International Journal of Academic Research and Development (IJAR&D)
ISSN : 2395-1737 (Print), Volume 11, No. 2, Page No 146-153
DOI : https://doi.org/10.70381/23951737.v11.n2.i22.2025.16
Bharti Publications, New Delhi, India

Converging Pathways to Sustainability: India's Pursuit of SDG 7 and SDG 13

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ABSTRACT

The Sustainable Development Goals (SDGs) represent a universally accepted framework under the United Nations (UN), delineating a harmonized blueprint for ensuring global peace and prosperity, benefiting both humanity and the planet, across present and future generations. Global partnership is needed to frame strategies to combat climate change and other socio-economic deprivations in terms of poverty, hunger, malnutrition, health, education, inequality, and economic growth and development. Countries around the globe are working at the national level as well as internationally to achieve these targets of SDGs at the earliest including India. In this backdrop, this study offers a critical analysis of India's initiatives and progress in attaining the targets of SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action) during 2016-2025. The study synthesizes qualitative and quantitative insights derived from the United Nations Development Programme's (UNDP) Annual SDG Reports (2016-2025) and the Paris Agreement (2015). Furthermore, it incorporates analyses of reports from NITI Aayog, Government of India, and the National Action Plan on Climate Change (NAPCC), providing a multifaceted perspective on progress towards sustainable development goals. SDG 7 ensures access to affordable, reliable, sustainable and modern energy for all. SDG 13 appeals for taking urgent action to combat climate change and its impacts. Through its 5 targets, SDG 13 ensures strengthen resilience; integrate measures, building knowledge and capacity, implementation of UN framework and promoting mechanisms for climate change and climate action. The study critically explores the association between the climate change and Sustainable Development Goals by internalizing environmental disruptions for developing country like India. The study is significant in understanding the need for earnest actions for mitigating the severe effects of climate change. Achieving effective climate action necessitates strong political will, coordinated governance, robust frameworks, and access to funding and technology cooperation. For India, specific targets, cross-sector coordination, and inclusive decision-making are crucial. Widely implemented regulatory and economic tools can drive emissions cuts and boost resilience. Strong leadership and regional to global cooperation are essential for effective climate policy. Ultimately, climate-resilient growth thrives on holistic understanding, expertise, and strategies for mitigation and adaptation, paving the way for a sustainable future.

Keywords: *Sustainable Development Goals (SDGs); United Nations; Affordable and Clean Energy; Climate Change; Sustainable Development*

1. Introduction

The vision of sustainable development[1] has been embedded in global climate policy, particularly since the United Nations (UN) Conference on Environment and Development 1992 known as Earth Summit and the subsequent adoption of Agenda 21. Climate change has significant implications for global sustainable development, making it a critical challenge to address. Climate change stands out as the most critical and intricate global environmental challenge we face today (Kandlikar & Sagar, 1999; Sathaye et al. 2006; Hussain et al., 2024). Developing countries typically have low resilience to climate change, making their communities more vulnerable. For developing nations, the top priority is building resilience in their ecosystems and economies to withstand the anticipated impacts of climate change. Countries like India will need to balance promoting climate mitigation and adaptation efforts with the financial burden and potential economic development implications. The climate crisis endangers both human prosperity and the planet's well-being and the clock is ticking to ensure a sustainable future for everyone (IPCC, 2023). To achieve this, we need to combine efforts to adapt to and mitigate climate change, promoting development that benefits all. This requires stronger global cooperation, including better access to funding for those who need it most, as well as inclusive decision-making and integrated strategies.

The Millennium Development Goals (MDGs) were established in 2000, when 189 UN member states signed the Millennium Declaration, pledging to address global challenges like poverty, disease, and environmental degradation through 8 specific goals to be achieved by 2015. Notwithstanding, the world has made considerable strides in achieving the MDGs, including halving extreme poverty, however, progress has been inconsistent. As the MDGs' deadline passed, the conversation turned to a post-2015 agenda that prioritizes sustainability, inclusion, and economic growth.

