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Climate Change and Changing Dimensions of Renewable Energy Policy in India

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ABSTRACT

Energy is the basic requirement for around the world in present scenario. But the basic thing is that the energy sources used in India are mostly conventional sources. They are decayed with faster speed and the impact of these is hazardous for environment. India is rich in coal and abundantly endowed with renewable energy in the form of solar, wind, mini/micro hydro and bio-energy etc. India has a vast potential of renewable energy sources and a number of technologies have been developed to harness them. This paper proposes policy instruments to improve the energy productivity with effectiveness of renewable energy projects implementation and create a framework for financing mechanisms for these projects. Efforts have been made to use the different energy sources and reduce the dependence on fossil fuels. Pollution prevention and dependency on the fossil fuels can be achieved by government's directly regulating pollution-generating activities and indirectly by influencing the decision making process on the micro level (economic instruments). This Paper recommends a sustainable energy policy that will not only meet the rapid economic growth but also protect the environment and conserve insufficient resources.

Keywords: Renewable energy, thermal power plants, solar, wind, Climate Change.

1. Introduction

"Our vision is to make the nation energy-sufficient, Over a period of time, there is need to shift from economic activities based on fossil fuels to non-fossil fuels. This announcement of the prime minister, unveiling the national action plan on climate change clearly indicates the importance India attaches to renewable energy policy.

The Assessment Report of the intergovernmental panel on climate change said that most of the warming that has taken place since the middle of the last century is very likely the result of increase in the concentration of human-induced greenhouse gases. Department of science and technology helped in following projects related to climate change. Knowledge for Climate Studies Centre by Indian Institute of Technology Bombay measuring Long Term Changes in Sea Level along Indian Coast by National Institute of Oceanography studying Climate Change on Agriculture and Forest Ecosystem case studies for sustainable livelihood and climate change.

Augmenting energy production and supply becomes key to India's development. An analysis of India's energy generation and consumption brings that India, with a major reserve of coal, depends on an energy system that is exceedingly carbon centric. India's first National Communication (2004) reveals that the energy sector accounts for around 61 per cent of total national emissions. For fossil fuels, coal combustion had a dominant share of emissions, amounting to around 64 per cent of all energy emissions. Besides, large quantities of traditional biomass resources used for the energy demands of the vast rural population are exerting pressures on forests and village woodlots. Thus, the energy scenario in India is clearly unsustainable. This paper examines the various institutional and legislative measures undertaken in promoting renewable energy.

2. Institutional and Legislative Response

India is one of the few countries to have a major renewable energy programmed for nearly two decades, and is the only country to have a full-fledged national ministry to deal with renewable energy. India's Renewable energy was launched primarily as a response to the professed rural energy crisis in the 1970s, the renewable energy programmed got momentum with the economic liberalization program which began in the early 1990s,[5] with the emphasis shifting from purely subsidy-driven dissemination programmers to technology promotion through the commercial route. The governance framework in the energy sector is quite complex. Government decision-making on energy at the Central level is distributed between the Ministry of Petroleum and Natural Gas, the Ministry of Coal, the Ministry of New and Renewable Energy (MNRE), the Ministry of Environment and Forests, the Ministry of Atomic Energy, and the Ministry of Power. While the MNRE is responsible for

policy creation and promotion of renewable energy program in the country, the Ministry of Power is responsible for the legal framework around electricity generation and transmission. The responsibility for comprehensive rural electrification is shared between two different ministries; another fact to be noted here is that Energy being a concurrent subject under the constitution, and the states share powers with the Centre for energy development as well as environmental regulation.

Despite India being the only country with a dedicated Ministry for renewable energy, and an extensive set of policies, the renewable energy sector is witnessing slow growth. Key reasons include multiplicity of agencies, skewed incentive structure, and poor implementation capability. There is multiplicity of government-led agencies in the renewable energy sector, leading to lack of accountability towards the growth of the sector. For instance, while MNRE plans, The important issue is to minimized the fuels which have a hazardous impact on climate system. Like coal major energy production in India based on coal1. Step to minimize used of these resource.2 step to utilize the waste material or material which remains unused in the process of energy generation Coal based thermal power plants release fly ash pollution. But fly ash could also be used for Construction of railway embankments in concrete for critical structures such as building foundation material for turbo- generators, chimneys and cooling towers etc. in power plants Department of science and technology promotes research work on development for such uses of fly ash to change the image of fly ash from a "WASTE MATERIAL" to a "RESOURCE MATERIAL". its inception, this project has added economic returns worth greater than3 billion USD and also added employment greater than1 million people. Major Project supported by department of science and technology.

