

LAW AS A MEDIUM OF CHANGE, TO ACHIEVE SUSTAINABLE DEVELOPMENT & USE OF CLEAN ENERGY

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Abstract: The aim of this research paper is to critically analyze the relationship that exists between the use of green energy and a healthy environment, and also aims at understanding the effect of use of non-environmentally friendly sources, such as coal, thermal, and nuclear substances which are used in order to generate energy and its devastating impact on the environment. The paper seeks to address the problem of environmental pollution with a legal remedy, by pointing out the loopholes in the current environmental laws that are in force and by providing for more rigid and effective implementation mechanisms, a system of checks and balances which focuses on the reduction and misuse of natural resources used for creation of energy and providing a substitute or alternative source, which can be used in the process of power generation. The aim of this paper is to ensure the ultimate reduction of environmental degradation, pollution and overall harm being caused to the natural environment and further more help prevent the destruction of natural habitats of various species, by providing a model which will put a stop to the prevalent practice of deforestation for the purpose of building power plants, power generation units, causing the destruction of various ecosystems and water sources. The paper concentrates on the governmental policies which are in force with regard to environmental protection, which are largely inadequate and lacking, and provides remedial measures and possible amendments which can improve the existing framework of laws so as to ensure the safety of the environment, and which can to a large extent, if implemented, ensure a healthy environment, prevent the exploitation of natural resources to a minimum, and build a framework which will facilitate the idea of development in such a manner, which can go hand in hand with eco-friendly methods of generation of power and use of clean energy. It can reduce the dependency on conventional sources of energy which are in short supply, to more viable and less harmful, and moreover renewable and cleaner substitutes which can be equally effective in the process of

power generation and production of energy. Finally, the paper seeks to shed light on issues which are related with the process of power generation by utilizing an empirical approach and suggest changes which can possibly be beneficial in both economic as well as the environmental aspect, the premise of the research paper is to take us a step closer towards understanding the problems and solutions related to achieving sustainable development, the present volume of power needed, how to circumvent the problem of demand and supply while keeping in mind the necessity of utilizing resources judiciously, and also bearing in mind the requirements of both the society & environment at the same time by effectively utilizing Law as a medium of implementing positive change. The observations put forth in this paper will not only be relevant in the Indian scenario but also will have global significance, since this issue being faced by the world at large, is contemporary in nature.

Keywords: Energy, Environment, Law, Policy, Sustainable

INTRODUCTION

India today is acknowledged as one of the fastest and largest growing economies in the world. There is significant labour and capital resource which has facilitated this exponential growth of our country. However, India still faces a major impediment to its growth potential, which can be attributed to energy shortage. India is already the 3rd largest economy and has become one of the largest contributors to greenhouse gases because power generation in India is largely based in thermal power plants using coal or petroleum products that are inherently polluting in nature. Power is a vital and crucial ingredient for economic development, and also essential for improving the quality of life. Since independence India has made remarkable strides in the field of power generation. India has managed to increase the installed power capacity from 1362 to over 100,000 MW and has also achieved the

electrification of more than 500,000 villages. India is ranked fifth globally in installed power capacity with nearly 147.965 GW. However India is still largely dependent on conventional sources of energy such as fossil fuels, coal, and gas, and the problem with the use of these conventional sources of energy is that these natural resources are non-renewable, they are available in short supply, and are inherently polluting which causes significant damage to the environment. There are certain crucial problems such as lack of rural electrification, excess dependence on imports of natural resources for power generation, rampant deforestation for setting up of power plants, which need to be addressed immediately as all these factors hamper the growth potential of the country, destroy our natural resources and pollute the environment. Concerns relating to pollution and the disposal of the large amount of ash from coal based power stations, which are the mainstay of India's power generation, have to be addressed as soon as possible and in the most effective manner so as to prevent and reduce the extent of damage being caused. The current energy policy in India focuses largely on the country's burgeoning energy deficit, and also tries to shift the focus from conventional sources to newer alternative sources of energy, mainly nuclear, wind and solar. Almost 70% of India's power generation capacity is derived from the use of fossil fuels, with coal accounting for more than 40% of the total energy consumption in the country, followed by crude oil at 24% and natural gas at 6%.