Sustainable Development Goals (SDGs) were accepted in 2015 under the United Nations (UN) framework. The 17 SDGs with 169 targets are adopted through consensus between the developed and the developing countries admitting the need for urgent action for sustainable development (UNDP, 2025). SDGs also referred as 'Global Goals' were accepted under the UN framework with the broad objective of 'peace and prosperity for people and the planet, now and into the future' (United Nations Department of Economic and Social Affairs, 2025). Out of these 17 goals, SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), SDG 11 (Sustainable Cities and Communities), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), and SDG 15 (Life on Land) are specifically related with climate issues and sustainability.

This study examines the link between climate change and Sustainable Development Goals, with reference to SDG 7 and SDG 13 focusing on environmental challenges in developing countries like India. It highlights the urgent need for action to mitigate climate change impacts and recommends strategies for climate resilience and sustainable development.

2. Review of Literature

Large volume of studies has been conducted globally to outline the achievements and challenges of the Sustainable Development Goals; however, studies highlighting India's development on SDGs front is limited. India's progress hinges on scientific progress and global cooperation to address climate change. Kandlikar and Sagar (1999) observed India's competence for research and analysis in climate change, highlighting key factors influencing its effectiveness. Through in-depth interviews, it identified challenges and opportunities for developing countries in participating in global climate science and evaluation. The Indian case study provided insights for international climate discussions, offering recommendations for overcoming potential obstacles and responding to the South-North segmentation. India's climate resilience and mitigation efforts rely on scientific advancements, international cooperation and inclusive capacity-building processes that facilitate knowledge sharing and collective action (Sathaye et al. 2006). Sami et al. (2016) discoursed that over the next few years it will be crucial for putting the Paris Agreement into action, both in terms of India's NDCs and the global climate effort. Since Indian cities play a crucial role in national and global development, they must also address climate change. Goal 13 of the SDGs can guide climate policy in India. However, evaluation of the current government efforts highlighting opportunities for creating more resilient urban areas, challenges and way forward to achieve targets of the SDGs is needed. Panda et al. (2018) appraised India's progress in Sustainable Development Goals, uncovering achievements and inter-state disparities. While some states lead the progress, others trail behind, entailing tailored policies for each state's distinct needs. The states' rankings and findings stressed that those national policies might not suffice; calling for focused interventions to bridge regional divides and foster balanced sustainable development across India. The SDG Index rankings underscore the importance of

1 Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland Report, 1987).

customized policies addressing unique state challenges implying that one-size-fits-all national policies may fall short.

Mitra et al. (2022) investigated India's climate policy, focusing on its development and execution, and argue for a nuanced approach to reconcile national and global interests. The study has debunked the Western critics of Indian approach which is viewed as obstructive and counterproductive in climate change negotiations and policy implementation. Further, the study has investigated the key challenges Indian policymakers encounter and highlighted limitations in India's climate policies, notably the ongoing reliance on coal alongside its notable renewable energy initiatives. The study by Borah (2023) explores the impact of climate change on sustainable development and human security in India, focusing on twin facets of ecological and security dimensions. Addressing climate change requires understanding its societal perspectives and integrating it into sustainable development strategies. Bhalla and Pandey (2024) examined India's SDG progress for the period from 2017 to 2024, highlighting climate change's impact on developmental objectives. This study assesses key indicators to understand climate change's impact on SDGs, identifying strategies to overcome environmental hurdles. Climate disruptions slowed SDG progress and warranted robust climate strategies stressing on renewable energy, resilient infrastructure, and equitable resource access to build a sustainable future. Hussain et al. (2024) outlined India's current situation, implementing climate mitigation strategies, such as ecological approaches, which deemed crucial to minimize impacts and support India in attaining the targets laid down under the SDGs. The study aspired to comprehensively assess the effects of climate change across various sectors, identifying challenges in achieving SDGs 13 and 11, and provided the future research recommendations tailored to India's context. The study by Raman et al. (2025) offers an in-depth assessment of SDG research in India post-2015, when the United Nations' SDGs were accepted. International collaborations have been instrumental in enhancing the productivity and effectiveness of SDG research in India, with partnerships with nations like the US, UK, and China elevating research quality.

