

CONVENTIONAL AND RENEWABLE ENERGY OUTLINE OF INDIA

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ABSTRACT

This paper exhibits an audit about customary and sustainable power source situation of India. The ordinal terms of Consumption, Production and Supply are familiar. In India a large portion of the power age is completed by customary vitality sources, coal and mineral oil-based power plants which contribute vigorously to ozone depleting substances outflow. Setting up of new power plants is unavoidably reliant on import of profoundly unstable non-renewable energy sources. In this manner, it is fundamental to handle the vitality emergency through reasonable use of plenteous the sustainable power source assets, for example, biomass vitality, sunlight based vitality, wind vitality, geothermal vitality and Ocean vitality. Most recent 25 years has been a time of extravagant chase of exercises identified with research, advancement, generation and showing at India. India has acquired use of an assortment of sustainable power source advancements for use in various parts as well. This paper presents current status, significant accomplishments and future parts of sustainable power source in India. In this paper assessment of current vitality arrangements for overcoming the impediments and executing renewables for what's to come is additionally been introduced.[1]

Keywords

Conventional Energy, Renewable energy, Solar, Wind, Biomass, Geothermal

INTRODUCTION

India is running one of the largest and most ambitious renewable capacity expansion programs in the world. Newer renewable electricity sources are projected to grow massively by nearer term 2022 targets, including a more than doubling of India's large wind power capacity and an almost 15 fold increase in solar power from April 2016 levels. These targets would place India among the world leaders in renewable energy use and place India at the centre of its "Sunshine Countries" International Solar Alliance project promoting the growth and development of solar power internationally to over 120 countries. India set a target of achieving 40% of its total electricity generation from non-fossil fuel sources by 2030, as stated in its Intended Nationally Determined Contributions statement in the Paris Agreement. A blueprint draft published by Central Electricity Authority projects that 57% of the total electricity capacity will be from renewable sources by 2027. In the 2027 forecasts, India aims to have a renewable energy installed capacity of 275 GW, in addition to 72 GW of hydro-energy, 15 GW of nuclear energy and nearly 100 GW from "other zero emission" sources.

Conventional energy

2.1. Natural Gas: According to Oil and Gas Journal, India had approximately 38 trillion cubic feet (Tcf) of proven natural gas reserves as of January 2010[12]. The estimation is that India produced approximately 1.4 Tcf of natural gas in 2009, a 20 percent increase over 2008 production levels.

2.2. Oil: In 2009, India consumed nearly 3 million bbl/d, making it the fourth largest consumer of oil in the world. EIA expects approximately 100 thousand bbl/d annual consumption growth through 2011. In 2009, India was the sixth largest net importer of oil in the world, importing, nearly 2.1 million bbl/d, or about 70 percent, of its oil needs.

2.3. Coal: India consumes 7% of coal of the world. As compared to these top 5 countries ROW (Rest of the World) consumes only 20% of the Coal. World's 68% coal is consumed in Electricity generation[2].

2.4. Electricity Generation and Consumption: In 2007, India had approximately 159 gigawatts (GW) of installed electric capacity and generated 761 billion kilowatt hours. Nearly all electric power in India is generated with coal, oil or gas. Conventional thermal sources produced over 80 percent of electricity in 2007.

RENEWABLE ENERGY

The Renewable Electricity Futures (RE Futures) Study investigated the challenges and impacts of achieving very high renewable electricity generation levels in the contiguous United States by 2050. The analysis focused on the sufficiency of the geographically diverse U.S. renewable resources to meet electricity demand over future decades, the hourly operational characteristics of the U.S. grid with high levels of variable wind and solar generation, and the potential implications of deploying high levels of renewables in the future [3].

Solar Energy: Solar energy powers virtually everything in the Earth and atmosphere system. India just had 2.12 megawatts of grid-connected solar generation capacity. As part of the National Solar Mission, the ministry aims to bolster the annual photovoltaic production to at least 1,000 megawatts a year by 2017. India is currently ranked number one along with the United States in terms of installed Solar Power generation capacity[4].

Wind Energy: The development of wind power in India began in the 1990s, and has significantly increased in the last few years. Although a relative newcomer to the wind industry compared with Denmark or the US, India has the fifth largest installed wind power capacity in the world. Suzlon, India's largest wind power company, has risen to ranking 5th worldwide, with 7.7% of the global market share in just over a decade.

Hydropower: India is endowed with economically exploitable and viable hydro potential assessed to be about 84,000 MW at 60% load factor (1,48,701 MW installed capacity). The power plant at Darjeeling and Shimsha (Shivanasamudra) was established in 1898 and 1902 respectively and is one of the first in Asia. In addition to this, hydro-potential from small, mini & micro schemes has been estimated as 6 782 MW from 1 512 sites.

Biomass: Biomass has been a key player in energy generation even in the past. Thirdly, the potential threat posed by climate change, due to high emission levels of greenhouse gases, the

most important being CO₂, has become a major stimulus for renewable energy sources in general.

Geothermal energy: Geothermal energy is the earth's natural heat available inside the earth. This thermal energy contained in the rock and fluid that filled up fractures and pores in the earth's crust can profitably be used for various purposes. India has reasonably good potential for geothermal;[5] the potential geothermal provinces can produce 10,600 MW of power. However, with increasing environmental problems with coal based projects, India will need to start depending on clean and eco-friendly energy sources in future; one of which could be geothermal.

MAJOR ACHIEVEMENTS

The Ministry of New & Renewable Energy (MNRE) has been facilitating the implementation of broad spectrum programs including harnessing renewable power, renewable energy to rural Areas for lighting, cooking, and motive power, use of renewable energy in urban, industrial and commercial applications and development of alternate fuels and applications[6].

CONCLUSIONS

There is an urgent need for transition from petroleum-based energy systems to one based on renewable resources to decrease reliance on depleting reserves of fossil fuels and to mitigate climate change. In addition, renewable energy has the potential to create many employment opportunities at all levels, especially in rural areas. So Isolated systems, whose cost depends on load factor are needed to be linked with rural industry. Innovative financing is also a requirement. Specific action include promoting deployment, innovation and basic research in renewable energy technologies, resolving the barriers to development and commercial deployment of biomass, hydropower, solar and wind technologies, promoting straight (direct) biomass combustion and biomass gasification technologies, promoting the development and manufacture of small wind electric generators, and enhancing the regulatory/tariff regime in order to main stream renewable energy sources in the national power system(Source: NAPCC). Accordingly, increased focus is being laid on the deployment of renewable power that is likely to account for around 5% in the electricity-mix by 2032. India's quest for energy security and sustainable development rests a great deal on the ability to tap energy from alternate sources or the renewable sources.

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