO_x result in Acid-rain. The pollutants released from

thermal power plant pollutes air in such a way which not only becomes injurious to human beings, vegetation, aquatic & forest ecosystem but it also affects the buildings, monuments and other abiotic substances. Air is not only affected from the point sources of TPP but also from the non point source e.g. Transportation of coal, Loading/unloading of fuel, Coal storage yard, Fly ash etc.

Water Pollution

TPP is a potential source of water pollution. The water runoff from coal piles, waste water from de-mineralized backwash and resin regeneratorwastewater carries pollution loads of heavy metals, acids and other chemicals in different forms and combinations; oil spills etc. contaminate ground water and water bodies. The largest water pollution occurs due to the release of water in water bodies after utilizing it for the purpose of Cooling Tower Blow Down, Boiler Blow down etc. such water alters the chemical quality and temperature and thus affects the aquatic flora and fauna. Fly-ash residue and pollutants contaminate soil and thus adversely affects the agricultural processes.

Fly ash

Besides the gaseous and chemical pollutants including PM dust from coal handling plants and ash pond is a real menace as it has the negative impact on the ecosystem due to land use diversion, resettlement, water resources allocation and air pollution. The disposal of the increasing amount of solid waste from coal based thermal power becomes a challenge before the environmentalists. Coal ash, 80% of which is very fine in nature and is thus known as fly ash is collected by electrostatic precipitators in stacks. In India the above problem becomes acute as the Indian coal has high ash content and low calorific value which affects the thermal power plant's operational efficiency and increases emissions per kWh generated. The high silica and alumina content in Indian coal[16] increases ash resistivity and reduces the collection efficiency at the electrostatic precipitators. The fine particles of fly ash may act like cumulative poisons in human body and seriously affect the respiratory system.

16 Rethinking India's Coal- Power Technology Trajectory by Ananth P Chikkatur, Ambuj D Sagar in *EPW*, Vol. 44, No. 46, Nov. 14-20, 2009 at 53-58 available at http://www.jstor.org/stable/25663790 (last accessed on July 21, 2015).

Noise Pollution

The various equipments in TPP like crushers, belt conveyors, fans, pumps, milling plant, compressors, boiler, turbine etc produces excessive noise which affects the incumbents work inside the plant and the people who live in adjacent areas.

Impact of pollution emitted from thermal power plant on health

Human health and environment are closely associated with each other and quality of life depends upon the quality of environment. Human beings generally exposed to the environmental pollutants, chemical, physical and biological toxic substances through their sensual organs, respiratory system or by way of consuming them, which either causes the end of their life or seriously affect the as pulmonary, reproductive and nervous and immune system. As per the observation of EIA[17] the different pollutants emitted from TPP causes following diseases:

- Sulfur dioxide (SO2 contributes to acid rain and respiratory illnesses
- Nitrogen oxides (NOx) causes smog and respiratory illnesses
- Particulate matters(PM) contribute to smog, haze, and respiratory illnesses and lung disease
- Carbon dioxide (CO2) is primarily responsible for greenhouse gas emission
- Mercury and other heavy metals cause neurological and developmental damage in humans and other animals. Mercury mingling with water — either directly or through deposition from the air —converts into methyl mercury, a highly toxic chemical that accumulates in fish and the animals (including humans) that eat fish.
- Fly ash and bottom ash are residues created when coal is burned at power plants.

17 Ibid.

In the light of the above observation it becomes tragic truth that emissions from coal-fired power are potentially responsible for causing serious illness and premature death. Particulate air pollution may have serious impact on lungs, including lung cancer, asthma cases, chronic bronchitis and other cardiopulmonary mortality and even to end the life. Increased exposures to thermal extremes remain responsible for cardiovascular and respiratory mortality including deaths.

Effect	Health Impacts (number of people affected)	Health Costs(Crore of Rupees)[a]	Health Costs(million USD)[b]
Total premature mortality	80,000 to 115,000	16,000-23,000	3300-4600
Child mortality	10,000	2100	420
Respiratory symptoms	625 million	6200	1200
Chronic bronchitis	170,000	900	170
Chest discomforts	8.4 million	170	35
Asthma attacks	20.9 million	2100	420
Emergency room visits	900,000	320	60
Restricted activity days	160 million	8000	1600

Estimated annual health impacts and health costs due to PM pollution from coal-fired power plants in India, 20011-12

a- one crore = 10 million

b- using conversion rate of 1USD = 50 Rupees

Source: From the researched report, "Coal Kills: An assessment of death and disease caused by India's dirtiest energy source"[18]

18 Prepared by Urban Emissions in partnership with the Conservation Action Trust and Greenpeace India available at www.UrbanEmissions.info (last accessed on July 17, 2015).

The above report shows the horrible consequences of the pollution emitted from the coal fired TPP. As per the report in 2011- 2012 emission from Indian coal plants resulted in 80,000 to 1, 15,000 premature death and 20.9 million asthma cases with considerable population affected by the chest discomfort, chronic bronchitis etc. The above figure also shows that the monetary cost associated with these health impacts exceeds Rs.16000 to 23,000 Crore yearly.

Mitigation measures in Indian legal system to curb pollution from TPP

As per the Brundtland Commission Report, 'All human beings have the fundamental right to an environment adequate for their health and well-being'.[19] The main tune of all the major International summits right from Stockholm Conference to Rio Declaration and Johannesburg summit to Rio+20 is that it is the right of all the human being to have healthy and productive life in harmony with the nature. The above approach lashed the people with a new right i.e. environmental right and which can be a potent weapon to fight with the menace of pollution and to ensure sanctity of ecosystem by promotion of a certain level of environmental quality, health and well-being. Environmental quality has become a potent human right issue and gradually drawing the attention of the world polity to give it an indisputable status of substantive right. So far procedural matter is concerned in several national legal system access to environmental justice, through public interest litigation, public participation in decision making process related to environment, right to information, sustainable development etc. have been successfully incorporated. It is true that without having the substantial right procedural right cannot sustain but what domestic laws incorporates about the right to environment that is only an anthropocentric i.e. the environment is required to be protected for the well-being of the people and not eco-centric which states that nature has its own intrinsic value, value aside from its usefulness to humans. Anthropocentric attitude considers protection of environment in the terms of the welfare of the human being and from this concept it articulates that right to have quality environment is a basic condition of life, indispensible to maintain human dignity and welfare. Right to environment has been considered as inviolable part of right to life and based on this jurisprudential view many a nations give it a

19 World Commission on Environment and Development, *Our Common Future* (1987), Oxford University Press, at 348.

constitutional status and helped the judiciary to promote green and curb pollution on the very logic that life c includes right to live in a healthy environment and thus it enhance the scope of 'judicial review' and 'judicial activism'. In Port Hope Environment Group v. Canada[20] the UN Human Rights Committee considered the dumping of nuclear waste raised a serious issue of right to life but dismissed the application for failure to exhaust local remedy. In Bordes v/s France[21] a complaint regarding nuclear testing in the pacific had been dismissed on the ground that there is lack of evidence to establish that the above activity is dangerous to life. In the case of Gabcikovo Nagymaros Dam[22], decided in 1997, the International Court of Justice highlighted, "the need to reconcile economic development with protection of the environment" and commanded the States to "respect the environment".

In Indian legal system right to get wholesome environment has attained the Constitutional status so as to enable the people to live with dignity. The spirit of our Constitution has never supported development in isolation without caring for protection and improvement of environment. Right to healthy environment ensures that no one can contaminate or pollute the environment to such an extent which becomes injurious to human being and their surroundings i.e. ecology as a whole. The very Preamble of our Constitution gives the guarantee of tripartite picture of justice– Social, economic and political to ensure the full and free development of every individual. Justice itself is a dynamic concept and cannot be kept confined within any set idea rather justice should consider the socio-economic and political realities and act as an instrument of transformation to fulfill the changing needs of the changing society. Protection of the environment is one of the most challenging issues before the world community as the problem of pollution reaches alarming proportions and is gradually putting the existence of the human beings in danger. The notion of justice has to deal with this grim menace and that is why the environmental

20 Communication No. 67/1980 : P. W. Birnie and A.E. Boyle, International Law and the Environment 259, Oxford (2004).

21 UNHRC No. 645/1995, Rept. Humans Right Committee (1996) GAOR A/51/40:

22 Hungary v/s Slovakia Judgment, ICJ, Reports 1997, at 7 Above case was related to the differences that had arisen in between the Czech and Slovak Federal Republic and the Republic of Hungary regarding the implementation and termination of treaty on the construction and operation of the Gabsikovo- Nagymaros barrage system signed in Budapest on 16th September, 1977.

justice became a popular topic of the day. The Indian Constitution, the supreme law of the land, has incorporated a considerable provision to address the matter of environmental pollution. It is wrong to conclude that only after the Stockholm conference our law makers incorporated certain provisions in constitution to fulfill the moral and ethical obligation to deal with the problem of pollution. The concerns of the Fathers and Mothers regarding protection of environment reflected through various provisions of the constitution. Besides the soul of the Constitution i.e. Art.21, the following provisions in the Indian Constitution prove the concern of the constitutional makers towards the protection and promotion of environment.

Art. 39 (b) & (c) imposes an obligation upon the states to distribute the ownership and control of the material resources of the community in a way which serves the common good and the economic policy should be such that the wealth and means of production should not be concentrated in the hands of few to the common detriment. The above provision of the Constitution reminds us that the state will work as a trustee to take care of the resources for the well being of all be it present generation or future and thus pave the path for sustainable development. Concentration of wealth and means of production at the hands of few causes disparity and enhances the gap in between have and have-nots which is a grave impediment in achieving healthy environment. The logic behind this assertion had already been provided by the Late Prime Minister Indira Gandhi in the platform of Stockholm conference, 1972 in saying that poverty is the biggest source of pollution. The above provision helps in eradication of poverty and initiating Public Trust Doctrine.

Art.39 (e) directs the state to ensure health and strength of workers and children of tender age and to ensure that due to the poverty one is not be compelled to undergo unhygienic pattern of life. Similarly Art.39 (f) states that it is the cardinal duty of the state to ensure that the children are given the opportunity to develop in a healthy manner with the sense of freedom and dignity which is possible only in quality environment. Art.42 indicates the jurisprudence of modern labour law as well as the core of environmental rights that the state should ensure just and humane condition of work. Modern environmental jurisprudence demands that the employer or the state as custodian cannot rule out its liability if any fatal accident or incident occurs due to the non-natural use of land and will be held absolutely liable for paying damages. Providing

hygienic environment with proper sanitation facilities comes under the duty of modern welfare government. Thermal power plants (TPP) are associated with high risk zone, which demands the extra care from the government for the health and well-being of the employees and the people who live in the contiguous area. Art.43 also compels the state to ensure adescent standard of life.

Art.47 of the Indian Constitution conjoins the State to regard the raising of the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties and to restrain the people from consuming intoxicating substances and drugs except for their health reasons.

It is true that in the beginning Art.21 had not attained the sanctity and growth it has at present. Art.21 has been interpreted from different angle to include all those components without which a human being neither can live with dignity nor can maintain personal liberty. Life under Art.21 denotes something more than mere animal existence and in Maneka Gandhi dictum[23] it has been clearly stated by the Supreme Court that Art.21 not only imposes the negative duty upon the state about when and how the life and personal liberty of the people can be curbed but also imposes a positive obligation upon the state to provide all those requirements which are needed to lead and enjoy life. As a natural and necessary consequences the right to have a healthy and quality environment, the right to clean air, water etc occupy a sacrosanct position under Article 21 of the Indian Constitution. In *Chhetriya Pradushan Mukti Sangharsh Samiti v State of Uttar Pradesh*[24] it had been held that every citizen has the fundamental right to have the enjoyment of quality of life and living as enshrined under Art.21 of the Indian Constitution. In *Subhas Kumar v Stae of Bihar*[25] the Supreme Court clearly stated that right to live includes the right to have pollution free water and air. In *Francis Corolie Mullin v The Administrator*[26] the Supreme Court observed that Art. 21 not only generated justice by process, but also widened the scope of substantive right to life.

23 AIR 1978 SC 594.
24 AIR1990 SC 2060.
25 AIR1991 SC 420.
26 AIR 1981 SC 746.

Through the Constitution (Forty-second Amendment) Act, 1976 Art.48A and Art.51A (g) have been incorporated to give a concrete shape for building the environmental jurisprudence of this country. Art.48A emphasizes that, "The State shall endeavour to protect and improve the environment and to safeguard the forests and wild life of the country." Article 51A (g), which confers a duty upon the citizen to, "to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures;" surely carries the influence of Stockholm Conference. There is no way to under estimate our legal system to say that promotion of environment was totally beyond the consideration of founders of our constitution. The procedural system has developed significantly to nab the polluters and to provide environmental justice to the people using Art.32 and Art.226 of the constitution which are the strongest weapons. The superior judiciary introduced the epistolary jurisdiction in place of traditional locus standi so that any public spirited person could approach the court as a voice of the oppressed and depressed section of the society to undo the act of injustice and to get remedy. This realistic approach of judiciary has also helped to bring the issues of environment to fore and to address them properly. The introduction of PIL, strengthening the process of judicial review, and ensuring the public participation and environment information have given a rock solid foundation to procedural law related to the right to a clean environment. In the light of the above it can be said safely that the very philosophy of the Constitution is strong enough to uphold the rights of the people against the pollution emitted from TPP.

Green Statutes to deal with the problem of TPP

We have a plethora of legislations, rules, directives from the proper authorities, and policies in India to deal with the matter of promotion and protection of environment. Since the Stockholm Declaration our law makers have enacted more than two hundred legislations to regulate the menace of pollution and to restrain its alarming growth. Indian energy sector as a whole comes under five separate ministries Coal, Petroleum and Natural Gas, Atomic Energy, Power and Non-Conventional Energy Sources which work independently, to formulate policies but in the interest of the country better co-ordination is required among these ministries. In India, it is the duty of the Ministry of Environment and Forests (MoEF) to make environmental policy, and the planning, promotion, and coordination of environmental protection, including EIAs.

The Ministries of Power and the Ministry of Non-Conventional Energy are responsible for directing and regulating the activities of power plants within their respective fields. Hence, although the Central Pollution Control Board (CPCB) and SPCB in coordination with the MoEF, monitor and regulate air and water ambient quality, the Ministry of Power is responsible for the impact of power plants through measures for air and water emissions control and fly-ash management because these ministries are accountable to all.

The Central Electricity Authority (CEA) is a statutory organization originally constituted under the repealed Electricity (Supply) Act, 1948 and now receives legal status from section 70 of the Electricity Act, 2003. As per section 70(3) of the Electricity Act, 2003, the Authority shall consist of not more than 14Members including its Chairperson of whom not more than eight shall be full-time Members to be appointed by the Central Government. The CEA acts as the apex technical organization for facilitating overall development of the Power Sector in the country to provide quality power for all at affordable price. It provides a technical support base in the form of Plan documents, technical standards & regulations, project monitoring mechanism power sector information and upgrading skills of human resources in the power sector of the country Besides the other activities it advise the Central Government on matters relating to the national electricity policy and formulates short-term and perspective plans for development of the electricity system and coordinates the activities of the planning agencies for the optimal utilization of resources to serve the interests of the national economy and to provide reliable and affordable electricity to all consumers; specify the technical standards for construction of electrical plants, electric lines and connectivity to the grid; and gives direction for safety requirements for construction, operation and maintenance of electrical plants and electric lines.

Various statues are enacted to deal with to restrict and restrain the pollutants emitted from the TPP but some of the statutes are directly controls the environmental aspects arise out of it. They are Environment (Protection) Act, 1986, amended 1991 (followed by Rules and Amendments of 1986, 1998, 1999, 2001, 2002, 2003, 2004), The Air (Prevention and Control of Pollution) Act, 1981 with its Amendment in 1987, The Water (Prevention and Control of Pollution) Act, 1974, amended 1988, National Environment Tribunal Act, 1995, National Environment Appellate Authority Act, 1997, Energy Conservation

Act, 2001 (in effect from 2002), Electricity Act, 2003, Public Liability Insurance Act, 1991 National Green Tribunal Act, 2010 Right to Information Act, 2005 etc.

The Air (Prevention and Control of Pollution) Act, 1981

The Act had been enacted with an object to prevent and control of pollution of air and also to incorporate the principles of Stockholm Conference, 1972 into the domestic legal system. The Act defines air pollutant as any solid, liquid and gaseous substances including noise in such concentration as may be or tend to be injurious to human beings and other biotic and abiotic substances. When the presence of air pollutant in air in such concentration that it make the air unfit for use and injurious then it is called air pollution. Like the Water Act 1974, this Act depends upon the Central Pollution Control Board (CPCB) and State Pollution Control Boards (SPCB) for maintaining the quality of air and to prevent, control and abate the air pollution. As per the Act the state government may declare any area or areas as 'air pollution control area' and as a consequence the state government may prohibit the use of any fuel or appliances other than the approved fuel or appliances to control pollution and maintain the purity of air. To protect from further pollution the Act places restrictions on new outlets and new discharges except without the previous consent of the Board. Thus the Act empowers the CPCB and SPCB of states to monitor the state of air and accordingly they are doing the splendid job in this regard. The Pollution Control Boards in order to assist the government for maintaining wholesomeness of the environment carry a project called, 'National Ambient Air Quality Monitoring' popularly known as NAAQM. To observe the quality of air the Boards emphasises on five components known as NO_x, SO_2, CO_2 and CO, SPM and Lead. The above provision helps to assess the impact of pollutants emitted from TPP. The table given below substantiate above assertion. The Central Electricity Authority (CEA) is also actively involved with the process of collecting and compiling of environmental data of different thermal power stations located in different parts of the country. CEA takes the stock of the Ambient Air Quality (AAQ) and effluent discharges along with the stack emission from different thermal power stations and after analyzing the same it provides suggestions about remedial measures, if required.

