

# BJYM Magazine

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## MODI ERA of ENVIRONMENTAL ACTION



United Nations  
Climate Change



COP28 UAE





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# Address of Prime Minister Shri Narendra Modi at the G20 Environment and Climate Sustainability Ministerial Meeting

Excellencies, Ladies, and Gentlemen,

Namaskar!

Vanakkam!

I welcome you all to Chennai, a city rich in history and culture! I hope you will get some time to explore the UNESCO World Heritage site of Mamallapuram. With its inspiring stone carvings and great beauty, it is a “must visit” destination.

Friends,

Let me begin by quoting from Thirukural, written about two thousand years ago. The great Saint Thiruvalluvar says: “नेडुंकडलुम तन्नैर मै कुंडम तडिन्तेडिली तान नल्गा तागि विडिन”. It means, “Even the oceans will shrink, if the cloud that has drawn its waters up, does not give it back in the form of rain”. In India, nature and its ways have been regular sources of learning. These are found in several scriptures as well as oral traditions. We have learnt, पिबन्ति नद्यः स्वयमेव नाम्नाः, स्वयं न खादन्ति फलानि वृक्षाः। नादन्ति सस्यं खलु वारिवाहाः, परोपकाराय सतां विभूतयः।।

That is, “Neither Rivers drink their own water nor Trees eat their own fruits. Clouds also don't consume grains produced by their water”. Nature provides for us. We must also provide for nature. Protecting and caring for Mother Earth is our fundamental responsibility. Today, it has taken the shape of “Climate Action” because this duty was ignored by many for a very long time. Based on India's traditional knowledge, I would emphasize that Climate Action must follow “Antyodaya”. That is, we must ensure the rise and development of the last person in the society. Countries of the Global South are particularly impacted by Climate Change and environmental issues. We need enhanced action on commitments under the “UN Climate Convention” and the “Paris Agreement”. This will be crucial in helping the Global South fulfill its developmental aspirations in a climate friendly way.

Friends,

I am proud to say that India has led the way through its ambitious “Nationally Determined Contributions”. India

achieved its installed electric capacity from non-fossil fuel sources, nine years ahead of the target of 2030. And, we have set the bar even higher through our updated targets. Today, India is one of the top 5 countries in the world, in terms of installed renewable energy capacity. We have also set a target of attaining “Net Zero” by 2070. We continue to collaborate with our partners through alliances including International Solar Alliance, CDRI, and the “Leadership Group for Industry Transition”.

Friends,

India is a mega-diverse country. We have consistently been at the forefront in taking action on biodiversity conservation, protection, restoration and enrichment. I am happy that through the “Gandhinagar Implementation Roadmap and Platform”, you are recognizing restoration in priority landscapes impacted by forest fires and mining. India has recently launched the “International Big Cat Alliance” for conservation of seven big cats of our planet. It is based on our learnings from Project Tiger, a pioneering conservation initiative. As a result of Project Tiger, 70% of the world's tigers today are found in India. We are also working on Project Lion and Project Dolphin.

Friends,

India's initiatives are powered by people's participation. “Mission Amrit Sarovar” is a unique water conservation initiative. Under this mission, more than sixty three thousand water bodies have been developed in just about one year. This mission is implemented entirely through community participation, and aided by technology. Our “Catch the Rain” campaign has also shown excellent results. To conserve water, more than two hundred and eighty thousand water harvesting structures have been constructed through this campaign. In addition, nearly two hundred and fifty thousand re-use and recharge structures have also been constructed. All this was achieved through people's participation and focused on local soil and water conditions. We have also effectively utilized community participation in the “Namami Gange Mission” for cleaning the river Ganga. This has led to a major achievement in the reappearance of the Gangetic Dolphin in many stretches of the river. Our efforts in wetland conservation

have also borne fruit. With seventy five wetlands designated as Ramsar sites, India has the largest network of Ramsar sites in Asia.

Friends,

Our oceans support the livelihoods of over three billion people across the globe. They are a crucial economic resource, especially for the “Small Island States”, whom I prefer to call “Large Ocean Countries”. They are also home to extensive biodiversity. Therefore, responsible use and management of ocean resources is of vital importance. I look forward to the adoption of “G20 High Level Principles for a Sustainable and Resilient Blue and Ocean-based Economy”. In this context, I also call on the G20 to work constructively for an effective international legally-binding instrument to end plastic pollution.

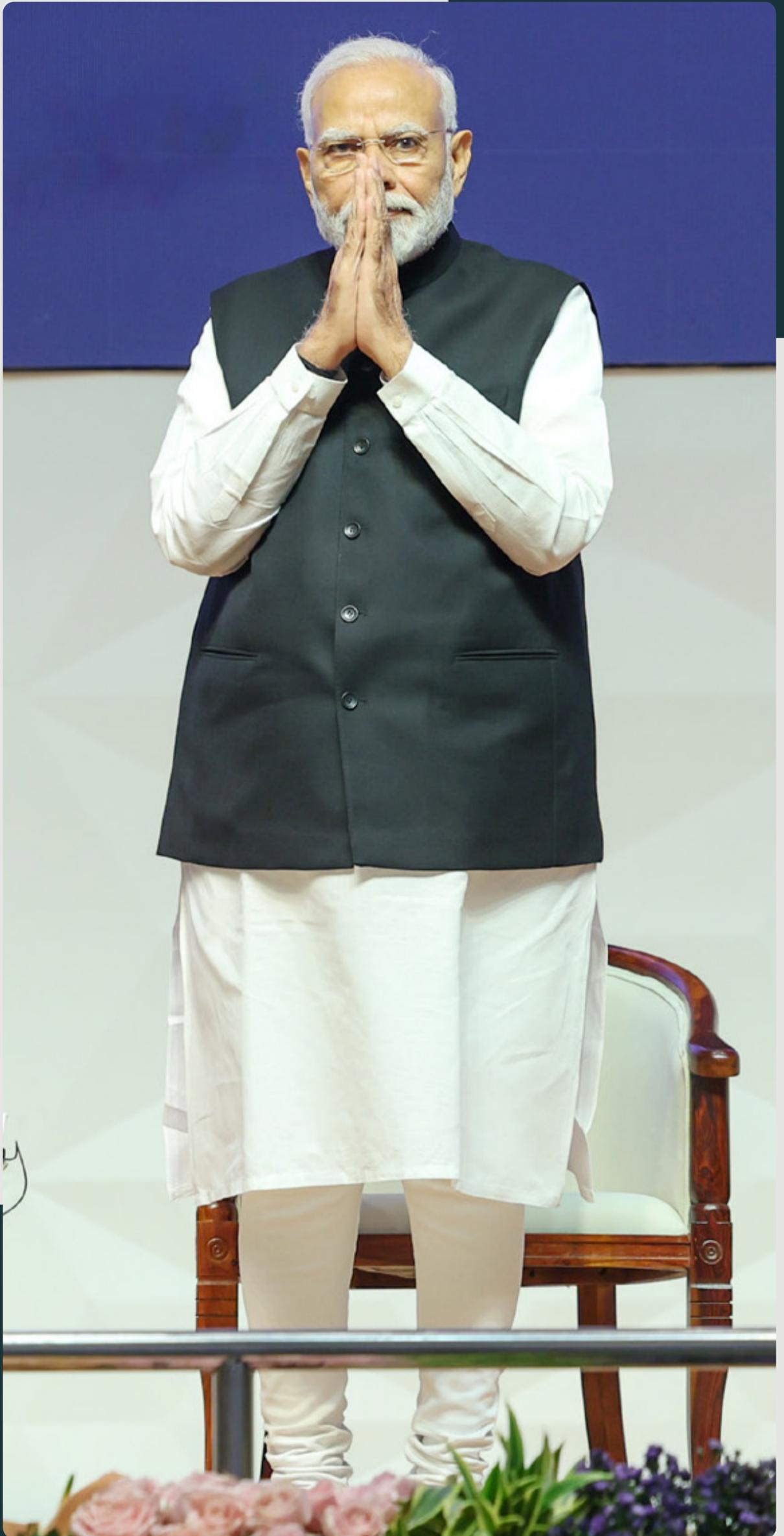
Friends,

Last year, along with the UN Secretary General, I launched Mission LiFE - Lifestyle for Environment. Mission LiFE, as a global mass movement, will nudge individual and collective action to protect and preserve the environment. In India, environment-friendly actions by any person, company or a local body will not go unnoticed. It can now earn them green credits under the recently announced “Green Credit Programme”. This will mean that activities like tree plantation, water conservation, and sustainable agriculture can now generate revenue for individuals, local bodies and others.

Friends,

As I conclude, let me reiterate that we should not forget our duties towards mother nature. Mother nature does not favour a fragmented approach. She prefers “Vasudhaiva Kutumbakam” - One Earth, One Family, One Future. I wish you all a productive and successful meeting. Thank you.

Namaskar!





# Remarks of BJP President Shri J.P. Nadda

Let us all bow to show respect to our Mother Earth and reaffirm our pledge to protect the environment, making our planet cleaner & greener every day. We must check our lifestyles and daily habits and ensure they are environment friendly.

**J P Nadda**

President  
Bharatiya Janata Party  
(Source: Tweet on X)

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## Message from the BJYM President Shri Tejasvi Surya

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Namaskar!

As we navigate through challenging times, it is imperative to acknowledge the visionary leadership of Prime Minister Shri Narendra Modi in spearheading India's environmental and climate change initiatives. His unwavering commitment to nurturing and protecting our environment is not just commendable but an inspiring journey towards a sustainable future.

Under PM Modi's guidance, India has made monumental strides in environmental conservation and climate action. The launch of the International Solar Alliance, the ambitious targets for renewable energy, and the emphasis on sustainable urban development are testaments to his foresight and dedication to the cause. These initiatives have positioned India as a global leader in environmental stewardship, showcasing our commitment to a greener, cleaner planet.

The Prime Minister's approach goes beyond policy-making. It is about instilling a consciousness towards environmental responsibility in every citizen. His call for embracing clean and green energy, conserving water, reducing air pollution, and promoting biodiversity resonates with the core of our cultural ethos, reminding us of our duty towards Mother Earth.

Protecting the environment has always been deeply ingrained in Indian civilization, rooted in the belief that nature is sacred and must be revered. Ancient

Indian scriptures and traditions emphasize living in harmony with the natural world. This enduring respect for nature is reflected in various cultural and religious practices, showcasing an inherent understanding of the interconnectedness of all life.

I firmly believe that protecting our environment is not just a governmental task but a collective responsibility. As citizens, we must embrace sustainable practices in our daily lives, contributing to the larger goal of environmental conservation. Every small effort counts, and together, we can make a significant impact.

As we commend PM Modi for his exemplary leadership in environmental and climate action, let us also pledge to do our part. Let us work hand in hand with the government to create a sustainable and prosperous future for our nation and the world.

Together, we can make a difference. Together, we can ensure a greener tomorrow.

Vande Mataram

**Tejasvi Surya**

National President  
Bharatiya Janata Yuva Morcha

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# Editorial

In an era where climate change poses one of the gravest threats to our planet, the environmental policies of Prime Minister Shri Narendra Modi and his initiatives stand out as a beacon of hope and action. His leadership has ushered in a new era of eco-conscious development in India, balancing economic growth with environmental sustainability.

A cornerstone of PM Modi's environmental strategy is the aggressive push towards renewable energy. The launch of the International Solar Alliance underlines India's commitment to solar energy, envisioning a future where clean energy replaces traditional, polluting fuels. India's ambitious target to achieve 175 GW of renewable energy capacity by 2022 and 450 GW by 2030 is a bold statement on the global stage, showcasing the country's dedication to combating climate change.

PM Modi's proactive stance in international environmental agreements, including the Paris Agreement, reflects India's readiness to play a pivotal role in global climate governance. His advocacy for sustainable practices and reduction in carbon emissions has put India at the forefront of the climate change dialogue. India's participation in international platforms like the Coalition for Disaster Resilient Infrastructure (CDRI) highlights its commitment to building sustainable and resilient infrastructure, not just domestically but globally.

PM Modi's government has launched several key initiatives that underscore its commitment to the environment. The Ujjwala Yojana, aimed at reducing indoor air pollution, the Jal Jeevan Mission for water conservation, and the Swachh Bharat Mission for cleanliness and sanitation all contribute towards a healthier, greener India. Recognizing the critical importance of water

conservation, initiatives like the 'Jal Shakti Abhiyan' and 'Namami Gange Programme' reflect a holistic approach to water resource management. These initiatives not only aim to provide clean drinking water but also focus on rejuvenating India's rivers and water bodies, crucial for maintaining ecological



balance.

Under PM Modi's leadership, India has taken significant steps in forest conservation and biodiversity. The government's commitment to increasing the green cover through initiatives like the Compensatory Afforestation Fund Management and Planning Authority (CAMPA) is commendable. Additionally, programs like Project Tiger and Project Elephant have been strengthened, reflecting a comprehensive approach to environmental stewardship.

Emphasizing innovation, the Modi government has encouraged sustainable practices in various sectors. Initiatives like the National Electric Mobility Mission Plan showcase a commitment to reducing vehicular pollution and promoting eco-friendly transportation solutions. Urban sustainability is a key focus area, with initiatives like the Smart Cities Mission aiming to create environmentally sustainable and technologically advanced urban spaces. These cities are envisioned to have sustainable waste management, efficient public transportation, and green spaces, setting new standards for urban living.

There is also a strong push for leveraging technology and innovation in environmental solutions. The National Hydrogen Mission, for example, aims to capitalize on emerging hydrogen energy technologies, highlighting India's commitment to exploring next-generation clean energy sources.

