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SOCIAL IMPACT OF RENEWABLE ENERGY TECHNOLOGIES FOR RURAL DEVELOPMENT IN INDIA

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Abstract: This paper shows that a problem nearby the use of renewable energy technologies (RETs) to increase access to modern energy services in rural areas. RETs shows that the provision of electricity generated from renewable sources such as wind, solar, water, tide/wave and geothermal, and the provision of other modern energy services that are power-driven by renewable sources for activities such as household heating, space conditioning and water pumping. These types of technologies have long been subject to international debate and action as a means of expanding access to electricity by means of off grid or grid extension programmes. Similarly, the development of RETs such as improved cook stoves to increase efficiency and reduce health impacts of traditional fuel use has had a long history and has shown some success. Though, rising concern over weather change and the increasing acceptance of a need for low-carbon development trajectories have provided renewed emphasis on improving access to modern energy services using RETs. In this work shows that how to choose the right combination of sustainable energy solutions in remote areas without electricity. The motive is not to describe the several renewable energy technologies available, but to provide guidelines for choosing the right options and implementing them. The guidelines should be used together with other available materials and methods used in development planning, such as gender sensitive evaluation of effects, integrated development methods, and participatory action research.

Keywords: Renewable Energy technologies (RETs); Ministry of New and Renewable Energy sources (MNRE); Rural Electrification Distribution Backbone (REDB)



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INTRODUCTION

Energy is an essential factor in both livelihoods and industrial development. An increase in unsuitable use and excessive consumption of energy has been causing not only local pollution but also global environmental problems such as global warming and climate change. In addition; fossil energy sources such as coal, oil, etc. are so limited, if energy security is not fully ensured, such unsuitable use may pose a significant threat to economic activities and even to people's lives [2]. Therefore, to realize sustainable development, a stable energy supply is important as well as an improvement in energy related environmental problem. Renewable energy resources and technologies are one of kind of approaches that if well utilized can play part in enhancing energy security and avoidance of environmental problems emanating from fossil energy sources [1].

Available Energy Resources In India

India is the country which has very large potential of producing renewable power. MNRE has set a target for India to achieve 175 GW power from the renewable energy sources. This will be achieved by utilizing the potential in wind, solar, biomass, small hydro and waste to energy power. Wind power is reached up to 50% near the target of getting 60 GW from it. While solar is only 8% on track of getting 100 GW. While small hydro power has almost reached the target of 5GW, and biomass is also half through to the target of getting 10 GW. If India is able to achieve this amount capacity in 2022, it will be in world leaders for renewable energy production [3].

TABLE I. Available Renewable Energy in India

Sr. No.	Source	Total Installed Capacity (MW)	2022 Target (MW)
1.	Wind Power	32,715.37	60,000.00
2.	Waste to Power	114.08	10,000.00
3.	Total	60,985.21	175,000.00
4.	Solar Power Rooftop	823.64	100,000.00
5.	Solar Power Ground Mounted	14,751.07	100,000.00
6.	Small Hydropower	4,399.35	5,000.00
7.	Biomass Power (Biomass & Gasification and Bagasse cogeneration)	8,181.70	10,000.00

Renewable Energy Sources

Sources of Energy In India	Composition in Percentage
Solar Power	09%
Wind Power	67%
Biomass Power	4%
Small Hydro Power	12%
Bagasee Cogeneration	8%
Total	100

Renewable Energy Generates Employment In Rural Areas

Renewable energy industries are creating jobs 12 times faster than other industries in the country. A stable industry in a locality encourages the locals to stay in town and not move elsewhere for employment. The employment generation potential of renewable energy does not only mean jobs in the renewable power plants. There are also indirect and induced jobs created by renewable power plants especially solar, wind, and biomass. These job opportunities emerge because of the rise of industries in a locality and in response to the purchasing power created by the direct jobs generated by the renewable energy plants [4].

Rural Area Benefit from Renewable Energy Source[5]

- Increase in employment opportunities
- Easy access to the main energy source
- Affordable Energy Costs
- A Cleaner Source of Energy

• Rural Energy Act In India

Customers, mainly those who are ready to pay a tariff which shows efficient charges have the right to get uninterrupted twenty four hours supply of quality power. About 56% of rural households have not yet been electrified even though many of these households are willing to pay for electricity. Hard work should be determined to make the confirm that the duty of rural electrification for securing electricity access to all houses and also ensuring that electricity reaches poor and marginal sections of the society at reasonable rates is completed within the next five years [6].

Reliable rural electrification system will aim at creating the following [6]:

- (a) Rural Electrification Distribution Backbone (REDB) with at least one 33/11 kv (or 66/11 kv) substation in every Block and more if required as per load, networked and connected appropriately to the state transmission system
- (b) Emanating from REDB would be supply feeders and one distribution transformer at least in every village settlement.
- (c) Household Electrification from distribution transformer to connect every household on demand.

(d) Wherever above is not feasible (it is neither cost effective nor the optimal solution to provide grid connectivity) decentralized distributed generation facilities together with local distribution network would be provided so that every household gets access to electricity. This would be done either through conventional or non-conventional methods of electricity generation whichever is more suitable and economical. Non-conventional sources of energy could be utilized even where grid connectivity exists provided it is found to be cost effective.

(e) Development of infrastructure would also cater for requirement of agriculture & other economic activities including irrigation pump sets, small and medium industries, khadi and village industries, cold chain and social services like health and education.

B. Particular attention would be given in household electrification to dalit bastis, tribal areas and other weaker sections.

C. Rural Electrification Corporation of India, a Government of India enterprise will be the nodal agency at Central Government level to implement the programme for achieving the goal set by National Common Minimum Programme of giving access to electricity to all the households in next five years. Its role is being suitably enlarged to ensure timely implementation of rural electrification projects.

D. Targetted expansion in access to electricity for rural households in the desired timeframe can be achieved if the distribution licensees recover at least the cost of electricity and related O&M expenses from consumers, except for lifeline support to households below the poverty line who would need to be adequately subsidized. Subsidies should be properly targeted at the intended beneficiaries in the most efficient manner. Government recognizes the need for providing necessary capital subsidy and soft long-term debt finances for investment in rural electrification as this would reduce the cost of supply in rural areas. Adequate funds would need to be made available for the same through the Plan process. Also commensurate organizational support would need to be created for timely implementation. The Central Government would assist the State Governments in achieving this.

E. Necessary institutional framework would need to be put in place not only to ensure creation of rural electrification infrastructure but also to operate and maintain supply system for securing reliable power supply to consumers. Responsibility of operation & maintenance and cost recovery could be discharged by utilities through appropriate arrangements with Panchayats, local authorities, NGOs and other franchisees etc.4

F. The gigantic task of rural electrification requires appropriate cooperation among various agencies of the State Governments, Central Government and participation of the community. Education and awareness programmes would be essential for creating demand for electricity and for achieving the objective of effective community participation.

CONCLUSION

The present energy scenario in India is not satisfactory. India, with its vast population and limited natural resources or meeting its energy requirements, needs to maintain its momentum of growth and this can be made possible only with a clear strategy for use of best possible energy options available. The RETs can play vital role in rural development. With proper organization and government funding, it can pave the way for economic advancement especially in poorer countries. It is a viable solution for addressing poverty and jumpstarting efforts to create or accelerate economic activity. It is a worthwhile investment option that also comes with a very important bonus: clean energy that does not contribute to environmental degradation and global warming.

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