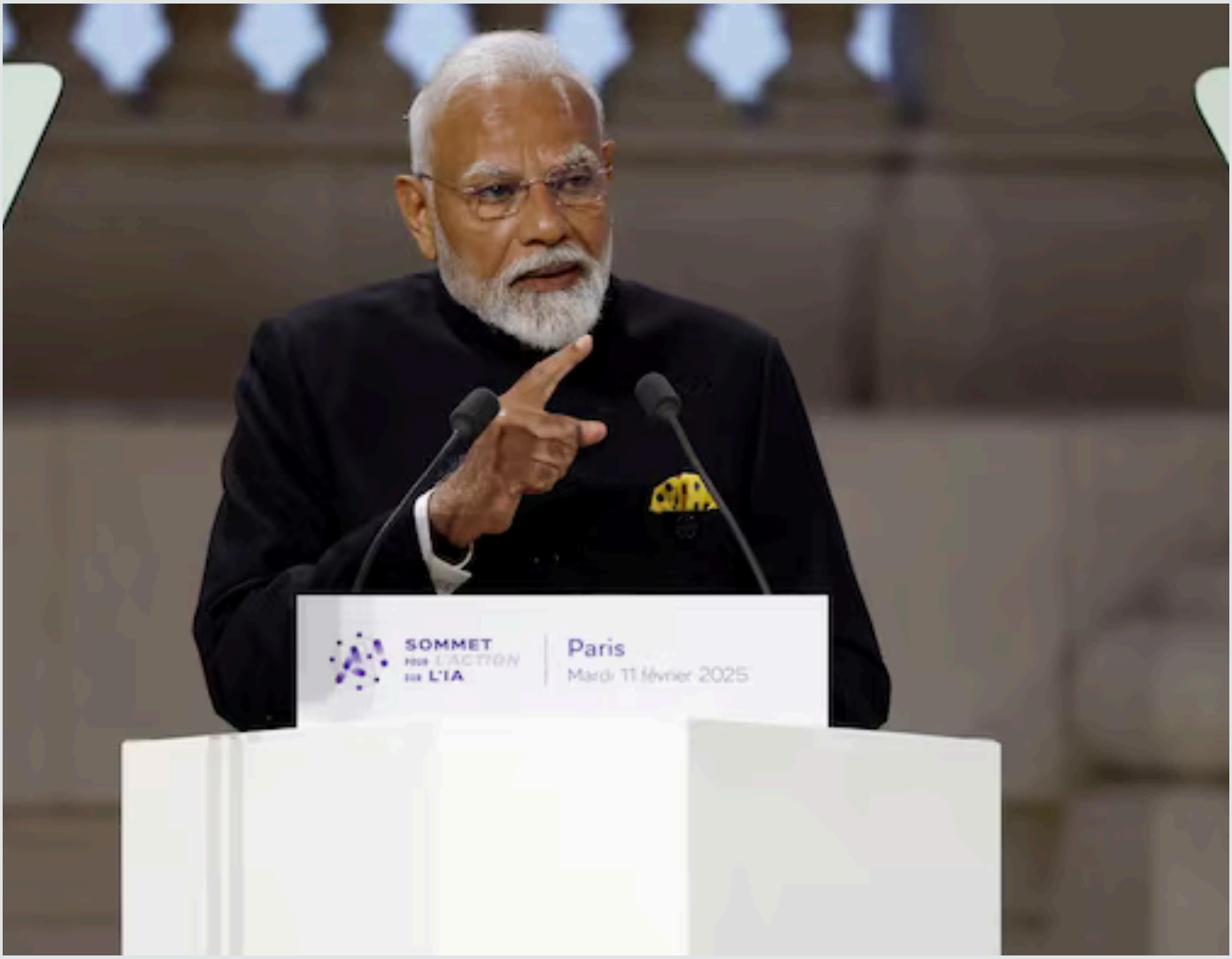
A Decade Later (2015–2025): India's Climate Promises from Paris to the Present

Anvita Tripathi, Nagappan Arun, Emilia Romero, Rhea Bajanka, Simar Kaur, Srisoniya Subramoniam, Aditi lazarus, Saksham Raj



Introduction

On 30th November 2015 the world leaders convened at COP21 in Paris for what became a landmark moment in global climate governance. The prime minister of India took to the stage to articulate India's vision for climate action, integrating it within the principle of "common but differentiated responsibilities" that has defined India's negotiating posture for decades. The speech was delivered exactly 10 years ago and it highlighted four headline commitments that would frame India's climate discourse for the subsequent decades. The promises included reducing the emissions intensity per unit GDP by 33-35% below 2005 levels by 2030, achieving 40% of installed power capacity from non-fossil fuels by 2030, adding 175 GW of renewable capacity by 2022, and extending forest cover to sequester at least 2.5 billion tonnes of CO2 equivalent.