So as we can see India is largely dependent on the use of conventional sources of energy for meeting its energy requirement and moreover it is largely dependent on fossil fuels and coal, the use of which cause high levels of concentrated pollution, and furthermore the plants which are constructed to facilitate the activities related to production and processing of these conventional sources can be highly expensive, dangerous, and require large tracts of land in which they can operate. The problems associated with the use of these two natural resources for production of energy apart from the obvious problem of inherent pollution is the fact that we import a majority of these natural resources from other countries in order to bridge our demand supply gap, which in turn increases the financial burden on the country which in turn makes it difficult to facilitate the transmission of power to rural areas and electrification of distant parts of the country, because we mainly focus on the metropolitan cities and developing towns which are the main contributors to the country's gross domestic product and therefore the needs of the few remain neglected to a large extent. The country is well equipped with a plethora of substitutes in terms of renewable energy sources such as hydro, solar, wind, etc. Currently Renewable

Power Plants constitute 12.45% of total installed Capacity¹. India's total domestic, agricultural and industrial per capita energy consumption estimate varies depending on the source. One source places it between 400 to 700 kWh in 2008–2009² and As of January 2012, one report found the per capita total consumption in India to be 778 kWh.³

Now we can see that India is slowly progressing and implementing methods which would reduce its carbon foot print and the reason for the shift from conventional sources to renewable sources is because renewable energy technologies are increasingly being viewed as a sustainable, equitable and environmentally sound way of addressing the concerns relating to energy consumption, inequalities in access, growing dependence on imports, supply constraints, and high environmental risks and costs. Also the rural energy demand of the country is still largely met by the use of non-commercial energy sources such as firewood, charcoal, the use of gober and crop residues. The threat which is inextricably bound with the generation of power by use of these sources are mainly the cost of using these fuels, that is to say, collection, storage, generation and furthermore it largely affects the health of individuals who are constantly exposed to the pollution which is a by-product of the use of such fuels.

Renewable Energy based electricity supply has been provided on an experimental basis in a number of places the world over and various studies have shown that there is technical success for the rural electrification programmes and they also identify the impediments which are associated with the implementation of renewable energy which can be overcome in order to ensure the utilisation of RE sources. The main problems associated with the implementation of renewable energy are that the initial costs with regard to setting up of plants, the lack of expertise, the limitations of the renewable energy sources, that is to include things like force majeure which are beyond anyone's control and moreover the affordability in general. Now to curb the problems associated with the implementation of RE energy, the use of Distributed Power Generation (DGP) can be one of the most feasible solutions available.⁴

¹ <http://www.renewindians.com/2012/12/Renewable-energy-contribution-in-india.html>

² "Power Sector in India: White paper on Implementation Challenges and Opportunities". KPMG. January 2010

³ Retrieved November 24th 2013 The Wall Street Journal "For India, a Power Failure Looms" The Wall Street Journal

⁴ [District Energy and CHP, www.clarke-energy.com](http://www.clarke-energy.com).

Distributed Power Generation ⁵

‘It basically involves technologies for the generation, transmission, supply, storage and control of electric power located on or near the retail or customer-end of the grid. Distributed resources are located within the power distribution system of a utility, and are generally limited in size to below 50 MW. Distributed power generation uses distributed primary energy source (such as fossil fuel or renewable resource) in order to generate electricity.

In DPG, electricity could be generated using conventional technologies such as internal combustion engines, gas turbines, or through more state –of-the-art technologies like Special purpose vehicles, wind electricity generators, fuel cells or even micro-hydro turbines. The choice of primary source depends on the economic and environmental viability of the same in the particular location.’

Now the benefits associated with the use of DPG are: (a) No new transmission/distribution lines or up gradation of existing ones is required. (b) Peak power needs can be met. (c) Various energy sources can be employed to increase the reliability of the network. (d) When coupled with uninterruptible power supply(UPS),it can be configured to provide premium power, (e) Conducive to use of renewable energy technologies and can be installed in small increments to match the load requirement of the customer.

Now keep in mind these are just a few of the benefits which we will be able to receive when we implement the Distributed power generation system.m

The Indian power sector of late has been witnessing a revolution as hope springs anew for the nation with regard to harnessing electricity from various renewable sources of energy. India is slowly becoming one of the world’s clean energy ‘hotspots’ as it plans to meet a substantial portion of its future energy from renewable sources. They mainly include solar, bio-mass, hydro, wind wastes etc. The generation of power from renewable sources of energy has been increasingly recognised as a major factor responsible for the achievement of a variety of primary and secondary energy policy goals, such as improved diversity and security of energy supply, reduction of local and global greenhouse gas emissions. Now in order to shift focus from the use of conventional sources of energy to a more sustainable alternative and in order to ensure that there is greater dependence which is being placed on renewable

sources of energy we must take the help of legislation.

