

DLC Image: Pratibimbo

ISSN: 2583-8881

<https://image.dispurlawcollege.org>

Transition Towards Green Energy in the Energy Sector of India: A Study of Law and Policies

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Abstract:

The search for “green and clean energy” is viewed as a solution for the energy crisis and a comprehensive response to the challenge posed by climate change. The pursuit of energy from unconventional sources has been recommended as a solution for the issues raised with climate change and address the energy crisis during a period of economic growth and advancement.

The aim to achieve green energy can be strengthened by various ways like reducing carbon footprints, practicing the four R’s and recycling of natural resources. The Indian Government has been deliberately pursuing regulations in ensuring and meeting the goals of Sustainable Development through the green innovation processes whether adopted by different nations or through its own inventive standards.

This article provides a review of the evolution of “sustainable development” and “clean energy” internationally and in India, alongside an examination of the legislative framework concerning renewables within the electricity sector. Through the doctrinal study this article highlights the environmental implications in achieving sustainable growth and ecologically balanced industrial development both nationally as well as internationally.

Keywords: Green energy, Environment, Sustainable development, Regulations, Four ‘R’.

I. Introduction

Due to its expanding population and increasing standard of living, “India has emerged as the world's third-largest consumer of primary energy”,¹ following China and the USA. In order to meet its hydrocarbon requirements India not only depends on its domestic production but also imports from other countries. This over-dependence on imports makes India dependent on foreign reserves as well as this also have an adversarial impact on the environment.

¹ India has been ranked third largest primary energy consumer in the world, available at <https://pib.gov.in/PressReleasePage.aspx?PRID=1809204> (Last visited on July 23, 2024)

To address this problem there has been an increasing emphasis on exploring renewable energy sources with the aim of meeting energy needs from more environmentally friendly sources.

An appropriate legal framework and policies are essential to facilitate the necessary efforts to adopt sustainable energy sources within a nation. This study aims to explore the evolution of renewable energy, examining the legislative provisions and policy initiatives implemented by authorities to transition the nation's reliance from conventional to clean and renewable energy sources.

II. Clean and Green energy: tracing the history in India:

During the 1970s, a significant rise in oil prices, coupled with uncertainties surrounding its supply and detrimental effects on the balance of payments, prompted the government to recognize the importance of achieving energy independence.²

This led the government to revise its energy source strategies and delve into the realm of “non-conventional energy sources within the country”.³ Consequently, in 1981, the Commission for Additional Sources of Energy (CASE)⁴ was established within the Department of Science and Technology.⁵

In 1982, the Department of Non-Conventional Energy Sources (DNES)⁶ was established within the Ministry of Energy, which later in 2006, underwent a name change to become the Ministry of New and Renewable Energy.⁷

III. Mapping National & International Legal Framework On Green Energy:

In order to understand the rise of green and clean energy as a part of the sustainable development goals both national and international legal documents have been discussed in the following.

III.1 International Conventions

The 1972 United Nations Conference on the Human Environment in Stockholm, Sweden⁸, stands as the inaugural significant international convention addressing sustainable development.

The Stockholm Conference adopted the “Stockholm Declaration and Plan of Action”⁹, which put forth recommendations for environmental action involving human concerns. Additionally, the conference led to the establishment of the “United Nations Environment Programme (UNEP)”¹⁰, the first UN entity dedicated exclusively to addressing environmental issues.

² Ministry of New and Renewable Energy, *available at*: <https://mnre.gov.in/about-department/introduction> (Last visited on July 20,2024)

³ *Ibid*

⁴ *Supra* Note 2

⁵ *Supra* Note 2

⁶ *Supra* Note 2

⁷ *Supra* Note 2

⁸ United Nations Conference on the Human Environment, 5-16 June 1972, Stockholm, *available at* <https://www.un.org/en/conferences/environment/stockholm1972> (Last visited on July 02,2024)

⁹ *Ibid*

¹⁰ *Supra* Note 8.

In 1992, the “United Nations Framework Convention on Climate Change (UNFCCC)”¹¹, colloquially referred to as the Earth Summit, took place in Rio de Janeiro, Brazil.¹² The UNFCCC was an international agreement to acknowledge that, among other things, the production and consumption of energy derived from fossil fuels contributes to climate change and is one of its solution[s] for adaptation and mitigation.¹³

In the Earth Summit, three significant agreements were adopted, i.e. Agenda 21, the Rio Declaration, and the Statement of Forest Principles. The United Nations Framework Convention on Climate Change and the Convention on Biological Diversity, two legally binding accords, were also signed during this conference¹⁴.

Following 1992, the next significant advancement toward transitioning to clean energy was the Kyoto Protocol and Paris Agreement.¹⁵

The “Millennium Summit established the eight Millennium Development Goals (MDGs)”¹⁶ in 2000 with the aim of achieving these objectives by 2015.

