
INTERNATIONAL JOURNAL OF ADVANCED LEGAL RESEARCH

**LEGAL AND REGULATORY FRAMEWORKS FOR RENEWABLE
ENERGY**- Vasu Agarwal¹**INTRODUCTION**

India, boasting a population above 1.3 billion individuals and an energy capacity surpassing 400,000 MW, can be classified as a power surplus nation. India has established ambitious objectives to enhance the capacity of renewable energy sources, reduce emissions, and achieve net zero emissions by 2070, as part of its dedication to addressing climate change and promoting renewable energy. India's ambitious 2030 goal of achieving 450 GW of renewable energy output has led to a substantial expansion of investment opportunities in the field of renewable energy. The Indian Government (GOI) has been actively engaged in the promotion of renewable energy as a means to mitigate greenhouse gas emissions and address the escalating energy demands of the nation.²

Prior to engaging in any investment activities, it is crucial to do a comprehensive analysis of the regulatory framework that governs the renewable energy sector in India. This article provides an overview of the key legal factors that investors should take into account when considering investments in India's expanding renewable energy sector. Legal Framework The federal and state governments of India have the authority to implement regulations that are applicable to this corporation, thanks to the concurrent list for energy. The primary legislative framework governing the electrical industry in India is the Electrical Act of 2003. The legislation sets the necessary framework for the growth, administration, and effective functioning of the electrical industry, encompassing activities related to renewable energy.³

The responsibility for formulating and implementing the nation's renewable energy policies and objectives lies with the Ministry of New and Renewable Energy (MNRE). The Ministry

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² Kishori Lal v. ESI Corporation AIR 2007 SC 1819

³ Arunabha Ghosh and Karthik Ganesan — Policy: Rethink India's energy strategy | 2 NIWJS 7551 (2015).

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of Power ("MoP") is responsible for overseeing regulations related to renewable energy and the energy sector. NTPC Limited and Solar Energy Corporation of India Limited ("SECI") have been assigned by the MNRE to collaborate in order to accomplish its objectives. One of the renewable energy efforts undertaken by SECI is the National Solar Mission. Several initiatives overseen by these organisations include plans for financing large-scale grid-connected projects that necessitate viability gaps, plans for solar parks and ultra-mega solar power projects that also require viability gaps, plans for grid-connected solar rooftops, and plans specifically tailored for military and canal environments. The Ministry of New and Renewable Energy (MNRE) serves as the overseer of the Indian Renewable Energy Development Agency (IREDA). The provision of financial assistance facilitates the advancement of energy-efficient and renewable energy initiatives. Furthermore, the Ministry of New and Renewable Energy (MNRE) has successfully built the National Institute of Bioenergy, the National Institute of Wind Energy, and the National Institute of Solar Energy. The following entities represent the primary national research and development institutions specialising in solar, wind, and biofuel energy.⁴

Government of India Initiatives The Indian government has implemented several policies and incentives to encourage private sector participation in renewable energy projects and provide support for these activities. Examples of this can be observed in the Renewable Purchase Obligation (RPO) and Competitive Bidding Guidelines pertaining to grid-connected solar and wind power projects. The objective of implementing these rules is to offer shareholders in the renewable energy industry with a sense of transparency and confidence. The National Electrical Plan, periodically produced by the Indian government, provides a concise framework for the electrical sector in the short term. The draft of the National Electricity Policy for 2021 has been released by the Government of India. In accordance with the provisions outlined in the Electricity Act, it is imperative for the government to grant approval for the National Tariff Policy. In 2016, the National Tariff Policy underwent an upgrade.

The significance of augmenting the quantity of power generated from renewable sources and the involvement of the private sector in the infrastructure development of renewable energy

⁴ Anindita Chakrabarti and Ravinder Kumar Arora — India's Energy Security: Critical Considerations | 17(6) SAGE 2 (2016)

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were underscored. Regulatory framework The regulatory framework for renewable energy programmes in India involves the participation of both the federal and state governments. The oversight and establishment of rates for projects, particularly those related to renewable energy, is carried out by the Central Energy Regulatory Commission (CERC) in a fair and transparent manner. In order to establish pricing strategies for renewable energy, the Central Electricity Regulatory Commission (CERC) has implemented legislation, notably the Central Electricity Regulatory Commission (Terms and Conditions for Price Determination from Renewable Energy Sources) Regulations, 2017. Each state has its own State Electricity Regulatory Commissions (SERCs). They exert a substantial influence on the establishment and growth of renewable energy initiatives within their respective nations. The tariffs for renewable energy plants are determined by the CERC in accordance with legal regulations. SERCs employ broad standards or economic factors at public hearings to determine tariffs. Generators possess the opportunity to engage in pricing negotiations and establish power purchase agreements (PPAs) with entities responsible for procuring and distributing electricity. PPAs are submitted to the SERCs for approval. The licensee-generator contract and the agreed-upon rate in the case of competitive bidding are ratified by the commissions. The PPA utilises the procurer's letter of credit to establish a reliable payment channel.⁵

The Appellate Authority for Energy (APTEL) is the designated appellate authority in India responsible for overseeing the energy industry. The process involves the evaluation of appeals pertaining to decisions made by external entities and regulatory bodies. Investors have the option to seek a resolution through the legal system in the event of a disagreement or legal dispute. Notwithstanding various obstacles, the renewable energy industry in India presents a compelling prospect for investment. The jurisdiction of state governments over power rates and land rules can potentially result in project delays. Although the process of purchasing property has become more convenient in certain countries, issues such as disputed titles, fragmented ownership, and uneven land allocation persist. Furthermore, state governments and public utility corporations are engaging in renegotiations of Power Purchase Agreements (PPAs) with the aim of diminishing prices, hence increasing the likelihood of

⁵J.K.Cotton Spinning & Weaving Mills Co. Ltd (1961) 3 SCR 185 v. State of U.P.