Legal Structure and Governmental Policies

The constitution provides for essentially a federal structure of governance⁶. The subject matter of Electricity has been included into the category of the concurrent list⁷ and under the constitutional scheme it essentially means that both Centre & State can legislate & regulate on this matter. As the delicate balance of power in legislative field is tilted in favour of the Centre rather than the federal units, the central law gains a primacy over state law. In situation of conflict, according to article 254(1) of the constitution, in case of conflict between laws formulated by centre & state over the same subject matter, the state law is rendered void to the extent of Repugnancy. The most important legislation enacted in order to regulate the power sector in India is the Electricity Act, 2003 which has been enacted by the central govt.

Electricity Act, 2003

The Electricity Act, 2003 is a major enactment which regulates the generation, transmission and the distribution of electricity in India. This law is complimented by a set of by- laws, policies, codes, rules, which cover a large number of aspects regarding the Indian power sector. The Central law provided an efficient framework in order to stimulate private investments for capacity augmentation in a laissez –faire regime which ushered the required competition in the power market, which in turn helped establish regulatory and monitoring agencies which also contained features like open access, captive generation, cogeneration etc. Certain provisions of the Electricity Act, 2003 have given a major boost to the renewable energy sector & put forth the need and priority to promote renewable energy through its enabling provisions. The relevant provisions are stated as follows:- Sections 3(1) and 3(2), states that the central govt. shall prepare and publish The National Electricity Policy and National Tariff Policy, after consultation with the state Governments and authority for development of the power system based on optimal utilization of Resources such as coal, natural gas, nuclear substances or material, hydro and renewable Sources of energy.⁸ Section 61, 61(h) and 61(i) states that the authorised commission shall specify the terms and

⁵ Renewable Energy Technologies :Special Focus on Distributed Power Generation, Potential for Applications to Rural Sector in India: Amitav Mallik,Nitant Mate and Devayani Bhawe :Academic Foundation.

⁶ Kuldeep Nayar v. Union of India (2006)7SCC1.Federalism is one of the basic features of the Indian Constitution.

⁷ List III, VII Schedule, Entry 37Constitution of India.

⁸ The Electricity Act, 2003

Conditions for the determination of tariff, and such determination should be guided by the Following factors such as the promotion of cogeneration and generation of electricity from Renewable sources of energy. The electricity Act, 2003 introduces newer concepts such as power trading and open access to overcome the shortcomings of the existing mechanism in order to cross subsidies & the sinking financial status of SEB's under the previous regime. Trading is now a licensed activity and regulated which will also help in bringing about innovative pricing which will lead to competition, ultimately resulting in lowering of Tariffs. There are also various programmes that have been initiated by the government in order to promote the use of renewable sources of energy, they are as follows.

Rural Energy Entrepreneurship and Institutional Development

This programme was initiated in 2000-01 for building capacity for installation and maintenance servicing of energy systems.⁹ The programme seeks to create and strengthen entrepreneurship in the rural energy sector at the local level to promote micro-enterprises for manufacturing, marketing, and servicing. The programme also aims to strengthen entrepreneurship development centres in various states for providing training, management skills, support for project formulation, maintenance services and export management and consultancy. The programme would be implemented through the involvement of NGOs, and educational institutions and by strengthening linkages amongst rural energy entrepreneur, renewable energy industries, financing institution including IREDA and SNAs.

Women and Renewable Energy Development

This programme, introduced in 2000-01¹⁰, aims at empowering women by involving them in the promotion and management of renewable energy systems and devices and through encouraging the widespread use of renewable energy technologies in rural areas. The SNA along with educational institutions, NGOs and other village institutions are implementing the scheme in select areas.

Solar Energy & Solar Thermal Energy Programme

The programme¹¹ seeks to tap solar energy for thermal applications such as water heating, cooking,

drying, space heating, distillation, power generation and solar passive architecture. The solar water heating, cooking and air heating concepts are being used extensively in the country while the concept of solar buildings is becoming increasingly popular. The measures initiated by the Ministry towards the promotion of solar thermal energy programme include technology development, standardisation and quality control, financing, special area demonstration, publicity and awareness generation, training, amendments to the building bye-laws, establishment of sales and service networks etc. In terms of policy initiatives, there has been a general shift away from central subsidy towards soft loans, tax incentives and promotional support. The technology that is available in the country today is largely indigenously developed. The achievements under some of the solar thermal programmes are highlighted below.

