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Renewable Energy Scenario in India

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Renewable energy is generated from sunlight, wind, rain, tides, waves, water, geothermal heat, biomass, biofuels for transportation, municipal solid waste, and other natural resources. Energy-related regulations and concerns in India are governed by the Electricity Act of 2003¹. This regulation, however, omits a crucial explanation of renewable energy. According to the Central Electricity Regulatory Commission, (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations Act of 2017, renewable energy is defined as electrical energy generated from renewable energy sources. The Indian legal system has produced a variety of innovations for energy generation and distribution. If there is a dispute between federal and state laws, federal law always wins. The most dependable of all energy sources is hydroelectric power. The MNRE, which was renamed in 2006, is in charge of renewable energy matters. The Ministry of Nonconventional Energy Sources was formed in 1992. Because it has a low negative impact, renewable energy is employed in our daily life. It does not cause global warming, but it does contribute to greenhouse gas emissions due to its substantial usage of oil and mineral oil-based power plants.

Keywords: *renewable energy, electricity act of 2003, non-conventional energy, global warming.*

¹ Electricity Act, 2003

INTRODUCTION

Primary and secondary energy, commercial and non-commercial energy, renewable and non-renewable energy, and so on are only a few examples of different types of energy. Primary energy, such as coal, gas, or petroleum, is used without being changed; secondary energy, on the other hand, is used after primary energy has been transformed, such as transforming coal components into electrical energy. Lifting water for irrigation, cow dung, wind energy for growing water supply, and power generation are examples of noncommercial energy. Commercial energy, such as coal, petroleum, natural gas, and electricity, is non-renewable energy that is available to users in exchange for monetary value, whereas non-commercial energy, such as coal, petroleum, natural gas, and electricity, is a renewable energy that is available to users in exchange for monetary value. Renewable energy, which includes the sun, wind, and tidal energy, is energy that can be used indefinitely. Non-renewable resources are those that, once depleted, cannot be replaced quickly. All of the following are included: coal, oil, fossil fuels, petroleum, and natural gas.

RENEWABLE ENERGY SCENARIO IN INDIA

In 2020, India will be the world's third-largest power consumer and producer of renewable energy, with renewables accounting for 38% of installed energy capacity. (136 GW of a total of 373 GW) Dependence on imported oil must be minimized, in order to attain energy independence, which will require the development of other energy sources. India's per capita energy usage is far lower than that of other developed nations. It's due to fast industrialization and massive economic growth. Due to its large population and high sun insolation, India is an interesting area for solar energy.

INDIA'S ENERGY-RELATED INSTITUTIONS

MNRE - In India, the ministry is in charge of developing renewable energy policies for electricity, transportation, and heat. Under the Ministry of New and Renewable Energy, the National Institute of Solar Energy and the National Institute of Energy are located. Bioenergy for power is also included in the MNRE. MNRE also helps persons working in the renewable

energy industry financially. The **Indian Renewable Energy Development Agency** is a non-banking financial entity that provides loans for renewable energy projects under the auspices of the **Ministry of New and Renewable Energy**.

SECI - The Solar Energy Corporation of India is in charge of putting MNRE programs like the solar park plan and grid-connected solar rooftop plans into action...

MOP - This ministry is in charge of overseeing and regulating the country's power sector. This involves the use of renewable energy sources for power. The major advisor to the Ministry of Power is the **Central Electricity Authority**. The Ministry of Power is also in charge of a number of significant programs, such as the UDAY program, which tries to aid Discoms by providing financial assistance.

CERC - Tariffs for generation and transmission utilities are regulated by the Central Electricity Regulatory Commission. They also issue licenses for interstate transmission and trade.

MOPNG - The Ministry of Petroleum and Natural Gas is in charge of petroleum and natural gas exploration and production, as well as biofuel development and policy implementation. These are some of India's key energy institutions.

PRINCIPLES AND REGULATIONS

ELECTRICITY ACT 2003 - The Electricity Act of 2003 was established by the Indian Parliament to improve the country's power sector. The act addresses important concerns relating to power generation, distribution, transmission, and trading. The central government should create a national policy for the most efficient use of resources, including renewable energy.

NATIONAL ELECTRICITY POLICY 2005 - On February 12th, 2005, the National Electricity Policy was purchased. It was published shortly after the Electricity Act (EA) of 2003 was passed. Economic growth was achieved through the provision of high-quality, reliable power at reasonable costs, universal access to energy, efficient operations, and private sector engagement and competition in capacity expansion.