These promises emerged from complex calculative developmental and environmental responsibilities. Thus, India, being the world's 3rd largest emitter with the per capita emissions 1/10th of the US and 1/4th of China, framed itself as a developing nation that needed carbon space for the eradication of poverty, while leading on climate. The selection of the baseline year 2005 appeared to be an act of great strategic thoughtfulness, which then provided a trajectory balancing growth ambitions with measurable climate action. This analysis integrates 3 fundamental questions: Where did India stand in 2015? What precise promises were made? And where does the nation find itself in 2025? This paper adopts neither a celebratory nor a cynical tone; instead it would pursue rigorous, evidence based assessments of India's climate trajectory through a policy document review, comparative international benchmarking and identification of structural enablers.

Methodology

This report employs a retrospective longitudinal design spanning the period from 2015 to 2025, reconstructing the baseline for each of the four Paris commitments made by the Republic of India and tracking annual progress on these commitments through quantitative datasets and qualitative policy publications. For emission intensity, the approach used in this study aligns with the metric employed in India's national communications, relying on the GHG Platform India and the Third National Communication, specifically the BUR-4 files. Baseline reconstruction begins with 2005 intensity figures. This process also has to deal with several structural methodological issues, like shifts in GDP base years and a persistent 'divergence' between GHGPI estimates and official national totals.

For renewable energy, installed capacity and non-fossil share trends are drawn primarily from government releases. There is differentiation between two separate commitments for clarity of analysis - 175 GW by 2022 and 40 per cent non-fossil capacity by 2030 (later 50 per cent). Evaluation is carried out through a year-on-year addition basis, sub-sectoral performance (solar, wind) and manufacturing expansion (PV Modules and cells). The analysis treats capacity and generation as distinct, to ensure reflection of grid constraints, storage limitations and the divergence between high renewable capacity and modest generation shares. Policy interventions such as the National Solar Mission, Solar Parks Scheme, UDAY, PM-KUSUM and rooftop-solar programmes are assessed qualitatively to provide a cohesive overview.

Forest carbon evaluation draws from ISFR 2021 and ISFR 2023 reports, FSI's framework and parliamentary updates on sink creation. The method recognizes the distinction between "forest cover" and "natural forests" and integrates both numerical increases and qualitative debates over various matters, including but not limited to plantation driven gains, survival rates and carbon accounting 'choices'. The baseline is anchored in mid-2000s carbon stock, with the progress being measured against the additional sink requirement equivalent to 2.5–3.0 billion tonnes CO_2 by 2030. The governance performance is also analyzed through reported outcomes from sources like CAMPA and the Green India Mission.

The finance, tech and diplomacy components are assessed through thematic qualitative reviews rather than quantitative benchmarking by synthesizing India's stated expectations at COP21 with evidence on global finance flows from the Climate Policy Initiative (2023). It also incorporates India's positions at various forums like COP and G20, to lay out a 'status update'.

Overall, the methodology analysis across all commitments relies on trend reconstruction with institutional and policy review, constructing a picture of India's performance from Paris to the Present.

Literature Review

The Paris Agreement's Legal Framework and India's Position

The Paris agreement architecture represents a compromise in the balance between binding procedural requirements and non-binding substantive commitments, since the global pact requires parties to provide NDCs every five years yet leaves target formulation to national discretion. The principle of Common But Differentiated Responsibilities (CBDR), articulated in Article 3.1 of the UNFCCC, reflected in the Paris Agreement, establishes CBDR as a guiding principle, with explicit recognition that developed countries bear a much greater responsibility for climate change and have greater financial resources to combat it. India's posture is reflective of its developmental priorities as the nation maintains that its per capita emissions remain below half of the average even in 2023. The Paris agreement framework operationalizes the CBDR by exhorting countries to formulate intensity-based targets rather than absolute emissions caps which further accommodate the growth imperatives.

Dissecting the Speech: Quantitative Targets and Qualitative Commitments
PM Modi's COP21 speech delivered four specific quantitative commitments that form the analytical core of this study. The emissions intensity pledge stated that by 2030, we will reduce emissions intensity per unit GDP by 33-35% per cent of 2005 levels" which was further updated in August 2022 to 45% below 2005 levels. The 2 different elements The renewable energy commitment were: 40 per cent of our installed capacity will be from non-fossil fuels" by 2030, then revised to 50%, and" adding 175 Gigawatts of renewable generation by 2022," a target that India has missed but it further catalysed an unprecedented capacity expansion. Each claim has to be verified against specific metrics, that is, (a) emissions intensity measured as tonnes CO_2 per unit GDP; (b) non-fossil capacity as percentage of total installed power capacity; (c) renewable capacity in gigawatts; and (d) carbon sequestration in billion tonnes CO_2-equivalent.

