Legal Frame Work Related to Renewable Energy in India- A Critical Study

Asha S Nair*

Introduction

India has always used clean energy, but renewable energy is still a relatively new technology in other countries. In order to guarantee that national and international targets for increasing the amount of power generated by renewable energy sources are realised, the legal structure for sustainable energy resources should in particular contribute. India has over 1.3 billion people and more than 4 lakh MW of installed energy capacity, making it a country with a surplus of electricity. With ambitious targets to expand the use of sources of clean energy, lower emissions, and achieve a net-zero carbon footprint by 2070, India is dedicated to promoting renewable energy and addressing climate change. Investment in renewable energy has a lot of potential thanks to India's ambitious 2030 objective of producing 450 GW of the capacity for renewable energy.

It's critical to keep in mind that energy governance is a highly complex subject, and that there is no "the most effective model" that can be used to manage renewable energy (RE).A few regulatory measures, such as

* Student, CMR University, School of Legal Studies.

the approval of a particular RE law with a set of regulations for the application of tariff incentives for the generation of energy from sources that are sustainable, may be taken into consideration.Incent ives and subsidies have been successful in enacting positive reforms in Europe. Global investment treaties and legally binding protocols may ensure that everyone has access to energy, despite the fact that such initiatives require political objectives and desire that transcend national boundaries. According to regional and institutional legal frameworks, RE is now a serious problem for within as well as outside development operations. International and regional legal authorities have also heavily pushed the potential of RE to improve sustainable development for everyone.Therefore, using and consuming RE helps to promote sustainable development in many ways. The UN's approved SDGs provide a legal framework and highlight the importance of Renewables in ensuring everyone has access to reliable and inexpensive energy. Overall, the inclination for and dependence upon Renewable energy (RE) are 21st-century realities that cannot be rejected or removed in any way on a national, regional, and international scale..

Constitutional Provisions

In India, electricity is included on the concurrent list, which enables both the federal and state governments to enact laws impacting this sector. The power Act of 2003 is the main law governing the power industry in India. It establishes the legislative framework for the

development, control, and efficient supervision of the power industr y, incorporating efforts involving renewable energy.

The 2003 Electricity Act: The Central Government recognised the necessity for the Electricity Act, 2003 (Electricity Act)[1] due to the nation's continuing economic reforms and power sector reforms in the several states. The State Electricity Boards (SEBs), which at first were set up pursuant to the IEA, 1910, and the ESA, 1948, performed poorly, forcing the Government of India (GOI) to enact an identical and unifying law to address the present necessities of the renewable energy sector, across the spectrum of generation, disposal, transactions, and dissemination of electricity.

- To take actions that will promote the growth of the electricit y sector, protect consumer interests, and promote competition.
- To rationalise electricity tariffs and ensure that there is an adequate supply of electricity in all areas.
- To establish Regulatory Commissions and an Appellate Tribunal for Electricity.
- To rationalise the tariff and ensure that there is an adequate supply of electricity in all areas.

The Indian Electricity Act of 1910[2]: This law was the first to regulate the production, transmission, and use of electricity in India. The 1910 Act allowed for the granting of licences to any individual or group in

[1] Electricity Act, 2003 (Electricity Act)
[2] Indian Electricity Act of 1910

order to offer energy in a certain area, as well as the provision of power by non-licensees with the government's approval in certain circumstances. Provisions were created to make it easier for these licensees to build energy supply lines and complete their operations.

The 1948 Electricity (Supply) Act[3]: The Electricity (Supply) Act of 1948 called for the rationalization of electricity production and supply as well as general action that would advance the field of electricit y. State Electricity Boards were established and given control over organising the provision of electricity across several States. The Central Electricity Authority, State Electricity Boards, and Generating Companies were all subject to the provisions of this Act regarding their legal authority and duties.

Regulatory Commissions for Electricity Act of 1998[4]: In order to separate State Governments from the determination of prices, the Electricity Regulatory Commissions Act of 1998 provides for the creation of both a Central Electricity Regulatory Commission (CERC) and State Electricity Regulatory Commissions (SERCs). Additiona lly, it included provisions for the rationalisation of power rates, open policies on subsidies, the promotion of effective and environmenta lly friendly policies, and related issues.

The 2014 Electricity (Amendment) Act : On December 19, 2014,[5] the Minister of Power introduced the Electricity (Amendment) Bill, 2014 (2014 Bill) in the Lok Sabha with the intention of revising the

[3] 1948 Electricity (Supply) Act
[4] Regulatory Commissions for Electricity Act of 1998
[5] The 2014 Electricity (Amendment) Act On December 19, 2014

Electricity Act. In several facets of the power industry, this bill recommended a number of reforms to the Electricity Act. Eliminat ing the transportation and material of the cables from the supplier's business; expanding freedom of access, rivalry, and markets; and stepping up support for renewable energy sources were the key thrust areas.