PM Modi's environmental policies recognize the importance of collaboration between the government, private sector, and civil society. By engaging various stakeholders, these initiatives ensure a wider impact and sustainable outcomes. The Modi government has also emphasized the importance of individual actions in combating climate change. Campaigns encouraging sustainable lifestyles, like the 'LiFE' movement (Lifestyle for the Environment), aim to inspire individuals to adopt eco-friendly habits, emphasizing that every

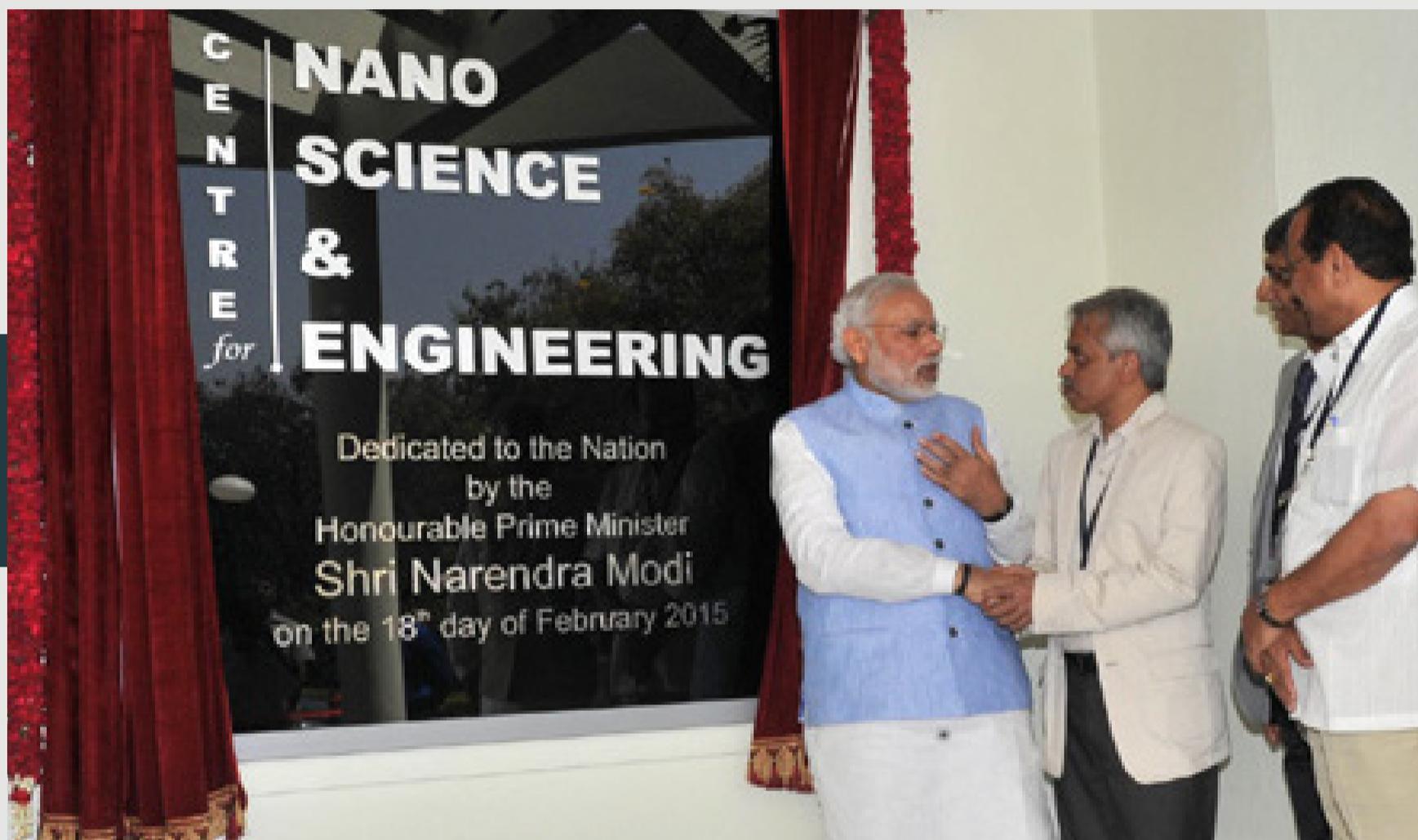
small step counts in the larger battle against climate change.

As India progresses under PM Modi's visionary leadership, the focus on sustainable development becomes increasingly vital. His initiatives, characterized by bold targets and innovative approaches, are setting a global benchmark in climate governance. The government's commitment to pro-environmental policies and initiatives is not just a response to global warming but a proactive approach to ensure a healthy planet for future generations.



# Anusthāyitā: Nano-Sustainability in Namo's Bharat

- Dr. Mrittunjoy Guha Majumdar, Assistant Professor in Quantum Technology - UPES and National Convenor - Mandala VIBHA



Anno Nano could well be the newfangled mutation in calenderics. The anticipation of nanotechnology was first articulated in Richard Feynman's renowned 1959 lecture - There's Plenty of Room at the Bottom, while the formal definition of the term 'nanotechnology' was established in 1974 by Norio Taniguchi. Nanoparticles, owing to their diminutive size and expansive surface area, exhibit distinctive properties that can revolutionize various fields. India has shown significant interest in the field of nano-biotechnology, evident in the launch of the National Nano Mission, overseen by the Department of Science and Technology (DST), which explores nanotechnology applications for safe drinking water, material development, sensor innovation, drug delivery, and more. Addressing the essential needs of a growing global population while minimizing environmental impact is a significant challenge today.

The concept of sustainable development, as defined by the Brundtland Commission, emphasizes meeting current

needs without compromising future generations. With the world population projected to reach 8-10 billion by 2050, there is a pressing need to enhance living standards while mitigating environmental consequences. Nanotechnology, envisioned as a solution, holds potential in areas such as agriculture, water treatment, and renewable energy. In an increasingly multidimensional approach to sustainability, the role of nanotechnology in advancing sustainable development must be closely strategized, aiming to provide insights for scientists, engineers, policymakers, and business leaders.

Nano-sustainability involves developing and utilizing nanotechnologies with a focus on environmental responsibility and long-term viability. It seeks to integrate nanoscale innovations that minimize ecological impact and contribute to the overall well-being of the planet. Embracing nano-sustainability ensures the responsible advancement of technology at the smallest scales for a greener and more sustainable future. In Bharat, the

Modi government has paid particular emphasis on the deployment of nano-products in various areas of development, as well as the associated regulations for the same, over the past decade. In this essay, I shall be looking at this in greater detail, with a focus on possible avenues of further progress in the bid to move towards true and comprehensive nano-sustainability or Anusthāyitā (अणुस्थायिता).

### **Nano-Agriproducts and DBT Policy 2019**

In the realm of agriculture, nanotechnology presents a promising frontier, holding the potential to revolutionize crop yields and bolster crop protection in response to the escalating needs of a burgeoning global population. The integration of innovative nano-interventions in agriculture brings the prospect of cost-effective, highly efficient solutions, particularly advantageous for developing nations. However, the transformative attributes of nanoparticles introduce a dual aspect. While they offer significant advancements in agricultural practices, concerns loom over potential nanoparticle-related toxicity, posing risks to both human health and the environment.

The evaluation of nano-products for agriculture surpasses the complexity of traditional assessments for fertilizers, pesticides, or food safety. The efficacy and impact of nanomaterials depend on the intricate interplay between their physico-chemical properties and diverse environmental factors, necessitating a multidisciplinary approach for alternative evaluation strategies. Addressing this challenge requires a revision of existing policies and the development of new standard guidelines informed by the latest scientific insights. The dynamic and interdisciplinary nature of nanotechnology, spanning chemistry, materials science, physics, biology, engineering, and medicine, poses a considerable challenge for regulatory bodies worldwide. Interdepartmental convergence is imperative, underscoring the necessity for

**The DBT's 2019 guidelines complement this vision, aiming to foster interdepartmental and interministerial cooperation within the Indian government.**

a unified approach.

The DBT 2019 guidelines aimed not only to ensure the quality and efficacy of nanotechnology-based innovations but also to prioritize safety. By emphasizing a high benefit-to-risk ratio compared to bulk counterparts, the guidelines sought to facilitate the commercialization of nanotechnological advancements while safeguarding against potential risks. Despite the presence of global provisions such as REACH, EPA, AVMPA, OECD, and FAO/WHO offering guidelines for nanomaterials, the ever-evolving landscape of nanotechnology complicates the application of universally accepted evaluation parameters. The inherent variability in nano-products and their diverse applications necessitates a nuanced, case-by-case evaluation approach for nano-agriproducts

(NAPs).

The guidelines provided detailed considerations for nano-agriproducts (NAPs), talking of which the Food Safety and Standards Authority of India (FSSAI) is poised to formulate a comprehensive framework building on the output of the United States Food and Drug Administration (2014a, 2014b, 2015) and the Food Safety and Standards Act of 2006. These guidelines have categorized NAPs based on degradability, organicity, function, approvals, and synthesis methods, with specified safety and efficacy data requirements. In alignment with REACH, OECD, and FAO/WHO provisions, they establish criteria for the quality, safety, and efficacy of nano-agriproducts. Stakeholders involved in the research and development of NAPs, including manufacturers and importers, stand to benefit from these guidelines. The evaluation of nano-agriproducts is recommended to be conducted on a case-by-case basis, considering scientific evidence, valid justifications, and adherence to safety and quality standards. Notably, the guidelines also outline specific criteria for nano-feed safety and evaluation under the Cattle Feed (Regulation of Manufacture and Sale) Order, 2009, emphasizing additional considerations in nano-feed inclusion.

In parallel, The Energy and Resources Institute (TERI) released a zero draft in November 2017, underscoring the transformative potential of nanotechnology in global food production. The draft advocated for the controlled use of nano-fertilizers to enhance nutrient efficiency, provide stress tolerance to crops, and reduce environmental pollution. The DBT's 2019 guidelines complement this vision, aiming to foster interdepartmental and interministerial cooperation within the Indian government. Together, these initiatives focused on leveraging nanotechnology to improve agricultural systems, reduce nutrient losses, minimize agrochemical use, and optimize water and nutrient management for increased productivity. The proposed policy promoted innovation and translational research, positioning India at the forefront of agri-nanotechnology and food technology. The guidelines attempted to encompass a range of nano-products, including nano-fertilizers, nanopesticides, finished food formulations, feed formulations, nano-processing aids, nanocomposites for food packaging, and nano-sensors for food safety applications.

### **Nanomaterials for Water Purification, Clean Energy, Greenhouse Gas Management and Green Manufacturing**

Nanomaterials, with their unique physicochemical properties, offer significant potential for sustainable technologies. Their extensive and active surface areas, functionalization capabilities, and superior electronic, optical, catalytic, and magnetic properties make them valuable in various forms, such as water-soluble supramolecular hosts, particles, fibres, and membranes. The increasing demand for clean water poses a critical challenge globally, exacerbated by contamination and salinization of freshwater sources. The convergence of nanotechnology with water science has led to revolutionary advancements in water treatment and desalination technologies. Pressure-driven membrane processes like reverse osmosis, nanofiltration,

ultrafiltration, and microfiltration are key components of these advancements. Fundamental investigations into membrane processes, materials, and systems contribute to shaping efficient water treatment strategies. Metal oxide nanoparticles, particularly titanium dioxide (TiO<sub>2</sub>), have emerged as promising catalysts for water purification due to their large surface areas and unique properties. There has been significant work on the synthesis,

characterization, and evaluation of TiO<sub>2</sub>-based photocatalysts, showcasing their efficacy in degrading pollutants under various light conditions.

Additionally, the use of metal oxide nanoparticles in magnetic separations technology is a matter of active research, presenting opportunities for efficient water treatment. Magnetic iron oxide nanoparticles functionalized with proteins exhibit potential for time-efficient water treatment, demonstrating recyclability and effective removal of turbidity from surface water. Bharat has been making strides in this direction. Global climate change stands as another formidable challenge in the twenty-first century, primarily driven by escalating emissions of greenhouse gases, notably carbon dioxide (CO<sub>2</sub>), from fossil fuel combustion. Acknowledging this, the consensus is that addressing the surging energy demand while curbing CO<sub>2</sub> emissions requires a substantial increase in clean and renewable energy systems.

Nanotechnology emerges as a pivotal tool, offering unparalleled prospects for advancing clean and renewable energy technologies. Solar photovoltaics, a leading renewable energy source, has seen new frontiers in areas such as the templated synthesis of mesoporous TiO<sub>2</sub> thin films for dye-sensitized solar cells (DSSCs). Nano-gold and nano-silver have seen applications in this area across the world. The India nano gold market size was valued at Rs.1676.8 crores in 2019 and is projected to reach Rs.4160.5 crores by 2027, growing at a compound annual growth rate of 17.0% from 2020 to 2027. On the other hand, the India nano silver market size was valued at Rs.512.9 crores in 2019 and is projected to reach Rs.1733.5 crores by 2027, growing at a compound annual growth rate of 21.3% from 2020 to 2027.

Hydrogen generation through solar water splitting demonstrates a rooftop prototype of a hybrid photovoltaic electrolysis system. This innovative system utilizes semiconductor nanoparticles coated onto metal substrates as electrodes, coupling hydrogen generation with the oxidation of organic compounds in wastewater. Considering the transportation sector's substantial contribution to oil consumption and CO<sub>2</sub> emissions, polymer electrolyte membrane fuel cells (PEMFCs) present a promising solution. In line with the National Hydrogen Energy Roadmap of the Government of India, there have been initiatives to develop and demonstrate hydrogen-powered IC engines and fuel cell-based vehicles, integrating PEMFCs.

Several organizations, including CFCT-ARCI, CSIR-Network Labs, NMRL, VSSC, and BHEL, are actively involved in the comprehensive development of PEMFC systems. Various research projects being undertaken in Modi's Bharat to this end include the development of stabilized forms of phosphomolybdic acid, phosphotungstic acid, and silicotungstic acid incorporated into PVA cross-linked polymers, novel mixed-matrix membranes like sodium alginate (NaAlg) with PVA and specific heteropolyacids (HPAs), high-temperature polymers such as PBI



and SPEEK, cross-linked SPEEK-reactive organo-clay nanocomposites, phosphonated multiwall carbon nanotube-polybenzimidazole composites, blends of PBI and poly(vinyl-1,2,4-triazole), oligosilsesquioxane hybrid membranes, anhydrous proton-conducting hybrid membrane electrolytes for high temperature PEM, zwitterionic silica copolymer-based cross-linked organic-inorganic hybrid polymer electrolyte membranes, carbon nanotubes-rooted montmorillonite (CNT-MM) reinforced nanocomposite membranes, domain size manipulation by sulfonic acid-functionalized MWCNTs, functionalized CNT-based composite polymer electrolytes, and minimally hydrated polymers replacing water with proton mobility facilitator.