Solar water heating

It can be used to meet the energy needs for heating water in homes, factories, and other commercial and institutional establishments.¹² The collector area installed so far in India for water heating is around 5, 50; 000 sq. m. solar water heaters are now being manufactured on a commercial scale with an annual production of over 50,000 sq. m. of collector area.

Solar Buildings

The objective of this programme¹³ is to promote energy efficient-building designs with optimum use of available solar energy and other forms of ambient energy in the management of energy needs of buildings. The Ministry has provided partial financial assistance to several government and semi-government organisations for

Designing and constructing solar-efficient buildings. In addition, there are ongoing efforts to develop a detailed climatic database for the country to evolve suitable design guidelines for energy efficient and environmentally friendly buildings in different parts of the country.

The Ministry Of Power

The Ministry of Power¹⁴ is India's apex central government body regulating the electrical energy sector in India.

⁹ See Ministry For Non-Conventional Energy Resources
http://envfor.nic.in/divisions/ic/wssd/doc2/ch4_anx.pdf

¹⁰ Ibid

¹¹ Ibid

¹² Ibid

¹³ Ibid

¹⁴ Retrieved November 24th 2013 "[Ministry of Power](#)". Government of India..

Table 1: New & Renewable Energy¹⁵ Cumulative deployment of various Renewable Energy Systems/ Devices in the country as on 30/09/2013

Renewable Energy Programme/ Systems	Target for 2013-14	Deployment during September, 2013	Total Deployment in 2013-14	Cumulative achievement up to 30.09.2013
I. POWER FROM RENEWABLES:				
A. GRID-INTERACTIVE POWER (CAPACITIES IN MW)				
Wind Power	2500	102.53	808.48	19881.43
Small Hydro Power	300	15.00	94.50	3726.75
Biomass Power	105	20.00	20.00	1284.80
Bagasse Cogeneration	300	55.05	55.05	2392.48
Waste to Power -Urban	20	3.00	3.00	99.08
-Industrial		-	-	
Solar Power (SPV)	1100	111.13	395.13	2079.97
Total	4325.00	303.71	1092.70	29464.51
B. OFF-GRID/ CAPTIVE POWER (CAPACITIES IN MW_{EO})				
Waste to Energy -Urban	10.00	-	-	115.57
-Industrial				
Biomass(non-bagasse) Cogeneration	80.00	4.00	19.69	490.84
Biomass Gasifiers -Rural- Industrial	1.00			16.924
	9.00	2.94	2.94	146.32
Aero-Generators/Hybrid systems	1.00	-	0.03	2.14
SPV Systems (>1kW)	40.00	7.13	14.32	138.99
Water mills/micro hydel	500 Nos.	-	-	10.65 (2131 nos)
Bio-gas based energy system	2	-	-	-
Total	143.00	14.07	38.91	921.43
II. REMOTE VILLAGE ELECTRIFICATION				
No. of Remote Village/Hamlets provided with RE Systems	-	-	-	-
III. OTHER RENEWABLE ENERGY SYSTEMS				
Family Biogas Plants (No. in lakhs)	1.10	0.09	0.15	46.83
Solar Water Heating - Coll. Areas (Million m ²)	0.60	0.10	0.27	7.27

Table 2: Renewable energy installed capacity in India (as of 31 December 2012)¹⁶

Type	Technology	Installed capacity (in MW)
Grid connected power		
	Wind	18420.40
	Small hydro	3496.14
	Bagasse Cogeneration	2239.63
	Biomass	1248.60
	Solar	1176.25
	Waste-to-Energy (WtE)	96.08
Off-grid, captive power		
	Biomass non-bagasse cogen	426.04
	Biomass Gasifiers – Industrial	138.90
	Waste to Energy-Urban	113.60
	SPV Systems (>1 kW)	106.33
	Biomass Gasifiers – Rural	16.696
	Aerogen/Hybrids	1.74

¹⁵ Retrieved from <http://www.mnre.gov.in/mission-and-vision-2/achievements/> 25 November 2013.¹⁶ Retrieved from [NEW & RENEWABLE ENERGY, Cumulative deployment of various Renewable Energy Systems as on 31/12/2012](#)". Ministry of New and Renewable Energy, Government of India .

The ministry was created on 2nd July 1992 and it is responsible for planning, policy formulation, processing of projects for investment decisions, monitoring project implementation, training and manpower development, and the administration and enactment of legislation in regard to thermal, hydro power generation, transmission and distribution.