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non-payment and breaches of contract. Furthermore Renegotiations may be required due to political events, highlighting the significance of political risks at the state level.⁶

The COVID-19 pandemic has had adverse impacts on public budgets in certain nations, resulting in payment delays and insolvency. Consequently, the implementation of force majeure measures has become imperative. An further concern that arises in relation to large-scale solar projects is the absence of environmental assessments and public engagement. Neglecting local livelihoods and environments when choosing locations can result in operational and reputational problems, community unrest, and legal complications. Operating a renewable energy company in India necessitates a profound understanding of the political, legal, and regulatory landscapes. Investors must anticipate uncertainty and hurdles despite the company's significant potential. Through the collection of relevant court documents and the execution of a meticulous and thorough investigation. In order to navigate the intricate landscape and mitigate potential risks within India's renewable energy sector, investors are need to engage in a thorough due diligence procedure encompassing legal and regulatory study. The timing and financial viability of a project can be significantly affected by policy changes and delays in approval.⁷

RENEWABLE ENERGY: TRACING THE HISTORY

The dramatic increase in oil prices that happened on the global market at the beginning of the 1970s raised concerns about the government's over-reliance on the issue of energy security. Forced to review its energy strategy, the administration chose to investigate domestic non-conventional energy sources. The Department of Science and Technology established the Commission for Additional Sources of Energy in 1981 to conduct the critical research and development in the field of alternative energy sources. In order to accomplish the necessary tasks in the field of alternative energy sources, the Department of Non-Conventional Energy Sources was established as an autonomous body the following year.⁸

The Indian government may have been one of the few to recognise the potential advantages of renewable energy sources in the future, both domestically and internationally, and as a

⁶ Diksha Garg and Kamlesh Kaur, —Understanding India's Energy Sector: Players, Policy Framework and Challenges" 3 (1) IJSRM 2357 (2015)

⁷ Dr. Paras Diwan and A C Kher , Energy Law And Policy 13 (Pentagon Energy Press 2009)

⁸ Indian Council for Enviro-Legal Action v. UOI (1996) 3 SCC 212

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response, it grew its department of renewable energy into a full-fledged ministry. Regarding India's progress with renewable energy, the Ministry of New and Renewable Energy (MNRE), which became the ministry in 2006, is considered to be the most significant ministry. This marked a momentous shift in the advancement of renewable energy in India. Previous to this, the Indian Renewable Energy Development Agency (IRDA), a well-known national organisation, was founded in 1987 with the goal of financing renewable energy projects across the nation. Subsequently, the state-level organisation was founded to intensify initiatives to support renewable energy sources in that state.

DIFFERENT SOURCES OF RENEWABLE ENERGY IN INDIA SOLAR ENERGY

Solar energy is widely available and may be used even under adverse weather conditions. The Earth's solar energy absorption rate is estimated to be around 10,000 times higher than the rate of human energy use. Solar systems have the capacity to provide a diverse array of energy, fuels, natural lighting, warmth, and cooling for a broad spectrum of applications. Two forms of solar technology that have the capability to transform sunlight into electrical energy are photovoltaic (PV) panels and solar radiation-concentrating mirrors. While the availability of solar energy may differ among countries, direct solar energy has the capacity to make a substantial impact on the energy composition of any nation. The solar energy industry in India is experiencing significant growth. As of March 31, 2023, the country has 66.78 GWAC of solar power installed, placing it fourth globally in terms of solar energy consumption in 2021. India intends to issue a tender for a 40 GW solar and hybrid project in the fiscal year 2023-2024. India has established over 42 solar parks to allocate space for proponents of solar energy ventures. From 2010 to 2019, solar power projects received a total investment of around 20.7 billion US dollars from international sources. The proposal put forth the establishment of the International Solar Alliance (ISA), with its headquarters located in India. India has additionally put forth the notions of the "World Solar Bank" and "One Sun One World One Grid" in order to harness the ample solar energy resources accessible on a global scale.⁹

WIND ENERGY

⁹ Arpita Asha Khanna, Governance in Coal Mining: Issues and Challenges (TERI-NFA Working Paper No. 9) 2013

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Harnessing Wind Power Large wind turbines can be constructed on land, offshore, in freshwater, or in saltwater to capture the kinetic energy of air in motion. Despite the long-standing usage of wind energy, recent advancements in onshore and offshore wind energy technologies have focused on enhancing the efficiency of electricity production by employing larger rotor diameters and taller turbines. ¹⁰Despite the considerable variation in wind speeds across different geographical locations, the majority of Earth's regions possess the capability to harness a substantial quantity of wind energy. In theory, wind energy generates more electricity than the global total. While powerful winds are present worldwide, the most optimal locations for harnessing wind energy are generally those located at greater distances. Offshore wind energy has immense promise. In the fiscal year 2022-2023, wind power accounted for over 10% of India's total utility power production capacity, equivalent to 71.814 TWh or nearly 4.43% of the total electricity generated. For the fiscal year 2022–2023, the capacity utilisation factor exceeds 18%, compared to 19.33% in 2018–19, 16% in 2017–18, 19.62% in 2016–17, and 14% in 2015–16. Approximately 70% of the global wind energy is generated throughout a five-month period known as the Southwest monsoon, spanning from May to September. In India, solar energy is predominantly generated throughout the day, except during the rainy season, rendering it a valuable complement to wind energy. The cost of wind energy is comparable to that of stored solar energy due to its production occurring during nighttime, accounting for around 60% of the total. ¹¹

GEOHERMAL ENERGY

Thermal energy Geothermal energy is generated by harnessing the heat energy contained within the Earth's interior. Geothermal reservoirs can be heated via wells and other methods. Enhanced geothermal systems possess inherently sufficiently high temperatures, which have been further augmented through hydraulic stimulation. Conversely, hydrothermal reservoirs inherently exhibit sufficient heat and permeability. After reaching the surface, fluids can be utilised to produce energy at various temperatures. The extraction of energy from hydrothermal reservoirs is a well-established, dependable, and sophisticated technology that has been operational for over a century. The commencement of field research and field

¹⁰Hari Chand v. Dakshin Haryana Bijli Vitran R.S.A. No. 1002 of 2014 (O&M)

¹¹ Pradip Bajjal , —Restructuring Power Sector in India A Base Paper”, . 34(39) EPW 2795 (1999)
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studies on geothermal sites in India occurred in 1970. According to the Geological Survey of India, a total of 350 places in India have been identified as sources of geothermal energy. Among these options, the Puga valley in Ladakh emerges as the most auspicious. India's geothermal zones encompass several regions such as the Himalayas, Sohana, West Coast, Cambay (Gujarat), Godavari, Mahanadi, and SonNarmada-Tapi (SONATA), in addition to other geothermal springs. According to the Ministry of New and Renewable Energy, which has conducted a comprehensive mapping of geothermal resources, it is estimated that India possesses a geothermal power potential of approximately 10 gigawatts (GW). The Chhattisgarh government intends to establish the inaugural geothermal power plant in the nation, situated in the Balrampur district, in close proximity to Tattapani.

