

Renewable Energy as an Option for Energy Sustainable Rural India Urja Gram Swaraj-A Policy initiative

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“Independence begins at the bottom...A society must be built in which every village has to be self sustained and capable of managing its own affairs.....”- Mahatma Gandhi

Energy is backbone of present livelihood. India Is Energy scarce Country and there is a huge demand of Energy. Rural Electrification is an important component of integrated rural development. Renewable Energy can play a vital role to serve the concept of “Urja Swaraj” in the countryside of the country. Currently, about 11% of the world’s primary Energy is estimated to be met with biomass and 15%-50% of the world’s primary Energy would come from biomass by 2050.

The economic status of rural population in remote un-electrified area is quite poor. The problem is more serious in rural areas which are not connected with Grid. In most instances it has been observed that Kerosene and Diesel are the common fossil fuel used for lighting, pumping and various other activities in Rural Areas. However, Rural Electrification through Renewable Energy available in the host Rural Area may be quite effective.

Main points which we have to analyze to solve the Rural area Energy problem are to find out the root issues in implementation of Energy programmes in rural areas, though Government is showing it’s commitment since long back but the problem is still there.

1. Lack of Grid availability in Rural Areas: - Generally Rural areas are far from cities and are not easily approachable for Grid. In such situation Grid establishment becomes costlier affair. However, Grid establishment is easy in villages which are in the vicinity of cities or nearer to Highways but unfortunately number of such villages in India are very few.
2. Government steps towards rural electrification are not sufficient for rural sustainable development because most of Government policies are being formed for rural electrification not for self sustainability in terms of Electricity requirements. Also there is lack of Grassroots analysis of rural areas before Policy formation.

3. India is geographical vast country and different part of country having different resources availability. There is a need for national rural electrification policy taking into account of resource availability in a particular rural area.
4. In India many rural households are not capable enough to pay the subsidized electricity charges. Even to provide subsidized electricity to rural areas is also not a permanent solution and steps need to be taken towards self sustainability of villages in terms of Electricity.

Off Grid Renewable Energy can be a solution for rural energy sustainability but there are also some limitations with such technologies:-

- RE technologies like Wind and Solar Energy are dependent on nature. It is found that Wind potential is mostly available in southern and western part of India.
- Solar technologies are also not suitable in the areas where the solar radiations are very poor as UT, HP etc.
- Biomass is available majorly in all agricultural part of India but the main problem is it's availability throughout the year. Transportation of Biomass is also not cost effective.
- In case of Small Hydro projects, there is limitation of availability of water throughout the year because these projects are constructed on seasonal rivers.

Rural electrification will require small scale (KW's scale) of Renewable Energy technologies. However, In India Wind and Solar Technologies are become commercialized and therefore manufacturers are not willing to make small scale (KW's scale) wind turbines and Solar Panels. Renewable Energy Policies for MW scale projects are lucrative for investors, manufacturers and all stakeholders since many incentives, subsidies and tax exemptions have been provided by Government through these policies. There is a need for Policy which should be made in the direction of benefits for the rural area development and sustainability even it may not be as lucrative to the investors.

To create a manufacturer base for these kind of technologies may also be a problem. Bharat Heavy Electricals Limited (BHEL), the pioneer Power equipments manufacturer of Govt of India is limited to manufacture the conventional power plant, T&D equipments. Some other institutions/Public sector Units may be formed which will be dedicated to cater the requirement of manufacturing for the rural technologies or otherwise public private partnership may be welcomed. Public private partnership should be on very small margin otherwise because of competition the technologies became costly and people from rural

India will again unable to pay for it. Cost effectiveness is also necessary factor for planning.

Limited involvement of the private sector players has been one of the key issues for off-grid rural electrification in India as well as in many other countries in the world. This may be because of low load and energy requirement of Rural India which results in lesser interest by distribution utilities and investors due to low collection efficiency, low loads and larger investment cost for building network.

Govt of India has recently recognized off-grid renewable as potential viable option as clean energy resource with announcement of electricity for all. This renewable based power has also gained importance as against polluted fossil fuel dominated grid power and its inability to cover many remote villages due to non-viability of grid extension for their electrification.

Few off-grid initiatives have been taken by individuals or NGOs, but are in unorganized or informal manner. Some models have also been developed for providing energy access to off-grid rural areas through renewable energy resources. These models depend mainly on availability and viability of renewable energy in particular area. It is seemed that these models were developed for some kind of research activity and are not providing the real solution for the energy problem across the whole rural India.

Policy initiative by Government for these kind of projects yet be awaited and Government will have to show a strong commitments towards this direction because this area is capital intensive but not lucrative for investors. The Government will have to identify the energy resource availability for specific area. A deep research will be required before planning and formulation of Policies/Regulation.

Special Energy Zone (SEnZ) as a Concept

A requirement of Area/Community based technology specific Generic National Policy on Off-grid Energy resources. Some factors need to be considered for policy formation are mentioned below:-

- To identify the Energy scarce rural area (Cluster of Villages), which are not well grid-connected
- To Identify/grass root Research for Energy Resource availability for the particular area
- Analysis of applicable technology and it's availability

- Technology based Manufacturing capability
- To Identify the implementation agencies and their role
- To analyze the supply chain activities
- Budgetary requirement?
- To examine long term viability of the development project
- Formulation of Policy
- Policy is to be formulated either village-wise or for cluster of villages?
- Role of Central Government and State Government?

Generic National Policy should be framed which will be based on area specific energy problem and their solution by exploration the existing local energy resources of the rural area.

Many difficulties will be there to frame a generic policy and in it's implementation. Some of them are briefed below:

- Energy is a concurrent subject and there should be clear cut definition for the role of Central and State Government and accordingly the Budgetary provision
- What will be the conical structure for implementation of the projects?
- It has to be examined that Local Panchayati Institution are capable enough to operationlise the project from nascent stage If they empowered, because this will be very technology intensive activity and if Panchayati institutions found incompetent then which will be the grass root level agency. Although it is to be noted that many technology driven projects are being successfully implemented by these Panchayati institutions but these projects are mainly Civil Construction projects.
- To train the Human resource for a specific technology. It is to be suggested that the local poor people from the Community/area should be trained for this.
- Some Renewable Energy sources are seasonal in nature. How to overcome this problem?

Manufacturer base and their margins for profit

Manufacturer base will also be a barrier for proper implementation because these community based projects will require KWs scale infrastructure. Presently lots of MWs scale manufacturers are there in the market and are working on very high marginal profits. There will be a need for manufacturer those will make the KWs scale machines on small



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margin of profits. Some technical Research and development agencies will also need to be deputed because many technologies are in nascent stage.

India is a geographical vast country having uneven distribution of resources. To formulate a generic policy for community level development in terms of self sustainability of Energy in rural India will definitely not an easy task. Lots of Planning and Research and development activities will be required prior to implementation of such Policy. India witnessed the success of many types of small industries model targeted to Community and rural development as Milk Industry (Dugdh sangh), Hathkargha (Khadi Gramodyog), Shi Mahila Griha Udyog (Lijjat Papad). All these activities provide self sustainability to Concern stake holders (Mainly Rural Population) by generating revenue and employment in rural areas based on local resource availability. This is our step towards Energy self sustainable Rural India “ Urja Gram Swraj”.

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