It is also responsible for the administration of India's Electricity Act (2003), the Energy Conservation Act (2001) and to undertake such amendments to these Acts, as and when necessary, in conformity with the Indian government's policy objectives.

Ministry Of New And Renewable Energy (MNRE)

The Ministry of New and Renewable Energy (MNRE)¹⁷ is the nodal Ministry of the Government of India for all matters relating to new and renewable energy. The broad aim of the Ministry is to develop and deploy new and renewable energy for supplementing the energy requirements of the country. Energy self-sufficiency was identified as the major driver for new and renewable energy in the country in the wake of the two oil shocks of the 1970s. The sudden increase in the price of oil, uncertainties associated with its supply and the adverse impact on the balance of payments position led to the establishment of the Commission for Additional Sources of Energy in the Department of Science & Technology in March 1981. In October 2006, the Ministry was re-christened as the Ministry of New and Renewable Energy.

MNRE main functions include the Facilitation of research, design, development, manufacture and deployment of new and renewable energy systems for transportation, both portable and stationary applications in rural as well as urban, industrial and commercial sectors through the use of Technology, surveys, use of strategies, use of renewable energy options and alternatives, etc.

It mainly focuses on the use of new technology in order to facilitate the use of renewable sources of energy, promote the implementation of clean energy, conduct scientific and empirical research in the field of energy and also monitor the current scenario in the country.

The Ministry of New and Renewable Energy (MNRE) has taken up the following programmes: (a) Hydrogen Energy (b) Chemical Sources of Energy (Fuel Cells) (c) Alternative Fuels for Surface Transportation (d) Geo Thermal Energy (e) Tidal Energy

The Protection and enforcement of the environmental regulation is the responsibility of the Ministry of

Environment and Forests (MoEF). For any upcoming project in any sector the permissions and the approvals have to be taken from the concerned ministries, respective departments and the local civic bodies. The environmental and social governance approach in the country consists of: (a) Regulatory and implementing entities; (b) legal framework including policies, acts and laws; and (c) Permitting system

Regulatory Controls, Authorities and Mechanisms

There are various checks in place in order to prevent the destruction of the environment and also in order to ensure that any activity which needs to be carried out is done in accordance with the laws in force and confirms with the norms required and mandated by the government, the reason is simple, in the present scenario there are more developmental activities that are being carried on and the problem is that if these developmental activities are allowed to continue without keeping a check on them then it could lead to dire consequences for both the environment and also human and animal life, although the laws which are in force are not airtight and have a few loopholes they still serve a major role in detouring a large amount of activities which could if left unchecked cause grievous harm to the environment.

Indian Renewable Energy Development Agency Ltd

IREDA is a Public Limited Government Company established in 1987, under the administrative control of Ministry of New and Renewable Energy (MNRE) to promote, develop and extend financial assistance for renewable energy and energy efficiency / conservation projects with the motto: "ENERGY FOR EVER"

The main objectives of this agency are as follows¹⁸:- (a) To give financial support to specific projects and schemes for generating electricity and / or energy through new and renewable sources and conserving energy through energy efficiency. (b) To increase IREDA's share in the renewable energy sector by way of innovative financing. (c) To strive to be competitive institution through customer satisfaction. (d) To maintain its position as a leading organization to provide efficient and effective financing in renewable energy and energy efficiency / conservation projects. (e) Improvement in the efficiency of services provided to customers through continual improvement of systems, processes and resources.

¹⁷ <http://www.mnre.gov.in>

¹⁸ See Objects of Ireda :<http://www.ireda.gov.in/>

Problems and Solutions

India is a country with a promising future of renewable energy potential which has scope for growth and development, it also has large prospects for receiving foreign investment as India is a country loaded with massive opportunity in terms of power generation capacity and so there are chances a lot of investors will want to capitalise on this opportunity, we are practically sitting on a gold mine ,renewable energy the potential of which if tapped to its fullest potential can yield not only an effective solution, which will help bridge the demand and supply gap ,but it would help usher in a new era of prosperity and sustainable development ,whereby we can ensure that the dependence on conventional sources of energy for power generation are drastically reduced.so there arises a need for a separate renewable energy law in order to play the role of a catalyst in the sector. The error of the present situation lies in the fact that the administrative Machinery at the centre as well as the state level for dealing with activities of the renewable energy Sector has been in place for a substantially long period of time but no concrete legislative policy has been enacted so far. Furthermore, a specialized financial agency, known as the Indian Renewable Energy Development Agency (**IREDA**) exists in order to cater to the financial requirements of the renewable energy sector in India. So, perhaps what we require is a solid, comprehensive legal framework with regard to renewable energy which might hopefully stimulate growth and provide greater opportunities in the area.