HYDROPOWER

The utilisation of hydroelectricity Hydropower refers to the utilisation of the energy derived from the movement of water from higher altitudes to lower altitudes. It can be generated by reservoirs and rivers. Reservoir hydroelectric plants utilise stored water from a reservoir, whereas run-of-river hydroelectric facilities rely on the current flow of the river. Hydropower reservoirs serve multiple functions, encompassing electricity provision, drinking water supply, agricultural water supply, navigation services, as well as flood and drought management. In the European Chemical Bulletin 2023, 3, the article titled "India's Obstacles To Renewable Energy" may be found on pages 3096–31004 and 3098. Hydropower is presently the predominant renewable energy source employed within the electrical industry. The outcome is contingent upon generally stable precipitation patterns, which can be adversely affected by droughts caused by climate change or by alterations to ecological systems that influence precipitation patterns. Indian hydroelectric power capacity ranks as the fifth-largest globally. India had implemented 46,000 MW of utility-scale hydroelectric capacity as of March 31, 2020, which accounted for 12.3% of the country's overall utility power generation capacity. The development of further smaller hydroelectric producing units has resulted in the achievement of over 4,683 MW, which accounts for around 1.3% of the nation's potential utility power output. The estimated hydroelectric power potential of India is 148,700 MW, assuming a load factor of 60%.¹²

¹² Piyush Joshi,, Law relating to the Infrastructure Projects, p 236 (Lexis Nexis Butterworth, 2003)

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BIOENERGY

Essential Energy Biogenic energy is derived from a diverse range of organic materials, commonly referred to as biomass. The items encompass agricultural commodities utilised for the production of liquid biofuels, as well as wood, charcoal, dung, and other manures employed for the generation of energy and heat. Biomass is predominantly utilised by impoverished individuals in rural areas of developing countries for the purposes of space heating, lighting, and cooking. Contemporary biomass systems utilise a diverse range of organic waste streams, specialised flora or arboreal species, and residual materials derived from agricultural and forestry practices. The combustion of biomass as a fuel source results in greenhouse gas emissions, albeit at a slower rate compared to the combustion of fossil fuels such as coal, oil, or gas. Nevertheless, the utilisation of bioenergy should be limited to specific circumstances due to the potential environmental risks associated with extensive expansions of forests and bioenergy crops, which may lead to deforestation and alterations in land utilisation. According to projections for India's Gross Domestic Product (GDP), the cumulative capacity of bioenergy plants in the country resulted in the creation of 0.66 million indirect jobs and 0.43 million direct jobs as of August 2022. Women occupy approximately 0.25 million positions across the whole value chain of bioenergy projects. India's annual biomass production ranges from 500 million to 450 million tonnes. At now, biomass constitutes 32% of the primary energy generated within the nation.¹³

RENEWABLE ENERGY: MAPPING OF LEGAL AND POLICY FRAMEWORK

The federal system of India is demonstrated by the delegation of authority to both the federal and state governments, enabling them to operate independently or in collaboration. The delineation of legislative authority between the federal government and the states is explicitly established by the inclusion of three lists within the Seventh Schedule of the Constitution. The responsibilities of state governments in this matter are outlined in the concurrent list of the Schedule. Moreover, this provision grants the federal government the power to intervene and use its authority in situations where achieving national uniformity becomes necessary.¹⁴

¹³ Anmol Soni, AnomitoChatterjee , Governance of the Petroleum and Natural Gas Sector in India: A Status Note, Working paper 15 on petroleum and natural gas, (TERI-NFA Working Paper Series No. 15 2014)

¹⁴Hindustan Zinc v CERC (2015) 12 SCC 611

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The term "electricity" is featured in List III of the Seventh Schedule, which is the concurrent list granting the legislative branches of the federal and state governments the authority to enact legislation pertaining to electricity. During the colonial period, the production and provision of power were predominantly undertaken by private enterprises, resulting in limited accessibility to electricity primarily in urban areas. The initial regulations concerning it were enacted in 1887 with the aim of safeguarding individuals and assets from the hazards linked to the provision and utilisation of electricity for purposes other than illumination. The power Act of 1910 replaced the Electricity Act of 1903 and implemented significant statutory provisions for the power distribution industry. The legislation abstained from addressing alternative energy sources and solely focused on electrical energy. Following the country's independence, new legislation regarding electricity was enacted, aiming to establish "State Electricity Boards" to guarantee the supply of "energy" in both rural and urban regions. The legislation encompassed provisions enabling the state to acquire electrical enterprises and to grant licences for bulk supply. Additionally, the Act addressed the issue of "water-power," granting the Board the authority to examine hydroelectric facilities while safeguarding interests associated with flood management, irrigation, and navigation.¹⁵The Electricity Regulatory Commission Act of 1998 aimed to improve the rate-setting process by increasing transparency, accountability, and professionalism. It also addressed the statutory power and obligations of the "Central Electricity Authority" and facilitated the streamlining of electricity production and supply to boost the energy sector through the implementation of the "Grid System."

