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TACKLING CLIMATE CHANGE IN INDIA

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ABSTRACT

Climate change happens when the average weather conditions of a place change over a period of years. Basically, it occurs due to excessive use of fossil fuels, which burn and release greenhouse gases which in turn trap the Sun's heat and cause our planet's temperature to rise. Climate change can lead to extreme weather events which threaten lives and livelihoods. Countries understood that climate change could be managed only by concerted efforts and this made them arrive at a landmark international treaty called The Paris Climate Agreement; wherein it was pledged to try to limit global warming to 1.5°C. India, being a developing nation faced a big dilemma, whether to give preference to environment or to prioritize development. Keeping in view the delicate balance required, the governments in India took initiatives of two types – mitigation and adaptation and put these in place through different plans and policies, energy sector interventions, industrial sector schemes, increasing green cover and financial tools. The UN Environment Program's Emission Gap Report of 2024 , mentioned India as the only major country to be on track to achieve its targets set out in the Paris climate agreement.

Keywords: Climate change, Paris Agreement, Green funds, greenhouse gases, climate legislation. Objective: To understand the concept and tackling of climate change in India. Research Methodology: Paper is based on secondary data taken from websites, articles, research papers and books

1. INTRODUCTION

Climate is the average weather of a place over many years and climate change occurs when there is a shift in those average conditions. The rapid global climate change over last many years has been caused by humans using oil, gas and coal for their homes, factories and transport. Basically, when these fossil fuels burn, they release greenhouse gases and these gases trap the Sun's heat and consequently cause our planet's temperature to rise. It is estimated that the world is now about 1°C warmer than it was in the 19th Century[1]– and the amount of CO2 in our atmosphere has risen by almost 50%[2]. Global climate change causes extreme weather events which threaten lives and livelihoods. With Global climate change, some regions can become uninhabitable, like farmlands turning into desert while in other regions, the opposite could happen, like extreme rainfall causing flooding.

Countries realized that climate change could only be tackled by working together. Therefore, 196 countries convened at the21st 'Conference of the Parties' (COP21) on 12 December 2015 in Paris, under the 1992 United Nations Framework Convention on Climate Change (UNFCCC)and in a landmark agreement they pledged to try to keep global warming to 1.5°C[3]. This, the Paris Agreement is a legally binding international treaty on climate change and became effective from

[1] https://www.climate.gov › *understanding-climate*

[2] https://climate.nasa.gov

[3] https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

04 November 2016.Every five years, each country is expected to submit an updated national climate action plan - known as Nationally Determined Contribution, or NDC.In their NDCs, countries inform actions they will take to reduce their Greenhouse Gas emissions in order to reach the goals of the Paris Agreement.
During 1 to 12 November 2021 another UN climate change conference called COP26 was held at Glasgow. In this summit participating countries stated their carbon reduction plans for 2030 and many countries also pledged to get to 'net zero' by 2050. This meant reducing greenhouse gas emissions as much as possible and balancing out remaining emissions by absorbing an equivalent amount from the atmosphere.

Modalities of the Climate Policy

Many governments hesitated to adopt climate change policy because of the perception that such a policy would slow economic growth and this brought into focus,the money part of managing climate change. Keeping in mind the need for climate financing, the Paris Agreement called for "making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development."; This meant that in addition to reducing emissions, making infrastructure more resilient, avoiding costly repairs and minimizing the wide-ranging consequences of natural disasters the Paris Agreement also emphasized the transparency and need for enhanced financial support.[4]
The Convention (The United Nations Framework Convention on Climate Change - UNFCCC) agreed to arrange financial assistance for developing country Parties from Developed country Parties with more resources. To facilitate this, the Convention set up a financial mechanism to provide funds to developing country Parties, through existing international entities. At COP 17 Parties decided thata Green Climate Fund (GCF) should be the operating entity of the Financial Mechanism of the Convention.[5]In response, developed countries agreed to jointly mobilize appx Rs 10,000 crores per year by 2020, from a variety of sources, and thus address the Climate Policy needs of developing member countries.
From India, the Ministry of Environment, Forests and Climate Change (MoEFCC) was selected as India's Nationally Designated Authority (NDA) for the GCF. The MoEFCC then made IDFC Bank, IEISL, SIDBI, Yes Bank and NABARDA accredited Entities partners to implement projects. These Accredited Entities source financial resources from GCF for India.

Paris Agreement and India

Under the Paris agreement, India agreed to reduce its greenhouse gas emissions intensity to 35% by 2030, increase non-fossil fuel power capacity to 40% in 2015 and substantially boost forest cover to reduce carbon dioxide.
This was readily agreed to, since India is susceptible to climate change impacts in many ways:

a. Its 7500 km long coastline is prone to various disasters like cyclone, coastal flooding, storm surges and heavy rainfall. The rise in the sea temperature and level increases the frequency of such hazards endangering the life and livelihood of the coastal population.
b. Phenomenon such as El Nino could increase the vagaries of the monsoon worsening the agricultural crisis.
c. Loss of biodiversity could put the livelihood of the forest dependent and hill communities in danger.
d. Increased disease outbreaks like Malaria and Dengue, heat waves could aggravate urban heat island effect and water scarcity compelling people to consume polluted water could increase mortality and morbidity.

