

Utilization of Non-Conventional Energy Sources For Sustainable Development of Rural Areas

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Abstract - Energy is the major factor to drive and improve the life cycle. It is the gift of nature to the mankind in various forms. The utilization of the energy is directly proportional to the progress of the mankind. The primary source of energy is fossil fuel; however the finiteness of fossil fuel reserve and large scale environmental degradation caused by their widespread use, particularly global warming, urban air pollution and acid rain and environmental friendly energy resources is vital for steering the global energy supplies towards a sustainable path. This paper describes in brief the utilization of non-conventional resources for sustainable development of rural areas with a study of villages. Energy generated by using wind, tides, solar, geothermal heat and biomass including farm and animal waste as well as human excreta is known as non-conventional energy. All these sources are renewable or inexhaustible and don't cause environmental pollution. Do not require heavy expenditure. The non-conventional source of energy is abundant in nature. According to energy experts the non-conventional energy potential of India is estimated about 95000 mw. These are renewable resources. The non-conventional source of energy can be renewed with minimum effort and money. These resources are pollution free and eco-friendly.

Key Words- Energy, Environment, MW, Non-conventional etc.

I. INTRODUCTION

In India, Non conventional energy source consist of those energy sources that are infinite, natural and restorable. For example tidal energy, solar energy and wind energy are non-conventional source of energy. Energy is the major factor to drive and improve the life cycle. It is the gift of nature to the mankind in various forms. The utilization of the energy is directly proportional to the progress of the mankind. The primary source of energy is fossil fuel; however the finiteness of fossil fuel reserve and large scale environmental degradation caused by their widespread use, particularly global warming, urban air pollution and acid rain and environmental friendly energy resources is vital for steering the global energy supplies towards a sustainable path. This paper describes in brief the utilization of non-conventional resources for sustainable development of rural areas with a study of villages.

The sun is the most abundant and unlimited source of energy. The sun functions as a global source of energy and has tremendous potential. As a result, solar energy is one of the most important non-conventional sources of energy that are utilized in India. The solar cookers are quite economical and they have been a remarkable invention. These cookers assist in food preparation nearly without any expenditure. Additional, many tiny and medium-scale solar power plants have been

intended for the countryside areas in India. Until now, some of the effective usage of solar energy includes water heating, food preparation, area heating, and removal of salt from water and drying of harvest.

II. TECHNIQUES TO GENERATE NON CONVENTIONAL SOURCE OF ENERGY IN INDIA

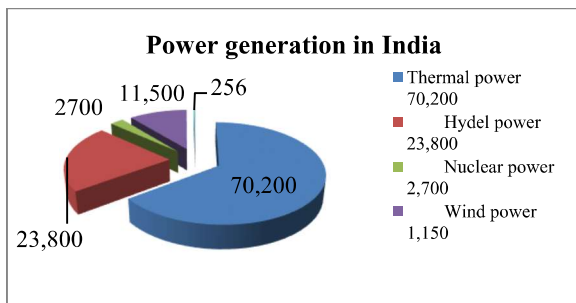
- 1. Thermal Energy-** Thermal energy is the application of natural temperature, which prevails on exterior and below the earth, predominantly in the fissures and holes within the outer shell of the earth. Geothermal energy can be productively utilized for different objectives. The country is not affluent in thermal energy resource. Nonetheless, endeavors are on for the total exploitation of natural energy. Energy generated from thermal can be applied for operating cold storage plants.
- 2. Biomass-** Biomass is an important source of energy which represents approximately 33% of the overall volume of fuel used in the country. It is broadly utilized in domestic circles for preparing food and warming. In countryside areas, farming disposables, timber wood coal and sunbaked droppings can be used as biomass. Smoke-free ambience, improved healthcare, and better quality of life and education are some of silent benefits of biomass.
- 3. Energy plantation-** In India, barren areas are utilized for cultivation of plants and bushes that tend to spread quickly and have significant heat generating characteristics. Successively, they render wood coal, fuel wood, power and most notably opportunities for agricultural service. With the gasification plan, these energy plantations spanning approximately 8,000 hectares were generating almost 1.5 MW power energy per year.
- 4. Biogases Oriented power plants-** It was projected that Indian sugar mills have the capacity to generating over 2,000 MW additional electrical energy at the time of the grinding period. The energy generated by a sugar mill would initially fulfill its own energy needs and the remaining can be used in watering farming areas but supplying it into the local power system. Similar to bagasse, various other agricultural disposables like rice husk are also used for generating electrical energy in India.
- 5. Energy from urban disposals-** In Delhi, a pilot plant for the intention of displaying has been established for processing hard municipal disposables for switching into energy. Urban disposables generate a significant volume of energy annually. In addition, waste in metropolitan areas is utilized for generating electrical energy and gas.
- 6. Animal, Agricultural and human excretions-** With the usage of agricultural and animal excretions over and