In addition, the establishment of the State Electricity Regulatory Commission was optionally implemented to oversee the functioning of licences and other entities engaged in the electricity sector of the state. It is worth noting that prior to this legislation, there was no mention of "clean energy" in any other legislation. Furthermore, the Central Electricity Regulatory Commission was established to regulate the tariffs of central generating companies and other generating companies in the event of a composite scheme for the generation and sale of electricity to two or more states. Given the circumstances, it is plausible to regard the Electricity Act of 2003 as a particularly significant piece of legislation,

¹⁵GuruvayoorDevaswom Management (2003) 7 SCC 546 Committee v. C K Rajan

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as it incorporates certain provisions with the objective of aligning renewable energy sources with traditional sources. Both the stimulus and the results ¹⁶

ELECTRICITY ACT, 2003

The electricity sector is currently governed by three laws: the Indian Electricity Act of 1910, the Electricity (Supply) Act of 1948, and the Electricity Regulatory Commissions Act of 1998. The Electricity Act of 2003 has superseded it. The legislation mandates the restructuring of State Electricity Boards into separate entities responsible for generation, transmission, and distribution. Additionally, it stipulates that Regulatory Commissions are entrusted with the responsibility of managing prices and licencing. The responsibility for regulating activities has been assumed by the government. In order to foster the evolution of an Indian power market, it is imperative to establish licensee-free thermal generation, ensure nondiscriminatory open access in the transmission system, and ultimately implement open access in the distribution system. This legislation places a high emphasis on renewable energy by integrating the objectives of both conventional and renewable energy sources through several measures. According to Section 3 (1) of the Act, it is mandated that the Government of India, in collaboration with the State Governments, must periodically formulate the National Electricity Policy and Tariff Policy. The objective of these policies is to facilitate the development of the power system by optimising the utilisation of various resources, such as coal, natural gas, nuclear, hydro, and renewable energy sources. The Central Government, in collaboration with state governments, must formulate, disseminate, and revise the national policy pertaining to stand-alone systems for rural areas that rely on non-conventional and renewable energy sources. ¹⁷

The State Electricity Regulatory Commission must consider the development of cogeneration and the generation of electricity from renewable energy sources when establishing the conditions and terms of the tariff. Furthermore, the primary responsibility of the Commission is to promote the adoption of cogeneration and the generation of power from renewable sources. This is achieved through the establishment of essential measures to ensure grid connectivity and facilitate the open market for electricity to all individuals. Please provide

¹⁶ Manisha Gulati and Piyush Tiwari, Development of Renewable Energy in India: Role and Effectiveness of Electricity Regulators,109 (Oxford University Press,2009)

¹⁷ Gmr Energy Limited vs Government OfKarnatakaAppeal no. 37 of 2013

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information regarding the percentage of the region's overall electricity consumption derived from cogeneration and renewable energy sources during the process of procuring power from these sources. To tackle the difficulties posed by the evolving competitive landscape, the Act promotes the adoption of cogeneration and the production of electricity from renewable energy sources through the implementation of the subsequent enabling provisions.¹⁸

These provisions require the State Electricity Regulatory Commissions (SERCs) to designate a portion of the overall electricity consumption within a distribution licensee's jurisdiction for the procurement of electricity from renewable energy sources. Additionally, the SERCs must establish suitable measures for grid connectivity and the sale of electricity to any individual. Advocates of renewable energy perceived these regulations as the initiation of a novel, forward-thinking era. The Electricity Act of 2003 serves as the fundamental basis for India's legislative framework pertaining to renewable energy. State electricity regulatory commissions are required to establish a specific goal for obligated enterprises, such as captive, open access, and distribution licensees, under the Renewable Purchase Obligation (RPO). The objectives of states exhibit significant variation. By 2015-16, the Maharashtra Electricity Regulatory Commission has mandated that the energy composition of the state should comprise 8.5% non-solar sources and 0.5% solar power¹⁹. India has established national objectives for solar energy as part of the Jawaharlal Nehru National Solar Mission. Phase I of the National Solar Mission, spanning from 2012 to 2013, aimed to achieve the objective of establishing grid-connected solar power facilities with a capacity of 1000 MW by the year 2013. Phases II (2013–2017) and III (2017–2022) will provide assistance in the process of scaling-up, aiming to achieve a total of 20 GW of on-grid solar PV capacity and 2 GW of off-grid solar PV capacity by the year 2022. The Act does not specify a date for the Commission's allocation of certificates for renewable purchases. The absence of a legally-binding commitment from power distribution companies in numerous jurisdictions to procure a predetermined amount of renewable electricity has prompted inquiries regarding the need for a legally-mandated requirement to procure energy from non-conventional sources.²⁰

¹⁸ W Tye, 'Competitive Access: A Comparative Industry Approach to the Essential Facility Doctrine' 8 EL J 337, 344. ((1987)

¹⁹D.K. Yadav v. J.M.A. Industries (1993) 3 SCC 258

²⁰K.Vaishali, Competition Issues In The Infrastructure Sector With special reference to the Indian Electricity Sector(internship report submitted to CCI , 2012)

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NATIONAL ELECTRICITY POLICY 2005

The Ministry of Power has developed the National Electricity Policy in accordance with the terms of the Act, with a particular focus on the importance of promoting non-conventional energy sources. ²¹The National Electricity Policy of 2005 was formulated with the objective of establishing a power system that prioritises the optimal use of resources, in accordance with the provisions outlined in the 2003 Act. In order to achieve this, projects that utilise non-conventional and renewable energy sources must have decreased capital costs. Enhancing competitiveness within these efforts can also contribute to reducing energy prices. The development of technology and the long-term viability of these sources would require a sufficient number of marketing initiatives. According to the criteria established by State Power Regulatory Commissions, there would be a need for a progressive augmentation in the proportion of power generated from non-conventional sources. In order to conclude this transaction, distribution businesses will engage in a competitive bidding procedure. The Commission has the authority to determine a suitable price differential in order to incentivize the adoption of non-conventional technologies, as it is anticipated that their costs will require a certain period to align with those of conventional sources.

TARIFF POLICY 2006

In compliance with the Act, a tariff policy has been formulated to mandate distribution companies to acquire renewable energy. The State Electricity Commission must establish precise percentages for the acquisition. As per the Policy, SERCs are required to establish a minimum proportion of RPO from various sources, considering the effect on retail prices and the accessibility of these resources in the region. Currently, electricity generated from renewable energy sources is more cost-effective compared to power generated from conventional energy sources. The feed-in tariff was established by the State Commission with the aim of incentivizing the adoption of renewable energy sources.²²

Feed-in tariffs (FITs) refer to the minimum price at which renewable energy products (REP) must be procured from private producers or generating enterprises through power purchase

²¹Chameli Singh v. Sate of U.P (1996) 2 SCC 549

²²David M. Newbery, The Relationship between Regulation and Competition Policy for Network Utilities, CPRC Discussion Paper Series Competition Policy Research Centre Fair Trade Commission of Japan, University of Cambridge ,December 2003

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agreements (PPAs) with trading licensees, transmission or distribution utilities, or both.²³ Gisele Schmid asserts that while fiscal and policy measures are present, the primary focus of most States is to promote renewable energy production (REP) through the implementation of Feed-in Tariffs (FITs) and Renewable Purchase Obligations (RPOs).

