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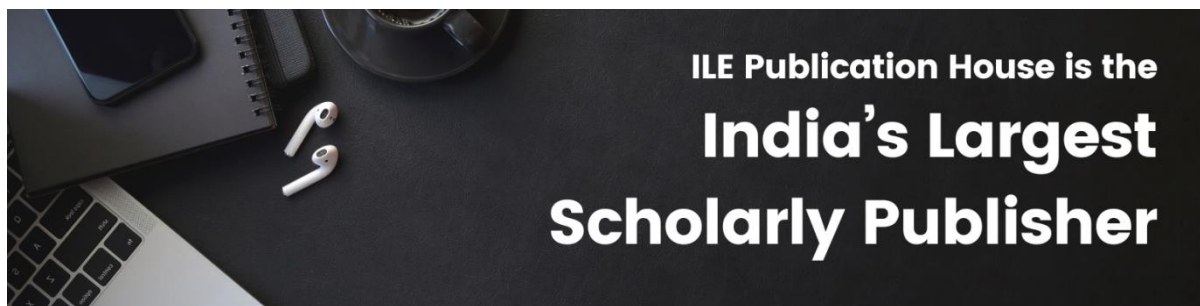
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LEGAL ISSUE AROUND SUSTAINABLE ENERGY

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Abstract

This summary provides an overview of the legal issues related to sustainable energy in India. The country has made significant progress in recent years in promoting renewable energy sources such as wind, solar, and hydropower. However, there are several legal and regulatory challenges that need to be addressed to accelerate the transition to sustainable energy.

Introduction

Sustainable energy refers to energy that is generated from renewable sources such as solar, wind, hydro, geothermal, and biomass, which have a low environmental impact and can be replenished naturally. The transition to sustainable energy is critical for reducing greenhouse gas emissions and mitigating the impacts of climate change.

However, the adoption of sustainable energy technologies is not without legal challenges. Here are some of the legal issues surrounding sustainable energy:

- A. Renewable Energy Standards and Regulations: Many countries have established renewable energy standards and regulations to promote the development and use of renewable energy. However, the implementation of these standards and regulations can be complex and contentious, particularly when it comes to balancing environmental concerns with economic development.
- B. Energy Subsidies: Governments around the world provide subsidies to support

the development and adoption of sustainable energy technologies. However, these subsidies can distort markets and raise issues related to fairness and competition.

- C. Property Rights: The development of sustainable energy infrastructure, such as wind turbines and solar panels, often requires land use agreements and easements. This can ²⁵raise issues related to property rights, zoning laws, and land use conflicts.
- D. Intellectual Property Rights: Sustainable energy technologies are often protected by intellectual property rights such as patents, trademarks, and copyrights. Disputes over these rights can delay the adoption of new technologies and slow down innovation.
- E. Environmental Regulations: Sustainable energy technologies can have environmental impacts that need to be regulated. For example, wind turbines can pose risks to birds and other wildlife, and solar panels can require large amounts of water for cleaning. Balancing environmental concerns with the need for sustainable energy is an ongoing legal challenge.

The transition to sustainable energy requires a complex legal framework that takes into account the competing interests of various stakeholders. Governments, industry, and civil

²⁵ *Renewable Energy Law and Policy in India: Case Studies from South Asia* edited by Philippe Cullet, Sujith Koonan, and Bimal N. Patel.
"Sustainable Energy Law in India" by Shivansh Pandey and Ritwika Sharma.
"Legal and Regulatory Framework for Renewable Energy in India" by Ramprasad Sengupta.



society must work together to ensure that sustainable energy development is environmentally responsible, economically viable, and socially equitable.

