
Beyond Emissions: Immediate Actions And Long-Term Solutions For Climate Change Resilience

Amoolya N Prasad¹ & Mohith H.M²

ABSTRACT:

This research examines the urgent need for a dual approach to climate change resilience, combining immediate actions with long-term solutions. It highlights the critical role of policy interventions, community engagement, and renewable energy transitions in mitigating greenhouse gas emissions. The study emphasizes the importance of international cooperation and ambitious Nationally Determined Contributions (NDCs) to achieve global climate goals, particularly in light of the disproportionate emissions from major countries. By integrating sustainable development principles with innovative technologies, this work proposes a comprehensive framework that not only addresses current climate challenges but also promotes economic growth and social equity. Additionally, it explores the significance of ecosystem restoration, circular economy practices, and green infrastructure investments as essential components for long-term climate resilience. Ultimately, this research aims to provide actionable insights for policymakers and stakeholders, fostering a collaborative effort to secure a sustainable future in the face of an escalating climate crisis. This research addresses both immediate and long-term strategies to mitigate climate change impacts, emphasizing the urgency of integrated action. Immediate strategies include implementing climate adaptation plans, community engagement initiatives, accelerating renewable energy adoption, and establishing carbon pricing mechanisms. These actions aim to reduce vulnerability, foster resilience, and shift away from fossil fuels. Long-term strategies focus on sustainable development, ecosystem restoration, technological innovation, and green infrastructure development, providing a foundation for enduring climate resilience. The paper also highlights the critical role of international cooperation, public-private partnerships, and policy frameworks in supporting low-carbon economies and sustainable growth.

¹ Student of IX Semester B.A.LL.B, JSSLC, Mysuru

² Student of IX Semester B.A.LL.B, JSSLC, Mysuru

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UNDERSTANDING CLIMATE CHANGE AND ITS IMPACTS:

Climate change refers to long-term shifts in temperatures and weather patterns. Such shifts can be natural, due to changes in the sun's activity or large volcanic eruptions. But since the 1800s, human activities have been the main driver of climate change, primarily due to the burning of fossil fuels like coal, oil and gas.

The main greenhouse gases that are causing climate change include carbon dioxide and methane. These come from using gasoline for driving a car or coal for heating a building, for example. Clearing land and cutting down forests can also release carbon dioxide. Agriculture, oil and gas operations are major sources of methane emissions. Energy, industry, transport, buildings, agriculture and land use are among the main sectors causing greenhouse gases.

In a series of UN reports, thousands of scientists and government reviewers agreed that limiting global temperature rise to no more than 1.5°C would help us avoid the worst climate impacts and maintain a livable climate. Yet policies currently in place point to up to 3.1°C of warming by the end of the century.

The emissions that cause climate change come from every part of the world and affect everyone, but some countries produce much more than others. The six biggest emitters (China, the United States of America, India, the European Union, the Russian Federation, and Brazil) together accounted for more than half of all global greenhouse gas emissions in 2023. By contrast, the 47 least developed countries accounted for only 3 per cent of global greenhouse gas emissions.³

IMMEDIATE STRATEGIES TO PREVENT CLIMATE CHANGE:

Policy Interventions :

- Climate Adaptation Planning: Governments should implement comprehensive climate adaptation plans that assess risks from climate-related hazards. This includes developing strategies to mitigate impacts on communities and integrating these plans

³ <https://www.un.org/en/climatechange/what-is-climate-change>

into existing emergency management frameworks^{4 5}

- Investment in Resilience: Policies must prioritize investments in sustainable infrastructure that can withstand climate impacts. This includes retrofitting existing structures and ensuring new developments are designed with climate resilience in mind⁶

Community Engagement :

- Building Local Capacity: Engaging communities in disaster preparedness and response is crucial. Programs that train local populations to identify risks and take proactive measures can significantly reduce vulnerability during extreme weather events⁷⁸
- Awareness Campaigns: Raising awareness about climate risks and promoting community-based preparedness initiatives can empower individuals to take action, thereby enhancing overall community resilience.⁹

Renewable Energy Transition:

- Accelerating Renewable Energy Adoption: Transitioning to renewable energy sources like solar, wind, and hydroelectric power is essential for reducing greenhouse gas emissions. This shift not only contributes to emission reductions but also fosters energy independence¹⁰
- Support for Clean Technology: Policies should incentivize the development and deployment of clean technologies that facilitate the transition to a low-carbon economy. This includes funding for research and development in renewable energy technologies¹¹

Carbon Pricing and Its Effects on Emissions Reduction:

- Implementation of Carbon Pricing: Establishing carbon pricing mechanisms, such as carbon taxes or cap-and-trade systems, can create economic incentives for businesses to reduce emissions. By putting a price on carbon, it encourages companies to innovate and invest in cleaner technologies¹²
- Impact on Emissions: Evidence suggests that effective carbon pricing can lead to

⁴ <https://eri.iu.edu/erit/implications/disaster-preparedness-and-emergency-response.html>

⁵ chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.fema.gov/sites/default/files/documents/fema_climate-adaptation-planning-guide_2024.pdf

⁶ <https://www.undrr.org/implementing-sendai-framework/drr-focus-areas/climate-action-and-disaster-risk-reduction>

⁷ <https://www.who.int/teams/environment-climate-change-and-health/climate-change-and-health/country-support/building-climate-resilient-health-systems/emergency-preparedness-and-management>

⁸ chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.icrc.org/sites/default/files/external/doc/en/assets/files/other/climatechange_report_final_eng.pdf

⁹ <https://www.who.int/teams/environment-climate-change-and-health/climate-change-and-health/country-support/building-climate-resilient-health-systems/emergency-preparedness-and-management>

¹⁰ <https://www.undrr.org/implementing-sendai-framework/drr-focus-areas/climate-action-and-disaster-risk-reduction>

¹¹ <https://www.undrr.org/implementing-sendai-framework/drr-focus-areas/climate-action-and-disaster-risk-reduction>

¹² <https://www.undrr.org/implementing-sendai-framework/drr-focus-areas/climate-action-and-disaster-risk-reduction>

significant reductions in emissions by making fossil fuel consumption more expensive compared to renewable alternatives.¹³

Emergency Response Plans:

- Comprehensive Emergency Preparedness: Developing emergency action plans (EAPs) that outline specific procedures for responding to climate-related disasters is critical. These plans should include risk assessments, resource allocations, and training for community members¹⁴¹⁵
- Integration with Disaster Risk Reduction: Emergency response strategies must be integrated with disaster risk reduction efforts. This involves creating synergies between climate adaptation measures and emergency management practices to enhance community resilience against climate impacts¹⁶

LONG TERM STRATEGIES TO PREVENT CLIMATE CHANGE:

To effectively combat climate change in the long term, a comprehensive approach is necessary. This includes integrating the Sustainable Development Goals (SDGs), promoting technological innovations, restoring ecosystems, implementing a circular economy, developing green infrastructure, and establishing long-term policy frameworks.

Sustainable Development Goals (SDGs):

- Goal 13: Climate Action - This goal emphasizes urgent action to combat climate change and its impacts. It calls for integrating climate measures into national policies and planning, improving education and awareness on climate issues, and enhancing resilience to climate-related hazards¹⁷¹⁸¹⁹
- Capacity Building: Strengthening the capacity of local communities, particularly marginalized groups such as women and youth, is crucial for effective climate planning and management. This ensures that diverse perspectives are included in climate action efforts²⁰²¹

Technological Innovations:

- Investment in Clean Technologies: Advancements in renewable energy technologies,

¹³ <https://www.undrr.org/implementing-sendai-framework/drr-focus-areas/climate-action-and-disaster-risk-reduction>

¹⁴ <https://www.thorntontomasetti.com/news/climate-action-emergency-preparedness>

¹⁵ chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.fema.gov/sites/default/files/documents/fema_climate-adaptation-planning-guide_2024.pdf

¹⁶ <https://www.undrr.org/implementing-sendai-framework/drr-focus-areas/climate-action-and-disaster-risk-reduction>

¹⁷ <https://www.unwomen.org/en/news/in-focus/women-and-the-sdgs/sdg-13-climate-action>

¹⁸ <https://www.un.org/sustainabledevelopment/climate-change/>

¹⁹ <https://sdgs.un.org/goals/goal13>

²⁰ <https://www.unwomen.org/en/news/in-focus/women-and-the-sdgs/sdg-13-climate-action>

²¹ <https://www.unep.org/topics/sustainable-development-goals/why-do-sustainable-development-goals-matter/goal-13-climate>

carbon capture and storage, and energy efficiency are vital. Governments and private sectors should invest in research and development to accelerate the deployment of these technologies.