The Tariff Policy also mandates that renewable energy technologies will eventually need to compete with conventional sources in terms of overall costs, and that competitive bidding will be employed to meet future demands for renewable electricity procurement. Following extensive stakeholder engagement, the Ministry of New and Renewable Energy (MNRE) issued the standard bidding documents and processes for grid-connected renewable energy in December 2012. Distribution licence holders engaging in competitive energy procurement is expected to decrease overall power procurement expenses and promote the growth of power markets. The recommendations served to strengthen the primary objectives of the Act by placing emphasis on the fact that "the costs associated with purchasing power represent the most significant cost component for licensees in the distribution sector." The presence of global competition in the wholesale electricity markets has led to a reduction in electricity rates and substantial advantages for consumers. The allocation of funds for solar energy through competitive bidding has been a longstanding practice under the National Solar Mission and state solar policies.

Nevertheless, these regulations also strive to embrace a wide range of renewable energy sources, such as wind, small hydro, geothermal, biomass, tidal, and others.²⁴ The primary objective of the recommendations is to mitigate existing disparities in bidder information, bolster competition within the grid-connected renewable energy industry, establish uniformity, and ultimately diminish overall uncertainty in the project allocation process. The Act offers detailed guidelines on how to meet the obligation to acquire renewable energy. Under Section 142 of the Electricity Act, 2003, utilities are held accountable for failing to meet the RPO. The utilities are required to procure a designated amount of electricity from

²³Booz Allen and Hamilton Inc v. SBI Home 2011 (5) SCC 532

²⁴Bombay Environmental Action Group v. SC 1991 (2) SCC State of Maharashtra and Others 539

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the aforementioned renewable power projects. The determination of accountability shall be made by the appropriate State Commission.²⁵

RURAL ELECTRICITY POLICY, 2006

According to the 2003 electricity Act, it is a requirement for governments to ensure the provision of electricity to all regions, including rural areas. Furthermore, there has been a revocation of permits for independent power production and distribution systems in rural regions. This category encompasses systems that utilise non-traditional and sustainable energy sources. In accordance with Section 5 of the Act, the establishment and management of rural distribution networks necessitate the formulation of a National Rural Electrification Policy, which involves the involvement of local organisations. The aforementioned criteria were considered during the implementation of the Rural Electricity Policy of 2006. The strategy aims to guarantee universal access to a reliable power supply for all households by utilising a diverse range of appropriate and efficient natural energy sources, such as biomass, solar, wind, small hydro, geothermal, tidal, and other forms of renewable energy. Hence, in any distant area where it is not feasible to provide electricity through an off-grid or independent system, the Policy promotes the implementation of isolated lighting alternatives such as solar photovoltaic systems. In addition, the Policy promotes the dispersal of power generation facilities and local distribution networks that depend on renewable energy sources. In order to implement the Policy, it is necessary to establish an organisation and a yojana. The "Rajiv Gandhi Grameen Vidhyutikaran Yojana" (RGGVY) implemented by the Central Government aims to provide electricity to all isolated hamlets and villages, ensuring access to energy for every household. The Rural Electrification Corporation Limited (REC) of the Ministry of Power serves as the central entity responsible for project financing and management.²⁶

THE COMPULSORY PROMOTION, UTILISATION, SUPPLY AND ACCESS OF RENEW-ABLE ENERGY BILL, 2014

India, a nation that has ratified the Kyoto Protocol and UN Resolution A/RES/58/21047, has put forth a legislative proposal aimed at promoting sustainable development and harnessing

²⁵ Indicus Analytics ,Public Enterprises, Government Policy And Impact On Competition Indian Petroleum Industry,(Final Report Prepared for the Competition Commission of India 2009)

²⁶ Karthik Ganesan and Rajeev Vishnu ,Energy Access in India - Today, and Tomorrow, Working Paper 2014/10 , (2010)

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renewable energy. This bill seeks to address the challenges posed by climate change and foster environmental sustainability by advocating for the adoption of non-conventional energy sources. The Bill encompasses a range of subjects, such as enhancing energy efficiency and employing state-of-the-art, eco-friendly technology to foster, cultivate, and broaden the utilisation of novel and sustainable energy sources nationwide.

The establishment of a comprehensive national renewable energy policy is proposed by the Bill as a means to tackle challenges such as inadequate enforcement, insufficient private funding, and flexible compliance standards pertaining to the renewable purchase obligation. These issues pose obstacles to the projected growth of the renewable energy sector in India. The strategy should incorporate nationwide objectives for renewable energy over the next two decades, along with a structure for a yearly evaluation by specialists and a detailed analysis of the objectives every five years. The legislation additionally forms the National Committee on Renewable Energy, tasked with providing guidance and conducting thorough investigations on all aspects related to renewable energy, encompassing potential challenges that may occur during the implementation of the legislation. The selection of committee members is based on their expertise in the legal, administrative, and academic domains, with the primary objective of effectively coordinating the various processes related to the expansion of renewable energy in India. The Renewable Generation Obligation (RGO) is a legislative measure proposed by the Electricity (Amendment) Bill, 2014, with the objective of mandating thermal power providers to generate electricity from renewable sources.

The needed firms must strictly comply with the renewable purchase obligation (RPO). The document specifies that the Renewable Portfolio Obligation (RPO) will be established at 5% and that these businesses must acquire the necessary resources from the government or through Renewable Energy Certificates in order to achieve the goal. The Bill addresses financing arrangements for renewable energy projects, government grants, and enough financial sources to attract private sector participation. In order to facilitate the growth of renewable energy, private enterprises must implement a range of tactics, including captive generation, procurement of renewable energy, acquisition of renewable energy certificates (RECs), and linking corporate social responsibility (CSR) expenses to the implementation of renewable energy systems. In addition, the Bill placed emphasis on the advancement of renewable energy in rural areas of India.