The “Johannesburg Plan of Implementation”¹⁷ (also known as the "Johannesburg Plan") established the first intergovernmental strategy linking energy to energy security, climate change mitigation, and sustainable development in 2002.¹⁸

In 2013, the Millennium Summit's member states decided to convene again in September 2015 to adopt a fresh set of goals that would build upon the framework provided by the MDGs. The UN established 17 Sustainable Development Goals (SDGs) and decided to accomplish them by 2030 as a result of this summit in 2015.¹⁹ Out of these 17 SDGs’ access to affordable and clean energy(SDG 7) is one .

III.2 NATIONAL LEGISLATION:

"Electricity" is categorized in the concurrent list, or list three, of the three lists specified in the “Seventh Schedule of the Constitution of India”²⁰.

The role of renewable energy was acknowledged in the current Electricity Act of 2003. “Section 3(1)”²¹ of this Act allows for the integration of renewable and conventional energy sources through a number of provisions. According to Section 3(1), the Indian government will periodically draft the National Electricity Policy and Tariff Policy in collaboration with the State Governments in order to develop the power system based on the most efficient use of energy resources, including coal, natural gas, nuclear, hydro, and renewable sources.

¹¹ UN Climate Change Conferences, available at <https://www.un.org/en/climatechange/un-climate-conferences> (Last visited on June 31,2024)

¹² *Ibid*

¹³ Stuart Bruce, International Law and Renewable Energy: Facilitating Sustainable Energy for All? available at https://law.unimelb.edu.au/assets/pdf_file/page_no.18 (Last visited on July 20,2024)

¹⁴ *Supra* Note 11.

¹⁵ *Supra* Note 11.

¹⁶ Millennium Summit, 6-8 September 2000, New York, available at <https://www.un.org/environment/newyork2000> (Last visited on July 15,2024)

¹⁷ World Summit on Sustainable Development, 26 August-4 September 2002, Johannesburg available at <https://www.un.org/en/conferences/environment/johannesburg2002> (Last visited July 16,2024)

¹⁸ *Supra* Note 13, at.15

¹⁹ Background on the goals, available at <https://www.undp.org/sdg-accelerator/background-g...> (Last visited June 26,2024)

²⁰ The constitution of india, Art.246(Entry 38)

²¹ Electricity Act,2003[No.36 of 2003]

“Section 4”²² of this Act also requires the Central Government to create and notify the national policy on renewable energy and other nonconventional sources of energy for rural areas after consulting with the State Governments.

Apart from this Electricity Act of 2003, in India, the Environment Protection Act of 1986²³ was implemented to establish a regulatory framework aimed at controlling environmental impact and ensuring safeguarding measures.

The National Green Tribunal Act of 2010²⁴ established the National Green Tribunal to expedite the resolution of cases concerning environmental protection and conservation. The Energy Conservation Act of 2001²⁵ was enacted to enhance energy efficiency and minimize wastage, setting out energy consumption standards for equipment and appliances at both national and international levels.

IV. Government Policies for India’s Green Energy Transition:

As a signatory to both the “Paris Agreement (COP 21)”²⁶ and the “United Nations Framework Convention on Climate Change (UNFCCC)”²⁷ India is dedicated to fulfilling its nationally determined contribution in renewable energy targets and lowering carbon emissions.²⁸

India submitted its initial “nationally determined contribution (NDC)”²⁹ in 2015, which includes specific quantifiable objectives aimed at meeting these goals.³⁰ Such as - to decrease the emissions intensity of its GDP by 33 to 35 percent by 2030 compared to the levels recorded in 2005, achieve about 40 percent cumulative electric power installed capacity.³¹

In order to achieve its objective for clean energy the Government of India has launched certain schemes in recent years. A few of the following schemes are as follows.

A. National Green Hydrogen Mission:

The “*National Green Hydrogen Mission*”³² was launched on January 4, 2022, under the “*Ministry of New and Renewable Energy's (MNRE)*”³³ direction. The directive of the mission is to “accelerate the economy's shift to a lower carbon intensity, reduce dependency on imported fossil fuels, and establish the country as a leader in technology and market leadership in this emerging industry”³⁴. “Achieving a minimum yearly production capacity of 5 million metric

²² Ibid

²³ The Environment (Protection) Act, 1986 (Act No.29 of 1986)

²⁴ The National Green Tribunal Act, 2010 (No.19 of 2010) .

²⁵ The Energy Conservation Act, 2001,(No 52 of 2001)

²⁶ The Paris Agreement, available at <https://unfccc.int/process-and-meetings/the-paris-agreement> (Last visited July 08,2024)

²⁷ *Supra* Note 11

²⁸ Cabinet approves India’s Updated Nationally Determined Contribution to be communicated to the United Nations Framework Convention on Climate Change, available at: <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1847812> (Last visited on June 19,2024)

²⁹ All About the NDCs, available at: <https://www.un.org › climatechange › all-about-ndcs> (Last visited on July 13,2024)

³⁰ Ministry of Environment, Forest and Climate Change, India achieves two targets of Nationally Determined Contribution well ahead of the time, available at <https://pib.gov.in › PressReleaseIframePage>, (Last visited on June 23,2024)