Ministry of Environment & Forest
NOTIFICATION
New Delhi, the 16th November, 2009
NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Time Weighted Average	Concentration in Ambient Air		Method of measurement
		Industrial, Residential, Rural and Other Area	Ecologically Sensitive Area (notified by Central Govt.)	
Sulphur Dioxide (SO_2), ($\mu g/m^3$)	* Annual	50	20	- Improved West & Gacke
	** 24 hours	80	80	- Ultraviolet fluorescence
Nitrogen Dioxide (NO_2), ($\mu g/m^3$)	* Annual	40	30	- Modified Jacob & Hochheiser (Na Arsenite)
	** 24 hour	80	80	- Chemiluminescence
Particulate Matter (size less than 10µm) or PM_{10} $\mu g/m^3$	* Annual	60	60	- Gravimetric - TOEM
	** 24 hour	100	100	- Beta attenuation
Particulate Matter (size less than 2.5µm) or $PM_{2.5}$ $\mu g/m^3$	* Annual	40	40	- Gravimetric - TOEM
	** 24 hour	60	60	- Beta attenuation
Ozone (O_3) $\mu g/m^3$	** 8 hours	100	100	- UV photometric - Chemiluminescence
	** 1 hour	180	180	- Chemical Method
Lead (Pb) $\mu g/m^3$	* Annual	0.50	0.50	- AAS/ICP method after sampling on EPM 2000 or equivalent filter paper
	** 24 hour	1.0	1.0	- ED-XRF using Teflon filter
Carbon Monoxide (CO) mg/m^3	** 8 hours	02	02	- Non Dispersive Infra Red (NDIR) Spectroscopy
	** 1 hour	04	04	
Ammonia (NH_3) $\mu g/m^3$	* Annual	100	100	- Chemiluminescence
	** 24 hour	400	400	- Indophenol blue method
Benzene (C_6H_6) $\mu g/m^3$	Annual*	05	05	- Gas chromatography based continuous analyzer -Absorption and Desorption followed by GC analysis
Benzopyrene (BaP) – particulate phase only, ng/m^3	Annual*	01	01	- Solvent extraction followed by HPLC/GC analysis
Arsenic (As), ng/m^3	Annual*	06	06	- AAS/ICP method after sampling on EPM 2000 or equivalent filter paper
Nickel (Ni), ng/m^3	Annual*	20	20	- AAS/ICP method after sampling on EPM 2000 or equivalent filter paper

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

17 Section 14 SPM report

Source: Performance Review of Thermal Power Stations 2011-12, prepared by the Central Electricity authority (CEA)

Environmental Protection Act, 1986 (EPA)

EPA is the first comprehensive legislation in our country to deal with the matter of environment directly unlike all the earlier statutes which were scattered in nature and addressed different components of the nature such as water, air, forest, wild life etc. EPA has been passed in the wake of the Bhopal Gas tragedy and articulates the serious flaws and lacunas of our legal system. So EPA is

enacted to handle the situation like Bhopal gas tragedy so that it should not occur again, to strongly regulate the avocations which deal with hazardous substances, to regulate the release and dumping of toxic and hazardous substances, to address an emergency situation promptly in the event of any accidents and to nab the polluters and to provide them exemplary punishment. The Act conferred enormous power at the hand of central government and accordingly it is the Central Government which is empower to make rules and regulations for the purpose of protecting and improving the environment and preventing, controlling and abating environmental pollutions. As per the provisions of the Act the Central Governments can create authorities, appoint officers, make directions and may delegates any or all such powers to the State Governments, officers or authorities. The directions issued by the Government is binding in nature and includes the power to direct closure, prohibition or regulation of any industry, operation or process or regulation of the supply of electricity or water or any other services. The Act makes it mandatory that even if there remains apprehension of any accident, the person in charge of the place is under the compulsion to take preventive measure and to inform the concerned authorities immediately or will face3 the deterrent punishment. The above provision is incorporated to check the unfortunate incidents like Bhopal gas tragedy and also to widen the scope of the 'entry and scope clause.' EPA has been enacted by the Parliament under Art. 253 to give effect to the principles incorporated in Stockholm Declaration, 1972. EPA is considered as umbrella legislation because of its comprehensive approach. It defines environment in a very comprehensive way. As per this definition environment includes water, air and land and the interrelationship which exists among and between water, air and land and human beings, other living creature, plants, micro-organism and property. Environmental pollution has been defined as presence of any environmental pollutant in the environment and environmental pollutant means any solid, liquid or gaseous substances present in such concentration as may be or tends to be injurious to environment. The nomenclature of the Act itself signifies a paradigm shift in its emphasis from the narrow concept of pollution control to the wider aspects of environmental protection. Section 3 of the Act empowers the Central Governments to constitute authority or authorities to implement the purposes of the Act and includes the power of the said Government to issue directives to promote environment. Under Section 6 the central Government is empowered to make rules for standard of quality of air, water or soil for various areas and purposes, the maximum allowable limits of

concentration of pollutants, the procedure and safeguards for the handling of hazardous substances, the prohibition and restrictions on location of industries, procedures and safeguards for prevention of accidents.

On the basis of this Act the various rules are formulated to effectuate the concept of sustainable development. Some of them are, The Environment (Protection) Rules, 1986, The Hazardous Wastes (Management and Handling) Rules, 1989, The Manufacture Storage and Import of Hazardous Chemicals Rules, 1989, The Chemical Accidents (Emergency Planning Preparedness and Response) Rules, 1996, The Bio-Medical Waste (Management and Handling) Rules, 1998, The Recycled Plastics Manufacture and Usage Rules 1999, The Noise Pollution (Regulation and Control) Rules, 2000, The Ozone Depleting Substances (Regulation and Control) Rules, 2000, The Municipal Solid Wastes (Management and Handling) Rules, 2000, The Batteries (Management and Handling) Rules, 2001 etc.

On the basis of the EPA, 1986 the Central Government time to time issues different notification to curb pollution from thermal power stations. Right now the following notifications are in force

Environmental Standards for Gas/ Naphtha based thermal power plants

Limit for emission of NO_x

(a) For existing units- 150 ppm (v/v) at 15% excess oxygen.

(b) For new units with effect from 1-6-99

Total generation of gas turbine	Limit for stack NO_x emission (v/v), at 15% excess Oxygen
(a) 400 MW and above	(i) 50ppm for the units burning natural gas (ii) 100ppm for the units burning naphtha
(b) Less than 400 MW but up to 100 MW	(i) 75ppm for the units burning natural gas (ii) 100ppm for the units burning naphtha
(c) Less than 100 MW	100ppm for the units burning natural gas or naphtha as fuel
(d) For the plants burning	100ppm gas in a conventionalboiler

Source: Performance Review of Thermal Power Stations 2011-12, prepared by the Central Electricity authority (CEA)

MOEF vide Notification of 19th May 1993 issued as amendment rules to environment (Protection) Act 1986 for the particulate matter emission limits for thermal power stations which are as follows:-

1	Generation capacity 62.5 MW or more	150 mg/Nm3
2	Generation capacity less than 62.5 MW and plant Commissioned prior to 1.1.82	350 mg/Nm3
3	Units located in protected area irrespective of generation capacity.	150 mg/Nm3

THERMAL POWER PLANTS: STACK HEIGHT/LIMITS

Generation Capacity	Stack Height (Meters)
500 MW and above	275
200 MW/210 MW and above to less than 500MW	220
Less than 200 MW/210 MW	H= 14 Q0.3 where Q is emission rate of SO2 inkg/ hr,and H is Stack height in meters.

Source: EPA Notification [G.S.R. 742(E), dt. 30th Aug; 1990]

Flue Gas Desulphurization (FGD) Plant

The MOEF insisting on the incorporation of Flue Gas Desulphurization (FGD) Plant in the designs of thermal power units of 500 MW and above capacity and also at stations with capacity of 1500 to 2000 MW to facilitate their retrofitting at a later stage in case the need for such plant is established. In sensitive areas FGD may be installed even for stations with smaller capacities.

Environment Impact Assessment (EIA)

The implementation of power projects requires clearance from Ministry of Environment and Forests. The Environment Impact Assessment (EIA) Notification 1994 states that expansion or modernization or setting up a new power project shall be undertaken after getting environmental clearance from the Ministry of Environment and Forest (MOEF). The above EIA Notification sets out procedure for clearance of projects. For site specific projects, such as hydro electric and pit head thermal power stations, the site clearance is to be obtained first from MOEF for initiation of any surveys and investigations. Thereafter State Pollution Control Board (SPCB) conducts Public Hearing, issues NOC and forwards the minutes of meeting to MOEF. Thereafter, for such site specific projects Environment Impact Assessment Reports are to be submitted by the proponents to MOEF for clearance. The reports shall be evaluated and assessed by the Impact Assessment Agency and placed before a Committee of Experts. If needed, visits are made to the projects on recommendations of the Committee of Experts. MOEF further processes the proposal for clearance/rejection of the project. The cases rejected for non furnishing of complete information may be reopened on the receipt of complete information. The clearance granted is valid for a period of five years from the date of commencement of the construction/operation.

Utilisation of Fly ash

- The problem of fly ash from the thermal power stations in India is constant source of headache for the management. Our thermal power stations produce large quantities of ash as our coals are high ash coal. The produced ash is disposed off in ash ponds and as the probability remains over there of contamination of the surface as well as ground water adequate care is required to be taken. To curb the percolation of heavy metals to the ground water ash pond lining is provided in the place of need. Scientific studies are revealing that fly ash can be proved useful for brick manufacturing. Cement manufacturing, coal mines backfilling, road construction activities etc. Existing notification on utilisation of fly ash was amended vide notification no S.O. 979(E), dated August 27, 2003 by Ministry of Environment & Forests incorporating that no person shall within a radius of 100 km from thermal power plants, manufacture clay bricks, tiles or blocks without

mixing at least 25% of fly ash or pond ash with soil by 31st August, 2004, 50% by 31st August, 2005, 75% by 31st August, 2006 and 100% by 31st August, 2007 but where the construction of building is within 50km. of radius 50% by 31st August, 2004 and 100% by 31st August, 2005. Every construction Agency including private sector builders within a radius of fifty to one hundred kilometers from coal or lignite based thermal power plant shall use the cement containing fly ash and use fly ash for filling purposes.

- ***Rule as to use of water and maintenance of temperature of water bodies***

As per EPA Notification [GSR 7, dated Dec. 22, 1998] new thermal power plants commissioned after June 1, 1999 and using water from rivers etc. must have to use cooling towers irrespective of location and capacity. The thermal power plants using seawater should use the proper system so that temperature of receiving water should not exceed 7°C over and for the existing thermal power plant it should not be more than 10°C. The above rule also provides certain guidelines for discharge point which are as follow:

1. The discharge point shall preferably be located at the bottom of the water body at midstream for proper dispersion of thermal discharge.

2. In case of discharge of cooling water into sea, proper marine outfall shall be designed to achieve the prescribed standards. The point of discharge may be selected in consultation with concerned State Authorities/NIO.

3. No cooling water discharge shall be permitted in estuaries or near ecologically sensitive areas such as mangroves, coral reefs/spanning and breeding grounds of aquatic flora and fauna.

THERMAL POWER PLANT: STANDARDS FOR LIQUID EFFLUENTS

Source	Parameter	Concentration not to exceed, mg/l (except for pH & Temp.)
Condenser Cooling Water (once through higher cooling system)	PH Temperature	6.5 to 8.5 please refer to Annex-14.4
Boiler Blow down	Free available Chlorine Suspended solids Oil & grease Copper (Total) Iron (Total)	0.5 100 20 1.0 1.0
Cooling Tower 60 Blow down	Free available Chlorine Zinc Chromium (Total) Phosphate Other corrosion inhibiting material	0.5 1.0 0.2 5.0 Limit to be established on case by case basis by Central Board in case of Union Territories and State Boards in case of States
As pond effluent	pH Suspended solids Oil & grease	6.5 to 8.5 100 20

Source: EPA Notification [S.O. 844(E), dt 19th Nov; 1986]

Some other important Legislation related to energy sectors

The Energy Conservation Act, 2001 has been enacted with an intention to conserve and effectively use the energy and also creates Bureau of Energy Efficiency with the primary objective of reducing energy intensity of the Indian economy. On the other hand The Electricity Act, 2003 has tried to ensure coordination in power sector along with the matter of renewable energy and also to promote efficient and benign environmental policies. The National Green Tribunal Act, 2010 lays the framework for the setting of a dedicated environmental adjudicatory forum- the National Green Tribunal for the purpose of effective and expeditious disposal of suits related to environmental protection, forests and natural resources.

The approach of Indian Judiciary on emission of pollution from TPP

The Indian judiciary has taken a very positive and bold approach to fight the menace of pollution emitted from thermal power plant. Some of the landmark cases mentioned below highlights the conscious and brilliant role to enrich the environmental jurisprudence in the matter of TPP.

- In *Dahanu Taluka Environment Protection Group v. Bombay Suburban Electricity Supply Company Ltd. with Bombay Environmental Action Group v. State of Maharashtra and Others*[27] the Bombay Suburban Electric Supply Company Limited (BSES) was allowed to set up a thermal power plant in Dahanu based on the condition to install a Flue Gas Desulpherisation(FGD) plant for its thermal power plant at Dahanu for environmental safety and protection as well as well-being of the local residents.
- In *Hindustan Zinc Ltd v. Rajasthan Electricity Regulatory Commission*[28] it has been held that the purchase of nominal quant*u*m of energy from renewable resources cannot adversely affect the cost effectiveness of the Captive Power Plant. Moreover, the object being reduction of pollution by promoting renewable source of energy, larger public interest must prevail over the interest of the industry herein which will in any case pass on the extra burden, if any, will be as part of the cost of its products and therefore, the same does not burden the appellants.

The above decisions clarify that Indian judiciary always favours a holistic development and the prudent use of science and technology. It never tells us to compromise with our needs and to conserve the resources for future generation rather it dictate us to use the resources in a prudent way.

Why the existence of Bakreshwar Thermal Power Plant (BKTPP) is in question

BKTPP situated in West Bengal, India started operations since 2000 with three units of 210 MW each. A pond was created close to the rivers for collection of fly ash generated from the power plant. It was then estimated that the pond would last 15 years before getting completely filled with fly-ash. In 2008, two more units of 210 MW each were added to BKTPP. However, no additional facility was created for collection of fly-ash from the new units. As a result the adjacent water bodies and crops etc. of the surrounding villages have been affected badly. Recently Green Tribunal slammed the management of the BKTPP for its lack of understanding towards technology and ecology and also show-cause why it should not be stopped to function.

27 SC, 1991 (2) SCC 539.

28 CIVIL APPEAL NO.4417 OF 2015 and order given by SC on May 13, 2015

A brilliant and courageous step

The draft notification of Environment (Protection) Amendment Rules 2015 related to curbing emissions of pollutants emitted from thermal power plants is a salutary measure of the central government. Earlier there was no limitation for emission of $NO_{x,}$ SO_x etc. from thermal power plant except for Naphtha based power plant but the Rule of 2015 provides for the limitation of the above stated pollutants. Apart from the above radical approach the rules are also made stringent to check the pollutions from the thermal power plant in comparison to earlier Rules. The charts given below inform us about the new rules mentioned above.

Water consumption limit

S. no.	Industry	Parameter	Standards
1	2	3	4
	Thermal Power Plant	Water Consumption	1. All plants with once through cooling (OTC) shall install cooling tower (CT) and achieve specific water consumption max.4m^3/ MWh within 2 years period from the date of notification 2. All existing CT based plants shall reduce specific water consumption upto maximum of 3.5 m^3/ MWh within 2 years period from the date of notification 3. New plants to be installed after January 01, 2017 shall meet specific water consumption maximum of 2.5 m^3/ MWh and achieve zero liquid discharge

Emission Standard

Industry		Parameter	Standards
Thermal Power Plant	TPP units installed before December 31, 2003	Particulate Matter	100mg/ Nm^3
		SO_2	600 mg/ Nm3 for units smaller than 500 MW capacity units 200 mg/ Nm3 units having capacity of 500 MW and above
		NO_x	600 mg/ Nm^3
		Hg	— units smaller than 500 MW capacity units
			0.03 mg/ Nm3 units having capacity of 500 MW and above
	TPP units installed after 2003 to December 31, 2006	Particulate Matter	50 mg/ Nm^3
		SO_2	200 mg/ Nm3 units having capacity of 500 MW and above
		NO_x	300 mg/ Nm^3
		Hg	0.03 mg/ Nm3
	New plants to be installed from January 01, 2017	Particulate Matter	30 mg/ Nm^3
		SO_2	100 mg/ Nm^3
		NO_x	100 mg/ Nm^3
		Hg	0.03 mg/ Nm^3

No doubt the above step of the Central Government is praiseworthy subject to its implementation, if happened with sufficient political will. Implementation of laws and rules are a big challenge before our country as political will often comes in between formulation and implementation and creates hinderance. Along with this rules it is high time on the part of the Government to think that why it failed to enforce relatively weak rules framed before 2015. As for example still the brick manufacturers or construction companies as well as individuals does not bother about utilization of fly ash. Lack of awareness about pollution and its control measures are also a big hurdle towards implementation of rules regulations. Energy is sin-qua-non for the socio-economic development of our country. We need electricity but certainly not keeping our race in peril.

Economizing the Law sans Conservation: Fallacy in Prudence of Energy Audit toward Enhanced Cost Efficiency

Debasis Poddar[*]

Abstract

In the post-Rio world, the way international climate commitment did impact on India through series of instruments, e.g. the Energy Conservation Act of 2001 along with amendments of 2010, followed by the Energy Conservation (Inspection) Rules of 2009, National Action Plan on Climate Change of 2008 (hereafter NAPCC) in general and National Mission on Enhanced Energy Efficiency (hereafter NMEEE) as one of the missions under NAPCC in particular, constitutes the corpus of this effort. This being the background of the emerging energy law regime in India, the focus of the forthcoming effort lies in the proposed Appellate Tribunal for Energy Conservation (hereafter ATEC) with the relevant instrument of the regime, i.e. the Energy Conservation (Procedure, Form, Fee and Record of Proceedings) Rules of 2012. In brief, the author advances arguments, with reasoning of his own, for jurisprudent climate governance and thereby facilitates the mission on energy efficiency for better administration of environment and environment of administration. With this engaging energy advocacy, what the author articulates is a need for minute mapping of the climate regime and, rather than energy audit, social audit of available climate law and practices to avert illegitimate trade of environ under the (dis)guise of environ of trade, and thereby hoodwink the very cause of climate regime itself to gross detriment of erga omnes, if not treaty obligation, in technical sense of the term.

Introduction

By courtesy ocular opulence out of the world of Occidental discourse, mainstream international environmental law in general - and global climate change

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regime under the United Nations Framework Convention on Climate Change (hereafter UNFCCC) in particular - stand flooded with trendy terms and zigzag jugglery of jurisprudence involved therein while the climate of the planet continues to change its sustainable character to comprehensive detriment of one and all. In course of its anxiety to assess hitherto damage out of anthropogenic syndrome, techniques for quantification of intensity and frequency of damage are on the rise and energy audit has emerged as one of them. Indeed green in its character on apparent face of the record, the opportunist ways in which such otherwise green techniques get accommodated in national energy law regimes attract attention of the *pro bono* conscience in larger (read international) public interest across the world. Out of its colonial hangover, and perhaps out of the Occidental mode of its response to globalization as well, India is stuck to the terms of climate concern marketed by the Global North to rest of the world. Thus, the way the European Union (hereafter EU) and USA introduced energy audit got accommodated in India despite being the hub of world class think tanks in technocracy. In the forthcoming paragraphs, effort is made to decipher the underpinnings of energy audit jurisprudence - the way it is introduced for the energy law regime here - with underlying pitfalls involved therein to subvert international climate obligation of India from within the given legal regime. Without further ado, let us initiate auditing the energy audit itself.

In its initial years, energy audit did not surface in the course of climate negotiations as an effective mechanism towards containing climate change anyway. Despite India being, as an emerging economy, a potential threat due to its increasing emissions,[1]

1 In 2009, India had the third largest energy demand in the world after China and the United States and just ahead of Russia. As World Energy Outlook (WEO) 2011 shows, India's energy demand more than doubled from 319 million tones of oil equivalent (Mtoe) in 1990 to 669 Mtoe in 2009. Notably, India's per-capita energy consumption is still at a much lower level than that of developed countries and even of some developing countries. Its per-capita energy consumption is 0.58 (toe/capita), compared to the world average of 1.8, OECD of 4.28, China of 1.7 and Africa of 0.67 in 2009 (IEA, 2011b). The low per-capita energy consumption level indicates that India's energy demand still has a long way to reach saturation. With a growing economy and a 1.24 billion population aspiring for a better quality of life, India's energy demand growth is inevitable. The question is at what scale and speed India's energy demand will expand and which fuels and technologies it will use. This is the key for understanding the future landscape of India's and eventually the world energy market.

Understanding Energy Challenges in India: Policies, Players and Issues, Partner Country Series, International Energy Agency, Paris, 2012 available at http://www.iea.org/publications/freepublications/publication/ India_study_FINAL_WEB.pdf (last accessed on August 29, 2015).

besides USA being the worst sinner due to its existing extent of *per capita* emission,[2] energy audit was left out of the final text in the UNFCCC regime.[3] Even in final text of the Kyoto Protocol of 1997, the same receives peripheral notice with only one mention, as part of the Clean Development Mechanism (hereafter CDM) rather than as a substantive principle *per se* for the regime to contain climate change. Further, the way 'independent auditing' is provided for seems too general to be read as a prescription for energy audit in the technical sense of the term.[4] Still, the same is so read, perhaps out of the US legacy of reading the same as per its own internal statute - the Energy Policy and Conservation Act of 1975 as amended till date. No wonder that India, as a default follower of US legacy, has imported the energy audit as it is there and, along with its potential, India thereby falls prey to its limitation as well.