Several environmental legislations existed in India before 1947, but after the UN Conference on the Human Environment at Stockholm in 1972; the National Council for Environmental Policy and Planning was set up in 1972 under the Department of Science and Technology. This National Council in 1985 was renamed as the Ministry of Environment and Forests (MoEF) and is the apex administrative body in the country for regulating and ensuring environmental protection. India signed the United Nations Framework Convention on Climate change (UNFCCC) on June 10, 1992. It also ratified the Kyoto Protocol on August 26, 2002 and hosted the eighth Conference of the UNFCCC on October 2002 in Delhi. Thereafter, the Green Investment Congress India 2010 conference on 20th and 21st April held in Mumbai, was crucial because it brought together financers, bankers, fund managers, project developers, manufacturers and entrepreneurs; identified concerns, generated debate and through practical examples and case studies discussed issues that required to be resolvedin order to manage global climate change.

[4]https://unfccc.int/topics/climate-finance

[5]https://unfccc.int/process/bodies/funds-and-financial-entities/green-climate-fund

Initiatives taken to tackle climate change in India

Keeping in view the delicate balance required between environment and development, the governments in India took initiatives that are classified into two broad categories:

- **Mitigation:** that is reducing the emission of greenhouse gases causing the rise in temperature
- **Adaptation:** that is building the capacity of the community through financial, technical and other infrastructural support to minimize the losses due to the climate change.

These initiatives put in place checks and balances, through plans and policies, energy sector interventions, industrial sector schemes, increasing green cover and financial tools.

A. Plans and Policies: These broadly include -

1. National Action Plan on Climate Change (NAPCC) comprising of[6]
   - National Solar Mission (MNRE) – for development of solar technologies.
   - National Mission for Enhanced Energy Efficiency (MoP)– for reduction of energy consumption in industries; trading energy-savings certificates
   - National Mission on Sustainable Habitat (MoHUA) – for better waste management; power from waste; extending energy conservation building code; incentivizing fuel-efficient vehicles; energy efficiency as part of urban planning; public transport promotion
   - National Water Mission (MoWR) – for improving water use efficiency
   - National Mission for Sustaining the Himalayan Ecosystem (MoS&T) – to conserve biodiversity, forest cover, and glaciers of the Himalayan region
   - National Mission for "Green India" (MoEFCC) – for expanding forest covers.
   - National Mission for Sustainable Agriculture (MoA) – for developing climate-resilient crops and sustainable agricultural practices.
   - National Mission on Strategic Knowledge Platform for Climate Change (MoS&T) – for facilitating private sector participation in the technologies for the adaptation and mitigation
2. Environmental Impact Assessment (EIA)[7]
   - To determine the likely environmental, social, and health effects ofproposed major projects like infrastructure, thermal and nuclear power, industries, mining etc, so that there is awareness about the consequences of such decisions.
   - Industries are categorized into red, orange, green and white according to their impact to maintain balance between regulation and ease of doing business. EIA approval is not required for white industries.
3. Eco Sensitive Zones (ESZs)[8]
   - Protected Areas such as National Parks and Wildlife Sanctuaries are called ECZs. The objective is to regulate and manage the activities that threaten the forest areas.
4. Other environment related laws:
   These include old regulations, like Environment (Protection) Act, 1986, Forest (Conservation) Act, 1980, Wildlife Protection Act, 1972, Water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act, 1981 and The Indian Forest Act, 1927which require updating for better implementation

B. Energy Sector Interventions:are regulations for mitigating GHG emissions by improving energy efficiency and adopting cleaner sources of energy. These include:

1. Pradhan Mantri Ujjwala Yojana (PMUY)[9]
   - to provide LPG connections to reduce dependence on the polluting cooking fuel

[6]https://dst.gov.in/climate-change-programme

[7]https://www.cseindia.org/understanding-eia-383

[8] https://www.drishtiias.com/to-the-points/paper3/eco-sensitive-zones

[9]https://www.india.gov.in/spotlight/pradhan-mantri-ujjwala-yojana#tab=tab-1

2. Energy Conservation Building Code (ECBC), 2017[10]
   - to reduce carbon growth by integrating the renewable energy sources in the design of the buildings.
3. Green Rating for Integrated Habitat Assessment (GRIHA)[11]
   - To evaluate the environmental performance of a building and provide a national rating system for green buildings.
4. Unnat Jyoti by Affordable Lighting for All (UJALA)
   - To promote efficient lighting andcreate awareness on use of efficient equipment.
5. Renewable energy development
   - To meet the target of renewable energy capacity by focusing onSolar cities[12], Ultra mega solar parks[13], National Biofuel Policy[14], National Offshore Wind Energy Policy[15], and Renewable Purchase Obligation[16].
6. Nuclear power program

To enhance production of nuclear power from current production level of about 3% [17]. The Govt recently cleared 10 nuclear power reactors with a net capacity of 7000 MW[18] with a view to reduce load on coal sector.