Sustainable materials utilization is integral to the development of next-generation technologies. Nanotechnology has played a role in achieving materials sustainability for energy generation. Researchers have also tried to undertake electronic waste (e-waste) management by converting e-waste into mesoporous silica, offering an environmentally friendly solution. Auxiliary research, in this respect, is the controlled release of the pesticide metalaxyl using silica nanoparticles, contributing to smart systems in agriculture, as well as the biosynthesis of iron oxide nanoparticles using *Aspergillus japonicus* fungus, showcasing the convergence of nanotechnology and biotechnology for eco-friendly green chemistry routes.

### Prospects in Namo's Bharat

Bharat has expanded on the Nano Mission launched in 2007, with the application of cutting-edge technology in the nano-realm for societal benefit, particularly around the theme of sustainability. After Bharat was swept by the Modi wave in 2014, the Union Cabinet approved its continuation into Phase II during the 12th Plan period, allocating a substantial amount of Rs.650 crore for its implementation. Over the years, we have seen the initiative significantly elevate Bharat's global standing, with the nation being among the top five in the world in research publications in the realm of nano-science.

The ongoing commitment and support for the Nano Mission reflect the government's dedication to fostering advancements in nano-science and technology, positioning India as a key player in this cutting-edge and dynamic field. In 2022, Prime Minister Shri Narendra Modi inaugurated the world's inaugural nano-urea liquid plant, which was established by IFFCO in Kalol, Gujarat. What is most important is that in our bid to move ahead in the realm of nano-sciences, we have nano-sustainability as an integral part of our vision, reflecting the Dharmic moorings of our Bharatiya civilization. The one aspect that could be enhanced is the involvement of the private sector in nanotechnology research, which, in Bharat, has been relatively limited, contrasting with the significant insights provided by academic institutions into the transformative potential of nanotechnology for addressing crucial needs in the Indian market.

The latter has seen the likes of researchers at IIT Madras, who have harnessed nanotechnology to address arsenic contamination in water, and the team from IIT Delhi, who

has developed a water-based self-cleaning technology tailored for the textile industry. It is where the current Union government, with its historic track record of pathbreaking initiatives - from the National Quantum Mission (NQM) and National Education Policy (NEP) to the Labour Code 2023 and Goods and Services Tax (GST), can lay the regulatory groundwork for private sector involvement in nano-sustainability, with a possible focussed extension of the recently promoted Green Credit programme of the government. The only way for Bharat today, nano-sustainably speaking, is upwards. Be it Modi's emphasis on clean energy technologies with nano-sciences or the push for sustainable nanomaterials in Bharat today, we are surefootedly moving on our path to attaining Anusthāyitā (अणुस्थायिता).



# From COP21 to G20: India's Pioneering Role in the Global Climate Dialogue

- Rajarshi Roychowdhury, Study Circle in charge, BJYM West Bengal

As the stage gets set for global leaders to gather at dazzling Dubai for the premier climate action forum COP28, the world is grappling with a climate emergency. It's often said with a hint of despair that the more things change, the more they remain the same. This year has been something similar, with old climate records being broken and new ones being set. The most sobering of them all is the fact that we are well on course to see this year being the warmest since records started. There are, of course, fewer sobering records but equally grave nonetheless; for instance, global energy-related emissions rose by a record 36.8 gigatonnes, global ocean temperatures went on to set a record of being 0.86°C higher than their long-term average and numerous European countries from Spain in the Iberian Peninsula to Greece in the southern Balkans seeing record high temperatures in several months of this year.

A recent case filed at the ECHR (European Court of Human Rights) is rather sobering, wherein six young individuals from Portugal have sued 32 nations, alleging those governments have "ruined childhoods" ostensibly due to having undertaken policies that have caused irreversible harm to the planet earth. Humanity collectively seems to be at a dead end in the quest for climate justice. A look at the global north or the Western world at large would suggest so. However, a cursory glance at the global south would portray a positive picture wherein humanity & nature coexist in harmony in line with our civilisational ethos developed over millennia. Eastern societies, by & large, don't require to be schooled in the dialectics evolved by the machine politics of the hard left trumpeted by toolkit activists like Greta Thunberg. The Chipko movement & other pro-environmental movements were a norm in India before climate justice became



fashionable amongst the radical left in the West.

As India is rapidly globalising, it is also becoming greener & this is happening in complementarity with each other under the far-sighted vision & dynamic leadership of Prime Minister Shri Narendra Modi. The Indian economy has made a quantum jump from being the 11th largest to being the 5th largest in less than nine years. At the same time, the green cover has increased from 20.8% in 2015 to 24.62% in 2021. The Indic way exemplifies the green growth path of the future where development takes place in accordance & harmony with nature, and the two need not be at cross purposes with each other.

This increase in green cover has, in turn, benefitted the wildlife population, which has seen a sizeable increase. For instance, in the state of Uttar Pradesh, the tiger population has increased from 118 to 173, and elephants have increased from 265 to 352 in the past five years. Similarly, Bhartiya Janata Party-led Madhya Pradesh is India's tiger capital, with the number of big cats rising from 308 in 2014 to 526 in 2018 and this is not where the proactive state government plans to stop but rather plans to create 11 more protected areas in the state.

The new areas cover over 2100 sq. km and represent possibly the largest addition of protected areas by any state in the last three decades. Madhya Pradesh also happens to be the home of India's newest national park, The Kuno Palpur Reserve, hosting Namibian Cheetahs decades after it went extinct in the Indian subcontinent in line with the vision of Prime Minister Modi recreating a home for Cheetahs for all Indians to admire & give an impetus to wildlife conservation efforts across the nation. The Mangrove Alliance has also reported that India has seen a substantial rise in Mangrove cover, which not only increases green cover but also protects vulnerable coastal states from the onslaught of cyclones. BJP-led governments both in the centre & in the states are working in sync to protect, preserve & promote nature's bounty in its pristine & unspoilt form, which gives an impetus

**As India is rapidly globalising, it is also becoming greener & this is happening in complementarity with each other under the far-sighted vision & dynamic leadership of Prime Minister Shri Narendra Modi.**

to conservation efforts while also promoting responsible eco-tourism thereby ensuring sustainable livelihoods for the local population.

From the innately local to the evolving global arena, the fight against climate change has reached a stage of drift wherein developing nations doubt the seriousness of their more developed peers to finance efforts to stem climate change. This deficit in trust stems from primarily two issues: the non-fulfilment by developed nations to finance \$100 billion in new & additional sources of funding to combat climate change and taking proactive steps to pass on climate resilient technologies to developing

nations.

But a leadership void doesn't exist for too long & India has admirably stepped up to fill the void in climate leadership by both achieving its climate goals & also by ensuring smaller nations of the global south find a voice at the global high table. The ISA (International Solar Alliance) launched by Bharat in 2015 has been a game changer by helping nations that lie within the tropics harness solar energy better. We have also been the only nation amongst the G20 to have fulfilled its Paris commitments taken at COP21 in 2015.

Salient amongst those commitments was achieving approximately 50% of cumulative electric power installed capacity from non-fossil fuel-based energy sources by 2030, creating an additional carbon sink of 2.5 to 3 billion tonnes of CO2 equivalent by 2030, among others. The global biofuel alliance formed under the aegis of Indian leadership at India's G20 presidency will help reduce global dependence on fossils by providing both mere platitudes and reliable alternate biofuels for nations. Bharat has envisioned a green growth path largely due to quiet determination and visionary leadership. A post-fossil fuel era in climatic terms may not be possible just yet, but sustained progress would get us on track to reach our climate goals within a few short decades.



# Mission LiFE and India's Journey to Climate Leadership Under Modi

- Priyanka Tamuli, Office Co-Incharge, BJYM, Assam Pradesh

Under the leadership of our Prime Minister, Shri Narendra Modi, India is on the path to becoming a global leader in combating climate change and taking necessary initiatives to achieve the defined goals. Under the active guidance of PM Modi, India is undertaking a major leap forward and executing various schemes and programmes that will help establish India as an eco-friendly and eco-conscious nation.

In this regard, one of the major steps was taken when Prime Minister Narendra Modi launched 'Mission LiFE' (Lifestyle for Environment), a new initiative for a sustainable and healthy lifestyle in the presence of the UN Secretary-General Shri Antonio Guterres. Mission LiFE - Lifestyle for Environment is led by India and is a global plan of action that aims to save the planet from the disastrous consequences of climate change. The vision of the LiFE is to replace the prevalent 'use-and-dispose' economy with a circular economy. The major objective is to promote an environmentally conscious lifestyle that focuses on 'mindful and deliberate utilization' instead of 'mindless and wasteful consumption'. Also, under this mission, it is planned to mobilize at least one billion Indians and other global citizens to take individual and collective action to conserve the environment in the period 2022-28. The mission is piloted by NITI Aayog and implemented by the Union Ministry of Environment, Forest and Climate Change.

Mission LiFE is encouraging citizens to reduce their consumption of fossil fuels, plastics, and other non-renewable resources. Thus, more and more citizens are switching to alternatives such as renewable energy, biodegradable materials, and circular economy, which are cleaner and greener. It will surely help to reduce GHGs (Green House emissions), which are the main drivers of climate change, and also conserve natural resources for future generations. This mission promotes the concept of 'Lifestyle of the planet, for the planet and by the



planet, ' which will help protect biodiversity, ecosystems, and ecosystem services, which are essential for human well-being and sustainable development. Thus, this will support Goal 13 of SDG, which calls for urgent action to combat climate change and its impacts.

India is on the path to achieving the Sustainable Development Goals (SDGs) that the United Nations established as part of the 2030 Agendas for Sustainable Development. The objective of these goals is to provide a comprehensive framework for addressing social, economic, and environmental challenges to achieve a sustainable future for all. Globally, it is a commitment to achieve the SDGs by 2030, and it is encouraging, motivational and extremely important to note that mission LiFE contributes directly or indirectly to almost all the SDGs.

Along with LiFE, several other initiatives like the National Afforestation Programme (NAP), National Mission for Green India (GIM), National Action Plan on Climate Change (NAPCC), National Biodiversity Action Plan, etc., are launched/implemented and contributing to the sustainable development of India without affecting the natural resources. Also, India is actively working towards becoming environmentally sustainable through major initiatives in the field of renewable energy, particularly solar and wind power. By expanding its wings, India is on the path to becoming a renewable energy powerhouse by 2030. PM Modi's global reach has helped to facilitate collaboration between India and solar-rich countries.

India is organically a resource-rich country, and its

policy framework on combating climate change includes the protection of regional glaciers, making the railway system green, reducing the use of single-use plastic, and producing green cooking fuel. India is also aiming to achieve the ambitious goal of Net Zero by 2070, which will help decouple its economic growth from its emissions. In comparison to the major world economies, India has a good track record of low emissions per capita. Accordingly, India's goal to achieve net zero by 2070 is at par with other industrialized nations.

It is important to note that the average carbon footprint of a person in a high-income country is more than 80 times higher than that of a person in a least-developed country. It is highly fair and needs the hour to call on the developed world to share in this transition proportionately. Mahatma Gandhi rightly said, "The world has enough for everyone's need, but not enough for everyone's greed." By spreading the message of climate change and through determined efforts, one can become a pioneer for the environment and make efforts towards a sustainable future.

Also, at a global level, world leaders need to step up and contribute towards achieving the goals defined for combating climate change. India is definitely making its presence known through its initiatives under the visionary leadership of PM Modi. It is being elucidated to the world that investing in the efforts for climate change is not a diversion from growth; rather, it is an essential step for the sustainable development of a country.



# From the Ganges to Global Forums: India's Comprehensive Approach to Climate Action

- Amarjeet Verma, PRT-BJYM Bihar

In the world of an ever-growing global challenge posed by climate change, Prime Minister Shri Narendra Modi has emerged as a leader with a vision, emphasizing the imperative of converting ideas into a mass movement. This mass movement was underscored during the World Bank-organized event held earlier this year. PM Modi passionately called for collective efforts from all the stakeholders, like the common citizens, corporations, and the government, to fight the climate change battle efficiently and effectively. India has not only made significant strides on the domestic front but has also become a global example to follow in the relentless fight against the climate crisis.

India has always followed global environmental standards and practices and has also been quite optimistic about the ongoing COP28 summit in Dubai. India has auspiciously launched initiatives like LiFE (Low-Carbon Footprint for Environment) through the farsighted policy-making processes, which again establishes India's stand in its approach towards economic growth, but with sustainability. Every scheme and initiative of the Modi government across all sectors expresses the dire need to effectively address the challenges of climate crisis and adversity, not just in India but on a global scale.

A unique attestation to India's commitment to its cultural, aesthetic, and environmental preservation is the Namami Gange Programme, which is for cleaning the River Ganges. Recognizing the profound cultural and ecological significance of the River Ganges, the Modi government allocated a huge budget for its conservation, restoration and rejuvenation. Uniquely, this project involved communities living along the riverbanks, ensuring sustainable livelihoods and fostering a profound sense of ownership among local communities. This people-centric approach signifies a greater shift in environmental initiatives, emphasizing the importance of involving citizens directly in conservation & restoration efforts.

The focus on green & sustainable growth is evident through visionary initiatives like maximizing renewable energy sources, trying for 20% Ethanol blending, promoting green Hydrogen, etc. These efforts not only showcase a comprehensive approach towards building a low-carbon

economy but also focus on the simultaneous reduction of carbon intensity, promoting sustainable growth in the economy and environment. Ever since 2014, each scheme, in general, has been a strong reflection of PM Modi's exemplification that the growth of the economy and environment must happen simultaneously and should be complementary to each other.

India's pro-active innovation and participation in international collaborations are exemplified by its deep engagement in initiatives such as the International Solar Alliance, which India co-founded and the Coalition for Disaster Resilient Infrastructure. India's testimony to a sustainable lifestyle is further demonstrated through programs like mentioned earlier, Mission LiFE and also the very much talked about International Year of Millets. These innovative initiatives highlighted India's stand domestically and as a critical global contributor to environmental welfare.