I. Laws related to Sustainable Energy

India has several laws and policies related to sustainable energy. Some of the significant laws and policies related to sustainable energy in India are:

- A. National Action Plan on Climate Change (NAPCC) - This plan was launched in 2008, and it outlines India's strategy to combat climate change. One of the key components of this plan is the National Solar Mission, which aims to promote the use of solar energy in the country.
- B. The Energy Conservation Act, 2001 - This act was passed to promote energy conservation and efficiency in India. The act establishes the Bureau of Energy Efficiency (BEE), which is responsible for developing energy efficiency standards and labeling programs.
- C. The Electricity Act, 2003 - This act is aimed at promoting the development of renewable energy sources in India. It provides a framework for the development of renewable energy projects and mandates the purchase of a certain percentage of power from renewable sources.
- D. The National Green Tribunal Act, 2010 - This act established the National Green Tribunal (NGT), which is responsible for adjudicating environmental disputes in India. The NGT has the power to impose fines and penalties on individuals and organizations that violate environmental laws.
- E. The Renewable Energy Act, 2015 - This act was passed to promote the development of renewable energy sources in India. It provides a framework for the development of renewable

energy projects and mandates the purchase of a certain percentage of power from renewable sources.

- F. The Smart Cities Mission - The Smart Cities Mission aims to promote sustainable and inclusive urban development in India. One of the key components of this mission is the promotion of renewable energy sources in cities.
- G. The National Biofuel Policy, 2018 - This policy aims to promote the use of biofuels in India. It provides a framework for the development of biofuel projects and mandates the use of a certain percentage of biofuels in transportation.

These laws and policies demonstrate India's commitment to sustainable energy and environmental protection.

II. Impact of Energy laws in India

India has implemented several laws related to sustainable energy in recent years to reduce its dependence on fossil fuels and promote the use of renewable energy. These laws have had a significant impact on the country's energy sector and the environment. Here are some of the key ²⁶impacts of sustainable energy laws in India:

- A. Increase in renewable energy capacity: India has set a target of achieving 450 GW of renewable energy capacity by 2030. To achieve this, the government has implemented various policies and incentives to encourage the

²⁶ Energy Law in India" by Manoj Kumar Sinha.

"Renewable Energy Law and Policy in India: Opportunities, Challenges and Way Forward" by Sudipto Mukhopadhyay and Nandita Mondal.

"Legal and Regulatory Framework for Renewable Energy in India" by Ramprasad Sengupta.

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1. "Renewable Energy Law and Policy in India: Case Studies from South Asia" edited by Philippe Cullet, Sujith Koonan, and Bimal N. Patel.
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development of renewable energy sources such as solar, wind, and hydropower. As a result, the installed renewable energy capacity has increased from 20 GW in 2010 to 100 GW in 2021.

- B. Reduction in carbon emissions: The increase in renewable energy capacity has helped India to reduce its carbon emissions. According to a report by the International Energy Agency (IEA), India's carbon dioxide emissions per unit of GDP have decreased by 20% between 2005 and 2015.
- C. Energy security: The development of renewable energy sources has also helped to enhance India's energy security. With the country's high dependence on imported fossil fuels, the development of indigenous renewable energy sources has helped to reduce its dependence on imports and improve its energy security.
- D. Job creation: The growth of the renewable energy sector has also created significant job opportunities in India. According to a report by the Council on Energy, Environment and Water, the renewable energy sector in India employed over 100,000 people in 2020.
- E. Economic benefits: The renewable energy sector has also provided economic benefits to the country. The development of renewable energy sources has attracted significant investment, both domestic and foreign, which has helped to boost the economy.

Overall, the sustainable energy laws in India have had a significant impact on the country's energy sector, the environment, and the economy. The growth of the renewable energy sector has helped India to achieve its climate goals while creating job opportunities and promoting economic growth.

III. Past Scenario of sustainable Energy

India has made significant progress in promoting sustainable energy in the past few years. Here are some of the notable past events and developments in India's sustainable energy sector:

- A. National Solar Mission: In 2010, the Indian government launched the National Solar Mission, with the goal of promoting the development and deployment of solar energy in the country. The mission aimed to achieve a cumulative capacity of 20 GW by 2022, which was later increased to 100 GW by 2022. India has made significant progress in achieving this goal and has become one of the world's largest solar energy producers.
- B. Ujwal DISCOM Assurance Yojana (UDAY): In 2015, the Indian government launched UDAY, a program aimed at improving the financial health of state-owned power distribution companies (DISCOMs). The program aimed to reduce the gap between the cost of electricity supply and the revenue earned by the DISCOMs. This program helped in reducing the financial burden on DISCOMs and made it easier for them to purchase renewable energy.
- C. International Solar Alliance: In 2015, India launched the International Solar Alliance (ISA) in partnership with France. The alliance aims to promote the use of solar energy in 121 countries, which lie between the Tropics of Cancer and Capricorn. The ISA aims to reduce the cost of solar energy and increase its accessibility.
- D. Renewable Purchase Obligation: In 2010, the Indian government introduced the Renewable Purchase Obligation (RPO), which requires power distribution companies to purchase a certain percentage of their power from renewable sources. This policy has been



effective in increasing the demand for renewable energy in the country.