C. Industrial Sector Schemes with objective to reduce emissions: These include

1. Reducing emissions from the automobiles by implementing:
   i) National Electric Mobility Mission Plan (NEMMP): to promote hybrid and electric vehicles in the country and reduce emissions from the vehicles running on the hydrocarbons. [19]
   ii) Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles (FAME): to support hybrid/electric vehicles and its manufacturing eco-system.
   iii) Adoption of the BS-VI norms: to reduce emissions from the vehicles based on hydrocarbons.
2. Zero Defect and Zero Effect (ZED):
   i) To provide incentives to MSMEs to adopt Energy Efficient manufacturing. [20]

D. Increasing the green cover: To create more carbon sinks; that can absorb carbon dioxide from the atmosphere; in the following manner:

1. River inter-linking program – to mitigate the problems due to drought and floods,to increase area under irrigation and to create inland waterways that will reduce burden on roads and railways.
2. National Green Highway Mission: to plant trees along the national highway by demarcating 1% of project cost thereby reducing noise pollution, storing CO2 and providing livelihood opportunities to the communities nearby the highways

[10]https://www.grihaindia.org/sites/default/files/pdf/ECBC-Code.pdf

[11]https://igbc.in/igbc/redirectHtml.htm?redVal=showratingSysnosign

[12]https://hareda.gov.in/solar-cities/

[13]https://en.wikipedia.org/wiki/Ultra_Mega_Solar_Power_Projects

[14]https://byjus.com/free-ias-prep/national-policy-on-bio-fuels/

[15]https://mnre.gov.in/wind/offshore-wind

[16] https://mahaurja.com/meda/en/programmes/rporec/rpo

[17]https://en.wikipedia.org/wiki/Nuclear_power_in_India

[18] https://www.livemint.com/news/india/ongoing-work-at-10-nuclear-reactors

[19]https://policy.asiapacificenergy.org/node/2663

[20] https://msme.gov.in/zero-defect-zero-effect

3. CAMPA (Compensatory Afforestation Management and Planning Authority) Act: to recover afforestation and other costs from industrial projects that require diversion of forest land for any non-forest purpose.

E. <u>Financial tools adopted:</u> these include incentives or punitive measures to ensure the desired changes. Prominent tools being:

1. Polluter Pays Principle
   To make a person or a company liable to pay for the damages done to the environment and community due to their activities.[21]
2. Carbon tax
   To fund innovative projects on clean energy'; and to incentivize consumption of cleaner fuel; by increasing consumption cost of coal.
3. Energy Saving Certificates (ESCerts):
   Under the 'Perform, Achieve and Trade (PAT)' mechanism, energy intensive industries are assigned energy efficiency targets. Any industry achieving the efficiency in the excess of their target can trade that excess on Indian energy exchange and monetize it
4. Green Bonds
   To allow the industry to raise capital from the market for funding green projects. It helps raise low-cost debt to meet the large fund requirement for the renewable energy projects.
5. National Adaptation Fund for Climate Change (NAFCC)
   Toassist States and UTs in meeting the cost of adaptation.
6. National Clean Energy Fund (NCEF)
   For funding R&D projects in clean energy technologies in public or private sector.

India therefore has a wide range of legislation relating to climate and energy.

CONCLUSION

Climate Change, is a consequence of carbon intensive activities since the industrial revolution and as per the IPCC reports, has already warmed the planet to about 1°C since the pre-industrial era. The changed weather patterns, unpredicted rainfalls clearly show the impacts of climate change. Although countries under the Paris Agreement have made concerted efforts, various reports point out that the INDCs (intended nationally determined contributions) submitted by the countries under Paris agreement are grossly inadequate to contain the temperature rise within the desirable limit.

India in its efforts to ensure a clean energy future for its people launched the National Action Plan on Climate Change (NAPCC) in the year 2008 having eight national missions. The National Mission for Enhanced Energy Efficiency (NMEEE) itself under NAPCC consists of programmes having climate change mitigation attributes. The PAT scheme under NMEEE has helped in avoiding about 30 MTs of CO2 and it is envisaged that by 2020, another 30 MTs of CO2 emission could be avoided.

According to the UN Environment Program's Emission Gap Report[22], India is the only major country to be on track to achieve its targets set out in the Paris climate agreement.

It is statistically known that each new law reduces annual carbon dioxide emissions by 0.8% in the short term and by 1.8% in the long term[23]and countries that have stronger ability to implement these laws see bigger falls in emissions; which implies that better implementation of regulations will definitely see India keeping its commitments made in The Paris Climate Agreement.

[21]https://thefactfactor.com/facts/law/civil_law/environmental_laws/polluter-pays-principle/1503/

[22]https://www.unep.org/resources/emissions-gap-report-2024

[23]https://www.sciencejournalforkids.org/articles/how-well-do-climate-laws-help-reduce-global-warming/