NATIONAL OFFSHORE WIND ENERGY POLICY 2015 -On September 9, 2015, the Union Cabinet initiate this policy with the purpose of encouraging and supporting the development of offshore wind energy in India. Offshore wind energy is generated by harvesting the wind's power at sea, where the wind is stronger and more consistent due to the lack of impediments. The United Kingdom, Denmark, and Germany are the world leaders in offshore wind energy development, followed by Belgium, China, the Netherlands, and Sweden².

NATIONAL TARIFF POLICY 2016 -It was released by the Ministry of Power in January 2006, as a follow-up to the National Electricity Policy of 2005. On January 20, 2016, the Union government changed the National Tariff Policy for Electricity, which is governed by the Electricity Act. It was primarily concerned with renewable energy and power procurement through competitive bidding. The revisions also attempted to achieve the UDAY scheme's goals³. The Electricity Act regulates power rate policies. The policy directs the establishment of electricity rates, the signature of power purchase agreements, and the sale and purchase of coal and electricity (both conventional and renewable energy).

POLICY ON FOREIGN INVESTMENT

- Overseas financiers are boosted to form joint ventures with Indian activities for monetary or industrial teamwork, as well as the formulation of renewable energy-based power production works.
- The government boosts overseas financiers to form, own, and functions renewable energy-based works.
- The Reserve Bank of India has allowed Indian enterprises to accept investment in renewable-energy projects without first receiving RBI permission.
- To translate **Foreign Direct Investment (FDI)** approvals into implementations, the **Foreign Investment Implementation Authority (FIIA)** was founded. This will stimulate foreign investment in renewable energy programs.

² 'Offshore Wind' (Ministry of New and Renewable Energy) <<https://mnre.gov.in/wind/offshore-wind/>> accessed 05 March 2022

³ 'Tarrif Policy 2006' (IEA, 12 May 2021) <<https://www.iea.org/policies/4731-tariff-policy-2006>> accessed 05 March 2022

POLICY ON INDUSTRY

- The MNRE creates policies to encourage the growth of small, mini, medium, and micro-businesses that manufacture and service a variety of renewable energy systems and devices.
- The CEA does not require clearance for power-producing projects under Rs 1,000 million.
- Renewable energy-based projects are also eligible for financial relief in the form of a five-year tax exemption from the government. Renewable energy manufacturing companies can get low-interest financing.
- Renewable energy equipment and spare parts are exempt from customs charges.
- Firms in the private sector can set up licensee or generating companies.
- Small Scale Industries have been given financial and fiscal incentives by the MNRE and the Indian Renewable Energy Development Authority. A small-scale industry is defined as one in which the total investment in fixed assets, such as equipment and machinery, is less than Rs 10 million.

POLICIES FOR JOINT VENTURES

Foreign investors are welcome to enter joint ventures with the government to manufacture renewable energy products and equipment, as well as to establish renewable energy contracts in the country. These joint ventures make it easier for foreign firms to access the Indian market, while Indian firms profit from the foreign firms' new tactics and ideas.

ADDITIONAL IMPORTANT POLICIES

- In the sphere of renewable energy, the government recognized the value of research and development. In 1981, the federal government established a CASE. CASE is a non-profit organization dedicated to advancing renewable energy research and development.
- A few years later, the MNRE emerged. India is the first nation to form a dedicated ministry to promote renewable energy progress.

- By 2022, the CCEA has approved up to USD 6.5 billion in financial support for farmers who want to use solar energy.
- The **AtalJyotiYojana (AJAY) phase II** program was launched in 2018 with the goal of providing monetary assistance for the construction of over 3 million solar street lighting systems in important locations.
- MNRE published a **National Wind-Solar Hybrid Policy**⁴ in 2018 to stimulate the use of large-grid-connected hybrid wind-solar PV systems to maximize the use of land and transmission infrastructure.
- To encourage local solar cell manufacture, the government imposes the Solar Panel Safeguard Duty (SGD).
- The legislative provisions addressing renewable energy are referred to in Section 86(1) of the **Electricity Act of 2003**. This clause mandates that state commissions encourage the use of renewable energy sources as a source of power. As a result, India's government has implemented a number of major laws aimed at promoting, researching, and producing renewable energy.