The project related to alternate fuels by different method like Indian institute of technology Kanpur with tata motors start to test the biodiesel on railway diesel engine using common rail direct injection technology, another project on green diesel from oil(non edible) using nana metal catalyst, another project related to bio-crude oil from waste water using the micro-algae and bio-coagulant.

This project related dye sensitized solar cell technology- third generation photovoltaic technology in which we used dye sensitized solar cell which is alternative of solar cell based on silicon the benefit of sensitized solar cell that it is cheaper and more efficient than contemporary silicon based solar cell and it can be easily fabricated on the flexible plastic. This project related to make a solar cell which has an advance efficiency and production potential. This project related to making the efficient cooking system capacity of 4 ltrs, 40 ltrs and 120 ltrs and it's have an option of multiple fuel option like biogas, coal, wood. This project on lighting system based on ultra capacitor which is used to improve power conversion especially for rural and remote region like we use a hybrid battery instead the conventional battery. This project name is stability and performance of photovoltaic, to improve the performance of solar cell by increasing the performance of solar cell. This project is to create an environment for innovation and corporation for solar cell by solar energy research institute for India and U.S. This project on smart energy grid and energy storages. In which department of science and technology collaboration with the research council UK. The project work by bhabha atomic research centre to manage the solid waste to used the waste material so its contribute the productivity for example a biodegrade material of 1 tonne use as an input to the nisarguna plant which produce the one cylinder of methane gas and four such cylinders have capacity to provide power approximate 90 LED streetlight for 7 to 8 hours. And to setup the plants. Its take 20 lakh rupees. This method is more efficient than the traditional biogas plants. Department of Science and Technology giving funds for developing low cost solutions using different technology for safe drinking water, purification, recycle.

Department of Science and Technology is responsible for research and development. Further, Ministry of Power is responsible for designing policies for grid-connected power supply from renewable energy projects. Also, all states have different policies regarding renewable energy projects. This is a big deterrent as promoters have to separately negotiate with each state department. For sustainable development India is stand with the the world organizations to improvement the environment United Nations Framework Convention on Climate Change (UNFCCC) Created because of the Rio Summit/ Earth Summit of 1992.It is an international treaty for reducing greenhouse gas emissions. Nearly every country on Earth is a party to the UNFCCC. A sound vision holds the key to the success of renewable energy initiatives. Governments have a number of options that they can use to promote renewable.

The first may be to emphasize on the use of voluntary measures, particularly through education and information dissemination. This option has varying and limited effects. Second gives importance to environmental standards. The third option is to promote renewable energies through direct support. In this paper an analysis is made regarding legislative and technological response Generally in India renewable energy policies were more or less financial. Fiscal incentives are normally aimed to encourage utilities to buy renewable power, promoter

companies to set up renewable projects, equipment companies to manufacture renewable equipment or private and government entities to undertake R&D relating to renewable. In India, policy initiatives encourage domestic private as well as FDI investments with a provision of fiscal and financial incentives such as tax holidays, accelerated depreciation, soft loans, non imposition of excise duties and duty rebates. Another noteworthy feature of India's policy includes Involvement of women not only as beneficiaries but also for their active contribution in implementation of renewable energy programmes. Besides this encouragement to NGOs and small entrepreneurs.

Apart from these fiscal steps recently certain emergency measures are taken. Coal-based power plants account for about two-thirds of the total electric generation and government is trying to link tariffs to efficient management. Plants are being encouraged to adopt more efficient and clean coal technologies, an energy labeling programmed for appliances was launched in 2006, and the labels provide information about the energy consumption of an appliance like Air Conditioners. An Energy Conservation Building Code (ECBC) was launched in May, 2007, which addresses the design of new, large commercial buildings to optimize the building's energy demand.[10] Under the Energy Conservation Act 2001, the conduct of energy audits was made mandatory in large energy-consuming units in industrial sectors.[11] The Electricity Act, 2003, requires State Electricity Regulatory Commissions to specify a percentage of electricity that the electricity distribution companies must procure from renewable sources.[12] Several Commissions have already This has contributed to an acceleration in renewable-electricity capacity addition, and over the past three years, about 2,000 MW of renewable-electricity capacity has been added in India every year, bringing the total installed renewable capacity to over 11,000 MW.