A collaborative approach between public and private institutions can accelerate India's SDG progress, harnessing diverse expertise and innovation. The study is limited as it provides thematic analysis of SDGs research in India based on available literature. India's efforts to tackle climate change demands strong political will, coordinated governance, robust frameworks, access to funding, green and energy efficient technologies, promoting renewable energy, and conserving ecosystems.

3. Methodology

This study is based on the qualitative and quantitative analysis of the Annual SDG Reports from 2016-2025 published by the United Nations Development Program (UNDP) and Paris Agreement 2015. Additionally, the study is based on the reports of NITI Aayog of the Government of India and National Action Plan on Climate Change (NAPCC). The study has critically explored the association between the climate change and Sustainable Development Goals by internalizing environmental disruptions for developing country like India. The study is significant in understanding the need for serious actions for mitigating the stern effects of climate change and has recommended for strategies for climate mitigation and adaptation for sustainable development and prosperous future for people and the planet. India's Nationally Determined Contributions (NDCs) reinforce the secondary research, offering a comprehensive framework to assess progress and challenges in meeting climate-related SDGs.

4. Sustainable Development Goals and India

India is dedicated to achieving the targets of SDGs by 2030. SDG 7 with its 5 targets (Table 1) ensures access to affordable, reliable, sustainable and modern energy for all (Department of Economic and Social Affairs, 2025). Delivering worldwide access to sustainable energy demands a concerted effort to expand electricity access, promote clean fuels for cooking, energy optimization, and increase the use of renewable energy. With progress currently insufficient, achieving the SDG7 goal by 2030 stipulates increased funding, more ambitious policies, and countries' adoption of new technologies. SDG 13 having 5 targets (Table 1) committed to take urgent action to combat climate change and its impacts.

Table 1: SDG 7 and SDG 13 Targets

SDG 7: Affordable and Clean Energy	SDG 13: Climate Action
7.1: Access to energy services	13.1: Resilience and adaptive capacity
7.2: Share of renewable energy	13.2: Climate change policies
7.3: Energy efficiency	13.3: Climate change awareness
7.a: International cooperation on energy	13.a: UNFCCC commitments
7.b: Investing in energy infrastructure	13.b: Climate change planning and management

Source: United Nations Department of Economic and Social Affairs (2025)

Table 2 presents a comparative snapshot of India's progress in SDG 7 with world during 2016 to 2023. Access to electricity has increased from almost 92% in 2016 to 100% in 2023, a remarkable achievement for India. World average during this period saw an increase of 5% in electricity access. Similarly, access to clean cooking fuels, India has progressed significantly. Progress in share of renewable in final energy consumption for India and globally is almost stagnant. Primary energy intensity for India has decreased during 2015-2022. International financial support of clean and renewable energy to India has increased from 2.4 Billion USD to 2.99 Billion USD. Likewise, it has increased globally from 18.6 to 21.6 USD Billion. Installed renewable-energy capacity has also increased from 67 watts to 122 watts per capita for India and from 267 to 478 watts/capita increase globally.

Table 2: India's Progress in SDG 7

Indicators	India		World	
	2016	2023	2016	2023
Electricity Access (%)	91.8***	99.5	87	92
Access to Clean Cooking Fuels and Technologies (%)	48.4#	77	59	74
Share of Renewable in Final Energy Consumption (%)	33.2 #	34**	17.5	17.9**
Primary Energy Intensity* (Mega Joules Per Dollar)	4.01#	3.5**	5***	3.87**
International Financial Support of Clean and Renewable Energy to Developing Countries (Billion Dollars)	2.4	2.99	18.6	21.6
Installed Renewable-Energy Capacity Per Capita (Watts Per Person)	67.28	122.3	267	478

Source: SDG Reports; the Energy Progress Report

* The ratio of total energy supply to GDP; **Data for the year 2022; ***Data for the year 2017

Data for the year 2015

Table 3 highlights progress of India during 2016 and 2023 in three metrics: CO_2 emissions from fossil fuel combustion and cement production (tCO_2/capita), GHG emissions embodied in imports (tCO_2/capita) and CO_2 emissions embodied in fossil fuel exports (tonnes/capita). CO_2 emissions from fossil fuel combustion and cement production per capita have increased during 2016 to 2023. Likewise, GHG emissions embodied in imports has also increased between 2016 and 2024.