There exists a pressing need for a new comprehensive renewable energy law because:- (a) The potential uses of renewable energy is limited to not only powering homes, but can also be extended to other sectors such as transportation and industrial processes. (b) Under the existing regulatory and legal framework there is a divide between the electric powers. Sector and other energy sectors (like coal, petroleum, natural gas) which needs to be rectified by implementing single umbrella legislation. (c) In order to facilitate the use of renewable energy which will act as a medium of the common man's growth, there has to be detailing of technological, developmental, legal policy and institutional framework. (d) Emerging renewable energy sources like bio-fuels cannot be regulated under Electricity Act 2003. (e) There needs to be more severe punishments imposed on individuals and corporations that flout environmental rules and bypass regulations in order to further their own selfish agenda's for profit ,which requires that there must be a separate legislation which lays down strict rules with regard to implementation and the enforcement of use of clean energy by a majority, if not the whole of India so as to ensure the sustainable growth of the country and

make sure that the unhealthy dependence on conventional sources of energy for power generation such as fossil fuels is significantly reduced. (f) Shortages of fuel is another crucial problem which is being faced by the country, despite abundant reserves of coal, India is facing a severe shortage of coal. The country isn't producing enough to feed its power plants. Some plants do not have reserve coal supplies to last a day of operations. India's monopoly coal producer, state-controlled Coal India, is constrained by primitive mining techniques, plagued by theft and corruption; Coal India needs to mine new deposits in order to meet demands. However, most of India's coal lies under protected forests or designated tribal lands. Any mining activity or land acquisition for infrastructure in these coal-rich areas of India has been hindered by political demonstrations, social activism and public interest litigations. (g) The Poor facilities and inefficient pipeline connectivity and infrastructure prevent India's abundant coal bed methane and gas from being harnessed to its fullest potential. (h) Over 30 crore (300 million) people in India have no access to electricity and of those who do; almost all find the electricity supply intermittent and highly unreliable. (i) Lack of clean and reliable energy sources such as electricity has been causing about 80 crore (800 million) people in India to continue being dependent on traditional biomass energy sources – namely fuel wood, agricultural waste and livestock dung , for cooking and other domestic needs. Traditional fuel combustion is the primary source of indoor air pollution in India, and it causes between 300,000 to 400,000 deaths per year apart from other chronic health disorders. (j) India's utilises coal-fired, oil-fired and natural gas-fired thermal power plants that are inefficient and offer significant potential for increase in greenhouse gas (CO₂) and there could be reduction of emission through better technology.

Power from Renewable Sources

The current potential for the application of renewable sources in all fields of life is practically limitless; the technology which is necessary to facilitate the use of non-conventional sources of energy is feasible, easy to use and the biggest benefit of all is the fact that it is a clean source of energy which ensures that sustainable development can take place. The practical applications could extend to different sectors, such as aviation, transportation, agriculture, construction, and possibly we could even implement the use of Renewable energy in space travel, the prospects seem endless, the world is already on the cusp of revolution in terms of energy , we have already managed to invent hybrid cars, harness the power of the sun and furthermore we have managed to break free from the shackles which bound us and made us dependant on conventional sources of energy. The reason is simple,

it starts with innovation, and we have managed to surpass excellence and are aiming at creating new and better technology, the benefits of widespread use of renewable technology and consolidated new energy laws for generation of power are numerous, they are : (a) Less dependence on conventional sources of energy ensures that there is less degradation and environmental harm which is caused to the environment. (b) Reduction in the use of conventional sources of energy such as fossil fuels, coal etc. would reduce our dependence and substantially lessen the large amount of demand for those natural resources, which would effectively help reduce the amount of imports made by our country in order to meet the vast demand. (c) The reduction in dependence on fossil fuels would help lessen our financial deficit which would lead in higher exports rather imports that would push our country into a more stable economic situation. (d) Due to the use of renewable technology, sustainable natural resources and the feasible costs of using the same, the overall price of energy generated and consumed in India would become cheaper, and that would enable the manufacturers to capitalise on the reduced factor prices which in turn would be reflected by a reduction in the price of goods and commodities while making sure that the manufacturers don't lose out on their share of profitability. (e) Renewable technology will ensure minimal exploitation of exhaustible natural resources which in turn will make sure that fewer natural resources are wasted, and due to less natural resources being utilised there will be a large reduction in the levels of pollution. (f) Harnessing the full potential of renewable energy is both feasible as well as less harmful to the environment, which will in turn effectively reduce our carbon footprint. (g) The electricity generated will be at a massive scale and so with the excess amount of energy being generated we can divert the power towards rural areas and try electrification of areas which have not yet witnessed electricity and the costs would be restricted to initial costs of installation of the technology. (h) The government could offer subsidies to foreign corporations and individuals who would like to invest in the renewable energy sector, effectively collecting more funds as well as encouraging foreign direct investment. (i) There could be tax holidays and benefits granted to companies that switch to renewable energy which would provide incentive for corporations to switch to utilisation of clean energy. (j) By providing umbrella legislation we can ensure that the strictest punishments are imposed in order to detour corporations and individuals from trying to flout policies, as well as formulate and establish certain definitive benefits which people will receive as and when they switch from conventional sources to renewable sources of energy.