- Smart Grids and Energy Storage: Developing smart grid technologies and improving energy storage solutions can enhance the efficiency of renewable energy systems, making them more reliable and accessible.

Ecosystem Restorations:

- Biodiversity Conservation: Protecting and restoring natural ecosystems such as forests, wetlands, and mangroves can enhance carbon sequestration while also providing resilience against climate impacts. These ecosystems play a critical role in maintaining biodiversity and supporting livelihoods.
- Sustainable Land Management: Implementing practices that restore degraded lands can improve soil health, increase agricultural productivity, and mitigate greenhouse gas emissions.

Circular Economy:

- Waste Reduction Strategies: Transitioning from a linear economy to a circular economy involves redesigning production processes to minimize waste. This includes recycling materials, reusing products, and reducing consumption to lower overall emissions.
- Sustainable Consumption Patterns: Promoting sustainable lifestyles through education and awareness can encourage individuals and businesses to adopt practices that reduce their environmental impact.

Green Infrastructure:

- Investment in Sustainable Infrastructure: Developing green infrastructure—such as green roofs, permeable pavements, and urban forests—can help cities manage storm water, reduce urban heat islands, and enhance air quality.
- Public Transportation Systems: Expanding public transportation options reduces reliance on fossil fuels while promoting sustainable urban development.

Long-Term Policy Framework:

- National Climate Policies: Establishing comprehensive national policies that commit to net-zero emissions by mid-century is essential. These policies should include clear targets for reducing greenhouse gas emissions across all sectors.

- International Cooperation: Global collaboration through agreements like the Paris Agreement is crucial for sharing resources, technology transfer, and financial support for developing countries to achieve their climate goals²²²³

INTERNATIONAL COOPERATION, AGREEMENTS, AND PUBLIC-PRIVATE PARTNERSHIPS (PPP) ON CLIMATE CHANGE:

1. United Nations Framework Convention on Climate Change (UNFCCC):

- Established in 1992, the UNFCCC provides a framework for international cooperation to combat climate change, emphasizing the need for collective action among nations.
- The annual Conference of the Parties (COP) meetings serve as platforms for nations to negotiate and enhance their commitments.

2. Kyoto Protocol:

- Adopted in 1997, this protocol set binding emission reduction targets for developed countries. It represented a significant step in formalizing international commitments to reduce greenhouse gases.²⁴
- The protocol faced challenges, particularly with major emitters like the United States not ratifying it, highlighting the complexities of achieving global consensus on climate action²⁵

3. Paris Agreement:

- Adopted in 2015, the Paris Agreement aims to limit global warming to well below 2°C above pre-industrial levels. It encourages countries to submit nationally determined contributions (NDCs) outlining their emission reduction targets.²⁶
- The agreement shifts focus from legally binding targets to procedural commitments that encourage domestic policy changes and increased transparency.²⁷

4. Green Alliances and Just Energy Transition Partnerships (JETPs):

- Initiatives like JETPs facilitate financial and technical support for countries transitioning from fossil fuels to renewable energy sources. These partnerships are crucial in helping nations meet their climate goals while supporting communities

²² <https://www.un.org/sustainabledevelopment/climate-change/>

²³ <https://www.unep.org/topics/sustainable-development-goals/why-do-sustainable-development-goals-matter/goal-13-climate>

²⁴ <https://climate-box.com/textbooks/3-how-to-prevent-dangerous-climate-change/3-5-global-cooperation-on-climate-change-and-sustainable-development/>

²⁵ <https://www.ipcc.ch/report/ar6/wg3/chapter/chapter-14/>

²⁶ <https://www.ipcc.ch/report/ar6/wg3/chapter/chapter-14/>

²⁷ <https://www.wri.org/climate/international-climate-action>

reliant on fossil fuel industries.²⁸

Role of Public-Private Partnerships (PPP):