Table 3: India's Progress in SDG 13

Indicators	India	
	2016	2023
CO_2 emissions from fossil fuel combustion and cement production (tCO_2/capita)	1.77	2.15
GHG emissions embodied in imports (tCO_2/capita)	0.27	0.38 (2024)
CO_2 emissions embodied in fossil fuel exports (tonnes/capita)	-	0.00

Source: Sustainable Development Report (2025)

India's initiatives to achieve targets of SDG 7 and SDG 13

Table 4 and Table 5 underline India's initiatives and schemes for sustainable development and to achieve the targets laid down under Sustainable Development Goals and India's commitment towards mitigating the effects of climate change.

SAUBHAGYA Scheme: The scheme's goal is to ensure universal access to electricity by providing connections to all un-electrified households in rural and urban areas of India, bridging the energy divide. The initiative strives to deliver uninterrupted electricity supply to all houses nationwide, with a target of 2019 for completion. Subsidy on equipment such as transformers, wires and meters has been be provided by the government. The project's total outlay stands out at ₹ 16,320 crore with a gross budgetary support (GBS) of ₹ 12,320 crore. The outlay for rural households was ₹ 14,025 crore (GBS was ₹ 10,587.50 crore), while total outlay for urban households was kept at ₹ 2,295 crore, GBS was ₹ 1,732.50 crore (REC, 2025). Since its inception, the scheme has delivered electricity connections to 2.86 crore households, with states confirming all interested households have been electrified.

PM Ujwala Scheme: The scheme seeks to promote clean cooking by making LPG accessible to rural households, reducing reliance on polluting fuels like firewood and cow-dung cakes that harm both health and the environment. The 2021-22 budget sets aside funds for 1 crore new LPG connections under PMUY, prioritizing migrant families (Ministry of Petroleum and Natural Gas, 2025).This led to a remarkable rise in LPG coverage, reaching 99.8% by April 2021 from 62% in May 2016.

Unnat Jyoti Affordable LED for All (UJALA): The UJALA scheme promotes energy efficiency by providing LED bulbs, tube lights, and fans to households, replacing traditional and wasteful lighting. Government's nationwide distribution of LED bulbs, tube lights, and energy-efficient fans has yielded impressive results, with estimated annual energy savings of 48.42 billion kWh

and evaded peak demand of 9789 MW. This initiative has helped in reducing GHG emissions by 39.3 million tons of CO_2 annually. It saved around ₹ 19,334 crore annually to the consumers (Energy Efficiency Services Limited, 2025).

PM-KUSUM Scheme: The PM-KUSUM scheme aims to reduce the farm sector's reliance on diesel and boost farmers' income. It offers central government subsidies of up to 30-50% for installing solar pumps or converting existing grid-connected pumps to solar equipped. Farmers can also set up grid-connected solar power plants up to 2 MW on their unused land and sell electricity to local distribution companies at a state-regulated tariff. The Scheme permits the transfer of quantities with a goal to add 34800 MW of solar capacity by March 2026, backed by ₹ 34422 crore in central financial supports (Ministry of New and Renewable Energy, 2025b).

Green Energy Corridors (GEC): A 2012 study by Power Grid Corporation of India Limited (PGCIL) identified a need for better transmission infrastructure to support large-scale solar and wind power projects. In response, PGCIL created the Green Energy Corridor plan, which was submitted in September 2012. States then crafted their own transmission plans, which were reviewed by the Central Electricity Authority (CEA). After securing approvals, the project implementation kicked off in 2015. The project (Phase 1) aims to establish around 9700 ckm of transmission lines and 22600 MVA substations to facilitate the integration of 24 GW of renewable energy. The total cost is estimated at Rs. 10141.68 crore, funded through Central Financial Assistance (40%), a loan from KfW Germany (40%), and equity from STUs (20%). Phase-II-Inter-State Transmission System (ISTS) on Green Energy Corridor (GEC) for 13 GW of Renewable Energy Project has been approved in 2023. The project is slated for completion by FY 2029-30, with an estimated cost of Rs. 20773.70 crore (PIB, 2023).