Energy Audit: "Love's Labour's Lost"

In perspective of its historical settings, quantification of pollution towards stocktaking for the state of affairs in the affairs of state is no *de novo* provision *per se* as the same initiated its odyssey long ago. Even the very nascent decades of international environmental regime took resort to crude methods of quantification to establish the rapid erosion of sustainable environment of the planet. Illustrations of energy law and policymaking are found in predecessor regimes, e.g. the Vienna Convention for the Protection of the Ozone Layer of 1985 and the Montreal Protocol on Substances that Deplete the Ozone Layer of 1987 respectively, and the like. In these instruments, for instance, provisions for collection of data on the basis of observation and reporting of the same to world data centres under the ozone layer regime on regular basis, etc. found

2 Refer to statistical database submitted in the Annex, n. 43-44, p. 20.

3 *Vide* official text as per the United Nations Framework Convention on Climate Change, 1992, available at: http://unfccc.int/files/essential_background/convention/background/application/pdf/convention_text_with_annexes_english_for_posting.pdf (last accessed on August 30, 2015).

4 The Conference of the Part serving as the meeting of the Parties to this Protocol shall, at its first session, elaborate modalities and procedures with the objective of ensuring transparency, efficiency and accountability through independent auditing and verification of project activities. Kyoto Protocol (to the UNFCCC), 1997. Article 12.7 (as part of Clean Development Mechanism) available at http://unfccc.int/resource/docs/convkp/kpeng.pdf (last accessed on August 30, 2015).

place way back in the eighties.[5-6] Thus, even before the UNFCCC regime was introduced, quantification was in vogue since the same offered to deadly apprehension, legitimacy, if not legality in technical sense of the term, to grapple with the issues and challenges of environmental vulnerability through the precautionary principle introduced to address the same before it was too late to lament. Thus, quantification is meant to ascertain the very gravity of the vulnerability of the environment.

Energy audit, on the contrary, is meant for the quantification of the discipline to observe lest sustainable climate should suffer further setbacks in times ahead. Quantification here operates to assess the anthropogenic behaviour towards mitigation of climate change. In the earlier case, while quantifying for assessment of nature, scientific investigation discovered climate sins which humanity stands accountable for; in the latter case, while quantifying for assessment of human behaviour, scientific investigation is engaged in the same not on its own but to carry out official instruction of diverse institutions- be it the same international forums like Intergovernmental Panel on Climate Change (hereafter IPCC) or national ones, like Ministry of Power, etc. Unlike the former case, there is a likelihood of political underpinnings in the latter case since the same is bound to cause intervention of appropriate institutions to discipline errant players by rules of restraint imposed upon them to gross detriment of vested interests in terms of their respective domains. Scientific investigation and consequent observation, therefore, deserve skeptic watch since the same are likely to be politicized by either side for strategic advantage of one over another. Competing- if not conflicting- claims between trade and environ, by default trend, manipulation by the former stands as the common apprehension. Albeit in the wake of activist civil society movement, the reverse cannot be construed otiose as well. A moot point of this effort hereby lies in (f)utility of energy audit as a means to attain energy austerity as an end to stop extravagant energy consumption and thereby demonstrate affinity for sustainable development.

5 *Vide* the Vienna Convention for the Protection of the Ozone Layer of 1985; Article 3.3, read with Annex I and II.

6 *Vide* the Montreal Protocol on Substances that Deplete the Ozone Layer of 1987; Articles 4.8, 7 and 12(b).

The naïve optimism stems from the premise that stakeholders of the society possess high integrity and they care for public interest over and above their own. At the bottom, more often than not, the premises are incorrect and thereby produce erroneous conclusions which greatly defeat the good faith inbuilt therein. The same is true in the case of energy audit. In forthcoming paragraphs, through diverse legal instruments in general, and those of India in particular, the reasoning is set to get tested with experience.

The genesis of such audit stems from the US trend to quantify energy and the character of consumption pattern towards disciplining domestic consumer, since way back in 1975 in the particular context of the then oil crisis.[7] At present, the manner in which the term "energy audit" is used in statutes, refers to the technical sense of the term in context of climate crisis.[8] The way energy audit jurisprudence has emerged over the course of the last forty years in the specific context of the US consumer behavioural pattern is indeed a success story. The energy audit jurisprudence in India during the last fifteen years stems from a

7 *Vide* the then (US) Energy Policy and Conservation Act, 1975 available at: http://www.gpo.gov/fdsys/pkg/STATUTE-89/pdf/STATUTE-89-Pg871.pdf (last accessed on August 31, 2015).

8 Sec 366. As used in this part-

(3) The term "energy audit" means any process which identifies and specifies the energy and cost savings which are likely to be realized through the purchase and installation of particular energy conservation measures or renewable-resource energy measures and which

(A) is carried out in accordance with rules of the Secretary; and

(B) imposes-

(i) no direct costs, with respect to individuals who are occupants of dwelling units in any State having a supplemental State energy conservation plan approved under section 367, and (ii) only reasonable costs, as determined by the Secretary, with respect to any person not described in clause

(i) Rules referred to in subparagraph (A) may include minimum qualifications for, and provisions with respect to conflicts of interest of, persons carrying out such energy audits.

... ...

Sec 391. For the purposes of this part-

(13) The term "energy audit" means a determination of the energy consumption characteristics of a building which-

(A)identifies the type, size, and rate of energy consumption of such building and the major energy using systems of such building

(B) determines appropriate energy conservation maintenance and operating procedures; and

(C) indicates the need, if any, for the acquisition and installation of energy conservation measures. The (US) Energy Policy and Conservation Act, 2013 available at: http:/ legcounsel.house.gov/Comps/EPCA.pdf (last accessed on September 5, 2015).

different historical setting and also culminates in a different experience. While the eldest democracy of the world developed its discourse through popular force, the largest democracy of the world developed the same with police force and thereby fell prey to subversion from within its own system. Also, in the European Union, energy audit was successfully implemented, except in a few cases of occasional failure. Thus, by a bizarre turn of history, the Global South suffers from setbacks related to noncompliance of the climate regime, while traditional climate sinners are engaged in cleansing their sin. In the course of the UNFCCC regime, while traditional climate sinners- as the Westerners so condemned- are on their way ahead toward mitigation, the fast-growing economies- so called BRICS states in particular- constitute a newer set of monsters causing more emissions than ever before, thereby shifting the onus of apocalyptic sin to the Global South, for indulging in potential threats to an increasingly vulnerable life-sustaining climate of the planet. Indeed appearing stranger-than-fiction, information is but backed by established data; courtesy of the World Bank.[9] Taken together with LULUCF,[10] whose sin affects the Earth worse in the age of climate discipline, it seems dicey choice for even the best of the best experts to ascertain until charged with any climate diplomacy in one way or the other.

Despite not being part of the Kyoto Protocol regime, the process was initiated in USA, including federal arrangement to become operative in all its states until state laws were enacted.[11] In EU, success seems apparent on the face of record;

9 *Vide* country-wise carbon dioxide emissions data available at http://data.worldbank.org/indicator/EN.ATM.CO2E.PC read with 2015 World Development Indicators, Table no. 3.8 http://wdi.worldbank.org/table/3.8 (last accessed on September 5, 2015).

10 For details, refer to relevant information on Land Use, Land-Use Change and Forestry (LULUCF) available at http://unfccc.int/land_use_and_climate_change/lulucf/items/1084.php (last accessed on September 6, 2015).

11 In the United States, utility regulation is done by each state. The state regulatory agency audits the rate schedules, negotiates changes requested by utilities, and sometimes initiates changes on its own. Each electric utility operating within a state establishes its own rate schedules subject to regulation by that state. An electric utility that operates in more than one state has a different set of rate schedules for each state.
The central principle in utility regulation has been to make utility's charges reflect its actual costs.
Donald R. Wulfinghoff, Energy Efficiency Manual, Energy Institute Press, Wheaton, 1999, at 1251.

as per institutional observations. [12] Also, as per regional arrangement, the EU referred the case of failure for Greece to the European Court of Justice while Germany stood requested (read cautioned) by EU to get tuned to relevant directives on energy conservation.[13]

Besides, there is an energy trading system for econometric adjustment for conservation;[14] although, whether and how far the same serves the purpose of

12 Recent global efforts to tackle climate change have concentrated on three pillars: firstly, ensuring energy for development and access for the poor; ensuring mitigation through transition to low-carbon economies and finally supporting adaptation to the adverse effects of climate change.

... ...

In this context, risk management and risk reduction strategies will underpin the operations of all stakeholders ... to contribute to the success of energy efficiency operations. Energy audits-carried out by external consultants under the management of the Energy Efficiency and Climate Change team at the EBRD (European Bank for Reconstruction and Development)-have proven to be invaluable pre-investment instruments for the EBRD.

Impact Assessment of Energy Audits Programme, Central European Initiative Trust Fund, London, 2009, at 5, available at: http://www.cei.int/sites/default/files/attachments/publications/Energy%20Audits%20Programme%20Impact%20Assessment%20FINAL.pdf (last accessed on September 6, 2015).

13 The European Commission is referring Greece to the EU Court of Justice for failing to transpose the Energy Efficiency Directive. Under the Energy Efficiency Obligations Schemes, companies have to take measures to ensure energy savings at final customer level, for example by giving advice on installing better insulation or offering grants for replacing old energy-wasting windows. Member states were required to transpose the obligations of the Directive by 5 June 2014.

Other requirements under the Directive include:

- energy audits for big companies every four years,
- increased rights for consumers regarding metering and billing of their energy consumption,
- renovation of at least 3% of central government buildings every year,
- and energy efficient public purchasing.

... ...

In addition, the European Commission has requested Germany to ensure the full transposition of the Energy Efficiency Directive. Germany has now two months to comply with this obligation, following that the Commission may decide to refer it to the EU Court of Justice and ask for financial penalties.

European Commission- Press Release, Brussels, 18 June 2015 available at: file:///C:/Users/HP/Downloads/IP-15-5196_EN.pdf (last accessed on September 12, 2015).

14 The (European Union) energy sector needs to incorporate energy efficiency objectives and energy technology innovation into its business model. The ETS (emissions trading system)

conservation after adjustment is but a point apart and to be dealt with on subsequent occasion. In brief, the Occident demonstrates its docility to *jus gentiam* vis-à-vis climate change though advantaged by its class-apart clean energy technology and intellectual property on the same.[15] All these but constitute a caveat on its apparent docility. Taken together, such affinity toward environ in general- and climate in particular- raises confusion since pitfalls involved therein succumb the same from within the system.

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contributes significantly to doing so for larger companies, but there is need for a wider use of other instruments, including energy audits and energy management systems in smaller companies and supporting mechanisms for SMEs (small and medium enterprises). Efficiency benchmarking can indicate to companies where they stand in efficiency terms in comparison with their competitors. Efficiency, including in electricity use, must become a profitable business in itself, leading to a robust internal market for energy-saving techniques and practices and commercial opportunities internationally. A wide framework for resource efficiency would increase such savings.

Energy 2020: A Strategy for Competitive, Sustainable and Secure Energy, p. 9; given text stands issued by the European Commission Directorate-General for Energy in 2011 available at: https://ec.europa.eu/energy/sites/ener/files/documents/2011_energy2020_en_0.pdf (last accessed on September 12, 2015).

15 The need for continuous information supply about climate change mitigation technologies has been voiced persistently since the Earth Summit and Agenda 21 in 1992. However, one of the lessons learnt in this project is that gathering, analyzing and providing access to information on clean energy technologies, including IPRs and licensing aspects, is a costly and complex task. It involves a wide and diverse set of actors such as governments, IP authorities, the private sector, international and regional organizations, academic experts and nongovernmental organizations. There is a need to foster partnerships and collaboration between such actors and in order to combine their different skills and expertise.

Ultimately, reliable and accurate patent and technology data is not an end in itself. The limitations of using such data for technology acquisitions are well known. However, such information is an important component- among others- of an enabling environment for innovation and technology transfer. As stated in Agenda 21, 'the primary goal of improved access to technology information is to enable informed choices, leading to access to and transfer of such technologies and the strengthening of countries' own technological capabilities'.

In the light of the above, technology information platforms should be an essential component of the emerging new technology transfer architecture. Relevant stakeholders mentioned above could present their views on how such platforms would operate.

Konstantinos Karachalios *et al*, Patents and Clean Energy: Bridging the Gap between Evidence and Policy, Final Report, the United Nations Environment Programme (UNEP), the European Patent Office (EPO) and the International Centre for Trade and Sustainable Development (ICTSD), Munich, 2010, p. 67, paragraph 5.4 available at: ftp://hulseyiplaw.com/GIPTK%20documents/patents_clean_energy_study_en.pdf (last accessed on September13, 2015).

ENERGY PROCEEDING: AVENUE FOR REVENUE

Before energy law, in India, there were routes for the courts to offer remedies- both in civil jurisdiction[16] and criminal jurisdiction[17] of procedural laws- though the same were hardly applied except in a few, too few, cases.[18] After a decade of hesitation following its ratification of the UNFCCC of 1992, and the Kyoto Protocol of 1997, India enacted its energy law- first of its kind- for disciplining entrepreneurship.[19-20] Accordingly, sections 1 to 29 along with sections 46 to 62 of the Act came into force on 1st March of 2002 along with the formation of

16 91. Public nuisances and other wrongful acts affecting the public.- (1) In the case of a public nuisance or other wrongful acts affecting, or likely to affect the public, a suit for a declaration and injunction or for such other relief as may be appropriate in the circumstances of the case, may be instituted,-

(a) by the Advocate General, or

(b) with the leave of the Court, by two or more persons, even though no special damage has been caused to such persons by reason of such public nuisance or other wrongful act,

(2) Nothing in this section shall be deemed to limit or otherwise affect any right of suit which may exist independently of its provisions. The Code of Civil Procedure, 1908.

17 Sections 268, 290-291, the Indian Penal Code of 1860, read with sections 133 and 143, the Code of Criminal Procedure of 1973.

18 Municipal Council, Ratlam v. Shri Vardhichand and Others, 1981 SCR (1) 97.

19 14. The Central Government may, by notification, in consultation with the Bureau,-

... ...

(h) direct, having regard to the quantity of energy consumed or the norms and standards of energy consumption specified under clause (a) the energy intensive industries specified in the Schedule to get energy audit conducted by an accredited energy auditor in such manner and intervals of time as may be specified by regulations;

(i) direct, if considered necessary for efficient use of energy and its conservation, any designated consumer to get energy audit conducted by an accredited energy auditor;

... ...

(s) direct, any designated consumer referred to in clause (r), if considered necessary, for efficient use of energy and its conservation in his building to get energy audit conducted in respect of such building by an accredited energy auditor in such manner and intervals of time as may be specified by regulations;

Provided that the powers under clause (s) shall be exercised in consultation with the concerned State.

The Energy Conservation Act, 2001.

20 15. The State Government may, by notification, in consultation with the Bureau,-

... ...

(h) direct, if considered necessary for efficient use of energy and its conservation, any designated consumer referred to in clause (b) to get energy audit conducted by an accredited energy auditor in such manner and intervals of time as may be specified by regulations;

Bureau of Energy Efficiency (hereafter BEE).[21] Later on, in a subsequent notification dated 8th December of 2006, the Ministry of Power prescribed minimum qualification for energy managers- also applicable to energy auditors after the Energy Conservation (Amendment) Act of 2010 came into effect- to add value through energy audit into the existing corpus of energy management.[22] Also, energy intensive industries and other establishments- as per another notification- stand specified in Schedule of the Act.[23] In 2008, as part of the National Action Plan on Climate Change (hereafter NAPCC), eight missions got initiated by Indian and the National Mission on Enhanced Energy Efficiency (hereafter NMEEE) stands one among them.[24] In 2009, rules were introduced under the Act for effective supervision of errant practices under national regime.[25-26] Besides there are provisions for penalty on the occasion of failure

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The Energy Conservation Act, 2001.

21 *Vide* two separate notifications released by the Ministry of Power, Government of India; both are dated 1st March, 2002 available at: http://powermin.nic.in/upload/S.O.268.pdf and http://powermin.nic.in/upload/S.O.269.pdf (last accessed on September 19, 2015).

22 *Vide* Ministry of Power, Government of India, notification dated 8th December 2006 available at: http://powermin.nic.in/upload/GSR309.pdf (last accessed on September 19, 2015).

23 *Vide* Ministry of Power, Government of India, notification dated 12th March 2007 available at: http://powermin.nic.in/upload/SO394_English.pdf (last accessed on September 19, 2015).

24 To achieve its objective, the Mission (National Mission for Enhanced Energy Efficiency-NMEEE) of 2008 focuses on the following initiatives:

- Perform Achieve and Trade (PAT): A market-based mechanism to facilitate energy efficiency improvements in large energy intensive industries and facilities, by issuing energy saving certificates that can be traded
- Market Transformation for Energy Efficiency (MTEE): Accelerating the shift to energy-efficient appliances and equipments in designated sectors through innovative measures that make such products more affordable.
- Energy Efficiency Financing Platform (EEFP): Creating mechanisms to finance demand side management programmes in all sectors of the economy by capturing future energy savings
- Framework for Energy Efficient Economic Development (FEEED): Developing fiscal instruments to promote energy efficiency.

India's Progress in Combating Climate Change: Briefing Paper for UNFCCC COP 20 Lima, Peru available at: http://envfor.nic.in/sites/default/files/press-releases/Indian_Country_Paper_Low_Res.pdf (last accessed on September 20, 2015).

25 6. Inspection report.- The inspecting officer shall prepare an inspection report bringing out clearly the violations of the provisions of the Act or rules or regulations made thereunder along with his recommendations on the action to be taken in the matter.

The Energy Conservation (Inspection) Rules, 2009.

26 7. Submission of report.- (1) The inspection report shall be submitted to the designated agency.

and repeated failure respectively with deterrent amounts.[27] In 2010, the Act stood amended with legislative intention to add on several incentives- by and large financial, for better adherence to statutory regime.[28]. Last but not least, in exercise of the powers conferred by sub-section (3) of Section 1 of the Energy Conservation Act, 2001, Sections 30, 31, 44 and 45 of the Act- along with the long-pending forum, Appellate Tribunal for Energy Conservation (hereafter ATEC), came into force with effect from 28th June 2012.[29]

Read in its amended version, the energy law of India chases rather than conservation the US legacy to explore avenues for revenue in some way or the other. Section 14A of the Act provides for compromise with energy consumption of designated consumer beyond statutory limit to continue with financial loss,

(2) A copy of the inspection report shall be given to the chief executive officer of the designated agency and the person concerned, affording him an opportunity to prefer his defense against the course of action proposed, within thirty days of the receipt of the report or such date as may be indicated in the communication, whichever is later.

(3) The designated agency may, after taking into account the reply of the person concerned and after giving him an opportunity of being heard, give directions to the inspecting officer to initiate adjudication proceedings against the person concerned under section 27 for imposition of penalty under section 26.

The Energy Conservation (Inspection) Rules, 2009.

27 8. In section 26 of the principal Act,-

... ...

(b) After sub-section (1), the following sub-section shall be inserted, namely:-

"(1A) If any person fails to comply with the provisions of clause (n) of section 14, he shall be liable to a penalty which shall not exceed ten lakh rupees and, in case of continuing failure, with an additional penalty which shall not be less than the price of every metric ton of oil equivalent of energy prescribed under this Act, that is in excess of the prescribed norms."

The Energy Conservation (Amendment) Act, 2010.

28 7. After section 14 of the principal Act, the following sections shall be inserted, namely:-

"14A. (1) The Central Government may issue the energy savings certificate to the designated consumer whose energy consumption is less than the prescribed norms and standards in accordance with the procedure as may be prescribed.

(2) The designated consumer whose energy consumption is more than the prescribed norms and standards shall be entitled to purchase the energy savings certificate to comply with the prescribed norms and standards.

14B. The Central Government may, in consultation with the Bureau (of Energy Efficiency), prescribe the value of per metric ton of oil equipment of energy consumed for the purposes of this Act."

The Energy Conservation (Amendment) Act, 2010.