Supplementary Documents and Formal Commitments

India's Intended Nationally Determined Contribution (INDC), submitted to UNFCCC on October 2, 2015, formalized the speech commitments into eight goals, three of which contained quantified targets for 2030. The INDC then cross-referenced the speech which reveals subtle but important elaborations: the 40% non-fossil capacity target was conditional on technology transfer and international climate finance, while the target of the forest sink of 2.5-3 billion tonnes CO_2-equivalent lacked clarity on baseline calculations. Ministry of External Affairs archives and UNFCCC documentation has demonstrated that India's delegation made additional statements at COP21 emphasizing climate justice and demanding that developed countries mobilize $100 billion annually by 2020 for mitigation and adaptation of climate change. The International Solar Alliance, launched at the Paris climate conference, was India's way of bringing developing countries together to scale up solar energy and support each other in the shift to clean power.

Academic and Policy Literature (2015–2025)

Scholarly assessments over the past decade has conveyed a picture of India's climate performance. The Climate Action Tracker primarily rated India's targets as "highly insufficient" but then upgraded the rating to "insufficient" following the 2022 NDC update. Further noting that even enhanced targets would drive only minor real-world emission reductions. TERI reports and CEEW lead the "overachievement" narrative of India, documenting that the country has already managed to overachieve the original goal of a 33-35% reduction in emissions intensity ahead of schedule and achieved 40% non-fossil capacity by 2021, nine years in advance. The UNEP Emissions Gap Reports consistently noted consecutively that while India's per capita emissions remain low, its total emissions trajectory makes it crucial for the global pathways to limit the global warming to 1.5°C. Debates centre on whether these intensity-based targets provide enough decarbonization or allow continued fossil fuel expansion through economic growth.

Section I: Emissions Intensity Reduction

Emission intensity is defined as the total amount of greenhouse gas emissions emitted for every unit of GDP. And particularly, it refers to emissions which go beyond those related to energy and greenhouse gases beyond carbon dioxide. Intensity-based targets are often preferred by developing countries as opposed to absolute-cap targets because it allows for economic growth and development alongside efficiency. An efficient energy approach does not necessarily hinder current economic processes; it merely optimizes it which prevents trade-offs with development and poverty alleviation for a clean economy.

Emissions intensity, which is defined at the national level using the above given formula, is simply an estimation of a X % reduction in emission if EIo is the emission intensity in the base year and EIt is the intensity in a target year.

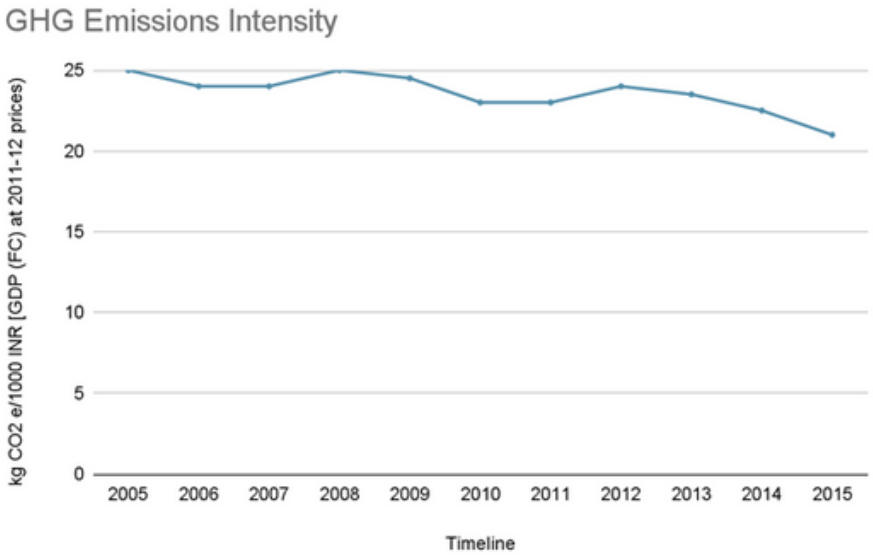
$EIt/ EIo = 1 - X/100$

So, if a country requires a 33-35% reduction by 2030 based on the 2005 baseline, then the emission in the target year would be approximately 0.65 - 0.67 times the base year emission quantity.