National Bio-Energy Programme: With ambitious targets of 50% non-fossil fuel-based electricity capacity by 2030 and net-zero emissions by 2070, India is prioritizing the optimal use of domestic renewable energy alternatives to achieve self-reliance in the energy sector (Ministry of New and Renewable Energy, 2025a). Bio-Energy Programme has three components: waste to energy programme, Biomass programme and Biogas programme. The Programme was launched with a total budget of Rs 1715 crore, spread across two phases. The first phase has been allocated Rs 858 crore and offers Central Financial Assistance (CFA) for various power generation components (PIB, 2022).

National Green Hydrogen Mission: The objective of National Green Hydrogen Mission is to transform India into the global hub for manufacture, usage and export of green hydrogen and its derivatives and achieve the targets of the Agenda 2030. The initial funding is ₹ 19,744 crore, distributed across various components: SIGHT programme (₹ 17,490 crore), pilot projects (₹ 1,466 crore), Research & Development (₹ 400 crore), and other activities (₹ 388 crore). The mission targets by 2030 the annual production of green hydrogen capacity of 5 million tons (MMTPA).

Faster Adoption and Manufacturing of Electric Vehicles (FAME) Scheme: The FAME I initiative, started in 2015, supported 2.8 lakh hybrid and electric vehicles in India, marking a significant step towards promoting sustainable transportation (Urja Dakshata Information Tool, 2025). The scheme's primary goal was to accelerate the adoption and create a market for hybrid and electric vehicles in India. With a budgetary support of ₹10000 crore, the Ministry of Heavy Industries is rolling out Scheme Phase-II for duration of five years, effective April 1, 2019.

Electric Mobility Promotion Scheme (EMPS): The Ministry of Heavy Industries, Government of India, has launched the Electric Mobility Promotion Scheme 2024 (EMPS 2024) with a budget of ₹ 500 crore, effective from April 1, 2024, to July 31, 2024, to promote the adoption of electric two-wheelers and three-wheelers (Ministry of Heavy Industries, 2025). This is expected to develop the EV ecosystem in India and boost green transportation.

Table 4: India's initiatives for achieving the targets of SDG 7

Sr. No.	Government of India Schemes	Year
1	SAUBHAGYA Scheme	25th September 2017
2	PM Ujjwala Scheme	1st May 2016
3	Unnat Jyoti Affordable LED for All (UJALA)	5th January 2015
4	PM-KUSUM Scheme	March 2019
5	Green Energy Corridors (GEC)	2015
6	Bio-Energy Programme	2nd November 2022
7	National Green Hydrogen Mission	4th January 2023
8	Faster Adoption and Manufacturing of Electric Vehicles (FAME) Scheme	April 2015
9	Electric Mobility Promotion Scheme (EMPS)	1st April 2024

Source: NITI Aayog (2024)

National Action Plan on Climate Change (NAPCC): The NAPCC launched on 30th June 2008 outlines India's approach to addressing climate change, emphasizing the need for sustainable development and economic growth to enhance living standards and reduce vulnerability. At the heart of the National Action Plan are eight National Missions that aim to promote climate change awareness, adaptation, and mitigation, as well as energy efficiency and conservation of natural resources. The eight missions include National Water Mission (2011), National Solar Mission (2010), National Mission for a Green India (2014), National Mission for Sustainable Agriculture (2014-15), National Mission for Enhanced Energy Efficiency (2008), National Mission on Sustainable Habitat (2010), National Mission on Strategic Knowledge for Climate Change (2010) and National Mission for Sustaining the Himalayan Ecosystem (2010).