29 *Vide* the Government of India Gazette Notification No. 10/02/2011- EC, dated 28th June 2012 available at: http://powermin.nic.in/upload/pdf/Establishment_of_Appellate_Tribunal_for_Energy_Conservation_Oct2012_English.pdf (last accessed on September 20, 2015).

which defeats the purpose of the statute toward conservation. Instead, what seems apparent is a trend of economizing the law, thereby hoodwinking the objective of sustainable climate to the gross detriment of the posterity. While all these US initiatives vis-à-vis energy audit did culminate into little fruition,[30] without doubt to political will, India is unlikely to attain enhanced energy efficiency in given trajectory despite the same being object and purpose of its National Mission (NMEEE). At its best, energy audit may facilitate better cost efficiency than earlier - nothing more and nothing else.Better energy jurisprudence, rather than econometrics- seems the need of the crisis hour to discipline the (re)public at large. Energy audit, with hyper-technocracy involved therein, may impress upon the privileged few- if at all- to turn green with fanciful fanfare as is experienced elsewhere. The underprivileged, who matter, cannot afford to get carried away by the white elephant of the Occident. Also, what seems aspirant for the urban elite stands somewhat irrelevant to even the peri-urban commoner of so-called developed hemisphere; the social relevance- if any- of the same to subaltern in suburban and rural locale of the Global South is rendered otiose while the latter releases the most lethal emissions during combustion of forest produce for survival. Since they constitute the majorityof the people, energy audit meant for the 'designated consumer'- with due appreciation for the prudence of its own- is bound to fall severely short in serving the purpose of sustainable development as a global agenda.

30 Recent attempts to assess the performance of RCS (US federal Residential Conservation Service) lead to several conclusions:

> Very little comprehensive evaluation of RCS and RCS-like programs has been done by utilities, state energy offices, or the US Department of Energy. As a consequence, more than five years after passage of its enabling legislation, we know little about the benefits and costs of RCS, or about the key features of RCS programs.
>
> Participation in RCS has been lower than initially anticipated. It is unclear whether participation rates are low because of limited utility marketing of the program or because consumers do not want home energy audits.
>
> ... ...
>
> Because of low participation rates and modest energy savings, the impact of RCS on national energy consumption is very small. At current participation rates and energy savings, the total impact after five years of RCS operation would be a reduction in residential energy use of 0.2 percent.

Eric Hirst, Household Energy Conservation: A Review of the Federal Residential Conservation Service, Public Administration Review, Vol. 44, No. 5 (Sept.-Oct. 1984), at 428. Available at http://www.jstor.org/stable/pdf/975994.pdf?acceptTC=true (last accessed on September 26, 2015).

ENERGY ADVOCACY: QUEST FOR PURPOSE

In course of preceding paragraphs, the author strived to provide energy audit discourse and prove/disprove its relevance toward teleological end of ecological economy in city-centric civilization. Albeit a product of econometric technocracy, the mechanism demonstrates potential in its given context. Way back in 1970s, energy audit initiated its ordeal to economize consumption of energy in the wake of the then oil crisis worldwide and thereby put fetters on demand side management rather than concern for conservation of climate; the way the same transcended its original jurisprudence in the wake of climate concern thereafter.[31] Nowadays energy audit has emerged as part of clean climate technology with typical tools and techniques of its own. However, even after its metamorphosis, the same is not devoid of inbuilt economic reasoning, as the very genesis of such audit lies in international economy and not at all in global environmental regime anyway.[32] Nor does the same suit the soil of social audit for global commons.

Even in the limited domain of its potential, energy audit jurisprudence stands hitherto limited to conventional power sector alone while there is space for

31 Over the past thirty years, DSM (refers to demand side management) has evolved considerably. High oil prices in the 1970s provided justification for efforts directed towards reducing demand. The initial programmes were successfully aimed at energy conservation and load management, although the emphasis was on providing information on energy saving options and better understanding of energy demand through energy audits. This period also saw efforts toward fuel substitution, so that demand for imported oil is reduced by moving towards locally available fuel.

Subhes C. Bhattacharyya, Energy Economics: Concepts, Issues, Markets and Governance, Springer, New York, 2011, at 137.

32 In considering retrofit of existing buildings, owners and operators should consider making several changes at one time rather than small changes made over a long period of time. An energy audit of a building can assess ways in which retrofit will be valuable. Several methods of saving energy and saving money can be discovered through a careful energy audit. These methods should be coordinated in such a way to have the greatest impact on energy conservation and thus the most desirable ROI (return on investment). When we consider the escalation of energy costs, we see that the ROI for energy conservation is very favorable. If energy costs increase 30%, so do annual savings, and the ROI increases substantially. With this in mind, retrofit of a building should be more desirable if initiated quickly to minimize inflation of material and equipment costs. Retrofit of existing buildings with energy conservation in mind should be a valuable financial investment.

Dale R. Patrick *et al*, Energy Conservation Guidebook, 2nd ed., Fairmont Press, Inc., 2006, at 399.

enhanced energy efficiency elsewhere as well through the same audit; in each and every sector often than not left out, e.g. coal, gas, oil, nuclear energy, renewable energy, and the like. If at all, energy audit in all these together may and does amount to considerable count. Fatefully, courtesy recent bizarre literature, flip sides of energy discipline by audit in each sector stand exposed to public domain. Also, economic reasoning is contested by reverse economic reasoning, to counter arguments advanced in favour of the audit. In a nutshell, in its own domain, energy audit suffers a heavy beating to the detriment of propositions preached by its protagonists so far toward a duly audited and- as if therefore- clean development mechanism. The fantastic way in which the fantasy of cleanliness has been frustrated leaves no doubt about the fault lines involved therein in the given mechanism.[33] Apart from jurisprudence, energy audit seems devoid of economic prudence as well. While such is the state of affairs in the affairs of state worldwide, whether and how far carrying forward the same attracts prudence poses a moot point.

Besides, from the other side of the fence, another contentious point is advanced to put the energy audit lobby in real peril. The crux of its contention may be summarized thus: after export of the cause(s) of climate change, now the Occident is engaged in the export of its cure through clean climate technology; thereby imitating the role of a merchant selling the causes of disease and of the cure

33 Energy efficiency can actually lead to negative environmental impacts unless regions institute taxes, caps, or regulations to prevent growing consumption patterns from smothering efficiency gains. As long as energy-efficiency strategies come with checks to prevent the rebound effect, efficiency proponents argue that they are highly effective. For instance, new refrigerators use just a fraction of the energy of models sold decades ago, yet because there is a limit to the amount of refrigeration space one can fit in a kitchen, the benefits of efficiency are usually not usurped by the rebound effect. Similarly, there 's no indication that drivers of small cars, who achieve twice the gasoline efficiency of those driving large vehicles, tend to drive twice as much as a result.

... ...

There's another problem. Even though energy consumers might not spend their efficiency savings to buy more energy, they may choose to spend these savings on other products or endeavours that still lead to energy consumption. In this case, energy efficiency measures can unintentionally inspire other types of consumption, leaving overall energy footprints unchanged or even larger. This occurs at the macroeconomic level as well. In short, energy-efficiency savings frequently lead to larger profits, which spur more growth and thus higher energy consumption.

Ozzie Zehner, The Dirty Secrets of Clean Energy and the Future of Environmentalism, University of Nebraska Press, Lincoln, 2012, at 174-175.

thereafter, to score spiraling commercial gain out of both. The energy audit lobby is thereby construed to Shakespearean Shylock; indeed its latest version. In the midst of a whirlpool between these competing- and at times conflicting-claims, the rest of the world grapples with a conundrum of crossroads ahead. India is no exception to this end. Being way ahead in corporate globalization, a legal regime after the Occident is the sole way-out for India.

And there lies a rationale for such rush for energy audit meant for urban India while peri-urban India surrounded by larger domain of *gramin Bharat* is left to oblivion. Thus, with metropolitan spaces being the mainstream concern, India's process of policymaking fortifies the existing rural-urban divide further through a series of inventions.[34, 35] The argument hereby advanced stands corroborated by an array of corporate giants; by courtesy of documentation of concerned ministry toward better energy efficiency.[36] Even the court, respectfully

34 New institutions such as Energy Efficiency Services Limited (EESL) have been set up. Organizational arrangements have been resolved to some extent, e.g. EESL was created to regulate Energy Services Companies (ESCOs), which is appropriate but not adequate. Two initiatives of the NMEEE have been introduced through ESCOs. Institutional arrangements are constrained by subsidies and other regulations. While the mission document per say does not specify synergy with other missions, some efforts are being initiated with the National Mission on Sustainable Habitat, especially on improving energy efficiency of buildings through building codes such as Energy Conservation Building Code (ECBC) and other mechanisms.
Sujatha Byravan and Sudhir Chella Rajan, An Evaluation of India's National Action Plan on Climate Change, Centre for Development Finance, Indian Institute of Technology Madras, Chennai, 2012, p. 18.

35 Another question concerns the future of ESCOs in India. ESCOs as well as energy auditors have made little progress so far in reaching the wider Indian market. This is partially due to their small size, limited reach, and lack of credibility and relationships with other important actors. Support for these two groups, whose prime business deals with energy efficiency and who could become important promoters of energy efficiency investments in India, could contribute to increasing commercially based energy efficiency investments. Although ESCO development may or may not be considered a priority, it is clear from the past experience in India and internationally that India's ESCO industry is unlikely to develop significantly without sustained government support, through ESCO market creation initiatives (perhaps through new energy efficiency initiatives for public buildings) or other means.
Robert P. Taylor *et al*, Financing Energy Efficiency: Lessons from Brazil, China, India, and Beyond, the World Bank, 2008, p. 148.

36 Also refer to (Inventory of) Accredited Energy Service Companies (ESCOs), Bureau of Energy Efficiency, Ministry of Power, Government of India, New Delhi, November 2008. Available at: <http://bee-dsm.in/Docs%5CAccreditedESCOs.pdf> last accessed on September 27, 2015.

submitted, walks together along with the government,[37, 38] though the same court has otherwise emerged as a messiah for human rights and environment in the post-emergency period until the new economic policy tolled the bell of globalization for India followed by its accession to the international trade regime under circumstances documented in the then international trade chronicles of

37 The concept of welfare State is a facet of Article 38 of the Constitution of India. it is the obligation of the State to see that the welfare of the people is appositely promoted. It is the obligation passed by the Constitution to the State to establish a welfare State. The words used in the Preamble of the 1962 (Atomic Energy) Act are "welfare of the people" and "peace". There is a necessity for generation of electrical energy and regard being had to the hazards, there has to be guidance which the Acts, Rules and Notifications provide. The collective interests should not totally be thrown overboard for the development of the power sector. If the safety measures are adequately not taken and the apprehensions are not removed and the fear is not totally ostracized from the minds of the people of the locality, posterity may not recognize the same as development or a progressive step. The conscientious and conscious policy decisions by the Government are to be taken with due care and consideration, keeping in mind welfare of the people at large. True it is, when such policies are framed, especially for establishment of nuclear plants or such big projects, the safety measures become the primary concern and the same have to be adequately addressed to and taken care of. However, the Courts, in exercise of power of judicial review, cannot assume the role of approving authority for laying safety measures, but, a significant one, what the regulatory authorities have stated are to be regarded as the primary and principal concern.
The Supreme Court of India in G. Sundarrajan v. Union of India and Others, Civil Appeal No. 4440 of 2013, dated May 6, 2013, p. 225-226, paragraph 217. Available at: <http://judis.nic.in/supremecourt/imgs1.aspx?filename=40374> last accessed on September 27, 2015.

38 The purchase of nominal quantum of energy from renewable resources cannot adversely affect the cost effectiveness of the captive power plant. Moreover, the object being reduction of pollution by promoting renewable source of energy, larger public interest must prevail over the interest of the industry herein which will in any case pass on the extra burden, if any, will be as part of the cost of its products and therefore, the same does not burden the appellants. The reliance placed upon the aforesaid paragraphs of the policies is misconceived as the same pertains to the captive power plants to be set up by groups of consumers namely, small and medium industries and other consumers who are not in a position to set up a captive power plant of optimal in a cost effective manner. The aforesaid paragraph in the context of section 2(8) of the (Electricity) Act has no application to the case of the appellants which are large industries having individual captive power plants. The provision of RE (renewable energy) surcharge in the statute is only meant for ensuring compliance with the requirement of consumption of the specified quantum of energy from renewable resources and the same is to be used in case of shortfall in compliance of RE obligation. The said provision does not amount to imposition of a pecuniary liability.
The Supreme Court of India in Hindustan Zinc Ltd. v. Rajasthan Electricity Regulatory Commission, Civil Appeal No. 4417 of 2015, dated May 13, 2015, p. 58-59, paragraph 49. Available at http://www.iexindia.com/Uploads/NewsUpdate/18_05_2015Final%20Order_Hindustan%20Zinc%20v%20RERC%20(2).pdf (last accessed on October 2, 2015).

India. In particular, besides blind adherence to the Western discourse, blind faith on the Western corporate giants also contributed to the setbacks India suffered in the course of its tryst with destiny.[39] In its anxiety to not deal with policy decisions of the executive, indeed an otherwise jurisprudent position, the judiciary merely withdrew from entertaining nitty-gritty of such blunder in its. Energy audit constitutes another myopic agendum of the ministry for better climate governance through clean development mechanism.

Of late, the Pope has expressed his conviction in public that environmental sinners will face God's judgment for world hunger.[40] Even if the Almighty remains merciful, as per recent official statement issued by the Intergovernmental Panel on Climate Change (hereafter IPCC), nature is likely to spare none- climate sinners and others alike- for the irreversible damage arising out of lethal emission.[41] The apprehension looms large enough for energy audit appearing too short to minimize the call of apocalyptic change ahead. Quantification apart, as a mode of CDM, energy audit lacks potential for bringing in enough qualitative change in modern lifestyles to slow down climate change.

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39 Weak countries can also play off one giant corporation against another; and they occasionally do. Thus small countries such as Poland have recently chosen between Airbus and Boeing, both huge corporations and both in continuous and fierce competition. Enron was accused of having taken India for a ride just a few years ago, bedore the corporation self-destructed. But the problem was that India, because it was in rush to get energy investments going rapidly, had foolishly failed to invite tenders and have Enron compete vigorously with other potential investors.

Jagdish Bhagwati, In Defense of Globalization, Oxford University Press, New York, 2004, p. 166.

40 "We must do what we can so that everyone has something to eat, we must also remind the powerful of the Earth that God will call them to judgment one day and there it will be revealed if they really tried to provide food for Him in every person and if they did what they could to preserve the environment so that it could produce this food".

Statement from a speech of the Pope Francis on the occasion of opening of UN General Assembly, dated 12 May, 2015 available at http://www.theguardian.com/world/2015/may/12/pope-environmental-sinners-will-face-god-judgment (last accessed on October 2, 2015).

41 Throughout the 21st century, climate change impacts are projected to slowdown economic growth, make poverty reduction more difficult, further erode food security, and prolong existing and create new poverty traps, the latter particularly in urban areas and emerging hotspots of hunger (*medium confidence*). Climate change impacts are expected to exacerbate poverty in most developing countries and create new poverty pockets in countries with increasing inequality, in both developed and developing countries.

IPCC Working Group II, Fifth Assessment Report, Summary for Policymakers, 31 March 2014, at 21. Available at: https://ipcc-wg2.gov/AR5/images/uploads/IPCC_WG2AR5_SPM_Approved.pdf (last accessed on October 2, 2015).

Conclusion

Energy audit apart, a resort to social audit stands emergent need of the hour to address the crisis of civilization in exact sense of the term. At its best, energy audit of industrial emission may and does quantify climate sin of the entrepreneur crowd, but does not wash it away. Besides industrial emissions, resort to the same energy audit of agrarian emission is imperative to safeguard larger (international) public interest. Also, energy audit vis-à-vis carbon sequestration through LULUCF and allied regime, like that of reducing emission from deforestation and forest degradation programme (hereafter UN-REDD), a collaborative initiative is required in developing countries to mitigate climate change with partner institutions and facilitate the national REDD+ readiness.[42] While energy audit stood enacted to discipline organized sector, the unorganized sector is required to follow similar discipline since energy use by the same unleashes emissions alike. Unless and until all sundry sources of emission stand subjected to energy audit, the balance sheet of emissions remains asymmetrical to the gross detriment of the civilization. Delay tactics may culminate in consequences too severe to lament for.

So far as energy audit to quantify climate sin of the underprivileged is concerned, in the absence of alternative means available to them for their survival, the climate sin stands attributable to the state concerned as the trustee of its people rather than individual user *per se* and duty to get adhered to clean development mechanism ought to get introduced without adversely affecting lifeworld of the underprivileged. After all, cause of climate justice cannot be served at the cost of further vulnerability for the impoverished. To attain justice in the globalized world, the onus of climate sin ought to be borne by those who are beneficiary of dark development through politics of emission vis-à-vis emission of politics in the given state of affairs of contemporary society.

To defer the doomsday, rather than energy audit alone, civilization ought to work out a way towards more durable solution for mankind through omission of emissions. At its best, energy audit may be one of the means to attain freedom from emission of greenhouse substances as a teleological end; nothing more and nothing else. Besides these means, to attain substantive change in civilization

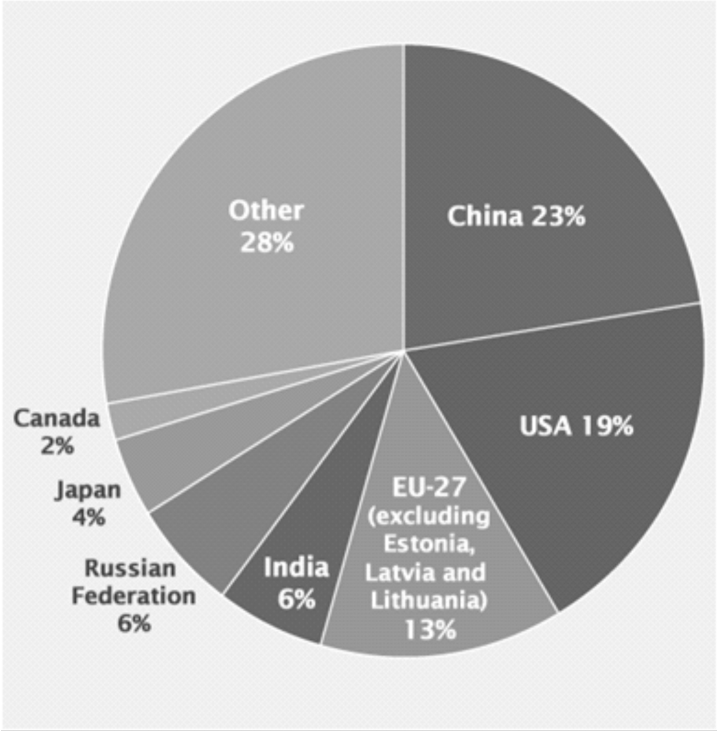
42 *Vide* UN-REDD PROGRAMME global collaborative initiative, available at http://www.un-redd.org/Home/tabid/565/Default.aspx (last accessed on October 4, 2015).

...

and minimize climate change, stakeholders ought to get rid of climate diplomacy to the mutual benefit of one and all. More there is indulgence in given Machiavellian politics to score at the cost of others, for instance, by taking undue advantage of common but differentiated responsibilities and respective capabilities, less is the likelihood for humanity to survive in the wake of oncoming climate disaster ahead to turn the Earth increasingly unsustainable to cope with.

ANNEX

TRENDS IN GLOBAL EMISSION[43]



2008 global CO_2 emissions from fossil fuel combustion and some industrial processes (million metric tons of CO_2)[44]

43 Available at http://www3.epa.gov/climatechange/ghgemissions/global.html (last accessed on August 31, 2015).

44 Ibid.

International Trade Law and Energy

TRADE IN ENERGY AND THE WTO LAW

Dr. Sunitha Abhay Jain[*] *& Namit Bafna*[**]

Abstract

The intersection between WTO law and energy trade gives rise to an unresolved and vastly debated issue of whether the trade regime embraces trade in energy or not. Two major approaches have been developed to address the debate over the GATT/WTO disciplines and trade in energy.The first approach supports the view that the international trade discipline governs all sectors of trade including trade in energy, mainly because the energy sector was never excluded explicitly from the GATT/WTO discipline. The other approach casts doubt about the automatic governance of GATT/WTO discipline over trade in energy and considers trade in energy a special case that is excluded de facto, not de jure, from the GATT/ WTO disciplines.[1]

In this chapter an attempt is made to evaluate and appreciate the ongoing WTO-Energy debate and give some suggestions to deal with the issue.