India's choice of 2005 as the baseline as established in the Paris Agreement reflects a balance between a stable reference point and capturing a post-2000s economic growth phase which readily allows for future development. Intensity-based targets which are usually attractive to developing countries allow flexibility, which the 1990s baselines (used by developed countries) do not provide for, thereby hindering possible growth and development at the expense of a cleaner environment. A 1990 baseline (used by developed countries) is reflective of a pre-industrial economy and emissions measured against such a backdrop appear ambitious since most industrial economies had peaked by then. But a 2005 baseline (used by developing countries such as India and China) is reflective of a more modernized economy, capturing a post-millennium GDP and emissions surge - thereby reflecting recent economic structures.

Country	Baseline Year	Target Year	Pledge
India	2005	2030	-33% to -35% intensity
China	2005	2030	-60% to -65%
United States	2005	2030	-50% to -52% GHG
Australia	2005	2030	-26% to -28% (absolute)
Brazil	2005	2030	-43% (conditional)
European Union	1990	2030	-55% GHG emissions v
Japan	2013	2030	-46% GHG emissions v
Russia	1990	2030	-25% to -30% GHG

Table A: Summary of INDCs by G20 countries



Graph A: 2005 vs 2015 Emissions Intensity

The data available for 2005 and 2015 emissions indicate methodological gaps and inconsistent datasets. The above mentioned intensity graph for instance, uses a GDP (factor cost) at 2011-12 prices, when emission inventories between 2005-2015 originally used 2004-05 as base year GDP. This results in a structural inconsistency, and emissions intensity values cannot be directly compared to older estimates due to inconsistent GDP denominators. The GHG data further explicitly highlights absence of data spanning across industrial, AFOLU, and waste sectors

India's emission-intensity trajectory shows a clear, consistent decline from 2005 onwards. According to India's Third National Communication (TNC) to the UNFCCC, emissions intensity fell 12% between 2005 and 2010, and 21% by 2014. By 2016, the decline reached 24%. The BUR-4 further documents a 33% reduction by 2019 and a 36% reduction by 2020, relative to 2005 levels, effectively achieving the original Paris target a decade early. Annual trends show steady decoupling of emissions from economic activity with intensification of reductions after 2015 due to rapid renewable-energy deployment and strengthened energy-efficiency schemes. A reconstructed dataset for the years 2005–2020 illustrates near-linear decline, easing only slightly after 2017 before falling more sharply between 2018 and 2020. The 2020 figure is partly due to COVID-19-related demand compression, but the underlying structural decline long predates the pandemic. Though India has not yet released consolidated 2021–2025 intensity values, existing national communications and sectoral reports strongly indicate continuity in the downward trend. Given that India reached a 36% reduction by 2020, it remains reasonably on track to approach its updated 45% reduction target by 2030, introduced in the 2022 NDC update.

Three broad drivers underpin India's declining emissions intensity. The first is renewable-energy expansion. India's non-fossil installed capacity crossed 43.8% of the total electricity capacity by 2023, well ahead of 2030 and surpassing the original NDC goal of 40%. Massive additions in solar and wind capacity reduced carbon intensity in the power sector, consequently lowering emissions per unit GDP. Secondly, one must consider the structural shift in the economy. Growth in India has increasingly come from services and digital industries, relatively low-carbon sectors, while agriculture and heavy industry constitute a shrinking share of GDP. That trend is reflected in the decoupling documented in BUR-4, where GDP continues to grow at 6–7% annually while emissions grow substantially slower, driving intensity downward. The third and last are energy-efficiency improvements. Demand-side programmes such as the Perform, Achieve and Trade (PAT) scheme, UJALA LED distribution and building-efficiency codes, reduced electricity demand growth while maintaining economic output. This structural demand moderation is widely recognised in national energy-efficiency evaluations.

Unlike the EU, US, or Japan, whose NDCs emphasise absolute reductions, India and China remain the only major G20 economies using intensity-based metrics. India's updated target seeks a 45% reduction (2005 baseline) by 2030, while China seeks a 65% reduction (2005 baseline) by 2030.