India's consistent and continuous augmentation in the share of renewable energy showcases the nation's resolute dedication to sustainability. In view of such ingenious & enterprising attempts, Prime Minister Modi was honoured with the prestigious "Champion of the Earth Award" in 2018 by the United Nations for his exceptional contributions to nurturing and fostering the renewable energy sector. This recognition aligns with India's global influence as a leader in renewable energy production.

India's progress in fighting climate crisis under PM Modi is truly commendable. Despite some of the global powers withdrawing from the Paris Agreement, Modi's staunch commitment reflects India's devotion to safeguarding the health of the people and the planet. The remarkable advance in solar power generation in India reinforces its status as an emerging world leader in the renewable energy sector. The formal launch of the Global Biofuels Alliance (GBA) at the G20 summit, 2023 in New Delhi, led by India, the United States and Brazil, underscores the joint effort to address the energy crisis through sustainable biofuels, marking a significant milestone in India's broader pro-people and pro-planet initiatives.

While the Modi government's environment-friendly policies play a significant role in promoting development &

**Every scheme and initiative of the Modi government across all sectors expresses the dire need to effectively address the challenges of climate crisis and adversity, not just in India but on a global scale.**

fighting the climate crisis, the major responsibility also lies with the common people of India. PM Modi's ambitious call for a mass movement against single-use plastics and initiatives like the Swachh Bharat Mission underscore the need for collective action from the general people of the country. As much as it is the government's responsibility to create and implement policies, it is equally the collective responsibility of people to embrace eco-friendly practices and contribute to the larger agenda of preserving the planet Earth.

India is daring and making advances in the fight against the climate crisis. At the same time, it is also making a global call to engage and contribute to the safety of our planet Earth. As the common man of the country, it is our shared responsibility to embrace eco-friendly practices and effectively contribute to the grander mission of preserving our planet. PM Modi's actions speak volumes, and it is through combined efforts that we can build a cleaner and greener India for our future generations.





# Charging Ahead: How EVs and FAME II Are Powering India's Green Mobility Revolution

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- Rangam Trivedi, SEC BJYM Gujarat

Prime Minister Modi demonstrates resolute commitment to achieving net zero emissions. Through transformative policies by Prime Minister Shri Narendra Modi, renewable energy investments, and sustainable practices, the country's course is steered towards a sustainable future, aligning with the global agenda to combat climate change and secure a cleaner, greener planet. As stated by India at COP-26, it will obtain 50% of its installed electricity ca-

capacity from non-fossil sources by 2030. It has set a 'Net Zero' target for 2070.

As per the studies, conventional fuel vehicles annually contribute about 290 gigagrams (Gg) of PM2. At the same time, around 8% of total greenhouse gas emissions in Bharat are from the transportation sector, and in Delhi, they exceed 30%. As per the study, Bharat was the world's fourth most significant greenhouse gas emitter - contrib-

uting 7.08 per cent of all global emissions in 2021.

Amrit Kaal defines New India's vision to be a developed nation in 2047. While India is growing at a record pace in its Amrit kaal, it also focuses on reducing its carbon footprints, one of the major sources of which is vehicles. The electric vehicles - EV revolution is transforming the world's vehicular data rapidly and simultaneously is contributing to reducing carbon footprints at large. When the world is gradually adopting EVs, how can the global torch-bearer for net zero emission be lacking in the race? The government of India came up with policies and initiatives to create awareness that boost the EV revolution in the country and put India on the global EV leaderboard in its Amrit kaal, involving public transport as well as private vehicles.

A total of 2.5 plus Million EVs have been sold in the country over the past nine-and-a-half years, out of which 19.7 Million have been sold in the past 30 months. More than 25 states have notified or drafted their EV policy. 380 electric vehicle manufacturers operate in India, and 1800 electric vehicle charging stations have already been installed. 133% growth has been observed in the sales of EVs from FY15 to FY20 2656.62 kilotonnes of carbon dioxide emission has been reduced as 1.32% of all vehicle sales in FY 21-22 were electric.

#### **E-Amrit**

E-Amrit serves as a one-stop solution for all information about electric vehicles, dispelling myths about their uptake, purchases, investment opportunities, regulations, subsidies, and other topics. The portal was created and is maintained by NITI Aayog as part of the UK-India Joint Roadmap 2030, which was agreed upon by the prime ministers of both nations and is a collaborative information-sharing program.

The goal of E-Amrit is to support government efforts to educate the public about EVs and the advantages of converting to electric vehicles. India has recently undertaken a number of steps to quicken the country's adoption of electric mobility and the decarbonization of transportation.

This portal has some interesting tools that help suggest the best options to buy an electric vehicle, guide you on starting an EV business, calculate electric vehicle benefits, find charging stations, and much more, which drives a transformation in the EV sector across the country.

#### **FAME**

The Ministry of Heavy Industries is putting the Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India (FAME India) Scheme Phase-II into action for a period of five years starting on April 1, 2019, with a total budgetary contribution of Rs. 10,000 crore. This Phase intends to support through demand incentives 7090 e-Buses, 5 lakhs e-3 Wheelers, 55000 e-4 Wheeler Passenger Cars, and 10 lakhs e-2 Wheelers in order to support the electrification of public & shared transportation. In addition, the scheme provides funding for the development of

charging infrastructure.

A total of 175 registered and revalidated models, 56 registered OEMs, and 8.32+ lakh vehicles have been sold as of July 2023 under the FAME-II scheme. Under the Phase I of the FAME India Scheme, the Ministry of Heavy Industries approved 520 Charging Stations/Infrastructure. Under Phase II of the FAME India Scheme, this Ministry has also approved 2,877 electric vehicle charging stations in 68 cities across 25 States and UTs, as well as 1,576 charging stations along 9 expressways and 16 highways. The three

**The country's course is steered towards a sustainable future, aligning with the global agenda to combat climate change and secure a cleaner, greener planet.**

Oil Marketing Companies (OMCs) of the Ministry of Petroleum and Natural Gas (MoPNG) have been granted Rs. 800 crore as capital subsidies for the construction of 7,432 public charging stations for electric vehicles.

As of February 2023, a total of 3738 electric buses have been sanctioned to 15 states and UTs states, and 2435 have been delivered under the FAME II scheme.

As per the latest notification by the government of India on November 7, 2023, a new phase of the manufacturing program for EV chargers was released. The list includes internal wires, harnesses, charge point operators and management systems. It aims to increase the degree of self-reliance in the EV sector by the end of the year 2024.

#### **PLI Scheme**

Production Linked Incentive (PLI) Scheme for Automotive Sector: On September 15, 2021, the government approved the PLI Scheme for Automotive Sector with a budgetary outlay of Rs. 25,938 crores. Electric vehicles are covered under this PLI scheme.

PLI Scheme for Advanced Chemistry Cell (ACC): On May 12, 2021, the government approved the PLI Scheme for the manufacturing of ACC in the country with a budgetary outlay of Rs. 18,100 crore. The scheme envisages establishing a competitive ACC battery manufacturing set-up in the country for 50 GWh. Additionally, 5GWh of niche ACC technologies is also covered under the scheme.

Bharat, in its Amrit Kaal, is witnessing transformations that were never thought of before. As it looks forward to being a net zero emitter by 2070, these initiatives are going to be catalysts for realizing this vision at large. This visionary initiative explains the foresighted approach by Prime Minister Shri Narendra Modi that will be helpful for ecology, and simultaneously, it will also boost the economy and employment in the country, reducing the dependency on crude from foreign countries.

# Path to Sustainability: Strategic Initiatives and Policy Innovations

- Deepanshu Singh: Public Policy expert. Ex-consultant G20 Presidency, India

In an era where climate change poses a significant global challenge, India has emerged as a pivotal player, balancing environmental commitments with economic growth under the stewardship of Prime Minister Shri Narendra Modi. This expanded article delves deeper into India's strategic initiatives, policies, and its role in global forums like the COP summit.

## Comprehensive Environmental Initiatives

Beyond PESA, INDCs, and the LiFe Movement, the Indian government has launched several other initiatives:

**National Solar Mission:** Part of the National Action Plan on Climate Change (NAPCC), this mission aims to establish India as a global leader in solar energy, with a target of 100 GW of solar power by 2022. As of December 1, 2023, India has achieved over 50 GW of installed solar capacity, exceeding its target of 100 GW by 2022. It makes India the third largest solar producer in the world, after China and the United States. Solar power now accounts for over 10% of India's total installed electricity capacity, and the cost of solar power in India has fallen significantly in recent years, making it competitive with other fossil fuel-based sources of electricity.

## Circular Economy: Waste-to-Wealth

India is aggressively promoting a circular economy to

**Mission aims to increase forest and tree cover, combat desertification, and enhance ecosystem services, including carbon sequestration. India's forest and tree cover increased to 24.6% of the country's total land area, up from 21.2% in 2013.**

convert waste into wealth. The NITI Aayog has developed action plans for various waste categories, including e-waste, industrial waste, and scrap metal. Additionally, Extended Producer Responsibility (EPR) regulations have been notified for several waste categories, fostering responsible waste management and recycling. The Indian government launched a new National Circular Economy

Policy, which aims to reduce waste generation by 50% and increase recycling rates to 70% by 2030.

Several Indian states have also introduced their circular economy policies and initiatives. For example, the state of Maharashtra has launched a program to convert construction and demolition waste into recycled aggregate for use in new construction projects.

**Jal Jeevan Mission:** Focused on providing safe and adequate drinking water through individual household tap connections, this mission is crucial for water conservation and management. Part of the Jal Jeevan Mission includes initiatives for rainwater harvesting and groundwater recharge. These practices help in maintaining groundwater levels and prevent the drying up of natural sources, which is vital for the ecosystem's sustainability. By reducing the dependency on rivers and lakes for direct water supply, the mission aids in preserving aquatic ecosystems.

**Green India Mission:** This mission aims to increase forest and tree cover, combat desertification, and enhance ecosystem services, including carbon sequestration. India's forest and tree cover increased to 24.6% of the country's total land area, up from 21.2% in 2013. This increase is due to a number of factors, including the Green India Mission, which has planted over 2.7 billion trees since its launch in 2014. The increase in forest and tree cover has helped to improve air quality, reduce soil erosion, and enhance biodiversity.

**Smart Cities Mission:** Promoting sustainable and inclusive cities, this mission integrates green building norms and clean technologies for urban development. Smart cities are designed with an emphasis on sustainable urban planning. It includes green building designs, efficient land use, and the preservation of open spaces, which help reduce the urban heat island effect and conserve natural habitats within city boundaries.

**FAME India Scheme (Faster Adoption and Manufacturing of Hybrid and Electric Vehicles):** By encouraging electric mobility, this scheme aims to reduce dependence on fossil fuels and control air pollution. The scheme has been successful in promoting electric mobility in India, with electric vehicle sales increasing by over 300% in the past

year. The Indian government is also working to develop a national charging infrastructure for electric vehicles.

### **Ban on Single-Use Plastics**

India's resolute steps towards eliminating single-use plastics have been crucial. The ban on such items and the implementation of EPR for plastic packaging not only address environmental concerns but also foster innovation and the development of eco-friendly alternatives, contributing to the concept of mindful consumption and a sustainable lifestyle.

### **Balancing Environment and Business**

The Indian government's strategy extends beyond regulatory measures to fostering a business-friendly ecosystem. For instance, the UJALA scheme for promoting LED lighting has significantly reduced energy consumption. Additionally, the National Clean Air Programme (NCAP) aims to tackle air pollution in major cities, creating opportunities for innovations in air quality management.

Investments in green infrastructure, including waste management and water conservation, have also received a boost. Public-Private Partnerships (PPPs) in these areas are not only addressing environmental concerns but are also contributing to economic growth.

### **India's Role at Global Forums**

India's leadership in climate action was prominently displayed at the COP summit in Dubai, where it pushed for a comprehensive approach to sustainable development. India advocated for the transfer of green technologies at affordable costs and emphasized the need for developed countries to fulfil their financial commitments to the de-

veloping world.

### **Data-Driven Success Stories**

India's renewable energy sector is a testament to its successful environmental policies. For instance, the country has achieved significant milestones in wind energy, becoming one of the world's largest wind energy producers. Additionally, the increase in renewable energy capacity has contributed to a reduction in carbon emissions.

The Compensatory Afforestation Fund Management and Planning Authority (CAMPA) initiative has also led to significant afforestation and regeneration activities, enhancing the country's green cover.

### **A Vision for the Future**

India's journey towards environmental sustainability and economic resilience is inspiring. The challenge ahead is to maintain this trajectory, adapting to emerging global environmental scenarios. Continuous policy innovation, international cooperation, and community empowerment will be key to India's success.

As India continues to lead by example, it offers a model for developing nations to balance ecological preservation with economic development. The nation's journey is a beacon of hope, demonstrating that a sustainable future is not just a vision but an achievable reality.



# Navigating the Green Path: India's Environmental Progress under Modi's Leadership

- Daivik S, M.Sc Environmental Science Graduate, Participant and Mentor - Youth Can Lead

In the transformative era under the leadership of Prime Minister Shri Narendra Modi, India has witnessed substantial progress across various sectors, with a notable emphasis on environmental sustainability. Recognising the global imperative to address climate change and the depletion of natural resources, the Modi government has undertaken significant initiatives to safeguard the environment, promote clean energy, and ensure a sustainable future for the nation.

Upon assuming office in 2014, Prime Minister Modi demonstrated his commitment to addressing climate change by redefining the Ministry of Environment and Forest as the Ministry of Environment, Forestry, and Climate Change. This pivotal step marked the government's acknowledgement of climate change as a pressing concern.

The **National Clean Air Programme (NCAP)**, launched in 2019, stands as a testament to India's commitment to combat air pollution. With a targeted reduction of 20-30% in air pollution levels across 100 cities by 2024, the program encompasses measures such as expanding public transportation, advocating for clean energy sources, and investing in pollution control technologies.

At the forefront of India's global environmental initiatives is the **International Solar Alliance (ISA)**, a flagship program aimed at promoting solar energy. With ambitious targets for renewable energy capacity, particularly in solar and wind power, India's focus on clean energy not only diminishes its carbon footprint but also enhances energy security.

The **Swachh Bharat Abhiyan**, launched in 2014, goes be-

ing natural resources.