2015's National Renewable Energy Act [6]: In order to diminis h dependency on fossil fuels, improve supply security, and reduce CO2 and other emission levels of greenhouse gases, this Act seeks to promote the use of sources of clean energy for the generation of electricity by taking macroeconomic, weather-related, and conservation concerns into account. In particular, this Act will contribute to achieving national and global targets to increase the quantity of energy that comes from renewable sources. The follow ing energy sources are considered renewable energy (RE) sources: wind, solar radiation, mini hydro, biomass, biofuels, landfill and sewage gas, municipal solid waste, industrial waste, geothermal energy, ocean energy, and any other energy source that the ministry may notify. Hybrids of the aforementioned sources are also included in this category. [7]

The Current Scenario of Renewable and Clean Energy Utilisation in India

[6] National Renewable Energy Act,2005
[7] M/S Radhe Renewable Energy V/s State of Gujarat on 23 December, 2019

India has always been a leader in environmental sustainability and climate protection. The major narrative of Indian culture is still based on a sizable portion of folklore literature and practises aimed at adopting a holistic perspective of the natural resources.

In Godavarman Thirumalpad v. Union of India (1997)[8], While not specifically focused on renewable energy, this case established the principle of environmental jurisprudence in India. It emphasized the importance of sustainable development and the protection of natural resources, which are fundamental to the promotion of renewable energy. However, in recent times, there has been a growing emphasis on climate protection. Since recently, India's international standing has been improving, and the country now holds the G20 Presidency.Ind ia is starting to serve as an example for nations all around the world, particularly in terms of how economic growth and environme ntal preservation may coexist. With a goal of 500 gigawatts by 2030, India has emerged as the main economy with the greatest rate of growth in the addition of renewable energy capacity, with over 100 gigawat ts installed by the end of 2021.[9]

[8] T.N. Godavarman Thirumulpad vs Union Of India & Ors, AIR 1997 SUPREME COURT 1228

[9] Competition Issues In Energy Sector In India A Critical Legal Study, Singh Kirti, 2018, Dr Ram Manohar Lohiya National Law UniversityJournal.

By 2030, our Indian government wants to install 523 GW of renewable energy capacity, including 73 GW from hydropower. By July 2021, India has 96.96 GW of existing alternative energy capacity, representing 25.2% of all the capacity currently in use and offering a sizable opportunity for the expansion of green energy.[10]

The number of solar power panels on our neighbor's rooftops is growing daily. The high cost of manufacturing and supportive legislative environment are two criticisms leveled at alternative energy sources. Low production efficiency and greater costs, particularly those related to constructing and installing facilities like solar or wind farms, are now the main and best-known barriers to the adoption of renewable energy.[11] Examples include: transmission, related stories, entry barriers, politics, and oversupply.

- Simplified RTS implementation process: To make the process more straightforward, the Ministry has created a national portal (solarrooftop.gov.in) where any residential user from anywhere in the nation can apply for rooftop solar without having to wait for the Discom to complete the procurement process and choose suppliers.[12]

[10] Report on Renewable energy efficiency, Ministry of Power
[11] M/s Alopi Parshad and Sons Ltd. V/s. Union of India AIR (1960) SC 588
[12] Robert P. Taylor et. al., Financing Energy Efficiency – Lessons from Brazil, China, India and Beyond, The International Bank for Reconstruction and Development / The World Bank ,2008

- Programme for National Bioenergy: Launched on November 2, 2022, the National Bioenergy Programme consists of the following Sub-schemes:
    - Programme on Power from Urban, The industr ia l sector, and Farming Wastes/Residues (Waste to Energy Programme)
    - The Human Resource Development Scheme's Vayumitra and Jalmitra Skill Development Programme was introduced in 2022. 1500 crore rupees in new equity invested in IREDA and 1000 crore rupees in SECI.
- Due to its enormous capacity to lead globally in the alternat ive energy industry and create green jobs, the authorities of India urged every significant player in the energy business to invest in India.
- In order to enable enormous scale grid-dependent solar power projects, an agenda for "The Creation of Photovoltaic Parks and Ultra Massive ji Solar Power Projects" is being executed with a goal of producing 40 GW by March 2024. Solar parks offer solar power firms a plug-and-play idea by providing the infrastructure that is required, comprising land, strength outflow facilities, transportation connectivity, water facilit y, etc., along with all necessary regulatory clearances..[13] As of October 31, 2022, 56 Solar Parks with a combined capacity of 39.28 GW have been approved throughout 14 states.In 17