Country	Baseline	2030 Target	Progress (Latest Available)
India	2005	−45% intensity	−36% by 2020 (BUR-4)
China	2005	−65% intensity	Significant decline but
EU	1990	−55% absolute	~−31% by 2020 (CAT)
USA	2005	−50% absolute	~−17% by 2019 (CAT)
Japan	2013	−46% absolute	Mixed progress (CAT)

Table B: A Summary of Tracked Progress of G20 Countries

Because of metric heterogeneity (intensity vs absolute), cross-country comparison must be interpreted carefully; nonetheless, India's intensity-based trajectory positions it among the more aggressive major economies in relative carbon efficiency improvement. As for achievements, India reached its 33–35% Paris target by 2019, far ahead of the 2030 deadline. It has also nearly met the associated non-fossil-capacity objective. Its rapid emission-intensity decline, alongside continued GDP expansion, positions India as one of the few major economies on track for its updated NDC.

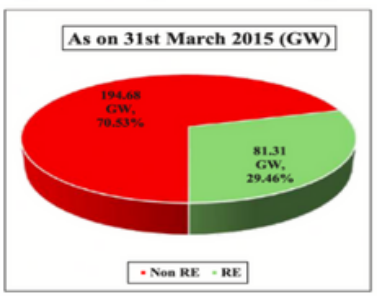
That is not to say that there are no challenges. While intensity is falling, total GHG emissions remain substantial. The drop in intensity reflects GDP growth outpacing emissions growth, not an absolute decline in emissions. Indeed, the total GHG emissions reported in 2020 remained nearly 3,000 $MtCO_2e$ (excluding LULUCF), highlighting that even as per-GDP emissions fall, cumulative climate impact remains large and growing. Additionally, while the latest national communication shows consistent intensity reductions, earlier inventories and independent analyses sometimes varied in their estimates.

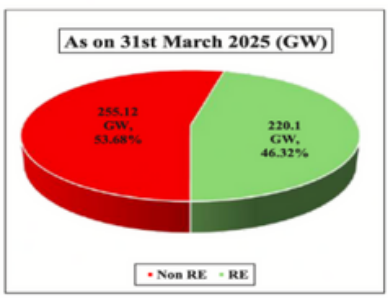
The decoupling narrative depends heavily on accurate, consistent greenhouse-gas inventories and GDP data. Discrepancies in sectoral emissions or delayed reporting can obscure real trends. Also, intensity reduction may mask sectoral emissions increases (e.g. from steel, cement, transport) that contribute to absolute emissions rise. Also, relying on intensity reduction targets alone, as used in India's NDC, risks giving a misleading impression of "progress." A growing GDP with only moderate emission increases will show improving intensity even as absolute emissions climb. For meaningful climate impact, intensity gains eventually need to be accompanied by absolute emissions reductions, especially if India is to meet longer-term goals (e.g. net-zero by 2070). India's trajectory is thus positive but incomplete: intensity goals are being met, yet structural decarbonization (especially coal phase-down) remains the decisive frontier.

Section 2: Renewable Energy Expansion

India's clean energy goals in recent times are based on two commitments. The first target was that "40% of our installed energy capacity would come from non-fossil fuels by 2030," and the second was "adding 175 gigawatts of renewable energy generation by 2022." These two targets were later updated to 50% by 2030 and 500 GW by 2030, respectively, which reflects the current commitments.

Fig 1.1 Share of Renewable Energy





Over the last decade, Renewable Energy (RE) sector has made a remarkable contribution to India's power generation landscape, significantly enhancing its share in the total installed capacity. In 2014–15, renewable energy accounted for just 29.46% of the country's total installed power capacity. By 2024–25, this share had surged to an impressive share of 46.32%, underscoring the sector's central role in driving India's clean energy transition.

The above data by the Centre shows that India's renewable energy generation capacity, while seeing a significant increase, is yet to meet its target. In 10 years, the total capacity has been 220 Gigawatts, which is less than half that was promised. In the next five years, achieving a double generation capacity is unlikely as per the current pace and resources and the Government must release updated analysis of the same.

In terms of the goal for installed energy from non-fossil fuels, the country has seen a significant progress wherein the share of non-fossil capacity has reached 51.37% percent by 2025 and meeting its target before five years.

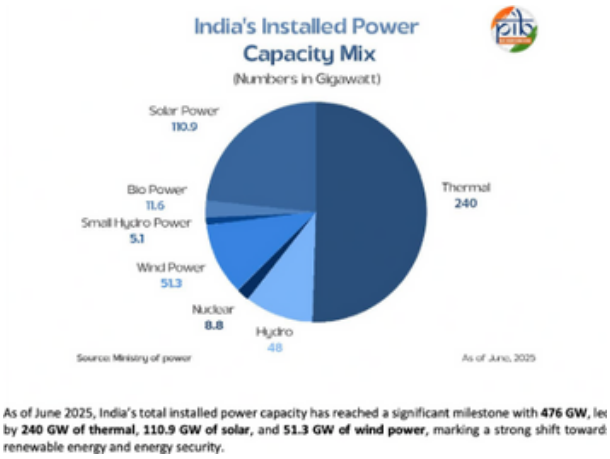
29th June, 2025: More than half of India's power in a single day comes from green sources as non-fossil capacity has reached 51.37%.To scale up the mission of clean energy in India, there have been multiple policy developments, some of which are the following:-

The Jawaharlal Nehru National Solar Mission has an objective of making India a global leader in solar energy by creating policy conditions for its large scale diffusion through policy framework, large scale deployment goals, aggressive R&D and domestic production of critical raw materials, components and products. The target of the mission is set to 20,000 MW of Grid connected and 2000 MW of Off-grid capacity by 2022.

