

Growth of Renewable Energy in India

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Abstract

Economic and sustainable development is necessary for any nation and energy is the major source of it. Developing countries like India where most of the energy is supplied by the coal or other conventional sources is suffering by environmental pollution and there is a worry about depletion of its conventional sources. Climate change is a major concern after the Paris climate conference. In this we have only renewable energy option to fulfill the gap between demand and supply. This paper discusses about Growth of renewable energy in India. It highlights the renewable energy scenario and discusses the financial and technical institute of renewable energy and the efforts made by the government of India to promote renewable energy.

Keywords: *Nise, niwe, mnre, ireda, unfccc*

1. Introduction

The expanded fossil fuel use in the previous quite a few years has raised worries about the exhaustion of fossil assets in future. This has additionally raised genuine ecological concerns prompting environmental change issues. Environment change impacts are expected to affect agriculture thus exposing food security, increasing natural disasters, species extinction, spread of vector-borne infections, rise in sea-level and accelerating erosion of coastal zones.

The 2015 Paris climate conference is from to achieve a legally required agreement on climate change for the first time in over 20 years; India has taken a deliberate commitment of decreasing emission intensity of its GDP by 33-35 per cent from 2005 level by 2030.

But For India, high import requirement (oil and increasingly coal), large peak power and power deficits, and high energy show serious challenges related to climate change, energy scarcity, and energy security. To overcome these challenges, India has set extremely ambitious renewable energy targets.

The previous couple of decades have demonstrated a quickened worldwide exertion in the improvement of renewable Energy sources and the related innovations that serve them as Energy is currently perceived as a key division. Government of India has adopted new controls and strategies empowering the occupation of renewable Energy innovations. These efforts include advancing renewable energy technologies, improving the efficiency of energy use, and establishing energy conservation plans alongside their related legislative activities.

India has set very huge renewable energy targets. As stated in the National Action Plan for Climate Change, set up renewable energy is a strategic priority for India. Under India's most recent budget, Union Budget 2015–2016, India aim to install 100 GW of solar energy capacity and 60 GW of wind energy capacity by 2022. The previously targets under the 12th Five Year Plan (2012–2017) intends to install an additional 20 GW of solar and 30 GW of wind capacity by 2022.

2. Growth of Renewable Energy Sector

Over the years, renewable energy sector in India has prominent as a significant player in the grid connected power generation capacity. It supports the government program of continuous growth, while, emerging as an important part of the solution to meet the nation's energy needs and a leading player for energy access. It has been recognised that renewable energy has to play a very important role in manage energy security in the years ahead and be an integral part of the energy planning process.

There has been a noticeable effect of renewable energy in the Indian energy scenario during the last five years. Renewable energy sector outlook in India has, during the last few years, witnessed great changes in the policy

framework with enhanced and ambitious plans to increase the power from solar energy. There is a perception that renewable energy can now play a significant role, as also, there is a technologies and capacity to do so. Growing the extent of the Jawaharlal Nehru National Solar Mission symbolizes both, and to be sure exemplifies the vision and desire for what's to come. This changes is, may be, the highlight of the last five years of activities under the Mission. The other powerful accomplishments are introduction of solar specific purchase obligations; launching of improved cook-stoves initiatives; starting coordinated research and development activities in solar thermal and PV; second generation bio fuels, hydrogen energy and fuel cells etc.

Renewable energy installed capacity growth day by day. Total installed capacity of renewable energy is 10257 MW in 2007-08 and it is increased up to 38800 MW in 2015-16. presently total installed power capacity is 42849 MW as on 30th April 2016.

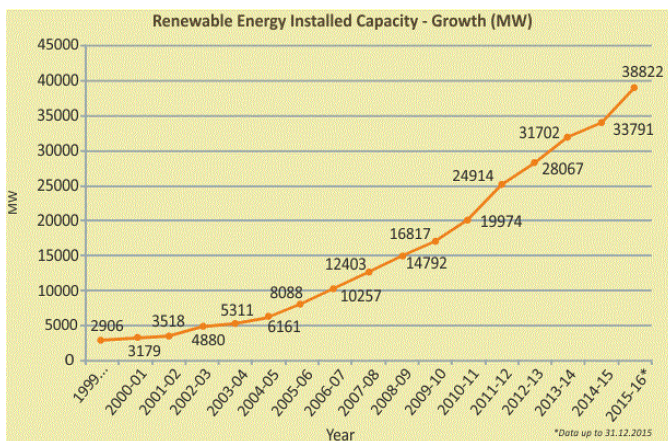


Fig 1 growth of renewable energy

3. PRESENT SENEARIO

Renewable energy increasing day by day.as now 14% of total installed capacity from renewable energy. Growth of renewable energy is increased in last few years. In India most of the renewable power is achieved by the wind energy. Wind energy shares 8.8 % of total installed power followed by solar energy. Most of the wind power coming from states like Tamil Nadu, Maharashtra, Gujarat, Rajasthan, Karnataka, Andhra Pradesh, Madhya Pradesh etc.

Solar energy shares 2.2% of total installed power. Most of the solar energy is coming from states like Rajasthan, Gujarat, Madhya Pradesh, Maharashtra, Andhra Pradesh, Punjab, Tamil Nadu etc.

Bio power shares 1.6 % of total installed power capacity. Most of the bio power coming from states like Maharashtra, Uttar Pradesh, Tamil Nadu Karnataka, Andhra Pradesh etc.

Small hydro shares 1.4 % of total installed power capacity.