The Kyoto protocol has created a favorable climate for attracting international support for renewable energy development. The Clean Development Mechanism (CDM) was one of the avenues through which financial resources can be raised.[13] In fact in the long run, penetration of RETs will however, depend on the market for carbon offsets and the pace of development of individual RETs. Over 700 CDM projects have been approved by the CDM National Designated Authority, and about 300 of these have been registered by the CDM Executive Board. The registered projects have already resulted in over 27 million tones of certified CO2 emissions reductions, and directed investment in renewable energy and energy projects by reducing the perceived risks and uncertainties of these new technologies, thereby accelerating their adoption we know how broadband internet billing works= there are plans for example 2GB plan for Rs.500 That means as long as you download music, movies etc. worth less than or equal to 2GB then you'll get bill of Rs.500 but if you download more files above 2GB quota, then company will charge you Rs.1 per MB of extra download.

Besides these various legislative responses are drafted which addresses the renewable energy options. Several electricity policies in the last few years have talked about the need and priority to promote Renewable energy. Foremost amongst them is the Electricity Act 2003 which de-licensed standalone generation and distribution systems in rural areas. The National Electricity Policy 2005 also stresses the need for urgent electrification.[16] The New Tariff Policy 2006 stated that a minimum percentage of energy, as specified by the Regulatory Commission, is to be purchased from renewable sources by April 1, 2006.[17] National action plan on climate change also emphasis on renewable. Act provides for the establishment of National solar Mission and National Mission for Enhanced Energy Efficiency both aiming at augmenting renewable: The action plan emphasis a system for companies to trade energy-savings certificates; Energy incentives, including reduced taxes on energy-efficient appliances; and Financing for public-private partnerships to reduce energy consumption through demand-side management programs in the municipal, buildings and agricultural sectors.

An exclusive and comprehensive policy on renewable has been proposed, aiming to raise renewable energy capacity to 100,000 MW by 2050, It is expected to come before parliament. Proposed salient features of the new policy are:

To support and accelerate power generation from renewable to meet the minimum energy needs. Provide supportive fiscal regime, single window clearance, leveraging additional budgetary resources from other departments, preferential prices for renewable electricity. Increase the target for electricity generation from renewable to 10 per cent by 2010 (as against 2012 currently) and 20 per cent by 2020, of the total electricity generated in the country (and not as a percentage of installed capacity). Remove some ambiguities or amplify some provisions in the Electricity Act, 2003, relating to provisions dealing with renewable electricity generation. Make solar water heating mandatory throughout the urban areas of the country by 2012, in a phased manner. Initiate a time-bound program of demonstration of solar rooftop lighting systems in 10,000 government buildings by 2010, also incorporate building integrated photo-voltaic. Time-bound conversion of the present about 18,000 MW diesel-based captive generating units to bio-diesel-based units. Provision for small biomass

based energy systems for rural areas. Initiate a time-bound Renewable Fuel program covering ethanol and bio diesel; backward and forward linkages of the program to facilitate employment and rural livelihood improvements. Define a definite road map for developing a hydrogen and fuel cell economy. Set up three separate time-bound Technology Missions Solar Energy, Bio fuels and Hydrogen to achieve the objectives of energy independence. Set up a national level apex body called the Renewable Energy Council with the Central Minister for NRE as its Chairman; the Council to have 15 members drawn from the Government (only 5), Industry, Academia, Non-Government Institutions, Researchers and User-Groups. This bodywork in a manner that we make a sustainable development by using their new able energy source in a efficient manner.

3. Conclusion

Climate change and its consequences are omnipresent. In order to mitigate the effects of climate there should be largely reduction on carbon centric energy pattern. Government takes initiative to start a project which is based on small scale energy production by using renewable energy sources which not only full fill our basic requirement so energy but also its impact on our environment is not hazardous. A sustainable energy policy that will not only meet the future energy demand for rapid economic growth but also protect the environment and conserve scarce resources. In addition to that renewable energy policies will be a positive step toward mitigating climate change phenomenon. The potential remuneration of participating in efforts to address Climate Change through renewable energy are available now and in the immediate future. India could take advantage of these efforts to address Climate Change and thereby increase its foreign direct investment, technology transfer, and job creation while also taking a responsible step towards reducing environmental impacts. In this context, the Indian renewable energy programmed needs to a goal-oriented effort to meet the country's energy requirement in an environmentally sound way.

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