- E. Energy Conservation Building Code: In 2007, the Indian government introduced the Energy Conservation Building Code (ECBC), which lays down the minimum energy performance standards for buildings. The code has been effective in promoting energy-efficient buildings in the country.

These initiatives and policies have helped India make significant progress in promoting sustainable energy. However, there is still a long way to go to achieve the country's goal of becoming a fully sustainable energy economy.

IV. Present Scenario of Sustainable Energy

India is making significant strides towards sustainable energy, both in terms of policy and implementation. Here are some of the key developments in the sustainable energy scenario in India:²⁷

- A. Renewable Energy Targets: India has set a target to achieve 450 GW of renewable energy capacity by 2030. This includes 280 GW of solar energy, 140 GW of wind energy, and 10 GW of bioenergy.
- B. Solar Power: India has one of the largest solar power capacities in the world. As of September 2021, India had a total installed solar capacity of 46.2 GW. The government has launched various schemes to promote solar power, including the Pradhan Mantri Kisan Urja Suraksha evam Utthan Mahabhiyan (PM-KUSUM) scheme and the Atal Bhujal Yojana (ABY) scheme.
- C. Wind Power: India is the fourth-largest wind power market in the world. As of September 2021, India had a total

installed wind capacity of 40.4 GW. The government has launched various schemes to promote wind power, including the National Wind-Solar Hybrid Policy and the Kisan Urja Suraksha evam Utthan Mahabhiyan (KUSUM) scheme.

- D. Hydro Power: India has a total installed hydro capacity of 50.3 GW. The government is promoting small hydro projects (up to 25 MW) to increase the share of hydro power in the energy mix.
- E. Bioenergy: India has a total installed bioenergy capacity of 10.3 GW. The government is promoting the use of biofuels, such as ethanol and biodiesel, in the transport sector.
- F. Energy Efficiency: India has launched various schemes to promote energy efficiency, such as the Perform, Achieve and Trade (PAT) scheme and the UJALA scheme. The government is also promoting the use of energy-efficient appliances through the Standards and Labeling (S&L) program.
- G. Electric Mobility: India is promoting the adoption of electric vehicles (EVs) to reduce emissions from the transport sector. The government has launched various schemes, such as the Faster Adoption and Manufacturing of Electric Vehicles (FAME) scheme and the National Electric Mobility Mission Plan (NEMMP).

Overall, India's sustainable energy scenario is progressing rapidly, and the country is on track to achieve its renewable energy targets. However, there are still challenges, such as the intermittency of renewable energy sources and the need for investment in grid infrastructure to support renewable energy integration.

V. Factors Affecting legal laws in India

There are several factors that affect the legal laws related to sustainable energy in India. Some of the key factors include:

²⁷ "Renewable Energy Law and Policy in India: Case Studies from South Asia" edited by Philippe Cullet, Sujith Koonan, and Bimal N. Patel.

"Renewable Energy in India: Past, Present and Future" by Pradeep Kumar Dondeti and Amardeep Kanur.

"History of Renewable Energy in India" by Pramod Jain.