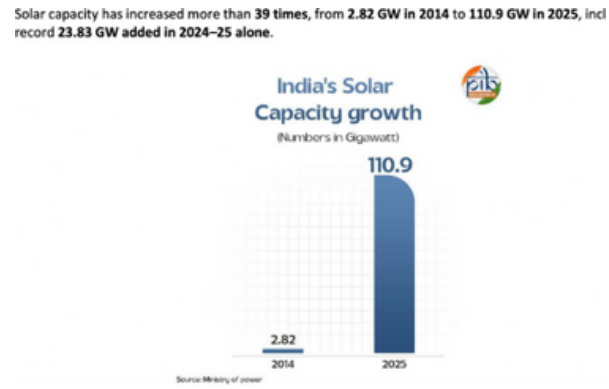
The Development of Solar Parks and Ultra Mega Solar Power Projects Scheme, through the setting up for atleast 50 solar parks each with a capacity of 50 MW and above, aims to construct a concentrated zone of development of solar power generation projects and provides developers an an infrastructure well equipped with resources needed to minimise risks for the project.

There are other lined up schemes like the UDAY Scheme, Rooftop Solar Programme etc. which aim to promote the goals of clean energy of the country, depicting the Government's commitment towards this mission.

Sector Analysis:



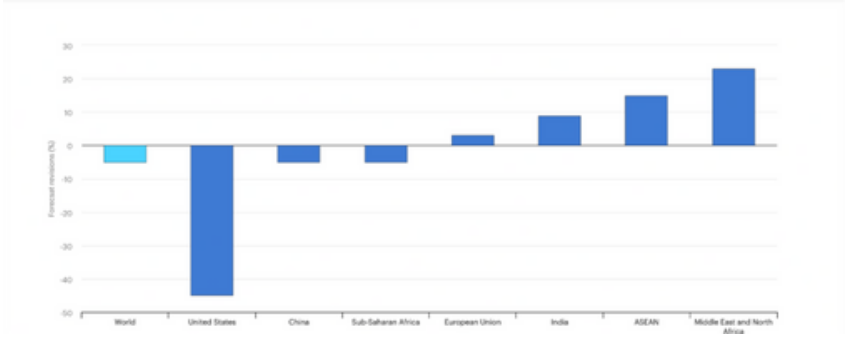
The above graph shows that the solar capacity growth has been the second highest after thermal power and comprising 110.9 GW out of a total of 476 GW of installed power capacity.



Its growth trajectory has been explosive and it forms roughly half of the renewable energy transmission project. From the manufacturing side, Solar PV Module Capacity surged from 2.3 GW to 88GW, a 38 fold increase and Solar PV cell capacity grew from 1.2 GW to 25 GW, a 21 fold increase.

One of the primary reasons for Solar Power to contribute extensively to the larger clean energy mission is due to its low carbon generation technology, making it extremely affordable and efficient. The capital costs of Solar PV have fallen along with storage rates and hence they compete with Thermal power. This also leads to expansion of domestic manufacturing capacity and declining installation prices (low solar tariffs), which counters cost volatility and dependence on imports.

The Wind Plateau sector, while being ranked 4th in the world seeing an increase from 21 GW in 2014 to 51.3 GW by June 2025, its growth as compared to solar has been low. It is due to certain challenges that the sector faces in terms of Land Acquisition, grid connectivity delays and regulatory lacks that it is lagging in progress. Wind scaling requires extensive land for farms and this infrastructural capital requirement poses a problem for developers and builders to acquire suitable land. In terms of grid connectivity, high voltage transmission lines and building evacuation infrastructure is a challenge which can be overcome only by tightening the regulatory framework. The National Offshore Wind Policy, adopted by India in 2015 despite laying down a route for offshore wind development, the large-scale deployment remains limited and the gap between policy ambitions and ground level realisations is yet to be met through legal evolution. As of June 2025, India has reached 50% of its goal of Non Fossil Capacity.