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LAW AND POLICIES ON RENEWABLE ENERGY IN SELECTED JURISDICTIONS

The pressing demand for environmentally friendly and enduring energy sources is fueling a worldwide shift towards renewable energy. Consequently, an endeavour has been undertaken to establish a distinction between the regulatory frameworks governing renewable and traditional energy sources. This section focuses on the key components of the legal frameworks pertaining to renewable energy in various countries worldwide.²⁷ In China, there is a deliberate and focused endeavour to advance the use of renewable energy sources. The legal framework lays significant emphasis on the prompt and suitable implementation of a renewable energy strategy that is aligned with its objectives. It is now mandatory for all grid enterprises to procure electricity generated exclusively from renewable energy projects. Renewable energy projects must satisfy specific criteria, including generating a predetermined power output within a specified timeframe and complying to stringent regulations. Oil companies operating in the Philippines are obligated to deliver a designated proportion of biofuel, such as five percent of the overall volume of oil they distribute. The Biofuel Act of the Philippines delineates the specific civil and criminal sanctions for contravening this stipulation. Nevertheless, there is no legislation in India mandating the dissemination of biofuel.

Therefore, oil companies are not obligated by law to supply biofuel, regardless of its promotion. The governing body has solely issued a notification. The Ministry of Petroleum & Natural Gas has been instructed by the Cabinet Committee on Economic Affairs (CCEA) to release a Gazette Notification about the nationwide implementation of a mandated ethanol blending requirement of 5% with petrol. The rationale behind this decision is derived from the proposal put forth by the Ministry of New and Renewable Energy (MNRE) pertaining to the pricing of ethanol that is intended for blending with petroleum. Indian oil corporations have required a 5% mixture of bioethanol. Compliance with this notification is not mandated by law. Inspectorate⁵³ in the Czech Republic employs comparable methodologies to evaluate and impose sanctions on firms that fail to meet their requirements in procuring renewable power.

²⁷A.P. Pollution Control Board v. M V Nayudu (1999) 2 SCC718

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There are two inspectorates in place: the Territorial Inspectorate and the Central Inspectorate. ²⁸The Central Inspectorate has the authority to lodge an appeal against the judgement made by the Territorial Inspectorate. Germany serves as an illustrative case of a country that has advanced to the extent of actively advocating for the adoption and use of renewable energy sources. Germany aspires to attain a 35% proportion of renewable energy in its overall power energy by 2020, whereas India now targets a 15% proportion of renewable energy. Grid connectivity in Germany is overseen by grid operators, but in India, the responsibility for grid connectivity lies with renewable power providers. The grid operators are required to procure the electricity generated by these installations. The EEG Act of 2012 in Germany has heightened the importance of accurate documentation, efficient distribution, and transparency in the renewable energy sector. ²⁹The 2014 EEG Act is currently in effect. This Act mandates that renewable energy installations must directly sell the electricity they generate to power purchasers. Germany implemented the Renewable Energy Heating Act in 2009, which requires a specific proportion of the heat required for a building's interior to come from renewable energy sources, such as solar collectors, heat pumps, and wood-fired boilers.

RECENT INDIAN JUDGMENTS ON ENERGY LAW AND POLICY CONSTITUTIONAL PERSPECTIVES ON RIGHT TO ACCESS ENERGY

1. T.M. Prakash and Ors. v. The District Collector and the Superintending Engineer, Tamil Nadu Electricity Board.³⁰

In one instance, petitioners who worked as laundry workers on government-owned land requested to be connected to the energy grid, but their request was denied on the grounds that they were encroachers. The respondents argued that, in accordance with clause 12 of Regulation 27 of the Tamil Nadu Distribution Code, 2004, a "No Objection Certificate" must be produced in order to receive the service. Whether distribution licence holders were compelled under section 43 of the Electricity Act, 2003 to give electricity upon request, directory or mandatory was the main question on the table before the Madras High Court. After considering the importance of having access to an energy supply in light of Article 21 of the Constitution, the court rendered the following decision: 65. One

²⁸Bihar State Electricity Board v. The Bihar State Human Rights Commission AIR 2013 Pat 11

²⁹India Energy Outlook : World Energy Outlook Special Report 2015

³⁰(2014) 1 MLJ 261

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of the key elements that affects health, education, and causes economic inequality, which in turn causes social inequality and ultimately leads to poverty, is a lack of electricity supply. Learning and information gathering are made easier by electricity. Children without access to electricity find it difficult to even consider competing with those who do. Women are made to work in the presence of smoke handling kerosene and firewood. Respiratory issues and lung diseases are brought on by air pollution. Combining power supplies with suitable jobs for the impoverished reduces inequality slightly. Child labour is a result of poverty and illiteracy. It was ultimately determined that the legislature intended to pass a law requiring the provision of electricity to all individuals, regardless of their ownership or occupation, including those residing on government-owned land, in return for the filing of an undertaking or declaration. The Court argued that it was necessary to make a clear distinction between the rules requiring the provision of electricity, even to those who are on the property, and the regulations meant to keep strangers out of Poromboke area.

REGULATION OF COAL SECTOR

2. Manohar Lal Shrama & Anr. v. Principal Secretary³¹

Following the infamous Coal Block Allocation Scam, M.L. Sharma and Common Cause, an NGO (Petitioners), started this case by contesting the legitimacy of the coal allocation that the central government had given to private firms between 1993 and 2012. Due to the complexity of the case, the Court granted requests for intervention from the federal government and the relevant state governments, as well as requests for intervention from three associations representing the allottees who had benefited from the purported allocation. One of the main issues raised during the assessment of the constitutional legitimacy of the allocations was the power struggle between the federal government and the states over the distribution of coal blocks located in various states. The jurisdiction and function of the federal government in this procedure were the main topics of discussion in this subject.