³¹ Ibid

³² National Green Hydrogen Mission, available at <https://mnre.gov.in/national-green-hydrogen-mission/> (Last visited on July 19,2024)

³³ *Ibid*

³⁴ *Supra*, Note 32

tons of green hydrogen by 2030 and reducing annual greenhouse gas emissions by roughly 50 million metric tons are important goals”.³⁵

B. Green Credit Programme:

The Green Credit Program (GCP) represents a pioneering market-driven mechanism strategically crafted to stimulate voluntary environmental initiatives spanning a broad spectrum of sectors, engaging multiple stakeholders including individuals, communities, private sector enterprises, and corporations.³⁶ Officially notified on October 13th, 2023, this initiative is overseen by the *Indian Council of Forestry Research and Education (ICFRE)*, which is an autonomous body under the purview of the Ministry of Environment, Forest and Climate Change.³⁷

In addition to these, the government has also launched several other schemes like “*Amrit Dharohar, Mangrove Initiative for Shoreline Habitats & Tangible Incomes, Energy Storage Projects, and the Renewable Energy Evacuation, Coastal Shipping*”³⁸ etc. in order to encourage clean energy and sustainable living.

V. Judgements in relation to green energy in India:

The Indian judiciary have emphasized on clean and green energy in the following recent judgments.

- ***M.K. Ranjitsinh vs Union Of India*,³⁹**

A writ petition in the public interest was filed to safeguard two endangered bird species, namely the Great Indian Bustard (GIB) and the Lesser Florican, facing imminent extinction. The petitioner emphasized the mortality of these birds caused by overhead power lines. In April 2021, the Supreme Court delivered a groundbreaking verdict requiring the installation of bird diverters on current overhead power lines and considering the transition of such infrastructure to underground systems for upcoming projects.⁴⁰

- ***Hindustan Zinc Ltd vs Rajasthan Electricity Reg.Commission*,⁴¹**

In this case, the Supreme Court endorsed the adoption of innovative co-generation methods for generating electricity from renewable energy sources.⁴² Accordingly the Supreme Court observed “the National Action Plan on Climate Change and Preamble of the Act of 2003 emphasizes promotion of efficient and environmentally benign policies to encourage generation and consumption of green energy to sub-serve the mandate of Article 21 read with Article 48A

³⁵ National Hydrogen Mission, available at: <https://static.pib.gov.in › jan › doc2023110150801> (Last visited on June 20, 2024)

³⁶ Notification issued for Green Credit Program (GCP) and Ecomark scheme Under LiFE Initiative to Promote Sustainable Lifestyle and Environmental Conservation, available at: <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1967476> (last Visited on July 10, 2024)

³⁷ *Ibid*

³⁸ Pallav Kumar Chittej, India Green Policy Push : Initiatives to Promote Energy Conservation and Energy Efficiency, available at <https://www.ies.gov.in/pdfs/pallav-kumar-article.pdf> (Last visited on June 10, 2024)

³⁹ AIR 2021 SC 20

⁴⁰ M.K. Ranjitsinh vs Union Of India on 19 April, 2021

Available at <https://indiankanoon.org › doc>, (last visited on 27.06.2024)

⁴¹ Civil Appeal NO.4417 OF 2015

⁴² Supreme Court - Daily Orders, Hindustan Zinc Ltd vs Rajasthan Electricity Reg.Commission on 13 May, 2015, Available at <https://indiankanoon.org › doc>, (last visited on 27.06.2024)

of the Directive Principles of the State Policy and Article 51A(g) of the Fundamental Duties enlisted under Chapter IVA of the Constitution of India. Further, the Rajasthan Electricity Regulatory Commission (Renewable Energy Obligation) Regulations, 2007 and Rajasthan Electricity Regulatory Commission (Renewable Energy Certificate and Renewable Purchase Obligation Compliance Framework) Regulations 2010 are consistent with the International obligations of India, as India has ratified the Kyoto Protocol.⁴³

VI. Conclusion:

The shift from conventional energy sources to sustainable and environmentally-friendly energy signifies a major change for the country's economic, ecological, and societal conditions. This analytical study underscored India's dedication to sustainable development by incorporating environmentally friendly and renewable energy sources.

India's shift towards green energy involves not only implementation of new technology but also it entails reorganization of the energy system, promoting innovation, and developing favourable conditions for private sector involvement.

Though, this shift is not without difficulties. For an efficient and efficient transition, challenges including grid integration, energy storage, regulatory obstacles, and monetary limitations must be resolved. India possesses the potential to achieve global leadership in the extensive adoption of renewable energy by overcoming these challenges through strategic planning and fostering international cooperation.

In conclusion, India's transition to green energy is a shining example of advancement and the country's commitment to creating a sustainable future. India's status as a worldwide leader in the battle against climate change and a role model for other developing countries striving for Sustainable Development would be cemented by the country's successful transition to green energy.

⁴³ Hindustan Zinc Ltd. v. Rajasthan Electricity Regulatory Commission, *available at* <https://climatecasechart.com> › Non-US Cases (Last visited on June 30,2024)