The above chart is depictive of India being one of the top countries in contributing to Renewable Energy capacity after the South East Asia and Middle East.

This study demonstrates that climate shocks trigger male out migration leading to women assuming expanded farm responsibilities but the transformation from mere labor substitution to genuine agency is conditional on the presence of enabling institutional pillars. Without the adequate support structures the feminization will end upChallenges in Achieving the Renewable Energy Utopia

The financial challenges in Renewable Energy are that of technology access and overall infrastructural capital required. While the market barriers of entry due to high initial investment costs exist, the regulatory barriers also make it cumbersome for the new players to claim their share in the market. The licenses required, grid connectivity and storage issues for the produced energy are an issue to be covered still. Some of the strategies to help overcome these obstacles could be that of improved battery technology and innovations in lithium ion in batteries which can improve the storage capacity. Furthermore, the sole most significant contribution will be through public and private investment such as climate bonds, venture capital and general investment by industrialists in these endeavours which can bring about a substantial change.

Section 3: Forest Cover and Carbon Sequestration

In its 2015 NDC, India committed to creating an additional carbon sink of 2.5–3.0 billion tons of CO_2 equivalent through increased forest and tree cover by 2030, relative to 2005 levels. Reconstructing the baseline shows why this sounded ambitious at Paris. By the mid-2000s, the Forest Survey of India (FSI) already estimated that India's forests held several thousand million tons of carbon, equivalent to something like 20-25 billion tons of CO2. The 2021 India State of Forest Report (ISFR) updated that figure to about 7,204 million tons of carbon (roughly 26 billion tons of CO_2), with an increase of 79.4 million tons since 2019. In that context, an "extra" 2.5–3 billion tons of CO_2 starts to look like adding roughly ten per cent to the existing stock in just one and a half decades, not impossible but demanding a sustained and organized push.

Based on its policies, India seems to be moving in that direction. A written reply in Parliament in February 2024 states that, relative to the 2005 baseline, India has already created an additional sink of about 1.97 billion tons of CO_2 **equivalent** through forest and tree cover programmes. More recent summaries based on ISFR 2023 suggest an additional sink in the same ballpark, edging closer to the lower end of the target. If one takes these numbers at face value, India has already covered most of the distance to 2.5 billion tons, with the remaining gap, roughly half to a little over one billion tons, spread over the rest of the decade. Numerically, that looks manageable compared to the harder structural shifts required for the emissions-intensity goal.

Delivering this forest-based sink rests on an elaborate policy architecture. One pillar is the Compensatory Afforestation Fund and the 2016 CAF Act, which take money from projects that divert forest land (mines, dams, highways) and channel it into a ring-fenced fund for plantations and "improvement" of degraded forests. Another layer is the National Mission for a Green India (Green India Mission) under the National Action Plan on Climate Change, with a target to increase or improve forest and tree cover on 10 million hectares of land, and an explicit promise of better ecosystem services and rural livelihoods.The official forest-cover trends from 2015 to 2025 offers a positive picture: ISFR 2021 reports that total forest and tree cover has reached 80.9 million hectares, or 24.62% of India's geographical area, up by 2,261 km^2 compared to 2019.

Increases are concentrated in “open forest” and “very dense forest” categories, and the government highlights plantation drives, agroforestry schemes and the creation of hundreds of “Nagar Vans” in cities as key drivers. At state level, gains in parts of central and southern India partly offset declines in several Himalayan and north-eastern states, but the national storyline remains one of slow, steady greening. This is where the controversy begins. FSI defines “forest cover” as any land larger than one hectare with a tree canopy density above 10%, regardless of legal status or actual land use. That means mango orchards, coconut and eucalyptus plantations, tea estates, and even clusters of trees along roads or in cities can all show up as “forest cover” in the national statistics. Researchers and civil-society groups have shown how, under this definition, satellite-based assessments can report net increases in forest cover in states where ground reports still talk about diversion, degradation, and fragmentation of natural forests. The numbers also do not distinguish clearly between biodiversity-rich natural forests and monoculture plantations that are closer to green infrastructure than to ecosystems.