The Debate: Applicability of WTO Law to Energy Trade

International Treaty Law is the major source of International Economic Law and International Trade Law.[2] In view of that, the founding members of WTO agreed to bind all the members to a set of international agreements, collectively known as 'single package' which comprises of the law of the WTO and relations

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1 The debate is based on a mutual significance to both sector and encompasses important consequences to both trade and energy sectors. From the point of view of the international trade system, energy is the most significant sector of trade by virtue of being the largest in terms of share and value, as well as being crucial to other trade sectors. For trade in energy, being subject to the international trade system means being subject to a stable and predictable set of rules agreed upon internationally/multilaterally. Thus, the outcome of this debate reflects the distance between the existence and non-existence of a rule–based regime to regulate the most important sector of trade, and it also entails positive or negative implications for both sectors.

2 Ignaz Seidl –Hohenveldern, INTERNATIONAL ECONOMIC LAW, 29, 35 (Kluwer Law International, 1999).

of members in respect of trading and its allied activities.[3] According to WTO law, when a country accedes to WTO, it must accept the single package as the binding law of the WTO.[4]

With that, it is important to evaluate chronological evolution of international trade in energy, with a view to decide if the GATT/WTO law applies to trade in energy.

Even though the energy issues were not specifically concentrated upon during the negotiations for the establishment of the International Trade Organization (ITO) and the General Agreement on Tariffs and Trade (perhaps due to non-participation of energy – exporting countries),[5] natural resources matters in general were brought up, discussed and agreed upon. During the ITO negotiations, in parallel to the creation of the GATT, the Havana Charter addressed issues relevant to natural resources in several provisions.[6] The term 'natural resources' was understood to include raw materials, while the term 'exhaustible natural resources' covered 'stock resources', including metal or oil.[7] Hence from this, it can be deduced that energy trade in general was intended

3 Gabrielle Marceau, A History Of Law And Lawyers In The GATT/WTO: The Development Of The Rule Of Law In The Multilateral Trading System 520 (Cambridge University Press, 2015).

4 John H. Jackson, The Jurisprudence Of GATT And WTO: Insights On Treaty Law And Economic Relations 376 (Cambridge University Press, 2002).

5 Yulia Selivanova, 'The WTO Agreement and Energy', in Research Handbook In International Energy Law 275 (Kim Talus 2014).

6 Havana Charter for an International Trade Organization (April 1948), https://www.wto.org/English/docs_e/legal_e/havana_e.pdf (Articles 10 and 13 of the Havana Charter enumerate Co-operation and Governmental Assistance for economic development and Reconstruction, emphasizing the role that natural resources play in economic development and reconstruction. Article 45 of the Havana Charter enumerates upon General Exceptions to Commercial Policies, includes exception for exhaustible natural resources, which is in the same line of Article XX (g) of GATT. Though Havana Charter contained rules specifically related to natural resources trade, they were primarily concerned with the establishment of international commodity agreements. See, Tim Josling, 'New Trade Issues in Food, Agriculture, And Natural Resources', in The Oxford Handbook On The World Trade Organization 256 (Narlikar *et al*., 2012)).

7 General Agreement on Tariffs and Trade 1994, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, The Legal Texts: The Results Of The Uruguay Round Of Multilateral Trade Negotiations 17 (1999), 1867 U.N.T.S. 187, 33 I.L.M. 1153 (1994) [hereinafter GATT] (Article XX (g) of GATT provides for an exception for conservation of exhaustible natural resources. See, Manjiao Chi, 'Exhaustible Natural Resources' in WTO Law: GATT Article XX (G) Disputes and Their Implications', 48 *Journal of World Trade* 939 – 966 (2014)).

to be subject to the disciplines of the ITO and the GATT unless a particular kind of energy trade was targeted by a measure aimed at conserving exhaustible natural resources, according to Article 45 of the Havana Charter, Article XX (g) of the GATT or any other reservation.[8]

Following the demise of the ITO, products which were eligible as tradable through export or import were made subject to the GATT. Thus, all tradable energy products qualified as tradable products capable of being exported and imported in accordance to GATT rules. Also, during the life time of the GATT, enormous trade of energy products such as oil, coal, and gas took place at a global scale. Therefore, it can be assumed that, to the extent that energy resources are tradable products, all trade in energy products, similar to other tradable, are subject to the GATT. Also, the fact that neither energy as trade sector nor energy products as commodities were explicitly excluded from the application of the GATT, unlike certain products such as agricultural goods and textiles. Therefore, it can be assumed that, to the extent that energy resources are tradable products, all trade in energy products, similar to other tradable, are subject to the GATT. Nonetheless, this argument completely ignores the possibility that energy products might not have been intended at all to belong to the general pool of tradable products.[9]

Although trade in energy was not particularly included in any of the GATT provisions, according to GATT history, the contracting parties discussed energy related matters during various rounds of GATT negotiations. Two main incidents; nationalization of the petroleum industry by oil rich countries in the early 1970s and the oil embargo and first oil shock in 1973 provided the much needed push for industrial nations lead by US to raise the issue of energy trade export restrictions and export taxes relating to energy during the Tokyo Round

8 However, there is a distinction between trade in natural resources and trade in energy. Trade in natural resources relates to trade in natural resources need to be produce energy such as fossil fuels while trade in energy relates to trade in electricity or nuclear energy. For more information *See*, Gabrielle Marceau, The WTO in the Emerging Energy Governance Debate (2000) , available at https://www.wto.org/english/res_e/publications_e/wtr10_forum_e/wtr10_marceau_e.htm (last accessed on September 10, 2015); World Trade Organization, *World Trade Report 2010: Trade in Natural Resources* (2010), available at: https://www.wto.org/english/res_e/publications_e/wtr10_e.htm (last accessed on September 10, 2015).

9 Rafael Leal –Arcas *et al*, INTERNATIONAL ENERGY GOVERNANCE: SELECTED LEGAL ISSUES 117,119 (Edward Elgar, 2014).

(1973 - 1979), however it failed because it stipulated to go beyond what was stipulated in GATT by the developed and developing Nations.[10] Nevertheless, despite the rejection several issues indirectly relevant to oil were negotiated. The Tokyo Round resulted in the creation of special agreements which included subsidies, anti-dumping and technical barriers which had potential impact on energy products and policies applied by energy exporting countries.[11]

Also, accession of energy – exporting countries such as that of Venezuela in 1990, Mexico in 1986, Kuwait in 1963, Nigeria in 1960 and Indonesia in 1950 casts light upon the link between the GATT discipline and trade in energy – exporting countries. The special case of Mexico and Venezuela clearly depicts the applicability of GATT discipline to all non-exempted energy trade issues. Presence of such member states gave rise to discussion during the Uruguay Round (1986 - 1994) that had a clear impact on energy matters. For instance, the Negotiating Group on Natural Resources – Based Products called attention to certain problematic practices pertinent to energy products issues. Among those debatable issues were dual pricing, export restrictions and trade distortions due to governmental ownership and control practices. On the other hand, within the Negotiating Group on Subsidies and Countervailing Measures, attempts were made to address subsidies issues relating to energy.[12]

Uruguay Rounds also lead to the creation of the WTO with its set of binding agreements. Although the WTO agreements do not specify either an independent agreement addressing energy matters or any particular provisions relating to energy, the premise is that the WTO covers a multitude of energy trade issues. All trade in energy products are covered by GATT rules; likewise, all trade in energy services should be conducted according to GATS rules.

10 The United Nations Conference in Trade and Development, *Trade Agreements, Petroleum and Energy Policies*, 15 available at http://unctad.org/en/docs/itcdtsb9_en.pdf (last accessed on October 10, 2015).

11 The GATT parties during the Tokyo Rounds were also required to discuss on the issue of dual pricing. However no substantive decision was taken in this regard until recently, with Russia's access into the WTO given Russia's practice pricing gas exported and gas consumed domestically at different rates.

12 Rafael, Supra note 11 at 124.

The Doha Rounds which began in 2001 contains few implications for energy trade. However it neither addresses energy trade as a separate or independent area of negotiations nor does it highlight its critical issues.[13] This in spite of the fact that there are three major areas of negotiations in the Doha Round with relevance to trade in energy issues: liberalizing trade in environmental products and services, energy services, and trade facilitation for energy transit. Nonetheless, the fact that the Doha Round includes energy issues, even if treated only as sub-matters rather than major areas of negotiation, stresses the existence of trade issues in the WTO.

Moreover, the accession of energy–endowed countries to the WTO strengthens the argument that trade in energy is subject to the WTO discipline. Unlike GATT era, the WTO seems to attract more energy endowed countries to become full members of this multilateral trade organization. The most prominent energy producing countries that joined the WTO are Qatar in 1996, United Arab Emirates in 1996, Angola in 1996, Oman in 2000, China in 2001, Saudi Arabia in 2005, Russia in 2012 and Kazakhstan in 2015.[14] The more energy – endowed countries join the WTO, the more energy trade becomes subject to the WTO. However, an argument solely based upon accession is weak as reliance only on the mere fact and act of accession with no clear reference to the negotiated and agreed issues pertaining to energy, would not be a sufficiently convincing argument.[15]

The Debate: Non - Applicability of WTO Law to Energy Trade

There are unresolved issues which lie at the intersection between international trade rules and trade in energy, which casts doubt on applicability of WTO rules on trade in energy. The failure of the discipline to inflict positive obligations on WTO members which are necessary to regulate significant issues of trade in energy poses as one of the biggest hurdles in regulating trade in energy.

13 See, Gabrielle Marceau, 'The WTO in the Emerging Energy Governance Debate', 5 *Global Trade and Customs Journal*, 83-93 (2010).

14 https://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm

15 'Energy Trade as a Special Sector in the WTO: Unique Features, Unprecedented Challenges and Unresolved Issues', available at http://www.manupatra.co.in/newsline/articles/Upload/37CEEFA0-1EC3-402E-BF0A-28749998F89F.pdf

Energy as either good or service poses various unique characteristics which are devoid from trade in other goods and services.[16] These distinctive features can broadly be grouped into two inter-related categories, based on physical features and political considerations. The physical features of energy goods make them volatile and often difficult to store requiring special infrastructure and method of store, transportation and distribution. Additionally, energy goods are naturally finite and mostly non-renewable making them an indispensable intermediate input for almost all economic activity having a direct impact on the welfare of end – users.[17] These distinctive physical features entail a number of political and economic considerations that are not common to trade in other goods such as price, quality, availability, marketability, transport and other conditions of purchase or sale.[18]

From a political consideration, large number of monopolies in exploitation exists either from an unequal distribution of energy resource across countries by nature or due to the strategically motivated dominance of state-controlled enterprise leading to anarchy of production and seeking monopoly profits.[19] An additional distinct issue is the dependence of the sector on capital intensive frameworks to regulate investments in such infrastructures and subsequently the conditions of access to the same.[20] In contrast, manufactured products can be stored and distributed in settings that are not dependent on infrastructures to which access may be restricted or conditional. Thus, it becomes clear that

16 There is a clear distinction between trade in goods and trade in services in the WTO disciplines. However the energy sector does not apply to this distinction as it is difficult to put 'energy' under any one the heads. There is no uniform interpretation in regards to this. For instance, The European Court of Justice in the case of *Municipality of Almelo* & ors. V. *NV Energiebedrijf Ijsselmij* (1994) held energy to be constituted as good and not service, decided in reference to *Costa* v. *Enel*. (1964). for more information *See also*, WTO Document No. S/C/W/52, dated September 9, 1998.

17 WTO Document No. S/CSS/W/69, dated March 29, 2001.

18 Francis N. Botchway, 'International Trade Regime and Energy Trade', 28 *Syracuse Journal of International Law and Commerce*, 07 (2001).

19 Chang Chien, *Behind the so-called Energy Crisis*, 11 Peaking Review, 5 (1974) available at: https://www.marxists.org/subject/china/peking-review/1974/PR1974-11a.htm (last accessed on October 10, 2015).

20 Yulia Selivanova, 'The WTO and Energy: WTO Rules and Agreements of Relevance to the Energy Sector', 13 (2007), available at: http://yuliaselivanova.com/wp-content/uploads/2013/09/ICTSDenergy.pdf (last accessed on October 10, 2015).

energy products possess characteristics which evidently differentiate them from trade in other commodities and manufactured goods.[21]

Power Sector Liberalization and WTO: Case for India

The National Electricity Policy recognizes electricity as a basic human need, an essential requirement for all facets of life.[22] However, there has been a constant deficiency in the supply of electricity. As of August 2015, the installed capacity was 2, 75, 912 MW observing deficit of 4,978 MW.[23] Electricity being necessary for economical development, poverty reduction and maintaining standard of living[24] lack of it can put economy into shambles and acting as a hindrance to human development.[25]

Indian electricity sector faces numerous challenges, which if not resolved in a timely manner, can result in a lag for the backdrop for Indian economy.[26] Indian power sector has been undergoing restructuring since 1991 but the progress has been uneven and slow, due to insufficient investment.[27] A few major problems and challenges faced by the Indian electricity sector are shortage of coal supply, erratic gas supply, non-availability and procedural difficulty in land clearance, issues pertaining to competitive bidding, unhealthy financial scenario for

21 Rafael, Supra note 11 at 133.

22 Ministry of Power, National Electricity Policy (12/02/2005), http://powermin.nic.in/National-Electricity-Policy-0.

23 Ministry of Power, Power Sector at Glance (24/08/2015), http://powermin.nic.in/power-sector-glance-all-india.

24 Sovacool *et al*, 'Troubled Waters: The Quest for Electricity in Water Constrained China, France, India, and The United States', 21 *New York University Environmental Law Journal* 409 (2015). *See also*, Steven Ferrey, 'Why Electricity Matters, Developing Nations Matter, And Asia Matters Most of All', 15 *New York University Environmental Law Journal* 113 – 160 (2009).

25 PC Maithani & Deepak Gupta, ACHIEVING UNIVERSAL ENERGY ACCESS IN INDIA: CHALLENGES AND WAY FORWARD 04 (2015).

26 Eric Yep, 'Power Problems Threaten Growth in India', *The Wall Street Journal* (March 1, 2012) available at http://www.wsj.com/articles/SB10001424052970203550304577136283175793516

27 T.R.Satish Chandran, 'Restructuring the Indian Power Sector: Some Issues', 3 *Journal of Social and Economic Development* 01 (2001). *See also,* Lewis et al, India: The Growth Imperative, McKinsey & Company (October 2011), available at: http://www.mckinsey.com/insights/india/growth_imperative_for_india

distribution sector, poor project management and execution capabilities and growing competition from international Original Equipment Manufacturer (OEM) *etc.*[28]

Such challenges can be resolved effectively through power sector liberalization. The Indian energy sector has experienced considerable level of liberalization by virtue of 1991 Economic Policy reforms. Prior to this, energy-related services were majorly supplied by state-owned vertically integrated monopolies which was justified on the basis of public service obligations and the high costs of setting up infrastructure were met by charging monopolistic rents and practicing cross-subsidization. Energy was sold on the basis of long-term contracts with stable prices, leaving little margin for trade and competition. It resulted in sizeable economic welfare losses for members that could not secure the most competitively priced energy to drive their economies.[29]

The advent of GATS, initiated liberalization. Similar to the trade rules for goods, service rules provide a framework for members to strengthen their legal system under which foreign firms can participate in their markets, but may face certain inherent limitations which varies from sector to sector.[30] The rules seek to guard against unnecessary discrimination and to ensure that foreign companies are treated on an equal footing with domestic firms.[31] The GATS

28 Pricewaterhousecooper, Emerging Opportunities and Challenges: India Energy Congress – 2012 (January 23, 2012), available at https://www.pwc.in/assets/pdfs/power-mining/energing_opportunities_and_challenges.pdf. *See also*, Sun-Joo Ahn & Dagmar Grackzyk, 'Understanding Energy Challenge in India: Policies, Players and Issues', International Energy Agency (2012), available at https://www.iea.org/publications/freepublications/publication/India_study_FINAL_WEB.pdf; Sam Tranum (ed), POWERLESS: INDIA'S ENERGY SHORTAGE AND ITS IMPACT 210 – 245 (Sage, 2013).

29 International Energy Agency, 'Understanding Energy Challenges in India: Policies, Players and Issues', 06 (2012), available at: https://www.iea.org/publications/freepublications/publication/India_study_FINAL_WEB.pdf (last accessed on October 10, 2015).

30 The Preamble to GATS enumerates that the objective of it is to establish a multilateral framework of principles and rules for trade in services, under conditions of transparency and progressive liberalizations. Hence providing a solid structure to liberalize and regulate trade in service.

31 Article II enumerates upon Most Favored Nation Treatment. International Law Commission (ILC) defines it as "Treatment accorded by the granting state t the beneficiary state or to persons or things in a determined relationship with that state, no less favorable that treatment extended by the granting state to a third state or to persons or things in the same relationship with that third state" II Report of the International Law Commission on the Work of its Thirtieth Session, 'Draft Articles on most – favored –nations clauses', Article 5, *ILC Yearbook* (1978). *See also*, Report of the International Law Commission of its Sixty Seventh Session, 32 -44 (2015); Rudolf Adlung & Antonia Carzanigna, 'MFN Exemptions under General

achieve these objectives through a legal framework consisting of general and specific obligations which consists of more than dozen general obligations that apply to all members. This is achieved by focusing on making market entry and competition work better. Market access commitments are highly valued by energy service providers operating on a global scale as such commitments elucidate the rights of foreign firms and provide legal support in a trade dispute.[32]

However, from the standpoint of encouraging fully accessible and competitive electricity market, the GATS had important limitations, the greatest barrier being lack of structural framework for trade in energy. For instance, distributed generators need both non-discriminatory access to transmission and distribution systems and the right to sell to eligible customers. The request–offer process creates a forum for reciprocal market opening; however, the GATS does not require countries to undertake market restricting, or restrict the right of WTO members to maintain monopolies at the national or local levels.[33] This right remains unless a member country decides to make a commitment to not impose monopolies or other market access limitations.[34]

GATS is not very clear on social dimensions of liberalization as individual members are free to recognize their sovereign right to regulate as it leaves the responsibility for formulating and implementing social policy to members.[35]

In regards to this, the GATS have been the subject of two main criticisms. *Firstly*, it is believed that global trade rules should be used as instruments to

Agreement on Trade in Services: Grandfathers Striving for Immortality', 12 *Journal of International Economic Law* 357 – 392 (2009); 06 WTO – TRADE IN SERVICES 71 – 91 (-Rudiger Wolfrum *et al*. (ed.) Max Planck Commentaries on World Trade Law, 2008).

32 Selivanova, Supra note 21.

33 However Article VIII (1) puts an obligation on monopoly supplier to not act in a manner inconsistent with member's obligation under Article II and other specific commitments, Rudiger Supra _ at 206 – 219; Jane Kelsey, SERVING WHOSE INTEREST?:THE POLITICAL ECONOMY OF TRADE IN SERVICES AGREEMENT, 289 (2008).

34 For information on trade in energy and WTO *See*, James J. Nedumpara, 'Energy Security and WTO Agreements', in Sajal Mathur, TRADE, THE WTO AND ENERGY SECURITY 15 – 72 (Sajal Mathur ed, Springer 2014).

35 See, International Labour Organization, *Report of the Working Party on the Social Dimensions of the Liberalization of International Trade*, Document No. GB. 277/16 (March 2000), available at http://www.ilo.org/public/english/standards/relm/gb/docs/gb277/pdf/gb-16.pdf

secure social objectives such as universal service, in which the GATS has not indicated much progress. *Secondly*, social concerns should be left to sovereign states but GATS commitments are much more constraining than actually required.[36] By accepting GATS obligations member governments run the risk of having their hands tied, thereby restricting the range of useful policy interventions they might have available to develop their power sectors in the public interest. Nevertheless, GATS put forward liberalization of services progressively, which will reap benefits such as greater economic performance, development, consumer savings, greater transparency, predictability and so on.[37] However before dwelling upon them, it is important to understand the manner and extend to which GATS apply to the energy services.