[13] Anindita Chakrabarti and Ravinder Kumar Arora India‟s Energy Security: Critical Considerations, 17(6) SAGE 2 (2016)

> parks, solar energy projects with a combined capacity of more than 10 GW have already been put into operation. The remaining parks are in various phases of implementation. From January through October 2022, there will be solar parks.[14]

India has been able to safeguard the environment without obstructing a significant number of infrastructure projects by picking a way where economics and ecological can both coexist harmoniously.I ndia currently has the lowest cost for installing renewable energy capacity, and in the near future, it is predicted that its price for green hydrogen would be the most affordable worldwide.[15]

India is therefore ready to switch from being an energy net importer to an energy net exporter. India's potential for renewable energy has grown by more than 25% over the course of the following six years, which is a remarkable rate of growth for any nation, let alone one with 140 crore people that is still developing.

Barriers to the Use of Renewable Energy

Although it faces several obstacles, the nation's renewable energy field provides intriguing investment possibilities. Project delays may result

[14] National Institute Of Transforming India , Report of expert Group on 175 GW RE by 2022 Govt. of India , 2015

[15] Diksha Garg and Kamlesh Kaur, Understanding India‟s Energy Sector: Players, Policy Framework and Challenges 3 (1) IJSRM 2357 (2015)

from state participation in regulating property laws and electricit y tariffs. Even while some countries have made the purchasing of real estate easier, issues with land distribution, fragmented ownership, and disputed titles still exist. In Centre for Public Interest Litigation v. Union of India (2013)[16] the allocation of coal blocks in India Were challenged highlighting the environmental and social costs associated with fossil fuel-based energy production. The judgment emphasized the need for transparency and accountability in energy policy and paved the way for greater scrutiny of government decisions in the energy sector, potentially incentivizing the shift towards renewable energy sources.

Additionally, in an effort to reduce rates, state governments and utility providers try to renegotiate PPAs, increasing the possibility of a contract default and non-payment. Further Such renegotiations may be required by political changes, highlighting the significance of state-level risks associated with politics. The impact of the COVID-19 epidemic on the public budgets of many nations has resulted in payment delays and bankruptcies, necessitating the use of force majeure measures.

- High cost and low productivity, in particular capital costs, or the up-front cost of constructing and installing solar and wind

[16]Centre For Public Interest Litigation ... vs Union of India, AIRONLINE 2020 GUJ 367

farms, are the most evident and well publicised obstacles to the use of renewable energy.[17]

- By 2030, the nation's aims and strategies call for quadrupling the capacity of renewable energy sources and more than doubling the share of gas from natural sources in all electricit y production.
- The India Vision Case is based on a rapid resolution of the current public health crisis, environmental issues, and a more complete realisation of India's stated energy policy objectives, along with a faster pace of economic growth than in the Steps.[18]
- The Sustainable Development Scenario looks at how India could mobilise an additional surge in clean energy investme nt to produce a rapid peak and subsequent decline in the emissio n of greenhouse gases.
- India is expected to experience rapid growth in solar energy. Currently, coal generates close to 70% of India's electricit y, while solar produces less than 4%. In the STEPS, they converge in the low 30% range by 2040, and in some scenarios, the transition occurs even faster.
- Utility-scale renewable energy projects are growing in popularity thanks to certain creative regulatory strategies that support combining solar energy with other production technologies and storage to provide "round-the-clock" supply.

[17] DR.S.R, Mayani (2012), Legal research methodology

[18] Bangalore Electricity Supply Company Limited (BESCOM) V/s E.S. Solar Power Pvt. Ltd. & Ors.

India's energy landscape is undergoing a significant transformat io n, with an increasing emphasis on renewable energy sources. The nation's ambitious targets for renewable energy deployment reflect its commitment to combatting climate change and achieving energy security. However, despite the favorable policies and legal frameworks in place, several barriers hinder the effective utilization of renewable energy in India.