There are numerous advantages that can be associated with the implementation of legislation as a framework in order to facilitate the growth and expansion of renewable sources of energy in order to effectively decrease dependence on conventional sources such as fossil fuels, coal, animal wastes etc., which cause significant harm to both the natural as well as animal habitat. Legislation if effectively employed can curb the problem of the shortage of power, large-scale dependence on imports, implementing the use of cleaner, more feasible technology and also the added boom in the energy sector will create jobs and increase the demand and supply of various complementing goods and services which would hype the growth of the economy as a whole. As of December 2011, India had an installed capacity of about 22.4 GW of renewal technologies-based electricity, about 12% of its total. The table above provides the capacity breakdown by various technologies.¹⁹Renewable energy in India is a sector that is still in its infancy and has large potential which can reap wonders for the Power generation market in India both in terms of Sustainability as well as economic benefits. India has become an emerging player on the world scene as a major energy consumer. The current trend shows that there has been steady growth in imports of oil; gas and coal re-define the conditions that guarantee India's energy security. India's energy demands have been growing over the past few years at a rapid rate and so the demand for natural resources has exceeded the capacity of development of natural resources. Furthermore we can observe increase in the levels of concentration of pollution and emissions from industrial activities; this situation is worsened by the misuse, wastage and inadequacy in the system. In order to tackle the shortcomings which would arise in the long run, with respect to the current demand and supply chains, in order to curb the gap between the demand and supply and to meet future expectations, various safety measures were implemented in order to safeguard and effectively solve the problems related to power security of India.

The Role of Electricity and Requirement of a New Law in India

There is no other country where in electricity plays such a vital role in agriculture as it does in India, a fact which has important economic and political implications. While electricity has stimulated green revolution and has facilitated the process of agriculture, it has now become an adverse ingredient in the growth of agriculture due to shortage of power

¹⁹ Retrieved from "Year End Review – 2011". Press Information Bureau, Government of India. December 2011.

and power supply. This key factor is responsible for the slowing down of agriculture at a stage where agriculture still accounts for nearly 30 per cent of GDP and employs a relatively large portion of the active population.²⁰ The costs are no less serious, as 30 percent of total consumption devoted to agriculture is heavily subsidized, if not free in certain states.

The country is also yet to develop a comprehensive long term policy on fuels. This particular issue has to be taken into account after considering several factors, such as long term fuel import requirements, investments in matching port, storage terminal and transportation facilities, and use of renewable sources etc. The decision on these matters must be taken after consulting with the best minds the country has to offer so as to ensure an effective policy, growing economy, large population, climate concerns, rising energy demands, employment problems and the political and moral obligations to bring hundreds of millions out of poverty are the challenges that India is faced with. Renewable energy could play a significant role in effectively solving these challenges. The Growth of Renewable Energy in India is also faced with enormous challenges with inconsistent and varying implementation by the states, varying or absence of any renewable portfolio standards, poor enforcement measures, complex clearance mechanisms, land allocation systems and lack of civil society participation. Pressing issues such as building RE equipment manufacturing capacity within the country, creating an accommodating, market oriented, pro-poor yet competitive environment that can sustain the energy contribution from renewable resources are some of the other major concerns that need immediate and streamlined initiatives and probably require a legal framework in order to facilitate the smooth and effective implementation of these news measures.

A Few Incentives by Government for the Promotion of Renewable Energy²¹

Tax Holiday

Under section 80 (I) (A) of the Income Tax Act, the central govt. offers a 10 year tax holiday for all infrastructure projects.