- **Collaboration between Sectors:** PPPs play a pivotal role in mobilizing resources, expertise, and innovation necessary for effective climate action. By combining public sector initiatives with private sector efficiency and investment capacity, these partnerships can drive significant progress toward sustainability goals.
- **Technology Transfer and Financing:** PPPs can facilitate the transfer of clean technologies from developed to developing countries, ensuring that all nations have access to the tools needed for effective climate mitigation. Financial resources from private entities can complement public funding efforts aimed at climate adaptation and mitigation²⁹³⁰
- **Joint Implementation Projects:** Countries can engage in joint projects where one nation supports emission reduction efforts in another, particularly when domestic capabilities are limited. This collaborative approach enhances overall effectiveness and fosters shared responsibility³¹

Importance of Multilateral Cooperation:

- **Addressing Global Commons Problems:** Climate change is inherently a global issue that transcends national borders. Effective international cooperation is necessary to manage this global commons problem efficiently³²³³
- **Synergies with Sustainable Development Goals (SDGs):** International climate agreements are closely linked with the SDGs, particularly Goal 13, which calls for urgent action to combat climate change. Collaborative efforts can simultaneously address environmental challenges while promoting economic and social development³⁴
- **Strengthening Resilience:** Through cooperative frameworks, countries can share

²⁸ https://climate.ec.europa.eu/eu-action/international-action-climate-change/eu-engagement-climate-action-non-eu-countries/cooperation-climate-action-non-eu-countries_en

²⁹ <https://www.linkedin.com/pulse/how-international-cooperation-can-help-fight-climate-change-lawrence/>

³⁰ <https://climate-box.com/textbooks/3-how-to-prevent-dangerous-climate-change/3-5-global-cooperation-on-climate-change-and-sustainable-development/>

³¹ <https://www.linkedin.com/pulse/how-international-cooperation-can-help-fight-climate-change-lawrence/>

³² <https://www.ipcc.ch/report/ar6/wg3/chapter/chapter-14/>

³³ https://climate.ec.europa.eu/eu-action/international-action-climate-change/eu-engagement-climate-action-non-eu-countries/cooperation-climate-action-non-eu-countries_en

³⁴ https://climate.ec.europa.eu/eu-action/international-action-climate-change/eu-engagement-climate-action-non-eu-countries/cooperation-climate-action-non-eu-countries_en

best practices and resources for building resilience against climate impacts. This includes addressing issues such as climate-induced migration and enhancing adaptive capacities in vulnerable regions.³⁵

INDIA'S CONTRIBUTION IN MITIGATION OF CLIMATE CHANGE AND ADOPTION OF PREVENTIVE STRATEGIES:

India has been actively engaged in climate change mitigation and the adoption of preventive strategies through various initiatives and international collaborations. Below are key components of India's contributions to addressing climate change:

International Solar Alliance (ISA) - The International Solar Alliance was launched in 2015, spearheaded by India and France, with the aim of promoting solar energy globally. The alliance focuses on increasing the deployment of solar technologies and aims to mobilize over \$1 trillion in investments for solar energy by 2030. This initiative is particularly significant for developing countries, which often face barriers to accessing clean energy technologies. The ISA promotes collaborative efforts in research, development, and deployment of solar energy solutions, enhancing energy security while reducing greenhouse gas emissions³⁶³⁷

One Sun One World One Grid (OSOWOG) - OSOWOG is an initiative that aims to create a global grid for solar energy sharing. This project seeks to connect solar-rich regions with energy-deficient areas across the globe, enabling countries to share renewable energy resources. By facilitating cross-border electricity trade, OSOWOG aims to enhance global energy security and promote sustainable development while reducing reliance on fossil fuels³⁸³⁹

Swachh Bharat Mission - The Swachh Bharat Mission, launched in 2014, is a nationwide campaign aimed at improving sanitation and cleanliness across India. While primarily focused on sanitation, the mission also has significant implications for climate change mitigation by promoting waste management practices that reduce methane emissions from landfills. The initiative encourages composting organic waste and recycling materials, contributing to a circular economy and reducing environmental impact⁴⁰⁴¹.