Recognising the vital role of forests in maintaining ecological balance, the government has embarked on ambitious afforestation projects, such as the **Green India Mission**. This initiative, part of the National Action Plan on Climate Change, seeks to increase forest and tree cover, promote biodiversity, and enhance carbon sequestration.

Addressing the environmental challenges posed by the agriculture sector, the **National Mission for Sustainable Agriculture (NMSA)** promotes sustainable practices, focusing on water-use efficiency, soil health, and conservation. It ensures food security while mitigating the sector's environmental impact.

The **Pradhan Mantri Ujjwala Yojana (PMUY)** has environmental implications by providing clean cooking fuel to households below the poverty line. By promoting the use of LPG over traditional biomass fuels, the initiative reduces indoor air pollution, conserves forests, and contributes to overall environmental health.

In the realm of urban development, the **Smart Cities Mission** integrates environmental sustainability. By encouraging eco-friendly infrastructure, public transportation, and waste management practices, the initiative aims to create technologically advanced yet environmentally conscious urban spaces.

The government prioritises water conservation and management through initiatives like "**Jal Shakti Abhiyan**" and "**Har Ghar Jal**," focusing on rainwater harvesting, watershed management, and efficient water use.

**Recognising the vital role of forests in maintaining ecological balance, the government has embarked on ambitious afforestation projects, such as the Green India Mission. This initiative, part of the National Action Plan on Climate Change, seeks to increase forest and tree cover, promote biodiversity, and enhance carbon sequestration.**

yond addressing public health concerns by contributing to the protection of water bodies and ecosystems. By emphasising proper waste management and sanitation practices, the initiative plays a crucial role in safeguard-

The **Nagar Van Yojana**, launched on World Environment Day 2020, exemplifies the commitment to creating urban forests or "Nagar Vans" to enhance green cover in

cities. This initiative aligns with the goal of fostering ecological balance and ensuring a healthier living environment for urban residents.

The **Atal Bhujal Yojana (ABHY)**, launched in 2019, addresses the critical issue of depleting groundwater levels. By promoting community participation and efficient water-use practices, the scheme aims to ensure the long-term availability of groundwater, supporting both agriculture and drinking water needs in vulnerable regions.

India's participation in the Paris Agreement underscores the nation's commitment to reducing greenhouse gas emissions and increasing the share of non-fossil fuel energy capacity. It reflects Prime Minister Modi's dedication to balancing economic growth with environmental stewardship.

In addition to these policies, the government has implemented measures such as banning the import of single-use plastics, promoting renewable energy sources, investing in water conservation projects, advocating for electric vehicles, and improving energy efficiency in buildings. These collective efforts are indispensable for ensuring a sustainable future for India.

In conclusion, Prime Minister Shri Narendra Modi's government has laid a robust foundation for India's environmental sustainability, fostering a vision that transcends political boundaries. The nation's commitment to environmental stewardship and climate action stands as a testament to its dedication to a greener and more sustainable future.





# LiFE and PLI: Pioneering Strategies in India's Climate Change Battle

- N S Phalguni Bhat, Assistant Professor,  
Participant & Mentor, Youth Can Lead

Climate variability and change often have the most adverse effects on livelihoods and are currently evident. The disruptions in the climate pattern have been considered a serious issue by the Modi-led Indian Government.

In 2015, India's Ministry of Environment and Forests was modified to the Ministry of Environment, Forests and Climate Change. The first major decision of this ministry in 2019 of the Modi 2.0 government was to introduce the National Mission on Strategic Knowledge for Climate Change. It outlines India's domestic plan for sustainable development with specific proposals under each mission representing what India believes it needs to do in terms of ecologically sustainable development and serving the objectives of adaptation and mitigation. As one of the eight national missions that form the core of the National Action Plan, the NMSKCC seeks to build a vibrant and dynamic knowledge system that would inform and support national action for responding effectively to the objective of ecologically sustainable development.

Science and technology are among the strategic methodologies of NMSKCC to combat the impacts of climate change. Utilization of bamboo for distributed energy generation under the National Mission on Bamboo Applications (NMBA) coordinated by DST, Development of materials for next-generation solar cells under the Nano-Mission of DST, Development of instrumentation and sensors that may be useful for energy efficiency applications under DST's Technology Development Board (TDB) and many more are the prospects.

The transportation sector is responsible for 16.2% of all greenhouse gas emissions globally. Of these, 11.9% are from on-road vehicles. Understanding the seriousness of the issue, the replacement of fossil fuels is a desired solution. Hence, the NDA government is encour-

aging the production and adoption of electric vehicles.

To boost the manufacture of these, the “Production Linked Incentive (PLI) Scheme” was initiated by the Ministry of Heavy Industries for the Automobile and Auto component industry with a budgetary outlay of Rs.25,938 crore to provide financial incentives to boost domestic manufacturing of Advanced Automotive Technology products of electric vehicles and their components. The scheme provides incentives up to 18% of eligible sales of electric vehicles and their components. OLA Electric is one such EV Company to procure benefits out of the PLI scheme.

On the other side, to encourage demand by citizens to use electric vehicles, the Modi government has introduced a scheme called “FAME India Phase II Scheme” with a budgetary outlay of Rs. 10,000 crores for five years commencing from 2019, providing subsidy to buy buses, three-wheelers and four-wheelers that run electrically, for both personal and commercial use. Not just insisting on the countrymen to buy, the government also bestowed e-vehicles to state governments. For instance, the capital of Karnataka, the metropolitan city, received 75 electric buses from the FAME II scheme and is now part of the city's ‘Bengaluru Metropolitan Transport Corporation’. There is an additional approval for the procurement of 302 more such buses in 2023.

The use of EVs on Karnataka roads has an estimated result in energy savings of about 2.23 million tons of oil equivalent (MTOE) and reduced greenhouse gas emissions by 6.99 metric tons of carbon dioxide by 2031.

LiFE- Lifestyle for the Environment (LiFE) Movement' is a scheme introduced by our prime minister at COP26 in Glasgow in November 2021 that provides a sustainable life, not only to our country but the entire world.

According to the United Nations Environment Programme, if 1 billion people out of the entire global population of 8 billion adopt eco-friendly behaviours, the global emis-

sions will drop by 20%. LiFE seeks to promote these individual actions by involving everyone in the fight against climate change and bringing the 'planet first' principle into personal life. India is the first country to introduce LiFE in everyone's life in Nationally Determined Contributions (NDC). The mission envisions replacing the prevalent 'use-and-dispose' economy-governed by mindless and destructive consumption-with a circular economy, which would be defined by mindful and deliberate utilization by the practice of holistic energy conversation. SDGs followed can suit sustainable cities and communities (SDG 11), responsible production and consumption (SDG 12), climate change (SDG 13), life on land (SDG 15), and life under water (SDG 14) sustainable cities and communities (SDG 11), responsible production and consumption (SDG 12), climate change (SDG 13), life on land (SDG 15), and life under water (SDG 14).

When estimated against a business-as-usual scenario by 1 billion Indians in 2022-23 to 2027-28, the impact of LiFE actions can be significant, as demonstrated below with select examples:

- Switching off the car/scooter engines at traffic lights/ railway crossings can save up to 22.5 billion kWh of energy.
  - Turning off running taps when not in active use can save up to 9 trillion litres of water
  - Using a cloth bag instead of a plastic bag while shopping can save up to 375 million tonnes of solid waste from entering the landfill
  - Discarding non-functioning gadgets in the nearest e-recycling unit can recycle up to 0.75 million tonnes of e-waste
  - Composting waste food at home can save up to 15 billion tonnes of food from going to landfills
- Through adopting the principles of LiFE, each Bharateeya should combat the positive impact of drawing a good climate and sustainable life.

**According to the United Nations Environment Programme, if 1 billion people out of the entire global population of 8 billion adopt eco-friendly behaviours, the global emissions will drop by 20%.**



# Empowering Tomorrow: Steering India Towards a Cleaner, Greener Future

- A Surya Prakash Reddy, Recruiter in Pvt.Organisation, Member of Youth Can Lead- Cohort 5

**“In the philosophy of Indian living, nature is an inseparable part of our lives. Our ancestors taught us how to live in harmony with nature. Today, it’s our responsibility to protect and nurture the environment for future generations.” – Shri Narendra Modi.**

While the concerns about climate change and the preservation of natural resources are rising across the globe, India, under the leadership of Prime Minister Narendra Modi, has taken significant Initiatives towards adopting proactive and sustainable environmental policies. This article delves into the commendable efforts and initiatives undertaken by the Modi government in combating climate change and safeguarding the country's precious natural resources.

India is one of the world's fastest-growing economies, and our country faces the dual challenge of economic development and environmental conservation. Prime Minister Modi's government has consistently advocated a balanced approach that emphasises sustainable growth while prioritising the protection and rejuvenation of the environment. For Instance, one of the flagship initiatives is the Paris Agreement. India pledged to reduce its carbon intensity and increase the share of non-fossil fuel-based energy sources in its energy mix. The government has set an ambitious target of achieving 450 gigawatts of renewable energy capacity by 2030. This commitment to renewable energy sources such as solar, wind, and hydroelectric power reflects India's determination to reduce its carbon footprint and mitigate the effects of climate change.

The National Action Plan on Climate Change (NAPCC) is a landmark initiative by the Indian government, showing its foresight and proactive approach to tackling the challenges posed by climate change. One of the pivotal aspects of the NAPCC is its sectoral approach, which involves different ministries and departments working collaboratively to formulate and implement strategies tailored to their specific domains. The plan outlines eight national missions- which encompass a wide spectrum of sectors, including solar energy, energy efficiency, sustainable agriculture, water conservation, and creating a strategic knowledge platform for climate change.

The Modi government has spearheaded numerous other flagship programs aimed at the conservation and rejuvenation of natural resources:

**1. The Swachh Bharat Abhiyan** (Clean India Mission) stands as a testament to the government's dedication to improving sanitation, waste management, and cleanliness across the nation. This initiative has not only enhanced public health but also contributed to preserving the environment by promoting proper waste disposal practices.

**2. Pradhan Mantri Krishi Sinchayee Yojana** (Prime Minister's Agriculture Irrigation Scheme) focuses on efficient water management in agriculture, aiming to enhance water use efficiency and reduce water wastage in farming practices. By encouraging the adoption of modern irrigation techniques and promoting water conservation measures, the government aims to safeguard this precious resource for future generations.

**3. The Namami Gange project** is an ambitious effort aimed at cleaning and conserving the river Ganges, a lifeline for millions of Indians. The multi-pronged approach under this project involves sewage treatment, riverfront development, and public participation, demonstrating a holistic strategy to rejuvenate one of India's most important rivers.

**4. The Smart Cities Mission** stands as a testament to the government's visionary approach toward urban development. This initiative is not merely about constructing new buildings or roads; it is a comprehensive strategy aimed at transforming cities into vibrant, sustainable, and technologically advanced hubs that prioritise the well-being of residents and the environment.

**5. The 'Ujjwala Yojana'** stands out as a transformative initiative that has positively impacted millions of households across India. By providing access to clean cooking

fuel, such as LPG (liquefied petroleum gas), this program has significantly contributed to reducing indoor air pollution and improving the health and well-being of families, especially women and children.

Beyond domestic policies, India, under Prime Minister Modi's leadership, has actively engaged in global environmental initiatives, emphasising the country's commitment to international cooperation in addressing environmental challenges.

**1. The International Solar Alliance (ISA)** is a notable platform that underscores India's leadership in promoting solar energy on a global scale. Established with the aim of harnessing solar power to meet energy needs and reduce dependence on fossil fuels, the ISA facilitates collaboration among countries to promote solar technology adoption and investment in solar projects.

**2. The Coalition for Disaster Resilient Infrastructure (CDRI)** is another significant initiative led by India that focuses on enhancing the resilience of infrastructure against natural disasters and the impact of climate change. By fostering knowledge sharing, innovation, and capacity building, the CDRI aims to create an infrastructure that is more resilient to extreme weather events and disasters, thereby minimising their socio-economic and environmental consequences.

Prime Minister Narendra Modi's government embodies the ethos of 'Sabka Saath, Sabka Vikas' (inclusive growth for all), extending this principle to environmental conservation. The government's emphasis on citizen participation and inclusivity in environmental initiatives ensures that every individual becomes a stakeholder in the nation's sustainable development journey.

Under the leadership of Prime Minister Narendra Modi, his government has been instrumental in shaping India's environmental policies, fostering a culture of environmental consciousness, and spearheading initiatives that pave the way for a greener and more sustainable future. The government's commitment to environmental conservation stands as a testament to its resilience, foresight, and dedication to securing a better tomorrow for India and the planet.



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# India's Green Odyssey: Nurturing Sustainability in a Changing Climate

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- Harini S - Student Pursuing B. Tech in Computer Science Engineering  
Youth Can Lead, Cohort 5 Participant

In the intricate tapestry of global challenges, environmental preservation stands as a linchpin, weaving together the very fabric of our existence. The Narendra Modi government in India has embarked on a transformative journey, implementing a series of pro-environment policies that go beyond mere words, embodying a dedicated commitment to protecting the air we breathe, the water we drink, and the land that supports our existence.

The environment transcends the realm of awareness campaigns; it stands as a fundamental pillar of our survival. It encompasses the air sustaining our breath, the water quenching our thirst, the soil nurturing us, and the sky shielding us. This philosophy underpins the environmental initiatives of the Modi government.

At the forefront of this green revolution is the National Action Plan on Climate Change (NAPCC), a comprehensive roadmap unveiled in 2008. Eight missions were charted, each addressing a facet of the climate change challenge,

**Climate change is not a predicament of the future; it is an immediate reality. We must act now, decisively, and collectively to protect our planet.**

from energy and agriculture to forests and water. A beacon in this endeavour is the relentless pursuit of renewable energy. India's pivotal role in establishing the International Solar Alliance (ISA) signifies not only a national commitment but a global leadership role in promoting solar energy development in tropical countries. The goal is to mobilize \$1 trillion in solar investments by 2030, fostering sustainable energy practices and reducing reliance on fossil fuels, the primary source of greenhouse gas emissions.