- Land Acquisition and Infrastructure Challenges:

  One of the primary barriers to renewable energy adoption in India is the acquisition of suitable land for renewable energy projects. Land is often a contentious issue due to competing land-use demands for agriculture and industrial purposes. Furthermore, the construction of infrastructure, such as transmission lines and substations, to connect renewable energy projects to the grid faces delays and bureaucratic hurdles
- Grid Integration:

  The intermittent nature of renewable energy sources, such as solar and wind, poses a challenge for grid integration. India's power grid needs significant upgrades to accommodate variable power generation. The legal framework must address issues related to grid stability, energy storage, and demand-side management to ensure the seamless integration of renewables into the grid.
- Policy and Regulatory Uncertainty:

The evolving nature of renewable energy policies in India sometimes results in uncertainty for investors and project developers. Frequent changes in regulations, tariffs, and incentives can discourage investments. A stable and long- term policy framework is essential to provide the necessary confidence to investors and stakeholders

- Financial Barriers:

  The high upfront costs of renewable energy projects remain a significant hurdle. While financial institutions offer loans and incentives, many developers face challenges in securing affordable financing. The legal framework should encourage innovative financing mechanisms, like green bonds and public-private partnerships, to make renewable energy projects more financially accessible.

- Land-Use Regulations and Environmental Clearances:

  Environmental regulations and clearances are essential for the protection of ecosystems and public health. However, complex and lengthy approval processes often slow down renewable energy projects. Striking a balance between protecting the environment and expediting approvals is crucial.

- Technological Constraints:

  Technological barriers also affect the growth of renewable energy in India. Research and development incentives can facilitate the development and adoption of advanced renewable energy technologies. The legal framework should encourage

technological innovation and collaboration between the public and private sectors.

- Lack of Skilled Workforce:

  The renewable energy sector demands a skilled workforce. There is a need for comprehensive training and educational programs to meet this demand. Legal provisions can support the development of training and certification programs, enhancing human resources in the renewable energy industry.

- Resistance from Conventional Energy Interests:

  The conventional energy sector wields significant influence, and the transition to renewables can face opposition. Policymakers and regulators must navigate these interests while maintaining a balance between conventional and renewable energy sources.

India's legal framework for renewable energy has made significant strides in promoting sustainability and mitigating climate change. However, numerous barriers continue to challenge the effective implementation of these policies. In M.C. Mehta v. Union of India (2002),[19] the Supreme Court of India mandated the use of cleaner fuels and technologies in the transportation sector to address air pollution concerns. While not directly related to renewable energy, this decision underscored the judiciary's role in promoting sustainable and environmentally friendly energy practices. Addressing land acquisition challenges, improving grid infrastructure, reducing policy uncertainty,

[19] M.C. Mehta vs Union Of India And Ors AIR 2002 SUPREME COURT 1696

addressing financial barriers, and encouraging technologica l innovation are critical steps in overcoming these hurdles. An adaptable legal framework that evolves with changing needs and technologica l advancements is essential to achieving India's renewable energy targets and fostering a sustainable energy future

Suggestions

The functioning of renewable energy facilities in India uses a variety of effective technologies. Almost every wind and small hydroelectr ic project is linked to the grid, either directly or through the transmiss ion licensee's networks, which are both public and private. Even though we have been using off-grid systems in India since ancient times, there are specific situations where the biomass and bagasse-based networks operate in this way.[20] Additionally, the majority of solar projects now built in the nation are off-grid installations, despite recent measures by MNRE and strong developer interest, which are likely to lead to the rapid development of grid-connected solar power with high yield production. Three problems must be resolved:

- Should current projects also be covered by the REC programme, or only new projects that were commissioned after the REC mechanism was introduced?

[20] Bihar State Electricity Board, Patna and Ors. v. M/s. Green Rubber Industries and Ors

- Should both grid-connected and off-grid initiatives be covered by the legal system and the REC programme?
- Should participation in the REC programme be voluntary or should it be made mandatory?

The following factors contribute to the various difficulties in integrating the REC programme to disconnected projects with minor grid projects: challenges with accounting for electricity produced using clean energy because the SLDC is not aware of them.[21] A rigorous monitoring system for this type of energy production will need to be institutionalised, and an independent metering scheme will need to be set up. On a global basis, net metering was made available to account for the energy produced by small-scale renewable energy installatio ns. Otherwise, it is difficult to estimate the amount of electricity produced or replaced in India via off-grid methods.

Recommendations which help to integrate Renewables Better into the Grid

- Develop time-of-day cost for large supply, particularly peak price (this can come first since it is simpler than consumer time - of-day pricing).

[21] Dr. Sairam Bhat (2016), Energy Law & Policy in India, Professor NLSIU, Bangalore.