³⁵ <https://www.iom.int/news/strengthening-global-cooperation-vital-addressing-climate-induced-migration-iom>

³⁶ <https://www.lse.ac.uk/granthaminstitute/explainers/how-is-india-tackling-climate-change/>

³⁷ <https://dst.gov.in/climate-change-programme>

³⁸ <https://www.lse.ac.uk/granthaminstitute/explainers/how-is-india-tackling-climate-change/>

³⁹ <https://dst.gov.in/climate-change-programme>

⁴⁰ <http://yojana.gov.in/adaptation-and-mitigation.asp>

⁴¹ <https://www.brookings.edu/articles/managing-climate-change-a-strategy-for-india/>

COP26 Glasgow Summit - At the COP26 summit held in Glasgow in 2021, India made significant commitments towards climate action, including its pledge to achieve net-zero emissions by 2070. Prime Minister Narendra Modi announced the Panchamrit strategy, which outlines five key commitments: increasing non-fossil fuel energy capacity to 500 GW by 2030, meeting 50% of total energy needs from renewables, reducing carbon intensity by 33-35% from 2005 levels by 2030, increasing forest cover to absorb carbon dioxide, and promoting a lifestyle for environment (LiFE) movement.⁴²⁴³⁴⁴

Indian Startups - Indian startups are increasingly contributing to climate change mitigation through innovation in clean technology. Many startups focus on renewable energy solutions such as solar power, electric vehicles, and sustainable agriculture practices. These innovations not only help reduce greenhouse gas emissions but also support economic growth by creating jobs in the green technology sector.⁴⁵⁴⁶

Panchamrit Strategy - The Panchamrit strategy represents India's comprehensive approach to tackling climate change through five pillars:⁴⁷

1. Achieving net-zero emissions by 2070.
2. Increasing non-fossil fuel-based energy capacity to 500 GW by 2030.
3. Meeting 50% of total energy needs from renewables.
4. Reducing carbon intensity of the economy by 33-35% from 2005 levels.
5. Creating additional carbon sinks through increased forest cover.⁴⁸⁴⁹

ECONOMIC AND FINANCIAL MECHANISMS TO MITIGATE CLIMATE CHANGE:

- **Green financing** - Green financing is a loan or investment that supports environmentally-friendly activity, such as purchasing environmentally-friendly goods and services or

⁴² <https://www.lse.ac.uk/granthaminstitute/explainers/how-is-india-tackling-climate-change/>

⁴³ <https://www.brookings.edu/articles/managing-climate-change-a-strategy-for-india/>

⁴⁴ <https://dst.gov.in/climate-change-programme>

⁴⁵ <https://www.brookings.edu/articles/managing-climate-change-a-strategy-for-india/>

⁴⁶ <https://www.c2es.org/document/climate-change-mitigation-measures-in-india/>

⁴⁷ <https://www.lse.ac.uk/granthaminstitute/explainers/how-is-india-tackling-climate-change/>

⁴⁸ <http://yojana.gov.in/adaptation-and-mitigation.asp>

⁴⁹ <https://www.brookings.edu/articles/managing-climate-change-a-strategy-for-india/>

building environmentally-friendly infrastructure.green financing shall include incentives that make it easier to deal with the cost of switching to electric vehicles or improving the energy efficiency of your home, for example. So, it can help people and businesses make good purchasing and investment decisions for both themselves and the environment. The importance of green financing in supporting the transition to a low carbon economy continues to be recognised at the UN Climate Change Conferences (COP) which convene world leaders to agree plans to protect the planet. This followed on from COP21 in Paris in 2015, where governments agreed to limit global warming to well below 2 degrees Celsius – preferably to 1.5 degrees – compared to pre-industrial levels.green financing expands the number of individuals and businesses who can gain access to environmentally-friendly goods and services, especially for the vulnerable and marginalised. This makes the transition to a low carbon society more equal, creating more socially inclusive growth. This can help businesses to grow, creating jobs, reducing carbon emissions and stimulating the economy, creating a ‘great green multiplier’ effect where both the economy and environment continuously benefit. A win-win for everyone.⁵⁰