²⁰ India's Energy: Essays on Sustainable Development, Manohar Publications, Edited by; Pierre Audinet; P.R. Shukla; Frederic Grare.

²¹ Making India a Solar Energy Economy – Prospects & Challenges
indiagovernance.gov.in/files/solar_energy_economy.pdf

Accelerated depreciation

The Central govt. presently allows for accelerated depreciation at the Rate of 80-100% on a *written down value* basis for various renewable energy items under Section 32 Rule 5 of the Income Tax Act, 1961.²²

Foreign Direct Investments

Proposals for up to 100 per cent foreign equity participation in a JV qualify for an automatic route

Indirect tax benefits

Equipment for solar photovoltaic and solar thermal and power generation plant and machinery enjoy a reduction in customs duty.

CONCLUSION

The practical application and growth potential of use of renewable energy in India is nearly limitless. India is becoming one of the foremost leaders in the clean energy program and is achieving great strides in the field of power generation and renewable energy, which is being supported, and facilitated by a fairly decent economic & legal framework established under various policies. Although, the Renewable energy sector in India is in its infancy stage, there is still a lot of positive growth and progress. The current legal framework and policies have facilitated the growth we see today but in these changing times there is a need for a consolidated energy law which will be well equipped to tackle any adversity which threatens India's energy security, and also provide an air tight system which can be used to implement the strict use of clean energy, shift the dependence from conventional sources of energy for power generation to non-conventional, and more viable and sustainable sources. The use of RE can help facilitate sustainable growth and will help usher India into a new phase and help it to become a more developed and self-sufficient economy. India fuelled by Renewable technology will be a positive example for the world and simultaneously it will be a leader in energy if it utilizes its energy production capability to the fullest extent. Howsoever, a uniform umbrella legislation for monitoring and regulating the generation of power as well as ensuring an effective power grid can really help in harnessing energy from renewable sources at massive scale. The new law can help better implementation and facilitation of the use of renewable energy, help us choose the correct and most appropriate means of utilising and generating energy using renewable sources for our country, whether it is DPG ,Solar Energy as an option for DPG , Fuel Cells as an option for DPG ,DPG with renewable fuels and high efficiency systems and

²² Describe rule 5 & sec. 32 of IT Act

other Renewable Technology options ,or Choice of DPG for Indian Conditions, which would effectively ensure optimum utilisation of resources and also bring us out of the infancy stage with regard to RE, besides there is a lot of commercial application in renewable sources of energy not only in the industrial level, but also at the consumer levels due to the introduction of electric cars and trend shifts towards hybrid varieties of automobiles. Hence, there is an urgent need to have a uniform national policy which effectively ensures the facilitation and smooth functioning of renewable energy plants in India as well as providing an efficient framework for implementation of RE technology as well as providing a platform for grievance redressal.

REFERENCES

- [1] Joel Reut (2003). Against the Current: Organizational Restructuring of State Electricity Boards. Manohar Publications
- [2] Amitav Mallik , Nitant Mate , Devayani Bhav (2008). Renewable Energy Technologies: Special Focus on Distributed Power Generation .Academic Foundation Publishers.
- [3] Krishna A Kumari (2009). Environment and Sustainable Development.
- [4] Tatyana P Soubotina (2004) Beyond Economic Growth: An Introduction to Sustainable Development. Washington Dc World Bank.
- [5] Bani P Banerjee (2005) Handbook of Energy and the Environment in India. Oxford university press.
- [6] Government of India Ministry of New & Renewable Energy- www.mnre.gov.in
- [7] Central Electricity Authority of India-<http://cea.nic.in/>
- [8] Annexure 4.1 Programmes supported by the Ministry of Nonconventional Energy Sources for the promotion of NRSE in India retrieved from www.envfor.nic.in/divisions/ic/wssd/doc2/ch4_annx.pdf
- [9] Strategic plan for new and renewable energy sector for the period 2011-17 retrieved from http://mnre.gov.in/file-manager/UserFiles/strategic_plan_mnre_2011_17.pdf
- [10] Ravi Prakash, Making India a solar energy economy – prospects & challenges- Retrieved from indiagovernance.gov.in
- [11] Report of the working group on new and renewable energy for xith five year plan (2007-12) – Retrieved from www.planningcommission.nic.in/aboutus/committee/.../wg11_renewable.doc
- [12] Observer research foundation-www.orfonline.org
- [13] Ministry of Power - www.powermin.nic.in

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