INITIATIVES UNDERTAKEN BY THE GOVERNMENT

In India's energy sector, the state government, the central government, and private businesses all play a role. To raise public awareness, the government has taken concrete steps. Natural resources are managed by the federal government, which has eminent domain authority. In August 2018, the government announced the launch of a countrywide biofuels program. From 2012 to 2013, the National Biogas and Manure Management Program were implemented. The ultimate goal was to convert the residual suspension into pure gaseous cooking fuel. Institutions, organizations, panchayats, student living accommodations, and law enforcement agencies will all benefit from this program. In India, central government authorities oversee most aspects of energy resource development, or a government-controlled business is either the sole or market-leading player. Advertisements, books, magazines, articles, workshops, webinars, seminars, and a range of other public activities are examples. Global Wind Day has

⁴ 'Wind Policies' (*Ministry of New and Renewable Energy*) <<https://mnre.gov.in/Wind/policy-and-guidelines>> accessed 05 March 2022

been marked since 2007 to increase awareness and honour accomplishments in the wind energy industry. In 2009, the Ministry of New and Renewable Energy was established as the first ministry of its kind solely focused on renewable energy. MNRE has also enforced the Remote Village Electrification Program. Surya Mitra is a program that teaches college graduates how to set up, function, and bring off solar panels. To appreciate and promote innovative, content in the renewable energy sector, the government gives prizes and awards. The Technology Development and Innovation Policy (TDIP), which went into effect on October 6, 2017, was created to promote renewable energy investigation, process, and presentation. The purpose was to examine renewable energy resources, technological progress, development, and diffusion across the nation.

MAJOR CHALLENGES FACED BY RENEWABLE ENERGY IN INDIA

Coal and other fossil fuels, which took 3 million years to produce, are expected to be depleted in the near future we have depleted 60 percent of all resources in the last 200 years. Energy efficiency measures must be implemented for long-term development. With rising use, these reserves are rapidly depleting and will soon be gone for future generations. The majority of India's power plants date back several decades. They have become obsolete and ineffective. As a result, recent years have seen a slowing in electricity generation growth. On renewable energy, the federal and state governments have not collaborated successfully. As a result, there has been miscommunication, delays, and mismanagement in auctions, transmission connectivity, and land acquisition concerns between central and state renewable energy projects. Insolvent state-owned distribution firms' payment delays are also a key source of concern. In India's thermal power sector, stranded or non-performing assets are impeding the country from investing in renewable energy sources.

RECOMMENDATIONS

If necessary efforts are taken, the concerns and challenges can be resolved. The government should make the decision to work on renewable energy issues. This will help to avoid further

delays in the implementation of policies and initiatives. The following are some of the measures that can be taken:

- To effectively exploit the country's undiscovered renewable resources, a comprehensive renewable energy strategy that includes supply and use, as well as proper transportation, is required.
- The government should endeavor to reduce the dangers associated with the initiative.
- The renewable energy strategy has been complicated by tariff limits. As a result, price ceilings must be raised to ensure that high-quality projects may be commercially viable. This can be accomplished by examining the various industries' tariff expectations and risk assessments.
- A single rate of taxation should be applied to solar and wind power equipment.
- To offer performance-based assistance for these businesses, a new discoms (distribution corporations) framework is required.
- Due to current inefficiencies, it is necessary to privatize the power distribution sector.
- The government should work on expanding and modernizing the transmission network, taking into account the needs of significant renewable energy centers.
- Renewable energy enterprises should have easier access to domestic and international funding.

CONCLUSION & SUGGESTIONS

Our Indian economic system has grown dramatically in the last decade. To ensure the efficacy of policies established to capture the potential of renewable energy, closer cooperation between national and state governments, as well as between distribution corporations and developers, is required. The reduction in excise duty on diesel will aid Indian farmers, who have kept the country's economic growth momentum running despite the blockade. In India, strong penalties for violating renewable energy regulations must be created. The government should seek to extend and modernize the transmission network while also considering the needs of major renewable energy centers. Another significant reform that has been advocated is the payment of subsidies via Direct Benefit Transfer (DBT). It is an attempt by the Indian

government to reform the method for providing subsidies, which began on January 1, 2013. The goal of this scheme is to provide subsidies directly to people's bank accounts⁵.

⁵ Dinesh Pardasani, 'Amendments To Electricity Act, 2003' (*Mondaq*, 14 December 2018) <<https://www.mondaq.com/india/renewables/764430/amendments-to-electricity-act-2003>> accessed 05 March 2022