GATS recognize four modes of supply. First mode being cross – border supply, second mode being consumption abroad, third mode being commercial presence and fourth being presence of natural person (Article 1(2)).[38] Of the four modes of supply, only three are in direct relevance to trade in energy services. *Cross-border supply* covers the situations under which energy services are supplied, without the need for the supplier to be physically present in the country of consumer. It covers electric power transmission, cross-border transit or interconnection rights associated with oil and natural gas pipelines.[39] Under the third mode of supply which relates to *commercial presence*, relates to energy services most prominently by establishing a subsidiary or a branch office in a foreign country to supply energy services. While the fourth mode relates to

36 Peter C. Evans, Power Sector Liberalisation, the poor ad Multilateral Trade Commitments, 239 IN LIBERALISATIONAND UNIVERSAL ACCESS TOBASIC SERVICES (OECD Publishing, 2006).

37 Xiuling Wang & Junmin Liu, 'Some Consideration for Electricity in GATS', 4 *US – China Law Review*, 33 (2006).

38 For the purposes of this Agreement, trade in services is defined as the supply of a service:
(a) from the territory of one Member into the territory of any other Member;
(b) in the territory of one Member to the service consumer of any other Member;
(c) by a service supplier of one Member, through commercial presence in the territory of any other Member;
(d) by a service supplier of one Member, through presence of natural persons of a Member in the territory of any other Member.

39 Pietro Poretti & Roberto Rios – Herran, 'A Reference Paper on Energy Services: The Best Way Forward', 3 *Manchester Journal of International Economic Law*, 19 (2006).

movements of natural persons covers the entry and visit of physical persons providing energy services such as mangers, consultants and technicians.[40]

This calls for an examination whether, the international framework of services law need to be altered to address electricity's role as an essential services in modern economies. There are several solutions which suggest that the existing GATS framework would benefit from clarification but does not need to be fundamentally altered.

Conclusion: Some proposals and future framework

The GATS and GATT provides tools and guidelines necessary to shape multilateral agreements to promote energy security. The following solutions can fulfill the objective of energy access and security within the existing WTO framework.

Firstly, Rights-based approach to development to achieve a positive transformation of power relations among various development actors can be used. In this context electricity should be recognized as a basic right in the international scenario, which can be implemented through the framework established by the WTO. However, right-based approach to electricity through trade law poses various challenges. It assumes that electricity is a good (or service) that is intrinsically desirable or socially valuable to consumers, while a few would disagree that electricity is an extremely valuable service, closely linked to living standards.[41] Right-based approach leaves unanswered key questions such as how much electricity is required to satisfy human needs, how it should be paid for, and whether assigning such rights may not create distortions in the allocation of resources that outweigh their social benefit. However, electricity is been gradually recognized as fundamental right or a basic human right in India.[42]

40 Id at 19.

41 See, Andrea Cornwall & Celestine Nyamu- Musembi, 'Putting the 'rights-based approach' to development into perspective', 25 *Third World Quarterly* 1415 - 1437 (2004); Peter Uvin, 'From the Right to Development to the rights-based approach: How 'Human-Rights' entered Development', 17 *Development in Practice* (2007).

42 A Subramani, 'Electricity Supply is Legal Right, Madras High Court Says', *Times of India* (October 10, 2013) available at http://timesofindia.indiatimes.com/india/Electricity-supply-is-a-legal-right-Madras-high-court-says/articleshow/23841025.cms

Secondly, an approach should be developed to include universal service obligations based on the existing GATS framework. Trade law should play a role to balance the rights of WTO members to place reservations on commitments against the need for clarity and transparency in the pursuit of universal service goals. However, protectionism wherein may pose a problem as members are inclined to give more importance to their domestic obligations over universal service obligations. As GATS have not made much progress towards including universal service goals, it requires to be done urgently to lessen its loopholes.[43]

Thirdly, India should adjust its domestic energy policy to reduce energy consumption through trade. This can be done by inflicting more investments in research and development of new technologies and to improve efficiencies of the existing, which in turn requires various diverse services to boost innovations which can be liberalized through GATS market access commitments. Services such as education, training, manufacturing, constructing can be further liberalized under the auspice of GATS's four modes of services through commitments such as market access and national treatments which will reduced trade barriers such as internal taxation and charges.[44] The prohibition of tax discrimination against free flow of goods and services is directly related to full the *equality* obligation. The equality obligation requires equal treatment of both, domestic and international commerce.[45] In the case of *Complete Auto Transit, Inc. v. Brady*[46]

43 The Venezula case reflects this issue of protectionism. Although it involved a dispute over goods, there are lessons for the energy services negations. Venezuela claimed that the US violated the national treatment principle by applying stricter standards on imported gasoline than it did for domestically refined gasoline. The Appellate body ruled against the US as the panel found that the US had in fact established higher standards for gasoline of foreign than of domestic origin, and noted that the legislative history explicitly mentioned congressional intent to provide favorable treatment to domestic producers. The case illustrates the danger of providing domestic regulators with high level of discretion and denying foreign competitors legal recourse. International trade commitments can help by recognizing the right of governments to withhold commitments in the name of public interest goals, but also by providing a legal basis that ensures that members adhere to lesser trade restrictive standards. (United States - Standards for Reformulated and Conventional Gasoline (US- Gasoline).

44 Dennis J. Hough Jr, 'World Trade Organization Agreements and Principles as a Vehicle for the Attainment of Energy Security', 9 *Richmond Journal of Global Law and Business*, 224 (2010)

45 See, Boris I. Bittker, 'Equity, Efficiency, and Income Tax Theory: Do Misallocations Drive Out Inequities', 16 *San Diego Law Review* (1979).

46 430 U.S. 274 (1977).

the court stated that a state tax will pass commerce clause[47] scrutiny if it is applied to an activity with a substantial nexus with the taxing state, is fairly appropriate, does not discriminate against interstate commerce, and is fairly related to the services provided by the state". A leading commentator has summarized this decision as "A tax which by its terms or operation imposes greater burden on out-of-state goods, activities, or enterprises than in competing in –state goods, activities, or enterprises will be struck down as discriminator under the Commerce Clause".[48] This case has clearly enunciated the non-discriminatory obligation of the taxing authorities.

Another landmark case in this regard is the European case of *Commission v. France,*[49] France's denial of integration credits to the French branch of a foreign insurance company that held shares of French companies was held to violate the freedom of establishment.

Division of supply through four modes read with international tax rules (mainly bilateral treaties) provide for a division of taxable income which reduces chances of discrimination. For several years, the standard developed – country division of the income tax base between two taxing jurisdiction has been following:[50] The source country is given primary and exclusive jurisdiction to tax *corporate business* income, while the residence country is given primary and exclusive jurisdiction to tax *investment income*, such as interest, dividends, and royalties, received from corporations.[51] The source country taxes the business income because the country of residence either forgoes taxing such income or taxes only to the extent to tax rate exceeds that of the source country.[52]

47 U.S. Constitution gives exclusive power to regulate commerce among the states, with foreign nations, and with Indian tribes. Black's Law Dictionary 285 (8th ed. 2004).

48 Walter Hellerstein, 'Commerce clause restraints on state tax incentives', 82 *Minnesota Law Review* 413 (1997).

49 1986 E.C.R 273, 1986.

50 Id.

51 For discussion on debate for the greater allocation of the tax base to the source countries, *See* Klaus VOGEL ON DOUBLE TAXATION CONVENTIONS (Wolter Kluwer, 3rd ed, 1997).

52 For better understanding on the division of tax bases, see Boris I. Bittker, 'A "Comprehensive Tax Base" As A Goal of Income Tax Reform', 80 *Harvard Law Review* (1967).

Such a division is consummated by a fine combination of domestic tax law and bilateral tax treaties. The domestic law of the source country typically taxes incomes of business arising within its borders, irrespective of who produces it; the residence country typically either exempts foreign business incomes or provides a credit for foreign incomes taxes, limited to the amount of the residence – country tax on the foreign income. Wherein there are several producing or source countries, the division of such countries follows form the price charged by the parties.

Fourthly, transparent and predictable energy market should be in effect, allowing laws of demand–supply to govern the market as it will bring fairness in the market. Transparency and fairness can be induced by deregulating the energy sector. As of now, the Indian energy sector is highly regulated by the government and various sub-sectors are regulated by separate governmental branches, it leads to unreasonable delay and conflict of interest. The lack of coordination between planning and implementing agencies, lack of a comprehensive energy policy and poor level of corporate governance are some of the major barriers to a transparent and predictable energy market. The GATT and GATS have already incorporated some provisions regarding transparency and fairness which should be duly given effect by the member states by openness in law making, rule making and enforcement mechanism.[53]

Fifthly, revenues derived from energy sector should be managed in a wise and prudent manner as good governance of income will make the government responsible and stable, and enhance the standard of living. As trade promotes economic development, by opening up the trade in energy and energy services, reliable supply of electricity can be made available which will attract investment, which is condition precedent for job growth and stable political atmosphere in the country.[54]

53 For instance, Article X of GATT deals with publications and administration. In *US – Underwear (United States – Restriction on Imports of Cotton and Man-made Fiber Underwear* (8 November 1996) WT/DS24/R*)*, the panel found that the principle of transparency and due process has been embodied in Article X. It allows the members and other persons affected, or likely to be affected, by governmental measures imposing restraints, requirements and other burdens, to have a reasonable opportunity to acquire relevant information about such measures and accordingly protect and adjust or modify their activities.

54 Organization for Security and Co-operation in Europe, *Energy Security as a Pre-requisite for Political Stability* (September 7, 2005) available at http://www.osce.org/serbia/16332.

Over and above, the Services Sectoral Classification list[55] and the 1991 UN Provisional Central Product Classification[56] should include a distinct section for the energy sector because a clear lack of nomenclature for energy services poses a problem of visibility for the energy sector in the GATS which may prove to be hindrance for market access negotiations and liberalization process for the energy sector.

Therefore, energy being an indispensible component of daily life, underpins all economic activities. The importance of this sector for social and economic life, coupled with the specificities of energy trade, has led governments to be directly involved in the provisions of energy goods and services.[57] But with the advent of liberalization and privatization under the auspices of WTO, energy services have become a growing part of international trade. Although the negotiations in energy are still in the preliminary stages, the priority now accorded to the sector suggests that countries are beginning to focus more seriously on how multilateral discrimination can remove restrictions on market access and enhance the conditions of competition in the supply of energy services.[58] However, deregulation and disinvestment in the energy sector puts a burden on the market which it is not equipped to deal with because market cannot deliver things like sanitation, education, infrastructure or electricity to people on a universal or an equitable basis.[59] Nevertheless, the internalization of the energy sector makes strategically prudent to subject the energy sector to the process of liberalization and privatization.[60]

55 WTO Document No. MTN/GNS/W/120, dated 10 July 1991.

56 United Nations, *Provisional Central Product Classifications* (1991), available at: http://unstats.un.org/UNSD/cr/registry/regcst.asp?Cl=9&Lg=1

57 Mireille Cossy, 'The Liberalization of Energy Services: Are PTAs more Energetic than the GATS?' in OPENING MARKETS FOR TRADE IN SERVICES: COUNTRIES AND SECTORS IN BILATERAL AND WTO NEGOTIATIONS 405 (Cambridge University Press, Marchetti et al eds., 2008).

58 Peter C. Evans, 'Strengthening WTO Member Commitments in Energy Services: Problems and Prospects', in DOMESTIC REGULATIONS AND SERVICE TRADE LIBERALIZATION 168 (Oxford University Press, Mattoo et al. eds., 2003).

59 Lori Wallach and Patrick Woodhall, WHOSE TRADE ORGANIZATION? : A COMPREHENSIVE GUIDE TO THE WTO, 113, 114 (The New Press, 2004).

60 R.V. Anuradha and Piyush Joshi, 'Trade and Energy Security: Legal Assessment of the Linkages and Implications for India', in TRADE , WTO AND ENERGY SECURITY 95 (Springer, Sajal Mathur ed., 2014).

As India has both export and import interests in the energy services, it urgently needs foreign investment, technical know-how and international best practices. With a high-skilled workforce working at reasonable prices, India has the potential of providing energy-related consultancy services both through cross-border supply and movement of persons.

Since the domestic availability of fossil fuel is limited,[61] Indian companies are exploring the possibilities of investing abroad. Therefore, it advisable that India should push for liberalization commitments in energy sector, both in the WTO and in its bilateral/regional agreements.

However, it might be difficult for India to undertake commitments in certain sub-sectors such as pipeline transportation and retailing, since the domestic regime is evolving slowly due to security and sensitivity concerns. This is also one of the important reasons as to why India has not been successful in attracting foreign investment for this sector.[62]

Therefore, it is suggested that the on-going reforms of liberalization and privatization shall strike to provide a competitive environment which will protect the interests of consumers and resolve the energy problem. Public - Private Partnership (PPP), better inter-ministerial coordination, centre-state coordination and Government-to-government collaborations shall be given effect to improve productivity and competence of the sector and ensure greater energy security.

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61 Ramprasad Sengupta, 'The Unsustainability of Fossil Fuels in India', *The Live Mint* (April 18, 2013), at http://www.livemint.com/Opinion/fOo85qYBmRcebMsB0emoGP/The-unsustainability-of-fossil-fuel-use-in-India.html (last accessed on September 21, 2015).

62 See, Shakshi Parashar, 'Legal Aspects of Oil and Gas Sectors', available at: http://www.manupatrafast.com/articles/PopOpenArticle.aspx?ID=3b9928f3-1807-4916-b78333b3c38992db&txtsearch=Subject:%20Oil%20And%20Gas (last accessed on September 15, 2015).

Rationalizing Global Trade Agreements To Promote Green Energy

Saumya Chaudhari[*]

Abstract

The U.S.- India WTO dispute on the Domestic Content Requirements imposed for Solar cells and Solar modules by India under the Jawaharlal Nehru National Solar Mission finally culminated on 28th August 2015. This decision is not merely a defeat for India but a huge set-back for the collective global initiative of adopting renewable energy to combat climate change. In view of the upcoming Paris Climate Change Summit, 2015, and rising national commitments in preparation thereto, this decision strikes a discordant note by discouraging government subsidies to the renewable energy sector for violation of WTO rules against National Treatment. WTO regime on the energy sector remains inconsistent with provisions scattered across several WTO instruments. With the fossil fuel subsidies categorized as 'non-actionable subsidies' under the Agreement on Subsidies and Countervailing Measures, 1995, polluting fossil fuels have historically not only distorted trade but caused immense pollution. Today, an exceptional treatment to subsidies for renewable fuel and technology, to merely repair this harm, is justifiable on this ground alone. It is imperative that a consolidated instrument be formulated to govern the renewable energy sector. An 'Agreement on Renewables' akin to the Agreement on Agriculture, 1995 is an urgent requirement. The global food security challenges of the 20th century have now been replaced by energy insecurity. However, a similar approach of special and differential treatment to developing countries must be adopted to diffuse cost-effective clean technology. This Agreement coupled with a gradual phasing out of fossil fuel subsidies will place us back on the path of sustainable development.

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Introduction

The upcoming Paris Climate Change Summit, 2015[1] has gotten every country pruning its feathers for a good show. India has likewise announced revised cumulative targets under its Jawaharlal Nehru National Solar Mission (JNNSM) from generation of 20000 GW of solar power by 2021-22 to 1,00,000 GW.[2] This bid would raise the meagre 3% contribution of the renewables in electricity generation in India currently. A large fraction of the project cost of Rs. 6,00,000 crores will be utilized in financial assistance such as capital subsidies especially for stand-alone rural solar projects and other special category states in the North-East and areas on international borders. This policy has been received well globally with Japan, Australia and United States having pledged support on different counts. These include the bilateral solar projects under the Asia-Pacific Partnership Programme[3] as well as investment of Rs. 4 billion under the U.S.-India Green Partnership[4]. Not surprisingly, this 12 year plan to expand solar

1 The Paris Climate Change Summit, 2015 to be hosted by France from November 30th to December 11th is the 21st Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21/CMP11), otherwise known as "Paris 2015". It is a crucial conference that seeks to achieve a new international agreement on the climate, applicable to all countries, with the aim of keeping global warming below 2°C. Available at http://www.cop21.gouv.fr/en/cop21-cmp11/what-cop21-cmp11

2 The 1,00,000 GW target has been bifurcated into generation of 40,000 GW through Grid-connected roof-top Solar Projects and 60,000 GW through Medium and Large Scale Solar Projects; Resolution No. 30/80/2014-15/NSM, Ministry of New and Renewable Energy, Government of India, available at http://mnre.gov.in/file-manager/grid-solar/100000MW-Grid-Connected-Solar-Power-Projects-by-2021-22.pdf

3 The Asia-Pacific Partnership on Clean Development and Climate, launched in January, 2006, with seven member nations (Australia, India, China, Japan, U.S., Korea, Canada) has sought to innovate and accelerate development and diffusion of cost-effective and clean energy technology. A bilateral agreement between India and Japan on 'Co-operative Research for Long Term Reliability of PV Modules in India and Japan' has been signed hereunder. The project description is available at http://www.asiapacificpartnership.org/pdf/Projects/REDGTF/CPD/RDG-09-39.pdf

4 U.S.-India Green Partnership to Address Energy Security, Climate Change, and Food Security signed on 24th November, 2009 resulted in an MoU for enhanced cooperation for the deployment of clean energy technologies to strengthen adaptation to climate change. Available at https://www.whitehouse.gov/sites/default/files/Green_Partnership_Fact_Sheet.pdf; Another MoU on November 18, 2014 saw U.S. Export-Import Bank pledge $1 billion for development of renewable energy sources in India, available at http://www.state.gov/r/pa/prs/ps/2014/09/232328.htm

capacity about 6000 fold has been criticized as over-ambitious.[5] However, this may not be the only hurdle in achieving this aim. With the world forging towards a collective climate combat on one hand, on the other there still exist major policy lacunae hindering this process. One such is the stringent WTO rule on government subsidies to the energy sector. These rules make subsidies actionable if detrimental to the interests of another WTO member.[6] The 50% domestic content requirement (DCR) set under JNNSM by the Indian government had been challenged by the U.S as discriminatory to its photovoltaic cell and module manufacturers.[7] The matter, which fundamentally pegged trade against the environment, was finally decided on 28th August 2015 in favour of the U.S.[8] This decision confirms the dominance of uninhibited economic growth over the battle for sustainability and further reveals the ultimate paradox in terms of the global commitment to clean fuel.

This episode has reignited the debate on the need to amend the relevant provisions in the WTO instruments and incorporate special considerations for energy subsidies with recent global developments. The allegations levelled by the U.S. against the DCR involved violations of Art. III (4) of GATT,[9] Art. 2.1 of TRIMS,[10] and Arts. 3.1 (b), 3.2, 6.3 (a), 6.3 (c), 25 of the Agreement on

5 Ratul Puri, 'What will be the fate of Jawaharlal Nehru National Solar Mission', *The Economic Times* (April 23, 2015) available at http://articles.economictimes.indiatimes.com/2015-04-23/news/61457679_1_solar-energy-jnnsm-renewable-energy; *Also see* http://social.csptoday.com/markets/india-cerc-tariff-benchmark-too-ambitious; and http://www.enerdata.net/enerdatauk/press-and-publication/energy-news-001/india-renewable-energy-targets_26066.html

6 Agreement on Subsidies and Countervailing Measures, Articles 1.2, 2, 5, Apr. 15, 1994, 1867 U.N.T.S. 14 [hereinafter SCM Agreement]

7 Both the WTO challenges brought by the U.S. against India in February, 2013 and February, 2014, concerned the domestic solar incentives given by the government under the JNNSM. Available at http://www.ictsd.org/bridges-news/bridges/news/us-lodges-wto-challenge-over-india-renewable-energy-incentives; http://www.ictsd.org/bridges-news/biores/news/us-launches-new-wto-challenge-against-india-solar-incentives

8 Rajesh Roy, 'WTO Panel Rules Against India's Solar Program', *The Wall Street Journal* (September 1, 2015) available at http://www.wsj.com/articles/wto-panel-rules-against-indias-solar-program-1441112645; also, http://www.ndtv.com/india-news/india-loses-solar-case-against-us-at-wto-to-appeal-1211764

9 General Agreement on Trade and Tariffs, 1947.

10 Agreement on Trade-related Investment Measures, 1995.

Subsidies and Countervailing Measures, 1995 (ASCM).[11] Art. III (4) of GATT and Art. 2.1 of TRIMS pertain to National Treatment regulations that prohibit the preferential treatment of domestic goods over comparative goods imported from other member countries. This ensures that the products whether imported or of a national origin are treated equally in all respects of legal regulations affecting the sale, purchase, transport and use of the product within the national boundary. Similar provisions under the ASCM denounce practices that subsidize domestic goods and impede the sale of imports, effectively prejudicing the interests of fellow member nations.