- Setting a new goal for climate finance: In 2009, developed countries agreed on mobilizing \$100 billion a year for developing countries to adapt to climate change and cut greenhouse gas emissions. This included fund flowing through bilateral, regional and multilateral channels, as well private funds, through a variety of mechanisms, such as grants, loans and even insurance. In 2022, developed countries met this goal for the first time, providing a total of \$115.9 billion in climate finance for developing countries. However, only a small share of the total went to low-income countries and only about a quarter to Africa. Loans made up the largest funding category, mainly going to middle-income countries.⁵¹

At the UN climate change conference in Paris in 2015, governments decided to set a New Collective Quantified Goal on climate finance prior to 2025, amounting to at least \$100 billion per year and taking into account the needs and priorities of developing countries. This new goal is meant to be adopted at COP29 in Azerbaijan in November 2024.

The new finance goal would channel greater funds towards urgently needed climate action in developing countries. It would support low-carbon, climate-resilient solutions in energy, transport and agriculture for instance, and should enable

⁵⁰ <https://www.lloydsbankinggroup.com/insights/green-finance.html>

⁵¹ https://www.ey.com/en_in/insights/climate-change-sustainability-services/green-finance-is-gaining-traction-for-net-zero-transition-in-india

developing countries to step up their climate ambitions in the next round of national climate plans, which are due in 2025.

Climate Finance Action Fund (CFAF): This fund was the result of COP29 held at Azerbaijan this to raise 1 billion and Azerbaijan being the founding contributor to this fund. The establishment of a fund, capitalized with voluntary contributions from fossil fuel producing countries and companies. The fund will catalyse the public and private sectors across mitigation, adaptation, and research and development, and also provide highly concessional and grant-based funding.

- **Green Financing Growth In India** - Green finance is gaining momentum in the Indian economy as a crucial tool for transitioning toward net zero emissions. Initiatives like green bonds, carbon pricing, and sustainable investment strategies are driving the shift toward a greener economy in India. Given the government's push for sustainable development and the increasing need among businesses and investors to develop strong sustainability credentials, the Reserve Bank of India has introduced guidelines for banks and non-bank financial companies (NBFCs) to accept “green deposits”. The purpose is to ensure funds are utilized for energy efficiency, clean transportation, climate change adaptation, sustainable water and waste management, green buildings, and terrestrial and aquatic biodiversity conservation. Securities and Exchange Board of India (SEBI) introduced an ESG category of mutual funds. Asset management companies in India can now launch more than one ESG fund, and as reporting on such parameters improves, the increased rigor and transparency will boost investor confidence. While anticipating government action on green financing, including tax breaks for low-carbon technologies, policy pushes for green financing instruments etc., private sector organizations are showing interest to adopt internal carbon pricing and promote investment in green technologies and solutions.

JUDICIAL ACTIVISM IN CLIMATE ACTION:

- **Constitutional Right to a Healthy Environment:** *MK Ranjitsinh v. Union of India*⁵² -The Supreme Court in its decision made following considerations: India’s commitment under international conventions: The Court acknowledged that in order to combat climate change on the global level, India has made international commitments founded in the Kyoto Protocol, Paris Agreement etc. to reduce greenhouse gas emissions and promote renewable energy.

⁵² MK Ranjitsinh v. Union of India AIR201SC209

One of these commitments is to achieve approximately 50 per cent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030. The promotion of renewable energy shall also play a crucial role in promoting social equity in terms of access to clean and affordable energy. Thereafter, the Supreme Court for the first time recognized the right to a healthy environment and the right to be free from the adverse effects of climate change.

- Establishment of Specialized Environmental Bodies: The formation of the National Green Tribunal (NGT) in 2010 exemplifies judicial activism's impact on environmental governance. The NGT provides a dedicated forum for adjudicating environmental disputes and has played a crucial role in interpreting and enforcing environmental laws. The tribunal has incorporated international environmental principles into domestic law, further strengthening India's legal framework for climate action.⁵³
- Expansion of Environmental Jurisprudence: Judicial activism has led to the expansion of environmental jurisprudence in India. The courts have invoked principles such as the Precautionary Principle and the Polluter Pays Principle, which are now integral to Indian environmental law. These principles compel industries and governments to take proactive measures against potential environmental harm and hold them accountable for pollution.^{54,55}

