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Policy Framework For Climate Change In India

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Abstract

India's policy framework for climate change is multifaceted, addressing both mitigation BY reducing greenhouse gas emissions as well as adaptation by building resilience to climate impacts. It is aligned with international agreements such as the **Paris Agreement** but also incorporates domestic challenges of development, energy security, and poverty alleviation. The current paper gives an overview of the major policies and initiatives within India's climate change framework as well as the challenges in implementation and outcome.

Keywords: Climate change, green house gases, policies etc.

Introduction

India is susceptible to wide scale climate change-related risks due to its various climate zones, topography, and ecosystems. The Global Climate Risk Index 2021[1] calls India the 7th most affected nation due to climate change. As per the State of India's Environment in Figures 2022[2] India reported 280 heatwave days (the highest in 12 years) between the period 11th March – 18th May 2022. Climate change exposes vulnerable communities to dangers like disasters, diseases, loss of livelihoods, crop failures, poverty and displacement, threatening loss of biodiversity and food security[3]. International pressure for urgent climate action heightened when the first legally binding international treaty, the Kyoto Protocol containing the GHG reduction targets, came into effect in 2005. Thereafter, increased emphasis was laid upon domestic policy for climate change both at the national and state government levels along with private and civil society groups[4] .

Here is an overview of the major policies and initiatives within India's climate change framework:

1. National Action Plan on Climate Change (NAPCC)

Launched on 30th June 2008, the NAPCC is India's overarching strategy for climate action. It includes **eight national missions** focused on different aspects of climate change:

- **National Solar Mission**: Promotes the use of solar energy, aiming to install 100 GW of solar capacity by 2022 (target revised to 280 GW by 2030).
- **National Mission for Enhanced Energy Efficiency (NMEEE)**: Improves energy efficiency across industries and households through initiatives like the Perform, Achieve, and Trade (PAT) scheme.
- **National Mission on Sustainable Habitat**: Promotes urban planning, waste management, and energy-efficient buildings.
- **National Water Mission**: Focuses on water conservation and sustainable water management.
- **National Mission for Sustaining the Himalayan Ecosystem**: Aims to protect the fragile Himalayan environment from climate impacts.
- **National Mission for a Green India**: Seeks to protect, restore, and enhance India's forests.

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- **National Mission for Sustainable Agriculture**: Promotes climate-resilient farming practices.
- **National Mission on Strategic Knowledge for Climate Change**: Focuses on research, education, and information dissemination related to climate science and adaptation.

2. State Action Plans on Climate Change (SAPCCs)

Each Indian state and union territory has developed a **State Action Plan on Climate Change** aligned with the NAPCC but tailored to local climate challenges. These plans focus on state-specific issues like drought management, water conservation, and biodiversity protection.

3. India's International Commitments

- **Paris Agreement** (2015): India committed to reduce the emissions intensity of its GDP by 33-35% from 2005 levels by 2030, increase the share of non-fossil fuel-based electricity to 40%, and create an additional carbon sink of 2.5 to 3 billion tonnes of CO_2 equivalent through forest cover by 2030.
- **Glasgow Climate Pact** (COP26, 2021): Prime Minister Narendra Modi announced the **Panchamrit** strategy, with targets including achieving **net-zero emissions by 2070** and increasing renewable energy capacity to 500 GW by 2030.

4. Energy and Emissions Policies

- **National Green Hydrogen Mission** (2023): India is working to establish itself as a global hub for the production and export of green hydrogen.
- **Perform, Achieve, and Trade (PAT) Scheme**: Focuses on improving energy efficiency in industries through market-based mechanisms.
- **FAME Scheme**: Incentivizes the adoption of electric vehicles, reducing reliance on fossil fuels in the transport sector.
- **Coal Cess (Clean Environment Cess)**: A tax on coal production aimed at generating funds for renewable energy projects.

5. Adaptation and Disaster Management

- **National Adaptation Fund for Climate Change (NAFCC)**: Provides funding for projects focused on building resilience in vulnerable communities.
- **National Disaster Management Plan** (NDMP): Includes climate change adaptation as part of disaster preparedness and risk reduction efforts.

6. Forest and Biodiversity Management

- **Compensatory Afforestation Fund Act (2016)**: Provides financial resources for afforestation and forest conservation efforts.
- **National Biodiversity Action Plan**: Focuses on conserving biodiversity in the context of climate change, especially in ecologically sensitive areas like forests and wetlands.

7. Carbon Pricing and Market Mechanisms

- India is exploring **carbon trading mechanisms**, including a **domestic carbon market** to encourage industries to reduce emissions cost-effectively.

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- **India's Energy Conservation Act** was amended in 2022 to include provisions for carbon markets.

8. Urban and Rural Initiatives

- **Smart Cities Mission**: Focuses on climate-resilient urban infrastructure, such as energy-efficient buildings, public transport, and renewable energy.
- **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)**: Has integrated climate change resilience measures like water conservation, drought-proofing, and afforestation.