National Cyclone Risk Mitigation Project (NCRMP): The National Cyclone Risk Mitigation Project (NCRMP) was a centrally sponsored initiative supported by the World Bank, focusing on reducing cyclone risks in eight coastal states prone to cyclones, and was implemented by NDMA. It includes four components (A,B,C and): Early Warning Dissemination System (EWDS), Cyclone Risk Mitigation Infrastructure (CRMI), Technical Assistance for Capacity Building on Disaster Risk Management and Project Management and Monitoring. The first phase of the project, launched in January 2011, focused on Andhra Pradesh and Odisha, and was completed by December 2018 with a total expenditure of ₹ 2,524.84 crore, slightly under the revised budget of ₹ 2,541.60 crore. With World Bank assistance, the National Cyclone Risk Mitigation Project's Phase II was approved in July 2015 for six coastal states: Goa, Gujarat, Karnataka, Kerala, Maharashtra, and West Bengal. The project was initially scheduled to conclude by March 31, 2020, but was finished in March 2023 with an outlay of ₹ 1806.84 crore (Disaster Management Division, 2025).

National Clean Air Programme (NCAP): National Clean Air Programme was commenced in January 2019 to tackle air pollution in 131 cities across 24 states and union territories (The Ministry of Environment, Forest and Climate Change, 2025a). The government has allocated significant funds under the National Clean Air Programme (NCAP). For non-attainment cities, ₹ 2216.23 crore has been granted for 2019-20. Additionally, ₹ 11020.55 crore has been granted to 42 million-plus urban areas under the 15th Finance Commission Grant for 2020-21. It aims to reduce particulate matter (PM10) concentrations by 40% or meet national air quality standards by 2025-26, engaging all stakeholders in the process. It was observed that out of 130 cities, 95 cities seen a decrease in PM10 concentration in 2023-24 compared to 2017-18.

Compensatory Afforestation Fund Management and Planning Authority (CAMPA): CAMPA funds are dedicated to restoring and protecting forest ecosystems through measures like compensatory afforestation, forest fire control, and biodiversity enrichment. It promotes the creation of nurseries for locally suitable plant species, and the CAF Act, 2016, provides a framework for monitoring and evaluating its activities (Ministry of Environment, Forest and Climate Change, 2025b). The CAMPA funds Annual Plan of Operation (APO) granted for the year 2021-22 was Rs 8980.04 crore.

Table 5: India's initiatives for achieving the targets of SDG 13

Sr. No.	Government of India Schemes	Year
1	National Action Plan on Climate Change (NAPCC)	30th June 2008
2	National Cyclone Risk Mitigation Project (NCRMP)	25th April 2011
3	National Clean Air Programme (NCAP)	January 2019
4	Compensatory Afforestation Fund Management and Planning Authority (CAMPA)	April 2004

Source: NITI Aayog (2024)

Paris Agreement and India's NDCs

On December 12, 2015, the Paris Agreement was adopted by 195 countries, marking a significant global commitment to addressing climate change, effective November 4, 2016 (UNFCC, 2025). The Paris Agreement was adopted during United Nations Climate Change Conference (COP21) held at Paris. The Paris Agreement (Article 4, paragraph 9) stipulates that every country must communicate its Nationally Determined Contributions (NDCs) every five years. India's NDCs are as follows:

- LIFE – Lifestyle for Environment initiative, as a main approach to combat climate change
- Pursue a cleaner and more climate-resilient path to development, diverging from the conventional approach followed by others with similar economic profiles
- Cut GDP's emissions intensity by 45% from 2005 levels by the year 2030
- Generate 50% of cumulative electric power by 2030 from renewable sources assisted by technology transfer and low-cost global financing, such as the Green Climate Fund
- Boost carbon sink capacity by 2.5-3.0 billion tonnes of CO_2 equivalent through additional forest and tree cover

- Enhance adaptation to climate change by boosting investments in key sectors, including agriculture, water resources, and disaster management, particularly in vulnerable regions
- Access domestic and additional international funding, particularly from developed countries, to fill the resource gap and implement climate change mitigation and adaptation actions
- Extend capacities and develop a supportive framework in India, and globally, to enable the rapid transfer and development of climate technologies, and collaborative R&D for future breakthroughs

5. Findings and Discussion

World has transitioned from achieving the targets of Millennium Development Goals (MDGs) to a broad based, inclusive and comprehensive Sustainable Development Goals (SDGs). MDGs have 8 distinct goals while SDGs comprise 17 goals. SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), SDG 11 (Sustainable Cities and Communities), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), and SDG 15 (Life on Land) are exclusively associated with climate change, energy efficiency and sustainability.