"Sustainable Energy Development in India: Historical and Policy Perspectives" by Rakesh Ku



- A. Government policies and regulations: The Indian government plays a critical role in promoting sustainable energy through policies, regulations, and incentives. For example, the government has set a target to achieve 175 GW of renewable energy capacity by 2022, and has introduced several policy initiatives such as the National Solar Mission and the National Wind Energy Mission.
- B. Technological advancements: The development of new technologies and innovations in the renewable energy sector can have a significant impact on the legal laws related to sustainable energy in India. For instance, the introduction of energy storage solutions and smart grid technologies can lead to changes in regulations related to grid integration and interconnection.
- C. Economic factors: The economics of renewable energy is an important consideration for policymakers when developing laws related to sustainable energy. For instance, the cost of renewable energy technologies has been declining rapidly in recent years, making them more competitive with traditional energy sources. This has led to changes in regulations related to tariffs, subsidies, and tax incentives.
- D. Environmental concerns: Environmental considerations, such as climate change and air ²⁸pollution, are major drivers of the adoption of sustainable energy in India. The impact of these concerns on the legal framework related to sustainable energy can be seen in regulations related to emissions

standards, pollution control, and environmental permits.

- E. Public opinion and awareness: Public opinion and awareness can also influence the legal laws related to sustainable energy in India. For instance, a growing awareness of the importance of sustainable energy among the public can lead to changes in regulations related to energy conservation, energy efficiency, and the promotion of renewable energy sources.

VI. Future Prospect and Implementation of Energy Laws

India has set ambitious targets for increasing the share of renewable energy in its energy mix, including a target of achieving 450 GW of renewable energy capacity by 2030. To achieve these targets, the government has implemented several policies and regulations related to sustainable energy.

One of the key laws related to sustainable energy in India is the Electricity Act, 2003, which provides the legal framework for the development of renewable energy sources. The act mandates that a certain percentage of electricity generated by power companies should come from renewable energy sources.

Additionally, the government has implemented the National Solar Mission and the National Wind Energy Mission to promote the development of solar and wind energy respectively. These missions aim to achieve a target of 100 GW of solar capacity and 60 GW of wind capacity by 2022. The government has also implemented various financial incentives, such as subsidies, tax benefits, and low-interest loans, to encourage the development of renewable energy projects.

In terms of implementation, there have been some challenges related to the availability of land, transmission infrastructure, and the high cost of renewable energy technology. However, the government has taken steps to address

²⁸ Factors Affecting the Implementation of Renewable Energy Policies in India" by Saurabh Kumar and Vishal Sethi.

1. "Factors Influencing Energy Law and Policy in India" by Parul Sharma.
2. "Legal and Regulatory Framework for Renewable Energy in India" by Ramprasad Sengupta.
3. "The Political Economy of Renewable Energy Policy in India: A Historical Analysis" by Rohit Varman.



these challenges, such as setting up dedicated solar and wind parks, upgrading transmission infrastructure, and promoting research and development in renewable energy technology.

Overall, the future prospects of legal laws and their implementation related to sustainable energy in India look promising. The government's ambitious targets and policies, coupled with the increasing focus on sustainability among consumers and businesses, are likely to drive significant growth in the renewable energy sector in the coming years.

Conclusion

The legal issues surrounding sustainable energy in India are complex and multifaceted. However, there have been significant efforts by the government to promote the development and use of sustainable energy sources through various policies, laws, and initiatives. One of the most significant legal developments in this area is the National Solar Mission, which was launched in 2010 and aims to achieve 100 GW of solar power capacity by 2022. The government has also introduced several other policies and schemes, such as the Renewable Purchase Obligation (RPO), which mandates certain consumers to purchase a certain percentage of their electricity from renewable sources.

In addition, there are several laws and regulations in place to support the development of sustainable energy, such as the Electricity Act, 2003, the National Tariff Policy, and the National Wind-Solar Hybrid Policy. However, there are still some legal challenges to the growth of sustainable energy in India, such as land acquisition issues, regulatory delays, and lack of clarity around certain policies. These issues can hinder the growth of sustainable energy and may need to be addressed in order to achieve the country's renewable energy goals. While there are challenges and legal issues to be addressed, India has made

significant strides in ²⁹promoting sustainable energy and is well-positioned to continue on this path in the coming years.

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1. Renewable Energy Law and Policy in India: Case Studies from South Asia" edited by Philippe Cullet, Sujith Koonan, and Bimal N. Patel.
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²⁹"Sustainable Energy in India: Historical, Political, and Social Perspectives" edited by Ligia Noronha, Anant Sudarshan, and Amulya K.N. Reddy.