Emphasizing the need for individual responsibility in addressing environmental degradation, it is stressed that every modest action we take can significantly impact the quest for a greener future. This sentiment finds tangible

expression in the Unnat Jyoti by Affordable LEDs for All (UJALA) initiative. Under this scheme, millions of energy-efficient LED bulbs have been distributed, aiming to curtail energy consumption and reduce associated emissions.

However, environmental stewardship extends beyond energy concerns. The government recognizes that forests are the lungs of the Earth, absorbing carbon dioxide and nurturing biodiversity. Despite the Forest Conservation Act (FCA) Amendment in 2023 allowing for the diversion of forest land for certain infrastructure projects, the government emphasizes strict environmental safeguards. The delicate dance between development and conservation seeks to protect ecosystems while supporting essential infrastructure.

Climate change is not a predicament of the future; it is an immediate reality. We must act now, decisively, and collectively to protect our planet. The National Clean Air Programme (NCAP) and the National River Conservation Plan (NRCP) stand as bulwarks against the immediate challenges posed by air and water pollution. Stricter emission standards, industrial pollution control, and measures promoting clean fuels collectively aim to improve air quality and safeguard public health and the environment.

Moreover, the government's emphasis on enhancing forest cover and biodiversity conservation through the National Wildlife Action Plan (NWAP) underscores a commitment to preserving not only landscapes but the rich tapestry of life they harbour. By increasing funding for wildlife protection and habitat restoration, the government acknowledges the interconnectedness of all living beings in the delicate balance of the ecosystem.

India proudly asserts its role on the international stage, stating, "We are not only a part of the global effort to combat climate change, but we are leading it. We are working to create a sustainable future for our people and the world." This proactive stance aligns with the Paris Agreement commitments and showcases a commitment to collaborative efforts for a sustainable future.

In the pursuit of environmental sustainability, the Modi

A photograph of Narendra Modi, the Prime Minister of India, speaking at a podium. He is wearing a white shirt, a purple shawl, and glasses. He is gesturing with his right hand while speaking into a microphone. The background is a blurred orange and white striped pattern.

government's commitment extends beyond policy initiatives, emphasizing the need for a cultural shift towards ecological consciousness. Educational programs and public awareness campaigns play a vital role in fostering a deeper understanding of the symbiotic relationship between human activities and the environment. By nurturing an eco-centric mindset, the government aims to instil a sense of responsibility and stewardship among citizens, ensuring that the principles of sustainability resonate not just within the corridors of power but in the everyday choices of individuals. This holistic approach, integrating policy measures with a broader cultural awakening, positions India on a trajectory toward a future where environmental harmony and human prosperity coalesce.

In conclusion, India's green odyssey is a testament to the transformative power of environmental policy when rooted in a philosophy that views nature not as a resource to exploit but as a legacy to preserve. Each policy, from the promotion of renewable energy to biodiversity conservation, reflects a commitment to leaving behind a planet that not only survives but thrives. As we navigate the complex challenges of climate change, the Narendra Modi government beckons us to join hands, recognizing that every drop saved, every tree planted, and every watt conserved is a step toward a greener and more sustainable tomorrow.

# Cultivating a Greener Future: India's Approach to Sustainable Agriculture

- Harshada Abhyankar: Masters in Public Policy from Gokhale Institute of Politics and Economics, Pune.

Climate change and global warming are global phenomena, and no country has not experienced their effects. As per IPCC's 6th cycle report, India has been predicted to suffer the most due to global climate change. With the tropical location of our country, the vulnerabilities have increased, and the proximity to seas and oceans further exposes us to frequent cyclones. Since climate change is universal, the implications are felt in all sectors and unsustainable practices in every sector are further contributing to it.

The share of agriculture in GDP is approximately 18% but employs around 45% of the labour force. The decreased productivity of the agricultural sector has been attributed to rapid climate change - erratic rains, prolonged droughts, high temperatures, etc. But at the same time,

long years of excessive fertilizer usage in areas like Punjab and Haryana have turned the soil saline, and over-irrigation has caused immense depletion of groundwater levels. In contrast, multiple crop cycles in a year have led to soil turning infertile. Though agriculture performed well during the covid 19 lockdown, the reason was reverse migration. The challenges emerging due to climate change and unsustainable agricultural practices need to be addressed.

Taking these into consideration and India's promise to mitigate global climate change, the current government in 2015 came up with a comprehensive sustainable agriculture framework under Paramparagat Krishi Vikas Yojana. It has been designated as a major component of soil health management under the National Mission for





### Sustainable Agriculture.

The scheme envisages promoting commercial organic farming and leaving no pesticide residue on the farm produce. Organic farming will increase farmers' incomes as well as improve consumer health. The scheme was initially designed to be implemented in a cluster approach format for better results and supervision. It also guarantees assistance for soil health testing and training of cluster members for organic farming. The scheme aims to improve soil health by integrated manure management. It seeks to introduce the components such as Panchgavya, Beejamrut and Jeevamrut. These components are chemical-free and hence allow soil rejuvenation. It also suggests the use of liquid pesticides, neem cakes, and neem oil. The farmers will be assisted in animal rearing, market integration and branding as well. The concept of natural farming allows the integration of crops, trees and livestock.

Under the national mission for sustainable agriculture, the government considers returning to traditional natural farming practices as a measure to curb climate change by increasing carbon sequestration and reducing greenhouse gas emissions. Though the gestation period of natural farming cycles is high and attached risks are high, in the long run, it promises to increase farmer's income. Tackling the issue of farmer's income is vital, as the economic survey of 2019 claims that climate change could reduce annual agricultural income by 15-20% on average.

Recently, a natural farming conclave was organized at Surat, and a committee has been set up as well to promote zero-budget natural farming. Along with wide coverage through government initiatives, zero-budget natural farming is also being promoted through the Bharatiya Prakitik Krishi Paddhati programme. The four wheels of zero-budget natural farming are Jeevamrut, Beejamrut, Whapasa and Acchadana. It expects the application of locally available inputs and, thus, reduces the input cost. It will also allow the restoration of the ecosystem's health and reduce water consumption. It also promotes the cultivation of climate-resilient crops to mitigate risks due to climate change.

However, certain concerns need to be addressed for the holistic adoption of zero-budget natural farming organic farming. Initially, the farmers have noticed a drop in agricultural yields with the adoption of natural farming methods. Hence, to have a smooth transition, the involved risk needs to be covered by greater penetration of schemes like PM Fasal Bima Yojana. This risk cover will enhance the farmer's appetite for smooth transitioning.

The application of zero-budget natural farming needs to be scientifically validated in various areas with different weather, geography, and cropping patterns throughout the country. It has been emphasized by NITI Aayog's experts as well. Robust support initiatives need to be designed to promote agri-based MSMEs in village clusters to provide inputs for chemical-free agriculture. The initially required guidance by the farmers needs to be accessible, affordable and easily available. There needs to be greater peer-to-peer interactions between farmers to boost confidence for a shift to natural farming.

Demonstrations by champion farmers who are practising natural farming have been fruitful in strengthening the natural farming movement in Andhra Pradesh. Lastly, community institutions need to be leveraged for greater awareness, inspiration and learning. While updating the current agricultural university's syllabus, farmers need to unlearn and learn in the process.

Calculated steps are crucial to avoid crises like the one in Sri Lanka due to a shift from chemical to natural fertilizer-based agriculture. But if not today, agriculture will demand this change tomorrow. Hence, smaller steps towards sustainability will allow India to fulfil its global climate change mitigation commitments of going carbon neutral, increasing carbon sequestration, etc.

As rightly said by our honourable Prime Minister Shri Narendra Modi, "The basis of the speed of progress in our country is the spirit of Sabka Prayas." If it's an honest, integrated Sab ka Prayas, then Sab ka Vikas is inevitable.

# India's Green Transit Initiative: Steering Towards an Eco-Friendly Future

- Purvi Patil: Bachelors in Economics from Savitribai Phule Pune University.

The Indian transport sector accounts for roughly 13.5% of India's energy-related CO2 emissions. It is becoming increasingly important to accelerate our sustainability efforts to limit climate change. A crucial element of our efforts is renewable energy and achieving energy efficiency in virtually every aspect of our lives, such as transportation. Specifically public transportation, such as buses and railways, since a large chunk of the population relies heavily on their services.

**In January 2023, it was announced that the Centre plans to procure 50,000 electric buses with an investment of \$10 billion under the National e-Bus Programme.**

Traditionally, such means of transportation are heavily dependent on non-renewable sources of energy like diesel. Keeping in mind the ambitious goals under the Sustainable Development Goals (SDGs) and the Paris Agreement, it has become important for us

to create policies and development plans that keep sustainability at their centres.

How has the Central government undertaken the exercise to ensure energy efficiency in public transit?





### Energy Efficiency in Public Transportation in India

Regulation is key to achieving energy efficiency in public transit. The details of such regulation are clearly stated in the Paris Agreement and the SDGs. The Paris Agreement mandated the undersigned countries to develop an integrated electro-mobility ecosystem encompassing various transport modes, implemented in conjunction with the broader sustainable transport principles. Furthermore, to achieve this goal, electric drive vehicles need to represent 35% of global sales in 2030. It also requires the electrification of global rail transport.

Keeping this in mind, India has steadily increased its efforts to electrify public and private transportation. Collectively, the country has witnessed an exponential rise in the adoption of all types of EVs available in the market. As of August 2023, there are over 28 lakh units of EVs on Indian roads, and this figure is steadily rising. India is on its way to decarbonise the transport sector in the country.

The central government has implemented several important policies and schemes that act as directives and guidelines for the states and local governments to aid our efforts in becoming a net-zero country by 2070. These policies and schemes are as follows:

**1. National Electric Mobility Mission Plan (NEMMP):** The NEMMP provides a vision for the adoption of electric vehicles and their manufacturing in the country. Under this plan, the 'Faster Adoption and Manufacturing of Electric Vehicles' in India (FAME) was launched by the Department of Heavy Industries. The scheme has been implemented in two phases. The FAME I scheme (2015-2019) focused on market creation through demand in-

centives across several vehicle segments. It supported 2.78 lakh EVs and allotted 465 buses to various states with a total demand outlay of Rs. 343 crores. FAME II (2019-2024) focuses on the electrification of public and shared transportation and increasing demand by way of subsidies for 7000 e-buses and other vehicles. The government also commissioned the National Mission on Transformative Mobility and Battery Storage under this phase.

**2. Production-Linked Incentive (PLI) Scheme for Advanced Chemistry Cell (ACC) Battery Storage:** To aid the growing demand for EVs, the government launched the PLI scheme for domestic manufacturing of ACC Battery Storage. The scheme aims to strengthen the ecosystem for electric mobility and battery storage in the country, with an outlay of Rs. 18,000 crores. Domestic manufacturing of such batteries will ensure that the levelized cost of manufacturing in India is globally competitive.

**3. Production-Linked Incentive (PLI) Scheme for Automobile and Auto Component Industry:** This PLI scheme offers financial incentives to boost domestic manufacturing of Advances Automotive Technology products and attract investments in the automotive manufacturing value chain. The objective of the scheme is to overcome cost disabilities, create economies of scale, generate employment, and build a robust supply chain. A sub-scheme of the PLI Scheme is the Champion OEM Incentive Scheme, which is a 'sales value linked' scheme applicable to Battery Electric Vehicles and Hydrogen Fuel Cell Vehicles of all segments.

**4. Ministry of Power's notification on Public Charging Infrastructure:** Electrification of public transit natu-

rally warrants charging stations. The Ministry of Power released guidelines for setting up charging infrastructure that are safe, affordable and reliable. There are two phases of the scheme. Phase I of the scheme targeted roads connecting cities with populations of more than 4 million. The second phase, Phase II, currently under implementation, focuses on establishing charging infrastructure in state capitals, UTs and all major roads and highways connecting to these cities. As of June 2023, India has installed 8,738 operational public electric vehicle charging stations, according to the Bureau of Energy Efficiency and the Ministry of Power. The country aspires to install a total of 46,397 public charging stations for EVs in nine major cities by 2030. About 19% of the target charging stations have been installed so far.

In January 2023, it was announced that the Centre plans to procure 50,000 electric buses with an investment of \$10 billion under the National e-Bus Programme. The programme also aims to aggregate demand, support state transport undertakings to integrate electric buses into their operations and work with states and DISCOMS to support the creation of charging infrastructure at their depots. Similarly, with respect to railways, till March 2023, the Indian Railways electrified 58,812 Route Kilometres (RKMs), which is about 90% of the total network of 65,300 RKMs. The Indian Railways is on track to achieve 100% electrification of the railway network by December 2023. The Indian railway network is the largest of its kind in the world. Therefore, achieving 100% electrification

will be a major feat in itself.

### Challenges in achieving energy efficiency

With a growing demand for and number of EVs in public transit, the number and capacity of these charging stations are inadequate. The number of buses being added continually exceeds the number of charging stations available for them. Adding more charging stations and expanding electricity capacity can be an expensive affair for the government in the short run.

The second hurdle is the source of electricity itself. Public transit cannot be completely energy efficient unless the electricity they use is generated from renewable sources of energy. At present, India is still largely dependent on coal imports for its electricity generation. There is, however, a gradual increase in renewable sources in the energy mix. Until renewable energy sources constitute a majority of the total electricity generated, our public transit system will remain relatively energy inefficient.

These issues are mainly related to State-owned electricity boards, most of which are not profitable. Therefore, there is a need to look beyond the traditional means of funding projects. The government should also expand inter-department and public-private partnerships to aid its efforts in achieving its net-zero ambitions. Such partnerships would allow the exploration of joint financing methods.



# Brightening the Future: India's Commitment to Solar Energy Initiatives

- Vaibhavi Pingale: Visiting Professor of Economics & Public Policy at Gokhale Institute of Politics and Economics and Savitribai Phule Pune University

**“India will meet 50% of its energy requirements from renewable energy by 2030”.**

**-Prime Minister Narendra Modi, at COP26 Glasgow, 2nd November, 2021**



This goal is known as the Third Amrit among Panchamrit or Five Nectars to combat climate change, which Prime Minister Shri Narendra Modi announced at the same event. Along with the announcement of Panchamrit, he shared varied Indian initiatives in this area. For example, the International Solar Alliance (ISA) is an initiative proposed by Prime Minister Narendra Modi along with the President of France, launched at the UN Climate Change Conference in Paris on 30th November 2015.