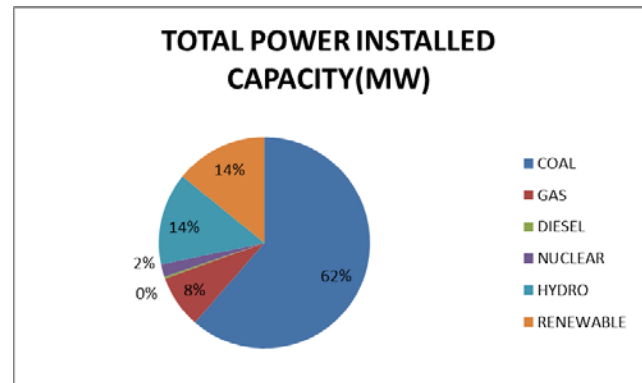


Fig.2 pie chart of total instatted capacity

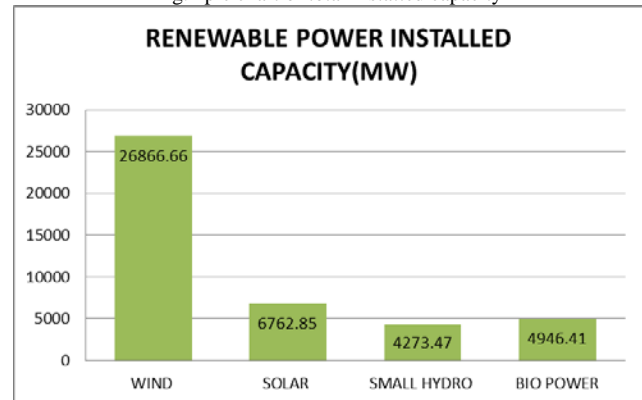


Fig.3 Renewable power installed capacity

4. GOVERNMENT PROGRAM/SCHEME ON RENEWABLE ENERGY

Government of India started many scheme and program on renewable energy. As we know the capital cost of renewable energy sources is high. Government of India gives subsidy on renewable energy sources for promoting non-conventional sources. The MNRE be responsible for financial incentives for various renewable energy programmers. The MNRE has issued guidelines to all state governments for creation of an inviting environment for evacuation and purchase, wheeling and banking of electrical power from Renewable Energy sources.

5 Technical & financial institutes

For increases growth of renewable energy in India there are various technical and financial institute which give technical knowledge and financial support for renewable energy.

5.1 National institute of solar energy

Nise is located in Gurgaon and it is an autonomous institute of Ministry of New and Renewable Energy (MNRE). It serve as technical point of solar energy. It is involved in various training, testing and interactive research on solar technology.

5.2 National institute of wind energy

Niwe is located in Chennai and it is also part of Ministry of New and Renewable energy (MNRE). Niwe gives the technical knowledge about wind energy ,generation of wind power and site feasibility for wind turbine.

5.3 Sardar Swaran Singh National Institute of Renewable Energy

It is located in Punjab and it is also part of Ministry of New and Renewable Energy (MNRE). It's focus on Bio power.

5.4 Solar Energy Corporation of India

Seci is a CPSU under the control of the Ministry of New and Renewable Energy (MNRE). It is financial Institute and responsible for implementation of a number of schemes of MNRE

5.5 Indian Renewable Energy Development Agency Ltd

Ireda is also financial institute and Govt. of India enterprise under the control of the Ministry of New and Renewable Energy (MNRE). It is financial support various project and scheme of generation of electricity by the renewable energy.

6 OPPORTUNITIES AND CHALLENGES

Power from renewable energy sources increased but still most of power is generated by coal. There are various challenges like

6.1 Energy security

Today around 62 per cent of India's power generation is based on coal. Expanding reliance on imported oil is prompting imports energy needs.

6.2 Electricity Shortage

Even with increase in installed capacity by more than 113 times in 65 years, still India is not able to fulfil its peak electricity demand and energy requirement. The peak power deficit amid money related year 2001-02 was 12.2 per cent, almost 9252 MW, however, at the end of Financial Year 2014-15, the peak power deficit decreased to the order of 2.4 per cent. As fallout of this situation, planned and un-planned measures were undertaken by the government to bridge this demand-supply gap.

6.3 Energy Excess

India faces a challenge to assure availability of reliable and modern forms of energy for all its citizens. About 85 for each penny of country family units depend on strong fuel for their cooking needs and just 55 for every penny of every rustic family have admittance to power. However, even with this low access, most rural households face issues with quality and regularity of energy supply. Absence of rustic lighting is prompting vast scale utilization of lamp fuel. This usage needs to be cut down, as it leads to increased subsidies and import dependence, and consequent pressure on foreign exchange reserves.

6.4 Climate change

India has taken a deliberate responsibility of diminishing outflow power of its GDP by 33-35 for every penny from 2005 levels by 2030. In the as of late finished up 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) held at Paris, France, India resolved to accomplish around 40 for each penny aggregate electric force introduced limit from non-fossil fuel based vitality assets by 2030 with the assistance of exchange of innovation and minimal effort worldwide account including from Green Climate Fund (GCF).

7 Conclusions

This paper describes the boost of renewable energy in India. India's energy consumption has been increasing at a relatively fast rate due to economic development. Climate change, emission of greenhouse gases and depletion of fossils fuel boost the development and promotion of renewable energy in India. India has enough potential of renewable energy but still there are various challenges. Today, 14% of total installed capacity is shared by renewable energy. India has set very ambitious renewable energy targets. India intends to install 100 GW of solar energy capacity and 60 GW of wind energy capacity by 2022.

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