Fossil Fuel Subsidies and Implications

Under the current regime of fossil fuel subsidies within WTO, energy related goods and services form part of different agreements, such as GATT, ASCM, GATS and Agreement on Agriculture.[12] Currently, the ASCM categorizes subsidies into three categories of prohibited, actionable and non-actionable subsidies. Article 8 of ASCM treats energy subsidies as 'non-actionable' permitting member nations to assist research activities in the industry, support regional development in the field, promote adaptation of existing facilities to new environmental requirements, etc. This provision has seen the rise in fossil fuel subsidies with nearly US$548 billion amounting to consumer subsidies alone in 2013.[13] Article 8(3) required these subsidies to be notified to the Committee before implementation. It was due to wholly unreported subsidisation under this provision that Article 8 was allowed to lapse after the 1999 Ministerial Conference in Seattle. Despite this lapse all nations have continued with fossil fuel subsidies as if in tacit agreement.[14]

11 Becky Beetz, 'US requests WTO consultation over Indian solar DCR', *P V Magazine* (February 7, 2013), available at http://www.pv-magazine.com/news/details/beitrag/us-requests-wto-consultation-over-indian-solar-dcr-_100010120/#ixzz3lOFQbQEX.

12 Cottier, T., Malumfashi, G., Matteotti-berkutova, S., Nartova, o., De Sépibus, J., & Bigdeli, S.Z. 'Energy in WTO Law and Policy', in T. Cottier and P. Delimatsis (eds.), THE PROSPECTS OF INTERNATIONAL TRADE REGULATION: FROM FRAGMENTATION TO COHERENCE 211–244 (Cambridge, 2011).

13 World Energy Outlook, 2013, International Energy Agency

14 Rubini, L., 'Ain't wastin time no more: Subsidies for renewable energy, the SCM Agreement, policy space, and law reform', 2012, *Journal of International Economic Law*, 15(2), 525–579.

The fossil fuel subsidies firstly distort trade; secondly, they adversely affect the environment; and thirdly, they significantly impact renewable energy development. According to Faith Birol, the chief economist at the International Energy Agency (IEA), eliminating subsidies for coal, gas, and oil could by itself contribute to half the reduction of greenhouse gas emissions necessary to curb global warming under 2 degrees Celsius threshold.[15] Further these subsidies have impaired the relative cost competitiveness of renewable energy by reducing the cost of fossil fuel based alternatives. This enhances the attractiveness of fossil fuel technologies in comparison. Till 2010, fossil fuel subsidies had rarely been challenged on any of the above grounds. The India-U.S. dispute is only the 4th such case on the matter. With the recent climate change concerns the adoption of renewable energy has risen and so have the WTO disputes that challenge the trade distorting character of these subsidies that are now extended to cover the renewables. It is noteworthy that the fossil fuel subsidies were never similarly challenged.

Global 'Climate Security' akin to Food Security

Mindful of the overarching intention of the WTO instruments to harmonize the international trade of goods, it is imperative that the renewable energy sector be exempted from the rule prohibiting trade distortions. The provisions concerning energy subsidies scattered across separate agreements must be consolidated into a single instrument that clarifies the position of the WTO in favour of advancement of this sector. An Agreement on Renewables may be formulated as an exception, similar to the historical Agreement on Agriculture.[16] This latter agreement was proposed in the Uruguay Round (1986-94) of discussions of GATT with the long term objective of establishing a fair and market oriented agricultural trading system. It relaxed the prohibition on import/ export quotas and subsidies as imposed by previous agreements in other Rounds of discussion. These exemptions for a fixed 'implementation period' were to be phased out eventually. This trade liberalization recognized the need for special and differential treatment for developing countries and

15 Duncan Clark, '*Phasing out fossil fuel subsidies 'could provide half of global carbon target', The Guardian*, Jan. 19, 2012, *available at* http://www.theguardian.com/environment/2012/jan/19/fossil-fuel-subsidies-carbon-target.

16 Agreement on Agriculture, available at https://www.wto.org/english/docs_e/legal_e/14-ag_01_e.htm.

required the developed countries to consider the scope for improvement of opportunities and terms of access for agricultural products in these countries. A similar agreement on lines of renewable energy with targeted subsidies that phase out after the implementation period would enable an effective shift from fossil fuels that are currently the primary source of global energy.

With the developments on the climatic front in the last few years, 'renewables' have replaced the agricultural sector in the above context. Today the world stands on the threshold of an era of Renewable Energy Commercialisation similar to the development of agriculture in the early 1990s. With exponential increments in the world population, under-nutrition and food security threatened a large part of the developing world. This crisis arose even as the global food production indicated sufficient food to meet the needs of all people on the planet.[17] Today climate change poses a comparative threat to existence with a more universal effect on all countries alike. Comparable to the earlier disparity in food security across different nations is today's unequal advancement and accessibility to renewable technology. Climate change aggravated by incessant burning of fossil fuels as a source of energy has also led to 'energy insecurity' with the fast diminishing fossil fuel reserves. Therefore renewables are not only quintessential for reducing the carbon footprint and combating climate change but with other gradually waning energy alternatives renewables are also seemingly the only viable option. With universal efforts channelled to contain global warming within the irreversible 2 degree Celsius limit, and the upcoming Paris Summit declared by the Earth League[18] to be the 'last chance' to avert a climatic doom, the need for widespread adoption of renewable technology and a simultaneous modification in the energy infrastructure is urgent. This can be achieved only by immediate and uniform dispersion of technology from the developed countries to the rest of the world. For effective dispersion Renewable Energy Commercialisation must be resorted to. Production of renewables can be boosted only with appropriate incentives such as domestic subsidies and country specific relaxation of the tax regime.

17 World Agriculture: Towards 2010; Food and Agriculture Organization of the United Nations, 1995 https://www.mpl.ird.fr/crea/taller-colombia/FAO/AGLL/pdfdocs/wat2010.pdf.

18 Earth League is a voluntary international alliance of prominent scientists from world class research institutions, who look to work together to respond to some of the most pressing issues faced by humankind, as a consequence of climate change, depletion of natural resources, land degradation and water scarcity.

Indi-Newables

Specifically in the Indian context these renewables may largely be taken to imply solar energy. Although statistically wind power currently leads the Indian renewable energy sector with 66% (12 GW) of the energy generated by non-conventional resources,[19] it is solar energy that has the most untapped potential. India offers the ideal combination of a dense population with a high solar insolation. Insolation or solar irradiance is simply the measure of sun exposure to the Earth's surface, i.e. the power per unit area produced by the sun in the form of electromagnetic radiation.[20] JNNSM launched in November 2009 as one of the eight National Missions under the National Action Plan on Climate Change (NAPCC) sought to explore the possibility of advancement in this sector. It targeted installation of 22 GW of on- and off- grid solar power by the year 2022.[21] It was to be implemented in three phases with the First Phase from 2010-2013 focussed on experimenting with incentive structures and creating a market for solar power in India. In June 2015 the Indian government revised the target to 100 GW by 2022 declaring Rs. 15,050 crores to be provided as capital subsidies for Viability Gap Funding (VGF) based projects.[22] The VGF Model, planned to be adopted in the Second Phase (2013-2017) of JNNSM, provides for one time or short term capital assistance from the government for high capital investment solar projects. Under this Model the developers will receive 50% of the funding when the project is commissioned and 10% every five years thereafter with precautionary provisions to ensure against project failures.[23] In addition to VGF, the Second Phase of JNNSM (starting in 2013) had also expanded the ambit of Domestic Content Requirement (DCR) to incentive Indian producers. DCR required a certain proportion of materials used under JNNSM to be

19 Indian Renewable Energy Status Report, 2010; NREL/TP-6A20-48948.

20 Michael Boxwell, Solar Electricity Handbook: A Simple, Practical Guide to Solar Energy (2012), p. 41–42.

21 Indian Renewable Energy Status Report, 2010; NREL/TP-6A20-48948.

22 Aruna Kumarankandath, 'Modi government sets revised solar mission target at 100 GW', Down To Earth (June 18,2015) available at http://www.downtoearth.org.in/news/modi-government-sets-revised-solar-mission-target-at-100-gw-50236.

23 Max Hall, 'India's National Solar Mission, Phase II', *PV Magazine* (October 8, 2013) available at http://www.pv-magazine.com/news/details/beitrag/indias-national-solar-mission—phase-ii_100012978/#ixzz3kexhPmY2.

manufactured within India. While DCR under the First Phase extended only to solar cells and solar modules it was expanded in scope to also cover solar thin film technologies. This decision was received adversely by countries exporting some of these products to India. The U.S. being one of them had challenged this DCR in WTO in 2013. The final decision of the WTO reported on 28th August 2015 was in favour of the U.S., effectively condemning incentivization by the Indian government of its domestic renewable energy sector.

World Agreement on Renewables

The WTO decision appears regressive when seen in the context as elaborated above. With the Paris Summit scheduled for December 2015 this decision proves an even more grave set-back for the entire international community striving to combat energy insecurity. It reinforces the need for reforms to the regime of energy subsidies. Several demands to the WTO have been made to this effect since 2010. However, even by April 29, 2013, the outgoing WTO Director-General Pascal Lamy lamented that the *"discussion on the reform of fossil-fuel subsidies has largely bypassed the WTO. This is a missed opportunity."*[24]

Three similar disputes have preceded the current one between India and the U.S. The Japan-Canada dispute[25] in 2010 was the first such dispute at the WTO where the DCR for the renewable energy generation facilities had been challenged on grounds similar to those by the U.S. as discussed above. The decision of the WTO on 19th December 2012 was predictably in favour of Japan who had complained of discrimination. Anti-subsidy investigation had also been launched by the European Commission (EC) into Chinese imports of silicon solar panels in September 2012.[26] When China responded with counter allegations against the EU, specifically Italy and Greece, for violative DCRs a settlement was reached in July 2013 to escape a wider trade war.[27] In the India-U.S. dispute a

24 Pascal Lamy, Director-General, WTO, Remarks to the Workshop on the Role of Intergovernmental Agreements in Energy Policy (Apr. 29, 2013), *available at* http://www.wto.org/audio/wks24042013_dgpl.mp3 (audio recording).

25 *Available at:* https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds412_e.htm

26 Press Release, European Commission, EU Initiates Anti-Dumping Investigation on Solar Panel Imports from China, (Sept. 6, 2012),http://europa.eu/rapid/press-release_MEMO-12-647_en.htm.

27 James Kanter & Keith Bradsher, *Europe and China Agree to Settle Solar Panel Fight*, N.Y. Times, July 27, 2013, *available at:* http://www.nytimes.com/2013/07/28/business/global/european-union-and-china-settle-solar-panel-fight.html.

similar hypocrisy had surfaced on part of the U.S. Incentives offered to U.S. companies to use local labour and products in renewable energy and water projects were revealed.[28] Clearly, DCR is an inescapable reality of the growing renewable energy sector in both developed and developing countries. It is therefore desirable to formalize such measures as acceptable.

In addition to an Agreement on Renewables the continuing subsidies to polluting fossil fuels must also be phased out as a matter of priority. It is the current commitment of only the G-20 to phase out inefficient fossil fuels by 2025.[29] There is a need to elevate this commitment to a global target. The resources freed from fossil fuel subsidies could be channelled towards national decarbonisation, i.e. the shift towards renewable energy. It could further be used to create international climate finance.[30] This would also enhance the transparency around existing subsidies by supporting subsidy assessments, tracking and reporting, and the completion of a diagnostic before funds are disbursed to projects and programmes through bilateral or multilateral channels.[31] It is this current lack of transparency that makes ASCM ineffective as a tool to discipline subsidies. This defeats WTO's overall goal and harmful subsidies continue to undermine sustainable development. An Agreement on Renewables that consolidates the energy regime and clarifies the principle and rules governing renewables will be a firm step in the run towards the Paris Summit. It will also tap into the momentum created by the civil-society campaign at the Rio+20 Conference on Sustainable Development in 2012, which called for governments to reach a global agreement, and demonstrate the first collective and effective resolve on part of both developed and developing countries towards a future of energy security.

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28 Tom Miles, 'India questions U.S. Green energy incentives at WTO', *Reuters* (April 17, 2013), available at http://uk.reuters.com/article/2013/04/17/us-india-usa-trade-idUKBRE93G11U20130417.

29 G20 Leaders' Communiqué Brisbane Summit (November 15-16, 2014), available at https://g20.org/wp-content/uploads/2014/12/brisbane_g20_leaders_summit_communique1.pdf.

30 High-level Advisory Group on Climate Change Financing, 2010

31 Shelagh Whitley, Fossil Fuel Subsidies and Climate (Overseas Development Institute, UK, November 2013).

RECENT INDIAN JUDGMENTS ON ENERGY LAW AND POLICY

Sharmila Raman Menon[*]

Constitutional Perspectives on Right to Access Energy

1. T.M. Prakash and Ors. v. The District Collector and the Superintending Engineer, Tamil Nadu Electricity Board.[1]

This was a case wherein the request to provide electricity connection to the Petitioners who were living in the government poromboke land as laundry workers, was disregarded on the ground that they were encroachers. The Respondents urged the need to produce a 'No Objection Certificate' for availing the service, in pursuance of clause 12 of the Regulation 27 of the Tamil Nadu Distribution Code, 2004. The fundamental question before the High Court of Madras was whether the duty on the distribution licencee to supply electricity on request, as provided under section 43 of the Electricity Act, 2003 was mandatory or directory. While answering this concern, the court looked into the significance of access to supply of electricity in terms of Article 21 of the Constitution, and stated:

65. Lack of electricity supply is one of the determinative factors, affecting education, health, cause for economic disparity and consequently, inequality in the society, leading to poverty. Electricity supply is an aid to get information and knowledge. Children without electricity supply cannot even imagine competing with others, who have the supply. Women have to struggle with firewood, kerosene, in the midst of smoke. Air pollution causes lung diseases and respiratory problems. Electricity supply to the poor supports education and if it is coupled with suitable employment, disparity is reduced to certain extent. Lack of education and poverty result in child labour.

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1 (2014) 1 MLJ 261

It was finally concluded that the intention of the legislature was to make a mandatory provision for the supply of electricity to all persons irrespective of whether they were owners or occupiers, including those living in the government poromboke lands, subject to the submission of an undertaking/declaration. The Court thus asserted the need to make a clear distinction between the law intended for the removal of encroachment from poromboke land and the law that mandates supply of electricity even to a person in occupation of the poromboke land.

Regulation of Coal Sector

2. Manohar Lal Shrama & Anr. v. Principal Secretary[2]

At the back drop of the infamous Coal Block Allocation Scam, this case was initiated by way of two PILs by M.L. Sharma and Common Cause, an NGO, (Petitioners) thereby challenging the legality of the coal allocation made to the private companies by the central government during the period of 1993 to 2012. Considering the nature of the issue involved, the Court sought reply from the central government, the concerned state governments and also entertained intervention applications filed by three associations who represented the allottees who had gained benefit from the alleged allocation.

While analyzing the constitutional validity of the allocations, one of the fundamental concerns was with respect to the power tussle between the union and the states in a federal structure, in so far as the central government's role/ authority in the process of allocation of coal blocks situated in different states was concerned. This involved the appropriate interpretation of the governing provisions of the Mines & Minerals (Development & Regulation) Act, 1957, (MMDR Act) the parent legislation governing the regulation of mining activities and development of minerals in India, with the Coal Mines (Nationalisation) Act, 1973 (CMN Act) and its 1976 & 1993 Amendment Acts, which deal exclusively with the aspects of coal mining. It could be ascertained from the Seventh Schedule of the Constitution that to the extent to which the central government had taken under its control 'the regulation of mines and development of minerals' through the 1957 Act (Entry 54 List I), the states had lost their legislative competence (Entry 23 List II). The 1973 Act also had echoed it by

2 (2014) 9 SCC 516

stating that the union shall take under its control the 'regulation and development of coal mines' in public interest, thereby taking it out of the state's legislative domain. However, this pre-eminent role of the central government could not have conferred on them the power to act in a manner derogatory to the provisions contained in the 1957 Act. Moreover, except providing for the persons who could carry out coal mining operations, the 1973 Act does not by itself prescribe for the procedure to be followed for the allocation of coal blocks, and for this, the legal regime under the 1957 Act has to be resorted to.

According to the existing legal framework, the state government, under the 1957 Act, needs to get prior approval from the central government while granting a reconnaissance permit, prospecting licence or mining lease for coal mines; and once a 'letter of allocation' is issued by the central government then the role of the state government gets reduced to the completion of the procedural formalities. Nevertheless, the practice and procedure adopted by the central government for the allocation of coal blocks by itself through the 'administrative route' was found to be totally inconsistent with the law, as they were not empowered to do so either under the MMDR Act or the CMN Act.

Arguendo, the central government had the authority to make allocations, then the broader contention was that the entire process of allocation by the central government either through the Ministry of Coal, known as the 'government dispensation route' or those done based on the recommendations of the 'screening committee' (constituted for the assessment of coal allocation for captive use) was violative of the basic minimum statutory requirement. This was also answered by the Court in positive. It was found that the central government through the Ministry of Coal had made coal block allocations to certain state government undertakings for 'commercial use' for which they were ineligible and for 'captive use' to those companies not being engaged in the identified end-uses under section 3 (3) (a) of the CMN Act. Moreover, no objective criterion of assessment was followed, no merit was evaluated, no comparative estimation of applications was carried out or no uniform norms was adopted by the Screening Committee while making the selections, which in the opinion of the Court was evidently reflective of their *mala fide* intentions.

However, on the question as to whether auction by competitive bidding could be the sole legitimate method for the alienation of natural resources including coal under Article14 of the Constitution, the Court reiterating its view in *In re*

Special Reference No. 1 of 2012, (2012) 10 SCC 1and held that though auctions may be the best way to maximize revenue but revenue maximization may not always be the best way to subserve the common good under Article 39 (b) of the Constitution. Emphasizing on the central government's stand on this aspect, it was noted that:

102. As a matter of fact, the Central Government has explained the circumstances because of which since 1992-1993 competitive bidding for allocation of coal blocks was not followed. The explanation is that in 1992-1993, the power generation and coal mining sectors were first opened up to private participants and, at that time, the private sector had to be encouraged to come forward and invest. Allocation of coal blocks through auction in such a scenario would have been impractical and unrealistic because during that time existing demand for coal was not being fully met by CIL and SCCL. There was supply-demand mismatch and there was also a huge shortage of power in the country. The State Electricity Boards had been unable to meet power requirements.

The Supreme Court accordingly ordered the cancellation of the 214 coal block allocations, saving 42 coalmines which had initialized their operations, by making them pay an additional levy. The judgment is hailed as anassertion of the Supreme Court's acumen in safeguarding the public resources from being seized and manipulated by powerful giants for their personal gains.

Regulation of Oil & NG Sector

3. Reliance Natural Resources Ltd. v. Reliance Industries Ltd.[3]

This judgment of the Supreme Court is hailed as one of the most significant attempts of the apex court, lately, to reinstate the State's ultimate authority to control the natural resources of the country from being exploited by private entities. Under the New exploration Licensing Policy of 1997, a Consortium of Reliance Industries Ltd. (RIL) and NIKO in 1999 had won the bid, over the KG-D6 block located offshore the coasts of AP, for deep-water exploration and production of natural gas. Accordingly a Production Sharing Contract (PSC) was entered into between the Consortium (Contractor) and the Government of India, as per which all the costs incurred by the contractor could only be recovered from the gas actually produced by them and the

3 (2010) 7 SCC 1

Contractor could sell the produced gas only subject to the profit sharing terms with the government, as stipulated in the PSC. In 2003, RIL (Respondent) had emerged successful in the bid invited by National Thermal Power Corporation (NTPC) for the supply of gas to their power stations in Gujarat.