Another idea proposed by Prime Minister Modi was the One Sun, One World, One Grid (OSOSOG) at the First Assembly of the ISA in October 2018 to connect energy supply across borders. OSOWOG aims to provide power to about 140 countries through a common grid that will ensure the transfer of clean and efficient solar power. By 2030, ISA hopes to raise US \$1 trillion in finance to help

developing nations build their solar power infrastructure to meet their energy demands.

Recently released World Investment Report 2023 highlights that developing countries need renewable energy investments of about US \$1.7 trillion each year but attracted only \$544 billion in clean energy Foreign Direct Investment (FDI) in 2022. The trend of investing in the Renewable Energy (RE) industry is primarily dominated by investments in the solar energy sector, which has seen an upward trend in the past years. The solar energy sector contributed to ~52% of overall RE investments and ~11.5% of global investments in the energy sector in 2022. Global investment in the solar energy sector is expected to be US\$ 380 billion this year. However, these increasing investments are yet to meet the wide demand for energy.

Within Asia Pacific regions, investments have been dominated by economies that have a mature solar PV market, such as China, the United States of America (USA), Japan, Spain, Australia, the Netherlands, South Korea, Brazil, Vietnam, Germany, and India. However, most investment goes to China & USA. Therefore, a lot of joint efforts are required in order to help the rest of the world attract funds for solar installations, as mentioned in the 6th Assembly of International Solar Alliance to be held in New Delhi from 30th October to 2nd November 2023.

Evidently, to fight against climate change, the major limitation is the huge scale of financial resources and investments in technology that are required. Officially, the term used in this regard is Climate Finance.

Climate finance refers to local, national or transnational financing drawn from public, private and alternative sources of financing-that seeks to support mitigation and adaptation actions that will address climate change.

The Convention, the Kyoto Protocol and the Paris Agreement call for financial assistance from Parties with more financial resources to those that are less endowed and more vulnerable. It recognises that the contribution of countries to climate change and their capacity to prevent it and cope with its consequences vary enormously.

According to the report prepared under India's G20 Presidency, titled, 'Roadmap of Solar Energy for Universal Energy Access', The global share of the population without access to electricity was 9% in 2021, i.e., 675 million. At the current growth rate of energy access, 660 million people may still not have access to electricity by 2030, i.e., about 8% of the global population.

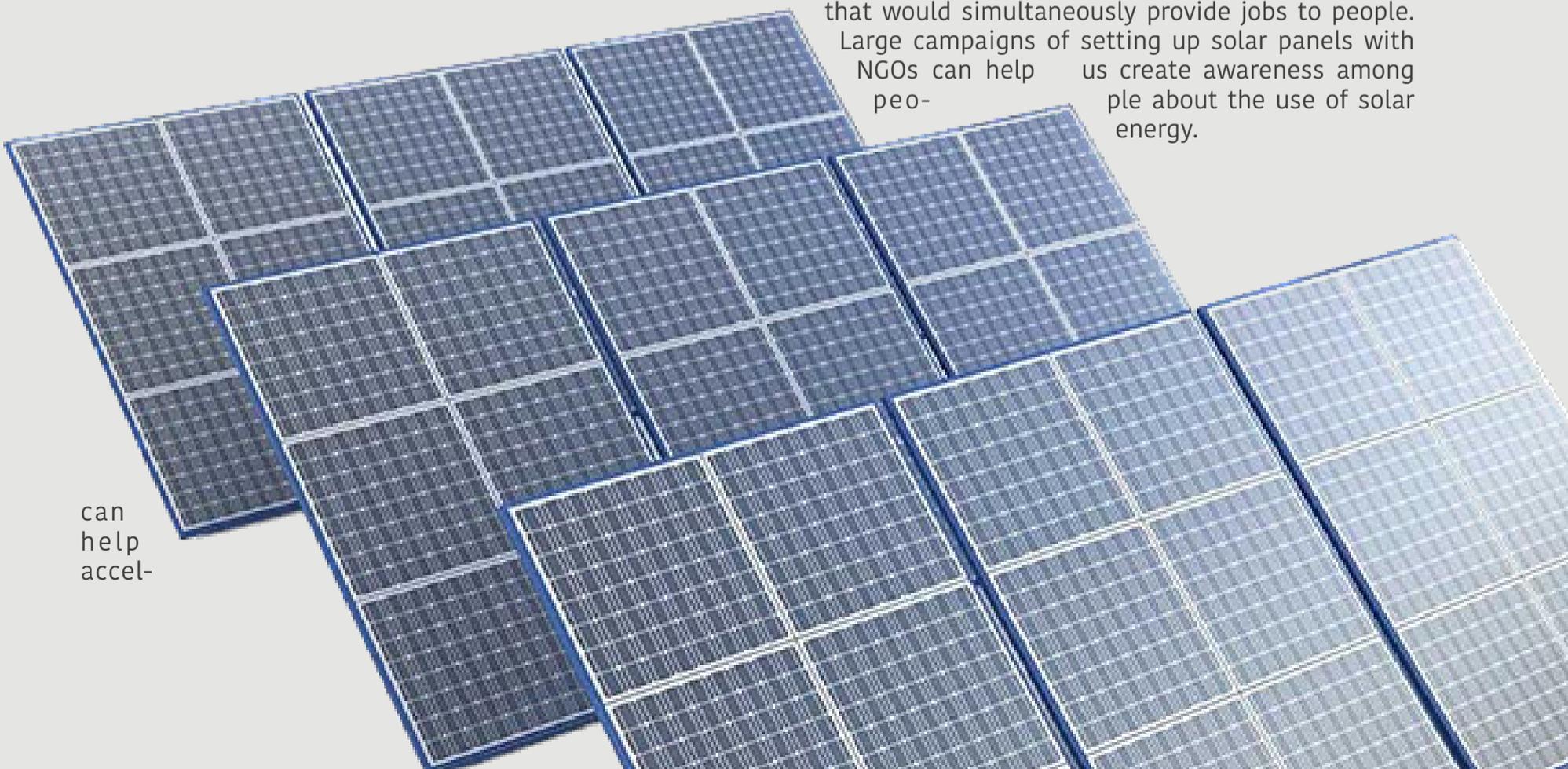
However, a sustainable option is now available. Solar combined with battery storage is emerging as the best energy choice for electrification due to its technical maturity, affordable cost, modularity and flexibility, localised generation, bankability, and climate and social benefits. Additionally, integrating solar PV clean cooking with solar electrification solutions

erate efforts to achieve clean cooking access.

Although the technology solutions needed to achieve energy access are available, several challenges need to be addressed to scale up their deployment sustainably. These challenges include a lack of proper policy and regulations, affordability issues, and a deficiency of technical and financial experts from the energy sector. India is currently driving on a difficult road wherein it has aimed to provide electricity to all citizens for 24 hours, which would require massive energy production. And now, with the new announcements, at least 50% of the energy used in this electricity creation should be renewable or non-fossil. On one hand, there is an international commitment that is extremely useful for the whole world. Still, with a lot of technical, infrastructural, and financial hurdles, there is a commitment given to its domestic citizens.

Based on the assessment and analysis of energy access deficit countries, it is clear that the roadmap for achieving universal energy access by 2030 will involve a combination of solutions, including grid extension, solar-powered mini-grids and DRE solutions. It is estimated that around 59% of the un-electrified population can be best suited for electrification through solar-powered mini-grids, about 30% through grid extension and the remaining 11% through DRE solutions. An investment of around US \$192 Billion will be required to deploy approximately 25,738 MW capacities of solar-powered mini-grids, 1,224 MW of solar-based DRE solutions, and develop grid extension infrastructure.

Over here, producing energy through non-fossils is a great step to combat climate change, but the question is about how. Now, the world has paid attention to the choice India tries to make on this fiddly path. India should fully make use of carbon markets to get the funds. It should continue to partner with countries working on renewable energy; however, it should tap multiple states to set up the plants. The rural employment programme, MGNREGA, can be utilised to build the required infrastructure for energy production that would simultaneously provide jobs to people. Large campaigns of setting up solar panels with NGOs can help us create awareness among people about the use of solar energy.



can help accel-



# मैंग्रोव वनों को बचाने की अनूठी पहल

- सुधीर कुमार, शोधार्थी, बनारस हिंदू विश्वविद्यालय

प्रधानमंत्री नरेंद्र मोदी के नेतृत्व में देश ने विकास के कई नए आयाम स्थापित किये हैं, सुखद यह है कि केंद्र सरकार ने विकास की विविधता पर विशेष ध्यान दिया है, जिसका परिणाम यह है कि आज पर्यावरण को लेकर भी लोगों में भारी जागरूकता देखने को मिल रही है। केंद्र सरकार की प्राथमिकता ने यह स्पष्ट संदेश दिया कि विकास के साथ-साथ पर्यावरण संरक्षण भी संभव है। वैसे तो मोदी सरकार ने पर्यावरण संरक्षण की दिशा में कई ठोस कदम उठाए हैं किन्तु 'मिष्ठी योजना' की घोषणा को मैंग्रोव वनों की वृद्धि और संरक्षण की दिशा में एक बड़ा कदम माना जा रहा है। इस योजना के तहत देश के तटीय और आर्द्रभूमि क्षेत्रों में मैंग्रोव वनों के विकास पर विशेष बल दिया जा रहा है। यह जलवायु परिवर्तन से निपटने की दिशा में केंद्र सरकार की सक्रियता का उल्लेखनीय उदाहरण भी है। गौरतलब है कि मिस्र के शर्म-अल-शेख में आयोजित कॉप-27 में भारत 'मैंग्रोव एलायंस फार क्लाइमेट' का हिस्सा बनकर इस दिशा में पहल कर चुका है। मैंग्रोव का संरक्षण जैव विविधता के संरक्षण, जलवायु संकट के निवारण और रोजगार सृजन की दृष्टि से भी महत्वपूर्ण है। मैंग्रोव जैव विविधता की प्रचुरता और समृद्ध पारिस्थितिकी तंत्र के केंद्र होते हैं, लेकिन जलवायु परिवर्तन, वनोन्मूलन, कृषि के प्रसार, मत्स्य पालन की अधिकता, प्रदूषण की मार और तटीय क्षेत्रों में

बढ़ते मानवीय हस्तक्षेपों के कारण आज ये सिकुड़ते जा रहे हैं। यूनेस्को के अनुसार, दुनिया भर में मैंग्रोव वनों का लगभग दो तिहाई हिस्सा नष्ट हो चुका है या क्षरण की कगार पर है। वहीं, भारत वन स्थिति रिपोर्ट, 2022 के मुताबिक देश में मैंग्रोव वन कुल भू-क्षेत्र के केवल 0.15 प्रतिशत यानी 4,992 वर्ग किलोमीटर क्षेत्र में विस्तृत हैं। देश के नौ राज्यों और तीन केंद्र शासित प्रदेशों में इसकी प्रचुरता है। पूरी दुनिया में मैंग्रोव के लिए सबसे प्रसिद्ध क्षेत्र सुंदरबन है।

मैंग्रोव पृथ्वी पर सबसे अधिक उत्पादक प्राकृतिक पारिस्थितिकी प्रणाली में से है। ये दुनिया भर के सभी उष्णकटिबंधीय वनों के एक प्रतिशत हिस्से को आच्छादित करते हैं। मैंग्रोव मुख्य रूप से ऐसे क्षेत्रों में पाए जाते हैं, जहां नदियों के मीठे और समुद्र के खारे पानी का संगम होता है। विशेषकर डेल्टाई और आर्द्रभूमि क्षेत्रों में इसके विकास की असीम संभावनाएं होती हैं। दुनिया के दो तिहाई मैंग्रोव वन सिर्फ 12 देशों में पाए जाते हैं। अकेले इंडोनेशिया में दुनिया के कुल मैंग्रोव वनों का 20 प्रतिशत पाया जाता है। भारत के तटवर्ती क्षेत्रों में मैंग्रोव वनों की प्रधानता है। इन वनों का गहरा पारिस्थितिकी, आर्थिक और सामाजिक महत्त्व है। मैंग्रोव चक्रवात, सुनामी, बढ़ते समुद्री जलस्तर और तटीय



भूमि के कटाव के खिलाफ प्राकृतिक रक्षक की भूमिका निभाते हैं। इस तरह मैंग्रोव जलवायु परिवर्तन के प्रतिकूल प्रभावों से मानवता की रक्षा करते हैं। वातावरण से प्रभावशाली दर से कार्बन डाइ-ऑक्साइड का अवशोषण करने तथा जैव-विविधता के आश्रय-स्थल के रूप में मैंग्रोव वनों के व्यापक जलवायु लाभ है। ये जीवाश्म ईंधनों के जलावन से वातावरण में ग्रीनहाउस गैसों की मोटी होती परत को पतली करने में सहायक हैं। मैंग्रोव एलायंस फार क्लाइमेट के मुताबिक, मैंग्रोव के घने वन भूमि आधारित उष्णकटिबंधीय वर्षावनों की तुलना में 400 प्रतिशत तेजी से कार्बन जमा करते हैं। दिलचस्प है कि मैंग्रोव अधिकांश कार्बन को अपनी जड़ों, शाखाओं, मिट्टी और तलछट में संग्रहीत करते हैं। एक अनुमान के मुताबिक एक हेक्टेयर भूमि पर लगे मैंग्रोव वन 3,754 टन कार्बन डाइ-ऑक्साइड अवशोषित कर लेते हैं, जिससे ग्लोबल वार्मिंग से लड़ने में मदद मिलती है।