9. International Collaborations

India is part of various international coalitions, such as:

- **International Solar Alliance (ISA)**: A coalition of solar resource-rich countries.
- **Coalition for Disaster Resilient Infrastructure (CDRI)**: An international partnership that seeks to promote the resilience of infrastructure to climate-related disasters.

10. Financing and Green Bonds

QUANTIFIED GOALS	NON-QUANTIFIED GOALS
To reduce the emissions intensity of its GDP by 45 per cent by 2030, from the 2005 level.	To put forward and further propagate a healthy and sustainable way of living based on traditions and values of conservation and moderation, including through a mass movement for 'LIFE'– 'Lifestyle for Environment' as a key to combating climate change.
To achieve about 50 per cent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030, with the help of the transfer of technology and low-cost international finance including from the Green Climate Fund (GCF).	To adopt a climate-friendly and cleaner path than the one followed hitherto by others at the corresponding level of economic development.
To create an additional carbon sink of 2.5 to 3 billion tonnes of CO2 equivalent through additional forest and tree cover by 2030.	To better adapt to climate change by enhancing investments in development programmes in sectors vulnerable to climate change, particularly agriculture, water resources, the Himalayan region, coastal regions, and health and disaster management.
	To mobilize domestic and new & additional funds from developed countries to implement the above mitigation and adaptation actions in view of the resource required and the resource gap.

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	To build capacities, create a domestic framework and international architecture for quick diffusion of cutting-edge climate technology in India and joint collaborative R&D for such future technologies.

India is working on mobilizing **climate finance** through green bonds, and institutions like the **Green Climate Fund** to support climate mitigation and adaptation projects. The **Sovereign Green Bonds** initiative helps in raising funds for government-backed green infrastructure projects.

Current Status:- On 3 August 2022, the Union Cabinet under the Chairmanship of the Prime Minister passed the updated Nationally Determined Contribution (NDC) for consideration by the United Nations Framework Convention on Climate Change (UNFCCC) under the Paris Agreement, to reach India's goal of net zero emissions by 2070. This was a translation of the Panchamrit (five nectar elements) – India's action plan against climate change, announced at COP 26 in Glasgow, United Kingdom.

Source: PIB, Government of India

Current Challenges In India's Climate Policy:- India's climate policy faces significant challenges in balancing its developmental goals with climate action. The country is heavily dependent on fossil fuels, particularly coal, for its energy needs, complicating efforts to reduce emissions. Financial constraints and insufficient climate financing further hinder the transition to clean energy and climate adaptation projects. While India has made strides in renewable energy, slow progress in infrastructure, technology gaps, and grid integration present hurdles. Vulnerability to climate impacts, especially for marginalized communities and the agriculture sector, exacerbates the need for stronger resilience measures.

Energy Dependency: India relies on coal for about 70% of its electricity generation. In 2021, it consumed around 968 million tonnes of coal, making it the world's second-largest coal consumer after China.

Renewable Energy Targets: India set an ambitious goal of achieving 175 GW of renewable energy capacity by 2022, including 100 GW from solar power. By July 2023, the installed renewable energy capacity was around 172 GW, falling slightly short of the target, though progress is ongoing[6,7,8].

Greenhouse Gas Emissions: India is the third-largest emitter of CO_2, responsible for about 2.65 billion tonnes of emissions in 2021. Despite this, India's per capita emissions remain low at 1.9 tonnes per person, compared to the global average of 4.5 tonnes[9].

Financial Needs: To meet its Paris Agreement commitments, India estimates it will need around $2.5 trillion by 2030. However, international climate financing has been slow, with developed countries falling short of their $100 billion annual commitment to developing nations[7].

Climate Vulnerability: India faces increasing climate impacts, such as extreme weather events. In 2021, India experienced extreme weather events on 240 days, with floods, heatwaves, and cyclones causing an estimated economic loss of $87 billion.

Additionally, coordination issues between central and state governments and the need for public awareness and behavioural change add to the complexity of implementing climate policies effectively.

CONCLUSION:- In 2020, India was the third biggest emitter of GHG_S[9] . As per climate analysts, India will not hit the peak of emissions by 2030, but instead, achieve the same between 2040-2045. This trend may create

hindrance for India's energy transition plans for the second half of this century. A pragmatic and far-sighted approach is necessary. Coal, a major player in India's energy sector, needs to be regulated and a shift towards green energy must be made to assist India in its renewable energy conversion goal. Forests which are carbon sinks need sustainable management from cooperative efforts of local communities and government. Financial, political, and policy leadership lies at the bottom of all the recommendations for a thriving climate change policy for India. Regional, state, national, and global involvements are the most effective keys for India to meet its aspirations of a climate resilient planet and achieve long-term sustainable growth.

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