India has made significant progress in energy access, achieving 100% electricity access by 2023 and improving access to clean cooking fuels. While renewable energy consumption has stagnated, India has reduced its primary energy intensity and increased its renewable energy capacity. International financial support for clean energy in India has also grown, from $2.4 billion to $2.99 billion. However, major concern is the coal based electricity generation which is posing a threat to climate change and emission targets. India's per capita CO_2 emissions from fossil fuels and cement production have risen from 2016 to 2023. Additionally, GHG emissions linked to imports have also increased between 2016 and 2024. To promote sustainable development, ensure energy efficiency and combat climate change, the Indian government has rolled out various schemes and initiatives aligned with the Sustainable Development Goals (SDG 7 and SDG 13) including SAUBHAGYA Scheme, Ujjwala Scheme, UJALA, Green Energy Corridors (GEC), Bio-Energy Programme, National Green Hydrogen Mission, EMPS, FAME Scheme, Electric Mobility Promotion Scheme, National Action Plan on Climate Change (NAPCC), National Cyclone Risk Mitigation Project (NCRMP), National Clean Air Programme (NCAP), and CAMPA. Moreover, India's ratification of the Paris Agreement underscores its commitment to lowering greenhouse gas emissions and shifting towards a sustainable, renewable energy-based future, showcasing its dedication to addressing climate change and promoting sustainability. However, India is lagging behind its renewable energy goals, having installed only 7.3 GW of solar rooftop panels against a 2022 target of 40 GW (India targets 300 GW of Solar Power by 2030). The country has fall short of its 100 GW installed solar capacity target by achieving only 63.3 GW (missed by almost 37%). India's goal of generating 500 GW of renewable energy by 2030 appears challenging to meet. Moreover, Climate Action (SDG 13) is a major concern, with a deteriorating trend indicating India's climate efforts are not sufficient. Without significant policy changes and robust implementation, India is likely to miss the 2030 SDG targets.

6. Conclusion and Recommendations

India is committed to achieve the targets of the Sustainable Development Goals including SDG 7 and SDG 13 which are specifically related to energy efficiency and the climate change. Developing countries, including India, face a pressing challenge of reducing their vulnerability to climate change while navigating the costs and economic implications of mitigation and adaptation strategies. India's energy landscape has improved, with notable achievements in electricity access and clean cooking fuels. Renewable energy capacity has also increased, and international funding for clean energy has risen. However, progress in renewable energy consumption has been slow. India's growing emissions, projected to peak in future, may hinder its energy transition goals. India has moderately improving in SDG 7; India's Climate Action (SDG 13) is a matter of concern, suggesting that current efforts to combat climate change are insufficient. A drastic policy overhaul and vigorous execution are needed to meet the targets by 2030 of Sustainable Development Goals. To achieve a climate-resilient future, India needs to adopt a forward-thinking approach, prioritizing green energy, sustainable forest management, and collaborative efforts between local communities and government.

A strong political will, coordinated governance, robust frameworks, and access to funding and technology cooperation are needed for proficient climate action. Specific targets, cross-sector coordination, and inclusive decision-making processes are crucial for India. Regulatory and economic tools can drive significant emissions cuts and boost resilience when widely implemented. Effective climate policy requires strong financial, political, and policy leadership, as well as regional, national, and global cooperation. Moreover, climate-resilient growth and development thrives on

holistic understanding and expertise and strategies for climate mitigation and adaptation for sustainable development and prosperous future for people and the planet.

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