The enduring differences between the Ambani Brothers had got culminated in the formation of a Memorandum of Understanding, through the mediation of their mother in 2005, which subsequently obtained a sanction of Scheme of Arrangement from the High Court of Bombay. As per this arrangement, the Reliance Natural Resources Ltd. (RNRL), the Petitioner herein, was to receive gas from the RIL at a price no greater than NTPC price and supply the same for the power projects of the resultant companies (Reliance Patalganga Power Ltd. and Reliance Energy Ltd.) of the demerger of the RIL. However RIL's request to the Ministry of Petroleum and Natural Gas for the approval of the gas price at which the gas sale was agreed to between RIL and RNRL was turned down. Several issues thus cropped up before the Supreme Court, from the private arrangement made between the brothers, on appeal from the Bombay High Court.

As regards the gas price determination, the fundamental questions of law identified were whether the approval of the government was required to decide on the price at which gas was to be sold by the contractor, whether the government had the right to regulate the distribution of gas produced, whether the contractor had a physical share in the gas produced and saved which it could deal with at its own volition and whether the power of the government under the PSC to determine the valuation as well as pricing was the selling price or the price for the determination of the share of the government only or the price at which RIL had to sell the gas to RNRL.

The Court read Article 21 (1) of the PSC with 27 (2), to clarify that the PSC had mandated that the natural gas discovered and produced had to be in the context of the government's Gas Utilization Policy, that the formula adopted by the Contractor for fixing the price under the arm's-length principle had to be approved by the government and that the title to petroleum would remain with the government till the time the natural gas reached the delivery point as prescribed under the PSC. Drawing the rationale by construing the terms of the PSC, it was concluded that the PSC gives the power to the government not only to determine the basis of valuation of gas, but also its price and that "both

in terms of the Gas Utilization Policy and the Production Sharing Contract, government, in its capacity as an executive of the union, can regulate and distribute the manner of sale of natural gas through allotments and allocation which would sub-serve the best interest of the country." Though the PSC regime under NELP had provided for arm's length price determination, the governmental intervention was justified owing to the fact that under the doctrine of public trust it was their duty to provide complete protection to the natural resource as a trustee of the people at large. It was observed that:

87..... the Constitution envisages exploration, extraction and supply of gas to be within the domain of governmental functions. It is the duty of the Union to make sure that these resources are used for the benefit of the citizens of this country. Due to shortage of funds and technical know-how, the Government has privatized such activities through the mechanism provided under the PSC. It would have been ideal for the PSUs to handle such projects exclusively. It is commendable that private entrepreneurial efforts are available, but the nature of the profits gained from such activities can ideally belong to the State which is in a better position to distribute them for the best interests of the people. Nevertheless, even if private parties are employed for such purposes, they must be accountable to the constitutional set-up.

Laying a new milestone in the property jurisprudence governing natural resources in India, it was emphatically remarked that the arrangements made between private parties in such cases where natural resources are involved, need to take into account not just their interests but also the interests of their share-holders, their obligation under PSC, the national policies and moreover the broader national interest. However, the proponents of privatisation have been critical of the judgment for it can discourage the potential investors, due to the fear of losing their marketing freedom.

Nuclear/Atomic Energy Sector in India

4. G. Sundarrajan v. Union of India and Others[4]

The case arose at the backdrop of the public furor and agitation spurred by the setting up of a Nuclear Power Plant at Kudankulam(KNPP) in Tamil Nadu. Petitioner had contested the safety concerns involved in the working of the

4 (2013) 6 SCC 620

KNPP and had apprehended the occurrence of serious consequences unless all the recommendations put forth by the Nuclear Power Corporation of India Ltd. (NPCIL) Task Force were met with, before commissioning the plant. The Supreme Court reiterated the position of law that the Court could not determine whether the national nuclear policy as reflected in the Atomic Energy Act, 1962 or the decision taken by the Nuclear Power Corporation of India Ltd. (NCPIL) based on the said policy to set up the NPP, in pursuance of the Indi-Russia agreement, was fair. However, the Court made a detailed analysis of the national and international instruments in place to deal with the safety criteria for design, construction and operation of specific equipment, systems, structures and components of nuclear and radiation facilities.Analyzing the efforts of the authorities concerned, the Court opined that the Site Selection Committee(SSC) had taken care of all the requisite aspects before making its recommendations to the Government and the NPCIL had taken measures to follow the standards laid down by the Atomic Energy Regulatory Board on safety in the NPP site.NPCIL was given direction to file a status report with respect to the completion date of implementation of all the 17 recommendations made by AERB. This judgment which gave a green signal to the commissioning of the KNPP, received wide criticism,for having overlooked the violations and non-compliances.

Regulation of Power Sector

5. Gujarat UrjaVikas Nigam Limited v. Green Infra Corporate Wind Power Limited and Ors.[5]

Gujarat UrjaVikas Nigam Limited(Appellant) is involved in the business of procuring electricity from the Generating Companies on behalf of the Distribution Licensees through the mechanism of Power Purchase Agreements (PPA). The Gujarat Electricity Regulatory Commission (Respondent 2) by an order dated January 30, 2010 had fixed the tariff at Rs.3. 56 kWh, for the wind power projects in the state, for their entire project life of 25 years. In pursuance of this, a PPA was entered into between the Appellant and Green Infra Corporate Wind Power Ltd. (Respondent 1), a wind energy generator company in the State of Gujarat. However, subsequently a petition was moved by R1 before the Commission seeking for a modification in the tariff fixed and an amendment

5 2015 ELR (APTEL) 1316

in the PPA to reflect the same, based on the claim that they had chosen not to avail the benefit of accelerated depreciation under the Income Tax Act. This claim was entertained by the Commission (R1).

The substantial question for consideration before the Appellate Tribunal for Electricity was whether a valid PPA entered into between the parties based on an order passed by the Commission could be interfered with by another order. Incidentally it had to be decided whether R1 was entitled to claim a 'project specific tariff' by subsequently choosing not to avail of the benefit of accelerated depreciation in terms of the Income Tax Act. The Appellant, in this regard, contended that since the PPA did not reserve any right to choose the other alternative it cannot be read as implied and that they would have even refused to sign the PPA if R1 had at the time of signing of the PPAs sought tariff on the basis of not availing of the accelerated depreciation (which would have placed the tariff at a higher rate).

The Tribunal took note of the seminal fact that the order of the Commission that fixed the tariff taking into account the benefit of accelerated depreciation had given the leeway for a project that does not intend to avail such a benefit, to petition the Commission for a separate tariff determination. And since the Appellant did not pose a challenge to this order then, it would not be open for them to object to the petition filed by the R1subsequently, for the said relief. By accepting the Commission's order dated January 30, 2010 the Appellant was found to have agreed to the fact that the PPAs could be reopened. Interpreting the clauses (4) and (6) of section 62 of the Electricity Act, 2003 it was reaffirmed that the statutory Commissions alone hadthe jurisdiction in relation to any alteration or amendment of tariff by issuing orders. Moreover, it was adjudged that 'acontract adopting a tariff determined by a statutory regulatory provision cannot eclipse thepowers vested in the State Commission under the statute, to amend it.' Thus the Commission's power to reopen a PPA and modify the tariff by an order was upheld by the Court.

Environmental Implications of Energy Law and Policy

6. Goa Foundation v. Union of India & Ors.[6]

This Special Leave Petition was initiated by an NGO, the Goa Foundation (Petitioner), in the light of the findings of the Justice Shah Commission Report

6 (2014) 6 SCC 590

of 2012 which projected on the rampancy in illegal mining of Iron ore and Manganese ore in the State of Goa. They prayed for directions to the Union and the state government (Respondents) to take necessary steps to handle the menace. On the other hand several mining lessees from the state as well as the Goa Mining Association sought to challenge the validity of the Report on different grounds. The Court while appreciating the merits of the case, ventured into a detailed evaluation of the legal and environmental issues raised in the Report, so as to check the veracity of its findings.

The Report had vehemently cited instances of encroachment by the mining lessees, into areas beyond the lease area, for the purpose of dumping of mining waste. According to the lessees, many of the alleged areas which were used for dumping was owned by them and so they were entitled to do so. Moreover in their opinion, the dumping of overburdens, tailings and rejects was permissible under the Mines &Minerals (Development & Regulation) Act, 1957 and the Mineral (Conservation and Development)Rules, 1988. However, in the opinion of the *amicus curiae*the dumping of waste being a 'mining operation' requires clearance under the Forest Conservation Act, 1980 as it involved the use of forest land for 'non-forest' activity.

Interpreting the contradictory provisions in application, it was ruled that if Rule 64C of the 1988 Rules suggests that tailings or rejects can be dumped outside the leased area, it must give way to section 4 and section 9 of the 1957 Act, which does not authorize dumping of minerals outside the leased area and mandate the payment of royalty for removal of minerals outside the leased area. Thus the act of dumping of mining wastes beyond the leased area was held to be illegal. Court also directed that in such cases, in addition to the 'forest clearance' there was need to receive 'environmental clearance' from the central government under the Environment Protection Act, 1986 since the activity of dumping mineral wastes could pollute the environment and it would come within the meaning of the term 'mining of minerals' as provided in the schedule to the 2006 notification (under the 1986 Act).

The Court furtherreinstated that mining would not be permitted within one kilometer safety zone beyond the boundaries of a National Park or Wildlife Sanctuary. Taking note of the substantial damage caused to the environment in Goa owing to arbitrary exercise of mining activities, the Court ordered that 10% of the sale proceeds of iron ore excavated in the State of Goa and sold by

the lessees must be appropriated towards the Goan Iron Ore Permanent Fund for the purpose of sustainable development and inter-generational equity.

Labour and Human Rights Issues in the Energy Sector

7. Orissa Mining Corporation v. Ministry of Environment and Forests[7]

The case arose, when the Respondent (Ministry of Environment & Forests) rejected the application, initiated by the Petitioner (Orissa Mining Corporation) and Sterlite, for issue of Stage II 'forest clearance' for the purpose of diversion of forest land for Bauxite Mining Project on the Niyamgiri Hills in Lanjigarh, Kalahandi and Rayagada districts of Orissa. Facts reveal that while the Ministry had granted 'environmental clearance' initially, they were unaware of the pendency of the application for 'forest clearance,' as the former application had express mention that forest land was not involved in the project. The grant of 'environmental clearance' was also challenged before the National Environment Appellate Authority by the local tribes (DongariaKondhs), for the inappropriate manner of conducting the Environment Impact Assessment. Since the 'forest clearance' was subsequently rejected, the 'environmental clearance' became inoperable.

According to the Respondent, the factors that had dictatedtheir decision to reject the Stage II forest clearance were the violation of the rights of the tribal groups (including the primitive tribal groups and the dalit population) under the Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, the violations of the Environmental Protection Act 1986 (as observed by the Saxena Committee) and the violations under the Forest Conservation Act, 1980. Petitioner primarily contended that the violation, if any, in respect of Alumina Refinery Project which was an independent project, ought not to have been a relevant criterion for the consideration of the grant of Stage-II clearance to the Bauxite Mining Project, in favour of them and Sterlite, through a Special Purpose Vehicle. However, this assertion was turned down by the Court as there was sufficient material on record to show that the two projects were an integrated unit.

A Green Bench of the Supreme Court while deciding on the legality of the rejection of the Stage II clearance, considered the crucial question as to whether

7 (2013) 6 SCC 476

the Scheduled Tribes (STs) and Other Forest Dwellers (OFDs) like the Dongaria Kondh could claim any 'religious rights' under the Forest Rights Act, 2006. It was observed that the Gram Sabhas functioning under the Forest Rights Act read with section 4(d) of Panchayats (Extension of the Scheduled Areas) Act, 1996 has an obligation to safeguard and preserve the traditions and customs of the STs and OFDs, their cultural identity, community resources etc., which they have to discharge following the guidelines issued by the Ministry of Tribal Affairs. The authority vested on the Gram Sabhas to consider the individual, community as well as the cultural/religious claims of the forest dwelling STs and OFDs was vehemently upheld by the Court. Since only the individual and community claims were found to have been entertained by the Gram Sabha, the state was directed to communicate the issues regarding cultural/religious claims to the Gram Sabhas in order to make the final decision on the grant of Stage II clearance for Bauxite Mining Project.

Contractual Concerns in the Energy Sector

8. Adani Power Limited v. Uttar Haryana BijliVitaran Nigam Ltd., Dakshin Haryana BijiliVitran Nigam Limited &Gujarat UrjaVikas Nigam Limited.[8]

Adani Power Limited (Petitioner), which runs the Mundra Power Project in Gujarat, had signed Power Purchase Agreements (PPA) with the power distribution companies of the states of Gujarat (GUVNL) and Haryana (UHBVNL/DHBVNL) in 2007 and 2008 respectively.

In its PPA with the GUVNL, the petitioner seems to have determined the tariff based on the assurance given by Gujarat Mineral Development Corporation (GMDC) to supply a certain amount of coal from the Morga-II coal block. However no Fuel Supply Agreement (FSA) was signed between them in this regard. Petitioner had in fact signed another agreement with its holding company, Adani Enterprises Ltd. for the supply of coal imported from Indonesia. Subsequently due to the non-supply of coal from GMDC, Petitioner was compelled to terminate their PPA with GUVNL, as against which the latter had initiated a petition before the Gujarat Electricity Regulatory Commission(GERC).And, GERC, considering the arrangement between the Petitioner and its holding company, had directed the Petitioner to fulfill their

8 Petition No. 155/MP/2012 (CERC), Order dt. 21.02.2014.

obligation to supply power to GUVNL under the PPA, using the coal imported from Indonesia.

With respect to the PPA with the distribution companies in Haryana, the petitioner had fixed the tariff based on the availability of fuel, the then prevailing market conditions and moreover the central government's policy on allocation of coal blocks for power sector. Accordingly, a Coal Supply Agreement was proposed to be signed between the Coal India Ltd. (CIL) and the Petitioner.Since, initially the CIL had assured the supply of coal linkage equivalent to 70% of the capacity proposed to be supplied to Haryana, the remaining 30% was to be used from the coal imported from Indonesia. However, the Petitioner contended that the FSA that was eventually signed was disadvantageous to them as it had brought in substantial changes in the conditions of supply of coal. These events were claimed to have obligated the Petitioner to increase their reliance on the imported coal from Indonesia.

The Indonesian government promulgated the Regulation of the Ministry of Energy and Mineral Resources in 2010 which required the coal exporters to sell coal at the prices notified by the government, based on the international coal price. The Petitioner urged that the implementation of the notification would frustrate the performance of the PPA owing to the escalation in the cost of power generation. Consequently, they forwarded a request to the Respondents for adjusting the tariff under the PPAs to cover the revised coal prices, considering the unforeseen supervening events.

This petition was subsequently filed under section 79 of the Electricity Act, 2003 seeking to invoke the '*force majeure*' and 'change in law' clauses under PPA, on the dispute between the parties regarding tariff. Two basic issues for consideration before the Central Electricity Regulatory Commission (Commission) were whether the events mentioned had resulted in a situation providing an impossibility of performance of the PPA obligation by the Petitioner under the agreed tariff rates and whether the matter could be brought under '*force majeure*' and 'change in law' clauses for the purpose of granting relief.

The Commission concluded that the Indonesian Regulations affecting the price under the Coal Supply Agreement (CSA) could not be said to be a *force majeure* event under the PPA with the Respondents, as the Respondents were not party

to the CSA nor was the PPA made on the basis of the CSA. Additionally, the change in the governmental policy also could not be considered as a '*force majeure*' event for the fact that the PPAs were not premised on the coal linkage to be provided by the government. It was also observed that the Indonesian law could not be covered under the definition of 'law' as per the 'change in law' provisions of PPA.

However they decisively asserted that the possibility of non-discharge of Petitioner's obligation under the PPA could have a severe impact on the consumers. In this regard the parties were directed 'to set down a consultative process to find out an acceptable solution in the form of "compensatory tariff" over and above the tariff decided under the PPAs to mitigate the hardship arising out of absence of full domestic coal linkage and the need to import coal at benchmark price on account of Indonesian Regulations.' The matter is now pending before the Appellate Tribunal for Electricity. The Commission's prudence in laying down a practicable solution to tackle the situation, despite the existence of several contractual constraints is really commendable.

Tax Implications in the Energy Sector

9. Commissioner of Income Tax, Dehradun & Anr. v. Enron Oil and Gas Ltd.[9]

A consortium of EOGIL (Respondent) and Reliance Industries Ltd. (RIL) was awarded the bid for the development of the concessional blocks of Panna, Mukta and the Tapti Fields in 1993. A Production Sharing Contract(PSC) was entered into, subsequently, between the consortium and ONGC, with the central government. Thecapital was to be made out from the 'cash call' remitted by each investor to EOGIL (the operator), at their bank account in USA, wherebyEOGIL, Reliance and ONGC received a participating interest of 30%, 30% and 40% respectively. The trial balance which was in United States Dollars was required to be translated at the end of each month, based on the accounting procedure as given in Appendix C to the PSC. However, the expenditure incurred had to be converted on the basis of the exchange rates as provided for in the PSC (i.e.the previous month's average of the daily means of buying and selling rates of exchange).

9 (2008) 15 SCC 33

The issue arose when the Respondent filed their IT returns for the year 1990-2000 bydebiting the amount of 'exchange loss' from the taxable income. The Assessing Officer disapproved this on the ground that the loss incurred was only notional and that it could only be treated asa book entry. However, on appeal, the Petitioner (CIT) observed that since the capital contribution and expenditure were converted at different rates, it had resulted in profit/loss in currency conversion. Accordingly, they heldthat if the gains in currency conversion were subject to taxation then the loss incurred during conversion should be allowed as deduction under section 42(1) of the Income Tax Act, 1961. This order was concurred by the Income Tax Appellate Tribunal and subsequently by the HC.

The Supreme Court, on appeal, addressed the most fundamental question as to whether the 'translation loss' under the PSC could be treated merely as illusory. As per the PSC, since the foreign investor provides the capital investment, the initial oil extracted (cost oil) is given away to them to recoup the costs through sale. And for such a company the profit obtained would not only be from the oil produced subsequently (profit oil) but also from the cost oil. In the opinion of the Court such profits cannot be ascertained without taking note of the 'translation loss' and so they cannot be treated as notional in nature.

On the question whether the assesse was entitled to claim deductions for losses on account of translation and conversely whether the profits arising out of conversion was liable to be taxed, the Court appreciated the fact that the PSC had envisaged the booking of all currency gains/losses irrespective of whether they stood realized or not, as the exchange rate of currency is always likely to change from the date of cash calls to the time of sale. Section 42 of the IT Act which acts a special provision for 'deduction of expenditure incurred on prospecting for, extraction, or production of mineral oil' mentions that the PSC shall prevail over the IT Act in cases where the former provides for a variance in the accounting principles. Out of the three allowances permissible under Article 42 (as expenditure incurred on account of abortive exploration, expenditure incurred before or after the commencement of commercial production in respect of drilling or exploration activities and expenses incurred in relation to depletion of mineral oil in the mining area) the PSCcovers only the first two. Thus treating PSC as a complete code in itself it was held that since the Appendix C of the PSC provides for 'translation', the permissible

allowances under PSC should be entitled for reductions for losses on account of translation.

It is to be noted that the PSC in question was entered into at the Pre-NELP era. The New Exploration Licensing Policy, 1997 which is deemed to be a reformatory leap from its predecessor, is interestingly found to have clarified some of the tax concerns in the PSC regime, through the Model Production Sharing Contract. The Model Contract expressly provides(Article 17.2) that the allowances specified in the PSC shall apply in computing the tax payable on profits in lieu of (and not in addition to) the corresponding allowances under the Income Tax Act. And allowances not specified in the PSC will be treated according to the provisions of the IT Act.

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