This involved applying the Coal Mines (Nationalization) Act, 1973 (CMN Act) and its 1976 & 1993 Amendment Acts, which only address matters pertaining to coal mining, to the

³¹ 2014) 9 SCC 516

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relevant provisions of the Mines & Minerals (Development & Regulation) Act, 1957, (MMDR Act), the parent legislation governing the regulation of mining activities and development of minerals in India. The federal government assumed "the regulation of mines and development of minerals" through the 1957 Act (Entry 54 List I), according to the Seventh Schedule of the Constitution (Entry 23 List II), which specifies that the states had lost their legislative authority to that degree. It was reflected in the 1973 Act as well, which gave the union control over "regulating and developing coal mines" for the sake of the public, taking it away from state legislative authorities. Nonetheless, they were unable to act against the requirements of the 1957 Act due to the central government's position of authority. Moreover, the 1957 Act's legal structure governs the allotment of coal blocks, since the 1973 Act does not explicitly outline the process. This is true as the 1973 Act merely specifies who is permitted to work in coal mining. The state government cannot grant a reconnaissance permission, prospecting licence, or mining lease for a coal mine without first obtaining prior clearance from the federal government under the 1957 Act, according to the current legal framework. When the federal government issues a "letter of allocation," that is the end of the state government's involvement. However, as the MMDR Act and the CMN Act denied them the authority to do so, the central government's practice and procedure for allocating coal blocks on its own through the "administrative route" was declared to be completely unlawful. The main contention was that the entire allocation process—whether it was carried out through the Ministry of Coal, also known as the "government dispensation route," or through decisions made based on the recommendations of the "screening committee," which was established to evaluate the allocation of coal for captive use—violated the minimum statutory requirements, notwithstanding the argument that the central government had the authority to allocate. Furthermore, the Court gave this a positive response. It was discovered that coal blocks were given to companies that were not engaged in the specified end-uses under section 3 (3) (a) of the CMN Act for "captive use" and "commercial use," for which some state government initiatives were ineligible. These allocations were made by the central government through the Ministry of Coal. In addition, the Court decided that the Screening Committee's dishonest behaviour throughout the selection process was evident in their

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disdain for objective criteria, merit evaluation, comparative application assessment, and uniform standards.³²

However, the Court reiterated its position in *In re Special Reference No. 1 of 2012*, (2012), regarding whether or not competitive bidding auctions are the sole legal way to alienate natural resources, such as coal, in compliance with Article 14 of the Constitution. The Court's decision suggests that, although auctions may be the best way to serve the common good under Article 39(b) of the Constitution, they may not necessarily be the best way to maximise revenue. In order to highlight the federal government's position on this matter, it was observed that: 102. In actuality, the Central Government has provided an explanation for the reasons why, between 1992 and 1993, coal blocks were not allocated through competitive bidding. This is justified by the fact that when the coal mining and electricity production sectors were first made available to the general public in 1992–1993, the private sector needed inducement to invest. Coal blocks could not have been allocated through auction in such a situation since CIL and SCCL were not then fully meeting the demand for coal. Not only was there a large power shortage in the nation, but supply and demand were also imbalanced. The State Electricity Boards had not provided adequate electricity. Thus, the Supreme Court mandated the imposition of an additional penalty on 42 coalmines that had already commenced operations in order to maintain the 214 coal block allocations. The ruling is praised as evidence of the Supreme Court's capacity to protect public funds.³³

ANALYZING LAW AND POLICY ON RENEWABLE ENERGY IN MIDST OF ENERGY – ENVIRONMENT DEBATE

The production and use of energy are thought to be influenced by a wide range of factors globally, including changes in the global energy markets, consumer preferences, economic performance, population growth, and technological advancements. Because of humanity's excessive reliance on fossil fuels for energy generation, the biosphere has suffered considerably. When fossil fuels are utilised to generate energy, carbon dioxide or monoxide is released into the atmosphere, causing irreversible damage to the ecosystem. Every country

³² World Energy Perspective Energy Efficiency Policies: What Works And What Does Not (World Energy Council 2013)

³³ Peter D. Cameron, *Competition in Energy Markets, Law and Regulation in the European Union*, (Oxford University Press, 2nd edition, 2007)

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has been pushed to use easily accessible energy sources to accelerate the industrialization process in order to meet the demand for energy and achieve faster economic growth.

The opportunity to investigate the viability of employing cleaner energy sources to meet human demands is presented by the state of the environment's decline. Sustainable development should ideally only employ energy sources that have negligible or no impact on the environment. India, a nation undergoing rapid economic growth, has been utilising non-renewable energy sources to suit its industrial and domestic energy needs. The need to enhance living conditions for millions of Indian households and the nation's increasing urbanisation are driving increased demand. Additionally, industries have chosen to use diesel-powered inefficient backup power in order to maintain output. Rapid economic growth and universal access to electricity are the two goals of India's energy plan, but both goals are not being met.

India's growing population, rising economic activity, and rising living standards are driving up the country's need for energy services, both in terms of quantity and quality. The fast growing Indian economy is expected to grow at a rate of about 8% annually, according to the Government of India's 12th Five Year Plan for 2013–17 (Planning Commission, 2011). To maintain this pace of increase, new energy producing capacity needs to be added as soon as possible.² Nearly 300 million people live in India without access to power, and the country consumes one-fourth of the global total per capita. It is generally accepted that encouraging sustainable development and lowering poverty depend heavily on having access to inexpensive, useful, and clean energy. Nevertheless, 1.6-2 billion people lack access to electricity and 2.5 billion still rely on conventional biomass for their household energy needs, a century after Edison's prophecy that "we will make electricity so cheap that only the rich will burn candles" came true. The renewable energy system has a lot of potential that can be investigated and used to meet energy needs without endangering the environment. Given this, the chapter starts out by laying out the reasons why fossil fuels cause environmental problems like climate change. It also looks at the policy and legislative framework for renewable energy.³⁴

³⁴ Executive Summary ,Energy Policies of IEA Countries , The United State ,2014 (IEA 2014)