above human body wastes, a number of 'Gobar gas' plants have been built in many rural areas to make them self-reliant in their energy requirements. The energy generated in this way is utilized for food preparation, lighting roads and houses, and satisfying the water supply requirements of the rural community. The plants have been established both at private and group levels.

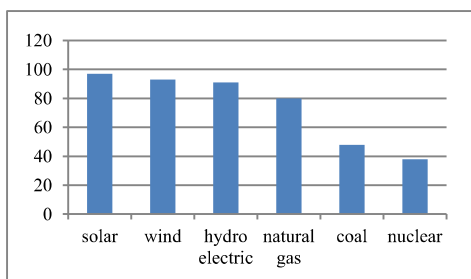
Last but not least, the largest percentage of energy is used in the household's kitchens of India. Cow dung and wood are regarded as global source of energy. Unfortunately, the conventional 'chullhas' are uneconomical modes of preparing food. The better categories of effective and smoke-free chulhas assist in protecting wood fuel. These are some of the most well known and extensively utilized non-conventional source of energy in India.

India has fifth-largest power generation portfolio worldwide. The country transitioned from being the world's seven largest energy consumer. The energy policy of India is largely defined by the country's burgeoning energy deficit and increased focus on developing alternative source of energy, particularly nuclear, solar and wind energy. Energy consumption in India is the fourth largest after China, USA and Russia. The total primary energy consumption from crude oil (29.45%), natural gas (7.7%), coal (54.5%), nuclear energy (1.26%) in the year 2013.

III. DIFFERENT SOURCES OF POWER GENERATION IN INDIA IN MW



IV. GLOBAL PUBLIC SUPPORT FOR ENERGY SOURCES



V. RENEWABLE ENERGY DEVELOPMENT IN INDIA

1. Importance recognized in mid 70s
2. Department of non-conventional energy sources in 1982.

3. upgraded to Ministry (Ministry of Non-conventional energy sources) in 1992.
4. IREDA (Indian renewable energy development agency development agency) set up in 1987.
5. Thrust given to resource assessment, technology development and demonstration.

VI. ROLE OR WOMEN IN SUSTAINABLE DEVELOPMENT IN RURAL AREAS

"Rural women are powerful catalysts for sustainable development, as well as agents against poverty and hunger", said the representative of the non-government organization international trade union confederation, echoing the statements made by many states and intergovernmental and other organization throughout the day. Indeed, she said, rural poverty was deeply rooted in the balance between "what women do and what they have". Around the world, women were frequently deprived of their basic rights, including the right to collective and bargaining and to safe working conditions. The world had no choice but to solidify the position of rural women, she added, as it was "on their shoulders" that sustainable development would be achieved.

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VII. CONCLUSION

India must give more thrust to the research and development in the field of non-conventional energy sources not only to mitigate greenhouse effect but also to lessen dependence on oil/gas import, which consumes major chunk of foreign exchange reserve. It is also clear that an integrated energy system consisting two and more renewable energy sources has the advantage of stability reliability and are economically viable. Last but not least, it is for the citizens also to believe in power of renewable energy sources, and understand its necessity and importance.

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