मैंग्रोव वनों के व्यापक आर्थिक लाभ भी हैं। एक हेक्टेयर में लगे मैंग्रोव वन प्रतिवर्ष 33-57 हजार डॉलर मूल्य का आर्थिक लाभ प्रदान करते हैं। दुनियाभर में 12 करोड़ से भी अधिक लोग प्रत्यक्ष और अप्रत्यक्ष तौर पर रोजगार के लिए मैंग्रोव वनों पर निर्भर हैं। इस तरह, मैंग्रोव तटीय समुदायों को उत्पाद और सेवाओं के जरिये रोजगार उपलब्ध कराकर खाद्य सुरक्षा और जीवन की रक्षा का प्राकृतिक तंत्र विकसित करते हैं। हालांकि, बढ़ते मानवीय हस्तक्षेपों के कारण मैंग्रोव वनों की पारिस्थितिकी में अप्रिय बदलाव देखने को मिले हैं। ग्लोबल मैंग्रोव एलायंस ने अपनी 2022 की रिपोर्ट में बताया था कि 2010 से 2020 के बीच लगभग 600 वर्ग किमी मैंग्रोव नष्ट हो गए। मैंग्रोव के नष्ट होने में मानव जनित कारकों की हिस्सेदारी 62 प्रतिशत तक है। जलीय कृषि, मत्स्य पालन की अधिकता और कृषि उद्देश्यों के लिए रास्ता बनाने के लिए मैंग्रोव वनों को साफ किया जाना चिंताजनक है। समृद्ध और स्वस्थ पारिस्थितिक-तंत्र तथा जलवायविक संतुलन के लिए मैंग्रोव वनों को बचाना आवश्यक

है। मैंग्रोव वनों का घटता क्षेत्रफल एक बड़ी पर्यावरणीय और आर्थिक आपदा है। आर्थिक और पारिस्थितिकीय लाभ के लिए इन वनों की बहाली सुनिश्चित करना आवश्यक है और इस दिशा में केंद्र सरकार निरंतर प्रयासरत है।

वर्ष 2004 में हिंद महासागर में आयी सुनामी से पड़े पैमाने पर मैंग्रोव वनों की हानि हुई थी। तत्पश्चात, इन वनों की पुनर्स्थापना के लिए अनेक उल्लेखनीय प्रयास भी किये जा रहे हैं। आइयूसीएन ने भारत सहित आठ देशों में मैंग्रोव वन के संरक्षण के लिए 'मैंग्रोव फॉर फ्यूचर' नामक पहल की शुरुआत की। पिछले साल, दक्षिण अमेरिका के सात देशों ने मैंग्रोव वनों के संरक्षण के लिए बहाली परियोजना प्रारंभ की थी। जानकारों के मुताबिक, मैंग्रोव वनों की बहाली में निवेश का प्रतिफल चार गुना होता है। सतत भविष्य के लिए इस कार्बन-अवशोषक प्राकृतिक संसाधन की सुरक्षा करना जरूरी है। मैंग्रोव वनों को लोभ की दृष्टि से न देखा जाये। लालच के कारण यह समृद्ध पारिस्थितिकी तंत्र खतरे में है। अतः इन वनों के संरक्षण पर विशेष बल दिया जाये। यह अच्छी बात है कि संयुक्त अरब अमीरात और इंडोनेशिया के नेतृत्व में भारत, श्रीलंका, आस्ट्रेलिया, जापान और स्पेन जैसे देश एक अंतर-सरकारी गठबंधन के रूप में मैंग्रोव वनों के संरक्षण के निमित्त काम कर रहे हैं। इनका संयुक्त लक्ष्य 2024 तक छह लाख हेक्टेयर में मैंग्रोव वनों का आवरण विकसित करना है। मैंग्रोव वन तटीय समुदायों को चक्रवात और सूनामी के दुष्प्रभावों से रक्षा करते हैं। तटीय समुदायों की आजीविका का प्रमुख साधन होने तथा जलवायु संकट के खिलाफ योद्धा की तरह जुटे मैंग्रोव वनों का संरक्षण सुनिश्चित करना आवश्यक है। इस पहल में सरकार के साथ-साथ समाज को भी आगे बढ़कर काम करना होगा।



# PM Modi and his LiFEstyle for Environment

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- Reem Talukdar: State Invitee Member, BJYM Assam

The year 2022 saw the launch of Mission LiFE by Prime Minister Shri Narendra Modi, a flagship programme to promote sustainable lifestyles across the globe. The country invited all the other fellow countries to join the movement, seeking to shift the world from mindless and wasteful consumption to mindful and calculated utilisation of natural resources. The National Museum of Natural History, under the Ministry of Environment, Forest & Climate Change and the United Nations Development Programme, jointly launched the “In Our LiFEtime” campaign to encourage the youth between the ages of 18 to 23 years to become message bearers of sustainable lifestyles. This campaign envisioned youth from all around the world taking climate action initiatives that resonate with the concept of LiFE.

PM Modi also highlighted India's action on 'Mission Circular Economy' while addressing the nation on the occasion of 75th Independence Day. The government has been actively formulating policies and promoting projects to drive the country towards a circular economy. An economic approach aimed at putting an end to waste and the recurrent use of resources, the circular economy offers a new perspective that emphasises the need to take a thorough view of products and processes. The Waste-to-Wealth Mission is bound to create new business models

as well as new employment opportunities for the citizens. It will result in moving away from mindless consumption to mindful utilisation and will help achieve the vision of Mission LiFE - Lifestyle for Environment given by the visionary leader Modi.

India has also taken major purposive steps to reflect its commitment to eliminate single-use plastics that are not biodegradable and have an adverse impact on the environment. The strategy adopted by the government to tackle unmanaged and littered plastic waste has two pillars - a ban on single-use plastic items that have high littering potential and low utility and the implementation of extended producer responsibility on plastic packaging. The introduction and use of alternatives to banning single-use plastic items have led to the creation of new employment opportunities and promoted innovation and the development of new business models. The manufacturing of alternatives with eco-friendly materials in the micro, small and medium enterprise sectors will further support the development of Atma Nirbhar Bharat.

Our country is prone to wide-scale climate change-related risks due to its various climate zones, topography, and ecosystems. Climate change puts vulnerable communities to dangers like disasters, diseases, loss of livelihoods, crop failures, poverty and displacement, threaten-

ing loss of biodiversity and food security. Hence, climate change policies in India have primarily focused on supporting synergies between development and outcomes for the climate. India was one of the few countries that passed the Energy Conservation Act in 2001, which underwent an amendment in August 2022. Since 2019, The Ministry of Environment, Forest and Climate Change has been implementing a National Clean Air Programme as a national-level strategy outlining the actions for reducing the levels of air pollution at city and regional scales in India, which includes lessening emissions from waste and biomass dumping and burning, lessening of vehicular emissions, road dust and construction & demolition waste management, capacity building etc.

The cheetah's reintroduction in India by the prime minister was another important milestone in the global conservation efforts of the species. The last cheetahs in the Indian wilderness were recorded in 1947 when three cheetahs were shot in the Sal forests of Koriya District, Chhattisgarh State. The main reasons for the extinction of cheetahs in India were large-scale capture of animals from the wild for coursing, bounty and sport hunting. The Government of India initiated G2G consultative meetings with the Republic of Namibia, which concluded in the signing of the memorandum of understanding between the two countries for cheetah conservation. Following the signing of the memorandum of understanding, eight cheetahs were translocated from Namibia to India and were released into the quarantine bomas. The goal of the Cheetah project in India is to establish a viable cheetah meta-population that allows the cheetah to perform its functional role as a top predator and provide space for the expansion of the cheetah within its historical range, thereby contributing to its global conservation efforts.

PM Modi has emphasised that the protection of the environment with rapid development is possible only through a holistic approach and the efforts of all. What is the role of our lifestyle in it? How should we change it? Lifestyle for the environment, i.e. Mission LiFE is the way forward. The beginning of a mission to change the fate of the earth in this century will be P-3, i.e., the pro-planet-people movement.



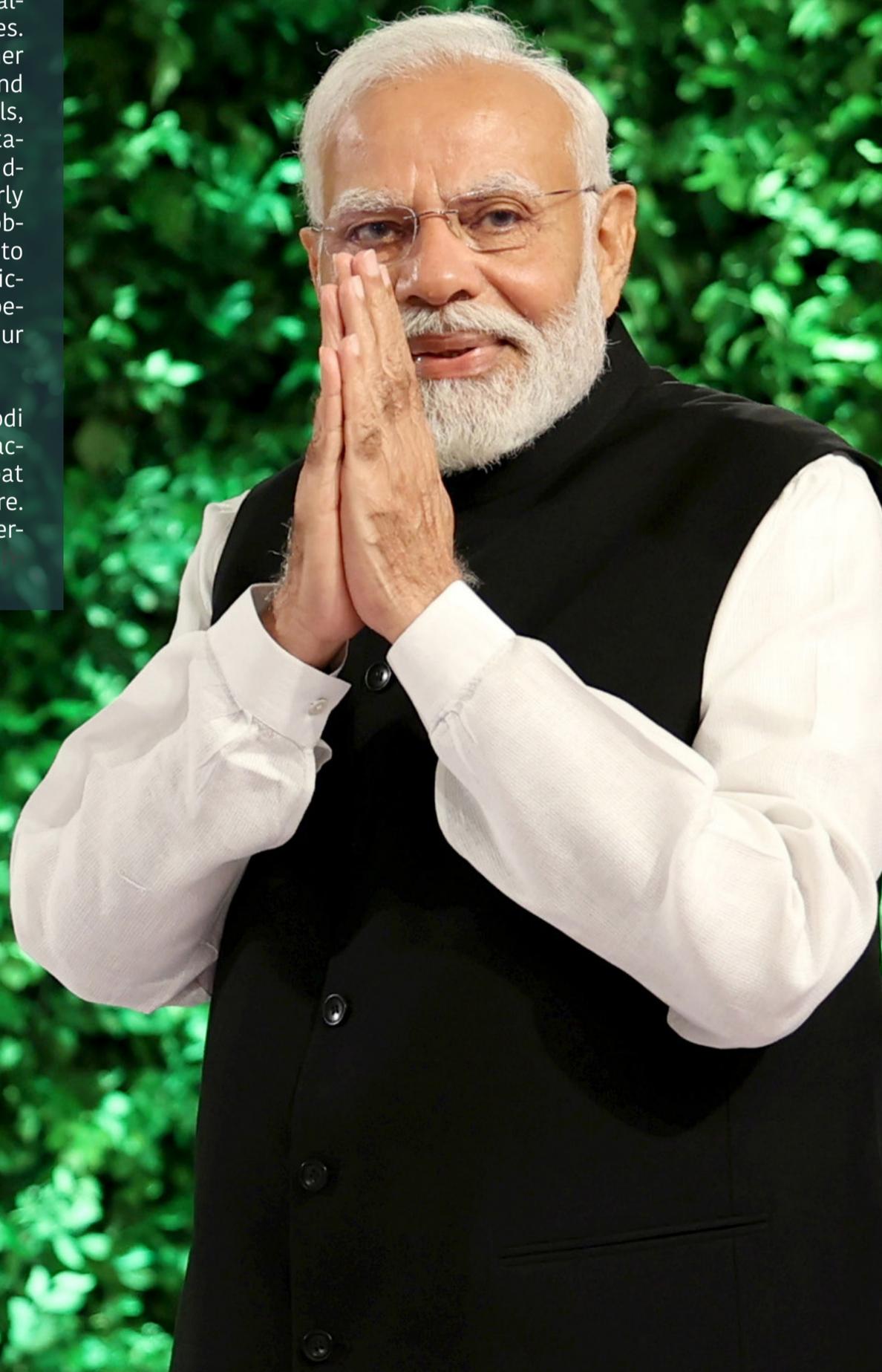
# Green Governance: Policy and Practice in the Modi Era

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- Sameer S Deshpande, Pursuing a Master's in Information systems  
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Climate change, driven by human activities, alters Earth's climate with severe consequences. Rising temperatures intensify extreme weather events, impacting agriculture, ecosystems, and communities. Glacier melt raises sea levels, threatening coastal areas. Shifts in precipitation patterns disrupt food security. Ocean acidification jeopardises marine life, particularly coral reefs. The future hinges on urgent global efforts to mitigate these effects, adapt to changes, and transition to sustainable practices. Decisions made now will shape the well-being of future generations and the health of our planet.

In the face of a global climate crisis, the Modi government in India has emerged as a proactive force, spearheading initiatives to combat climate change and foster a sustainable future. This article delves into key endeavours undertaken by the government to address en





mental challenges.

- **Renewable Energy Leadership:** The Modi government has set ambitious targets for renewable energy, demonstrating a commitment to reducing carbon emissions. The establishment of the International Solar Alliance underscores India's leadership in promoting clean energy solutions globally.

- **Swachh Bharat Abhiyan (Clean India Campaign):** Beyond its impact on public health, the Swachh Bharat Abhiyan is a pivotal environmental initiative. By addressing sanitation and waste management issues, the campaign contributes significantly to creating cleaner and more sustainable urban and rural environments.

- **Afforestation and Green Cover:** The Green India Mission is a testament to the government's dedication to enhancing green cover and biodiversity. Through afforestation initiatives, India aims to mitigate the impacts of climate change and preserve its rich ecosystems.

- **Air Quality Management:** Recognising the severe implications of air pollution, the National Clean Air Programme (NCAP) has been rolled out to address and combat deteriorating air quality systematically. The program focuses on reducing particulate matter levels in major urban centres.

- **Plastic Waste Reduction:** India's initiatives to reduce single-use plastic align with global efforts to combat plastic pollution. The government's emphasis on sustainable alternatives and waste reduction is a crucial step in curbing environmental degradation.

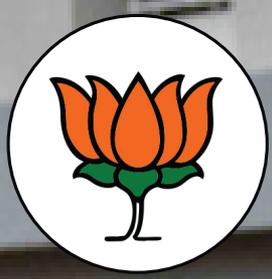
- **International Collaborations:** Actively participating in international agreements, notably the Paris Agreement, India showcases a commitment to global cooperation in the fight against climate change. These collaborations position India as a responsible stakeholder in the quest for a sustainable planet.

There are even more great initiatives taken by the present government. As the Modi government navigates the challenges of climate change, its multifaceted approach encompasses renewable energy, sanitation, afforestation, air quality management, plastic waste reduction, and global cooperation. Through these initiatives, India is carving a path towards a greener, more resilient future. It is a call for collective action, urging citizens to embrace sustainable practices and contribute to the broader global movement for environmental conservation.









**BHARATIYA JANATA YUVA MORCHA**