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It evaluates the legislative actions made to support renewable energy sources and draws attention to the environmental effects of the Bill. Environmental Impacts of Fossil Fuel Electricity Generation Humans have been burning wood for thousands of years to generate the high-temperature heat required for many tasks, including melting metal, cooking, heating, and extracting chemicals. Carbon dioxide (CO₂) is released during the burning of wood when the carbon interacts with oxygen. Plants then absorb this gas and transform it back into carbon, which is used as fuel. During the Industrial Revolution, machine labour had to replace manual labour; this required the use of coal and other high-temperature heat sources. At that period, the use of natural gas, coal, and oil all increased significantly. The consumption of fossil fuels is increasing substantially at the same time that the world's population is growing, developing countries are becoming more industrialised, and living standards are rising. It is commonly known that using fossil fuels excessively accelerates the depletion of fossil fuel supplies and has a severe ecological impact, raising the possibility of health problems and climate change.³ Because of worries about the energy problem and our increasing reliance on fossil fuels to fulfil our present energy demands, there is a renewed interest in promoting renewable energy solutions to meet the expanding energy needs of the emerging globe.⁴ Supporting clean, renewable energy sources is essential because carbon dioxide emissions from the over use of fossil fuels have made global warming worse. Fossil fuel energy production has a negative effect on the environment. Recent estimates place the blame for over 80% of the world's emissions of carbon dioxide, a significant greenhouse gas that may be linked to climate change. on these activities.⁵ Burning coal to generate electricity releases fly ash and hazardous chemicals into the sky. There are three main categories into which the negative effects of the energy industry on the environment and the pollution it produces can be divided: general, local, and the result of cycles of production and consumption. The Ministry of Environment and Forests (MOEF) announced the first modification rules to the Environment Protection Act of 1986, which outlined the particle emission limitations for thermal power, in a notice published in the gazette on January 3, 1989. The use of coal has increased to 0.7 kg/kWh, a concerning amount considering that the calorific content of the coal has dropped to about 4000 kcal/kg. As a result, the proportion of ash content has also gone up.⁶ Boiler blowdown is the most frequent cause of water contamination near coal-fired thermal power plants. It permits cooling water to seep into nearby bodies of water. Water pollution, including chlorine, has a negative impact on aquatic

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life. Thermal pollution can also cause the surrounding water to become hotter, which can kill some of the most delicate species or speed up the metabolism of aquatic life. Therefore, the amount of CO₂ released would be impacted by a high metabolic rate.³⁵

Due to an over-reliance on fossil fuels to meet the demands of economic growth, the nation's greenhouse gas emissions have increased to the fourth rank in the world, above allowable levels. An additional indicator that has become more important over time to highlight how important it is to investigate greener energy sources in order to lessen environmental impact is climate change. India has several regulations that limit or eliminate greenhouse gas emissions, some of which are listed below and contribute to lessening the consequences of climate change.

Planning for renewable energy started with the Sixth Plan (1980–1985), whose energy policy sought to use forestry and biogas among other renewable energy sources to suit the needs of rural areas. The aim of this plan was to offer a new approach to investigating alternate energy sources in order to fulfil the country's energy requirements. The nation's development of the 7th Plan was influenced by the lessons learned from this Plan. The Seventh Plan, in place from 1985 to 1990, had as its main objective the development and rapid application of renewable energy sources in methods that were both practically and financially viable.⁸ Major breakthroughs in the production of electricity have been made in wind-generating technologies, such as wind farms and "stand alone" wind turbines, micro hydel projects, wood- and agricultural waste-based gasifiers, and solar photovoltaics for lighting and pumping systems. Initiated was the Indian Renewable Energy Development Agency, or IREDA. There's also a National Solar Energy Centre. During the 8th Plan (1992–1997), a new ministry known as the Ministry of Non-Conventional Energy Sources was established to oversee renewable energy resources. During this time, the Planning Commission also put a lot of effort into planning the renewable resource. This plan makes use of low-grade solar thermal devices, biogas efforts, and upgraded chullas to meet a large amount of the country's rural communities' heating and cooking needs. 750–1000 MW of power capacity must be installed, based on NRSE technologies such as wind energy, microhydropower, solar photovoltaics, urban/agricultural wastes, and cogeneration programmes where practical. The

³⁵ Munir Hassan and Dalia Majumder-Russell, CMS ,Electricity Regulation In The UK: Overview ,May2014
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planners placed a strong emphasis on commercialization and the involvement of private partners in the development of renewable energy resources in the ninth plan, which spanned the years 1997–2002.³⁶

The 9th Plan gave priority to other biomass energy-related initiatives such as solar energy, biogas, enhanced chulhas, gasifiers, biomass production, etc. The National Project on Biogas Development (NPBD) was greatly expanded with regard to rural energy, and the States were being examined for the transfer of projects such as the National Programme on Improved Chullas. The 10th Plan, which ran from 2002 to 2007, saw the implementation of the R&D, urban applications, and rural energy projects. It was discovered that during the course of this strategy, attempts to use solar thermal power lagged behind those of wind power. During this time, the effort to electrify rural areas using renewable energy was also successful. Several MNRE initiatives for the 11th Plan (2007–2012) were developed based on the proposals made by the Planning Commission.

Additionally, MNRE conducts research, development, and demonstration projects with state-of-the-art technologies for surface transportation, including fuel cells, hydrogen energy, geothermal energy, and alternative fuels. The implementation of steps to ensure the sustainable growth of the power sector is balanced with consideration of the issue of energy security and the commitment to a "Low Carbon Growth Strategy" in the 12th plan (2013–2017). The administration is rightly emphasising the expansion of nuclear power, hydropower, and power from renewable sources as ways to cut greenhouse gas emissions. Because renewable energy sources are free, non-exhaustible, and typically clean, they are a more sustainable option for power generation than traditional fuels. This raises sustainability problems. However, these resources should be able to provide future generations with safe and dependable energy. In this 12th five-year plan, the development of renewable energy resources is given significant emphasis since, aside from the benefits of producing cleaner power, they also assist society by giving rural areas access to and security over energy.³⁷

³⁶ Diksha Garg and Kamlesh Kaur, —Understanding India's Energy Sector: Players, Policy Framework and Challengesl 3 IJSRM 2355-2362 ,(2015)

³⁷ George Raitt , —Shifting The Goalposts: Current Issues In Australian Competition Law Affecting The Energy Sectorl, 9 (6) (1) T JOW E L B 425

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