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Renewable Energy in India

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Abstract:
Energy is considered to be one of the most important elements for the development. An energy deficit village cannot flourish and will always lag behind. India is a energy deficit country. Thus renewable energy places a important role in providing energy to thousands of villages whose days start with the sunrise and ends with sunset. This paper attempts to explain that how solar, wind, hydro and biomass energy can help to make India energy sufficient and the huge potential it has to generate all sources of renewable energy .Although a large section of population has started exploiting these non conventional sources of energy but still a lot has to done in making it economical, reachable and more awareness need to be spread. The dual advantage of renewable sources makes them more attractive. Along with helping to reduce the energy deficit, it also enables sustainable development being a clean source of energy.

Keywords: *Biomass energy, Conventional sources, Jawaharlal Nehru solar mission, Solar, Sustainable development, Wind*

1. Introduction

Renewable energy is an emerging sector. This is an area where we are addressing issue of meeting our energy needs from perennial natural resources like solar, wind, hydro, biomass etc. Recently, investment on Renewable energy capacity addition had exceeded the additional fossil fuel based generating capacity addition. Global investment in Renewable energy has gone up from US$39.6bn in 2004 TO US$279 in 2011.

Today about 400 million people in India have no access to commercial electricity. In decentralized way renewable energy is quite appropriate, scalable and viable solution for providing power to unelectrified or power deficit villages. In terms of speed of implementation, quality and cost, decentralized renewable energy could become the most effective and democratic component of our village electrification programme.

2. Present status of renewable energy

India started its renewable energy program in 1981 with the establishment of the Commission for Additional Sources of Energy, with the responsibility of formulating policies and programmes, coordinatingand intensifying research and development and ensuring implementation of government policies in regard to all matters concerning new and renewable energy sources. The commission resulted in the creation of an independent department of the non conventional energy sources in 1982, which was converted to an independent Ministry of Non Conventional Energy sources in 1992.In 2006, it was renamed as ministry of New and Renewable energy.

India's total renewable power installed capacity as on 31 December 2014 has reached 33.8GW.Wind energy continues to dominate this share accounting for 66 per cent of installed capacity followed by biomass, small hydropower, and solar power. As per census of India 2011,around 1.1 million households are using solar energy to meet their lightning needs and almost similar number meets cooking energy needs from biogas plants.

Table 1
Renewable energy sector has been witnessing over 20 percent Growth in last 5years

Energy(Mw)	10th plan	11th plan	2012	31.03.2014
(SOLAR,WIND,BIO, HYDRO)	**3453**	**10,255**	**24,914**	**31,700**

3. Potential of RE and the Way Forward

Continued emphasis has to be place on other renewable resources especially on expanding wind power generation an in the emerging area of solar , thermal and solar photovoltaic .While a national solar mission plans for a capacity of 22000mw by 2022,C-WET ESTIMATED a technically feasible wind potential of 49000mw.A fresh assessment of wind power, a potential by some agencies has maintained a higher figure which needs realistic review by the Ministry of New and Renewable energy(MNRE) based of scientific norms. These areas will need further study .The potential for such generation is clearly higher than current estimates of about 50GW.

IT is also necessary that scientific and technological (S &T) developments ,especially in the solar energy field, are sufficiently internalized to keep the country a breast of international developments. In order to make solar power a success in the coming decades ,it is vital that we develop the necessary domestic S&T capacity such that we can collaborate as peers with the rest of the global community.

A basic problem with most renewable energy sources is that they are significantly more expensive than conventional power. However, technological developments are reducing the cost of renewable generation and it is widely predicted that by 2019the cost of solar electricity generation which is currently six times higher than coal based electricity will come down to be approximately equal to the latter. However, this equalization is expected to occur partly because the cost of conventional fuels is expected to raise significantly .In other words, technological developments in the field of renewable energy will help overcome energy constraints, but only at significantly higher energy prices. This underscores the fact that in the medium term, energy prices in the India must rise to correspond more closely with world energy prices. India could also built the National Renewable Energy University to build future generation to tackle future energy crisis and help in meeting the energy needs more sustainably.

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