GOVERNMENT ACTIONS TO ADDRESS THE RAPIDLY GROWING ENVIRONMENTAL PROBLEMS IN THE COUNTRY:

- The Ministry of Environment, Forest and Climate Change (MoEF&CC) has launched the *National Clean Air Programme* (NCAP) in January, 2019 with an aim to improve air quality in 131 cities (non-attainment cities and Million Plus Cities) in 24 States/UTs by engaging all stakeholders.
- Installation of Vapour Recovery System (VRS) in new and existing petrol pumps selling gasoline >100kl per month in million plus cities and those selling >300kl per month in cities with population between 1 lakh to 1 million. Subsidy on E-vehicles under Faster Adoption and manufacture of (Hybrid &) Electric Vehicles in India.
- Sustainable Alternative Towards Affordable Transportation (SATAT) has been launched as an initiative to set up Compressed Bio-Gas (CBG) production plant and make CBG available in the market for use in automotive fuels.

⁵³ <chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://pure.jgu.edu.in/id/eprint/9/1/JLJ2021.pdf>

⁵⁴ <https://www.lawctopus.com/academike/environmental-activism-supreme-court-of-india-tracing-the-transformative-approach/>

⁵⁵ chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://ili.ac.in/pdf/win21_5.pdf

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- Conservation of rivers - Ministry of Jal Shakti supplements efforts of the States/UTs by providing financial and technical assistance for abatement of pollution in identified stretches of rivers in the country through the Central Sector Scheme of Namami Gange for rivers in Ganga basin and the Centrally Sponsored Scheme of National River Conservation Plan (NRCP) for other rivers.
 - Government also aims at making Mumbai net zero carbon city by 2050 by implementing action plans and shall also aim at taking the achievement of first city in south asia to be carbon neutral by 2050.
 - The government has taken a defining step to *eliminate single use plastics*. A ban has been imposed on identified single use plastic items from 1st July 2022.
 - Desertification and Land Degradation Atlas of India, published by Space Applications Centre (SAC) Indian Space Research Organisation, provides the extent of land degradation and desertification in India, states that the land degradation and desertification in the country has been estimated to be 97.84 million hectares in 2018-19. It provides state-wise area of degraded land which is helpful in planning and implementation of schemes aimed at restoration of land by providing important data and technical inputs.
 - The Government of India launched the India Climate Change Knowledge Portal in November 2020 as a single point information resource which captures sector-wise adaptation and mitigation actions that are being taken by the various line Ministries in one place including updated information on their implementation.
 - “Charging Infrastructure for Electric Vehicles – Guidelines and Standards” to facilitate accelerated deployment of such vehicles. In 2021, the Government launched Production Linked Incentive (PLI) scheme for manufacturing Advanced Chemistry Cell (ACC) to meet its electric vehicle component needs, especially battery cells.
 - 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).

CONCLUSION:

In conclusion, addressing climate change requires both immediate actions and long-term strategies that transcend mere emissions reductions. The urgency of the climate crisis mandates a multifaceted approach that includes significant transformations across all sectors of the economy, such as energy, transportation, and agriculture. As outlined in the Paris Agreement, nations must commit to ambitious

Nationally Determined Contributions (NDCs) that align with the goal of limiting global warming to well below 2°C, ideally striving for 1.5°C above pre-industrial levels.

The integration of sustainable practices and the restoration of ecosystems are vital components in achieving these targets. Halting deforestation and enhancing renewable energy usage can collectively reduce greenhouse gas emissions significantly. Moreover, fostering international cooperation is crucial, as climate change is a global challenge that affects every nation and requires collective action to mitigate its impacts effectively.

Ultimately, the path forward hinges on a commitment to transformative change—not only in policies but also in individual behaviors and corporate practices. By prioritizing sustainability and resilience, we can secure a healthier planet for future generations while simultaneously fostering economic growth and social equity. The time for action is now; delaying will only exacerbate the challenges we face. Thus, we must mobilize efforts at every level—governments, businesses, and individuals—to create a sustainable future that transcend current limitations and embraces innovative solutions for climate resilience.