- Adequate legal framework is required to advance the use of clean energy storage technologies.
- Improving data exchange across the nation as well as measurements, forecasts, and analysis for wind and solar generation.
- Start auxiliary services in the grid with a strong legal foundation.
- Install intelligent mobile grids to increase grid stability and demand flexibility.
- Distribute renewable energy sources (or all types of generation) as efficiently as possible while accounting for their effects on the remaining components of the grid, such as transportatio n constraints.
- The future of energy comes from renewable sources, according to some. With the right planning and work, we can begin that future far sooner.
- All stakeholders must get appropriate insurance to cover losses in order to control risk.

Critical Analysis

The legal framework related to renewable energy in India has undergone significant developments and transformations over the years. This critical study, conducted from the environmental law perspective, has shed light on the strengths and weaknesses of the

existing legal regime. While India's commitment to renewable energy is commendable, there are key areas that require further attention and improvement.

One of the notable strengths of the Indian legal framework is its recognition of the environmental imperative and the need to transitio n towards cleaner and more sustainable sources of energy. The National Action Plan on Climate Change and the ambitious targets set under the National Solar Mission and National Wind Mission demonstrate the government's commitment to address climate change and promote renewable energy sources.[22] However, the critical study has also unveiled certain weaknesses in the current legal framework. One of the primary concerns is the lack of a unified and comprehensive renewable energy law. The existing laws and regulations related to renewable energy are spread across various sectors and are often disjointed. This fragmentation can lead to confusion and inefficiencies in the implementation and enforcement of renewable energy policies. Furthermore, the study highlights the need for more stringent regulatory mechanisms and better enforcement of environme ntal standards. While India has made significant strides in expanding its renewable energy capacity, there remain challenges in ensuring that the environmental impact of renewable energy projects is adequately addressed. This includes issues related to land use, water consumpt io n, and the protection of biodiversity.

[22] Dr. Manish Yadav (2013), Energy Laws, Professor NLU, Nagpur.

Another critical aspect is the issue of land acquisition and its associated environmental impacts. Large-scale renewable energy projects often require substantial land, and their expansion can lead to land use conflicts and environmental degradation. It is imperative for the legal framework to provide clear guidelines for sustainable land use practices in the context of renewable energy development.The study also emphasizes the need for stronger incentives and support mechanisms for decentralized and off-grid renewable energy solutions.[23] These solutions not only reduce the pressure on the grid but also empower local communities to take charge of their energy needs.The legal framework should be revised to promote and incentivize such community- led initiatives.In addition to the regulator y challenges, there is a need for greater emphasis on the protection of the rights of indigenous and local communities.[24] Many renewable energy projects are situated in or near areas inhabited by such communit ies. The legal framework should include provisions for meaningful consultation with these communities, ensuring that their rights are respected, and the benefits of renewable energy development are equitably distributed. Furthermore, the critical study underscores the importance of periodic reviews and updates to the legal framework to keep pace with technological advancements and changing environmental concerns. It is essential that the regulatory framework remains adaptable and responsive to emerging challenges and

[23] Union of India v. Reliance Industries, 2018

[24] Arunabha Ghosh and Karthik Ganesan ,Policy: Rethink India's energy strategy 521 (7551) NIWJS 2 (2015)

opportunities in the renewable energy sector.To address these weaknesses and further enhance the legal framework related to renewable energy in India, a holistic approach is necessary. This approach should involve comprehensive legislative reforms, improved coordination among various ministries and agencies, and robust mechanisms for monitoring and enforcement. It is imperative that environmental considerations remain at the forefront of these efforts.

Conclusion

In conclusion, India's journey towards a more sustainable energy future is admirable, but the legal framework governing renewable energy requires continuous refinement. A comprehensive and integrated legal regime that addresses the environmental impacts of renewable energy projects, encourages decentralized solutions, protects the rights of local communities, and adapts to evolving challenges is essential. As India strives to achieve its renewable energy targets and reduce its carbon footprint, a strong and environmentally conscious legal framework will be instrumental in ensuring that the transition is both effective and sustainable. For developing countries and those undergoing economic transition, renewable energy (RE) is regarded as being of tremendous assistance when it is supported by an appropriate regulator y framework. However, it might raise certain unpleasant issues that those nations might find challenging to address. Intellectual property rights are undoubtedly a pressing topic in the RE legal system.Globa l

technical superpowers and developed nations should offer financ ia l, legal, and technical assistance to those emerging and poor countries in order to lower the barrier and make such nations self-sufficient.Therefore, the industrialised world should support technology transfer with lax legislative restrictions, capacity build ing, and infrastructure development in developing countries' RE sectors. A clear and concise global legal framework for RE will help the developing world claim these as their due and not merely as a gift. As per researcher opinion, "Renewable energy means to re-adopt our old Indian tradition which were used by our great grandparents to fulfi lled energy need without degrading environment".