These definitional choices spill directly into carbon accounting. If a fast-growing eucalyptus plantation is treated as equivalent to a mixed sal or oak forest, then, on paper, India can compensate for the loss or degradation of older forests by planting rows of trees elsewhere. From a narrow greenhouse-gas standpoint, a ton of CO_2 is a ton of CO_2. But from the perspective of biodiversity, hydrology, and community rights, it matters enormously where that carbon is stored and in what kind of landscape. There is also emerging scientific evidence that the apparent “greening” of India – higher leaf area index and more plantations – does not automatically translate into higher net primary productivity or long-term carbon uptake, because warming and moisture stress can reduce forest growth in key regions like the Western Ghats and the north-east. The official forest-cover trends from 2015 to 2025 offers a positive picture: ISFR 2021 reports that total forest and tree cover has reached 80.9 million hectares, or 24.62% of India’s geographical area, up by 2,261 km² compared to 2019. Increases are concentrated in “open forest” and “very dense forest” categories, and the government highlights plantation drives, agroforestry schemes and the creation of hundreds of “Nagar Vans” in cities as key drivers. At state level, gains in parts of central and southern India partly offset declines in several Himalayan and north-eastern states, but the national storyline remains one of slow, steady greening. This is where the controversy begins. FSI defines “forest cover” as any land larger than one hectare

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Finally, there are governance and justice gaps inside the very schemes meant to create the sink. Evaluations of the Green India Mission and official Economic Survey data point to slow and scattered progress, with only a small fraction of plantation targets achieved in the first years and a tendency to count saplings planted rather than trees surviving a decade later. Third-party audits of CAMPA spending in several states flag under-utilized or diverted funds, species choices that ignore local ecology, and low survival rates of plantations. Afforestation projects sometimes overlap with land claimed under the Forest Rights Act or used by pastoralists and shifting cultivators, generating conflict or quiet non-cooperation. In other places, plantations are pushed into grasslands or fragile catchments, creating "green cover" that may store some carbon but undermines existing livelihoods and ecosystems.

Taken together, the data produce a paradox. By its own accounting, India may well be close to fulfilling the letter of its Paris-era Forest promise: an additional 2.5–3 billion tons of CO_2 absorbed in forests and trees by 2030. But the quality, permanence and distribution of that sink are much harder to defend.

Section 4: Beyond the Numbers

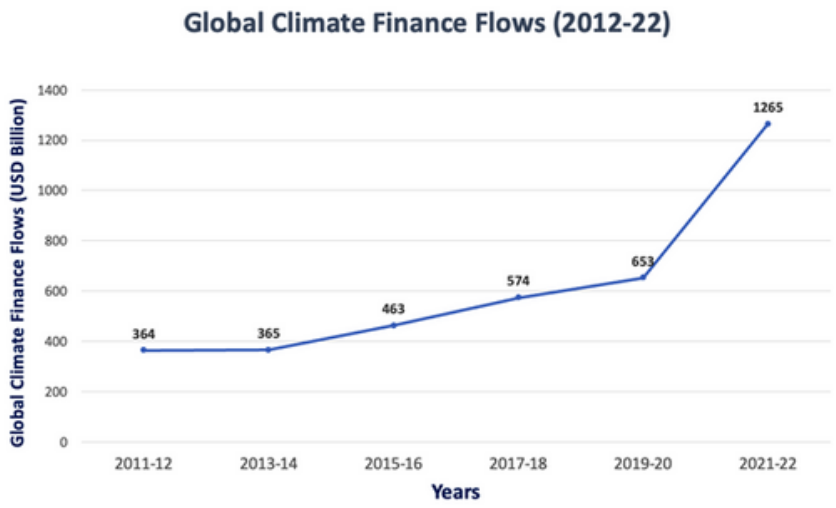
India's Climate Commitments

India's intervention at COP21 advanced a foundational equity argument rooted in climate justice and historical responsibility. Delhi argued that countries contributing least to cumulative emissions should not be locked into costly transitions dictated by those that industrialised early. Prime Minister Modi therefore insisted that clean energy must be accessible, affordable and available across the Global South and called for the mobilisation of USD 100 billion annually in concessional finance by 2020 to support mitigation and adaptation. India also sought public-purpose technology cooperation that would not be constrained by restrictive intellectual property regimes and pressed for an expanded Green Climate Fund capable of ensuring equitable access to clean energy technologies.

These expectations from the international system were integrated into India's own commitments. The Updated First Nationally Determined Contribution of 2022 situates India's transition within a sustainable lifestyle approach that stresses moderation and protection of vulnerable communities. It formalizes ambitious goals including a 45 percent emissions intensity reduction by 2030 relative to 2005 and around half of cumulative installed electric capacity from non-fossil sources by 2030. Importantly, India makes clear that achieving these goals depends on affordable international finance and technology transfer through mechanisms such as the Green Climate Fund. Adaptation priorities spanning water, agriculture, coastal regions, Himalayan ecosystems, public health and disaster resilience reflect India's consistent argument that climate action must reinforce development rather than hinder it.

Global Finance Delivery Gap

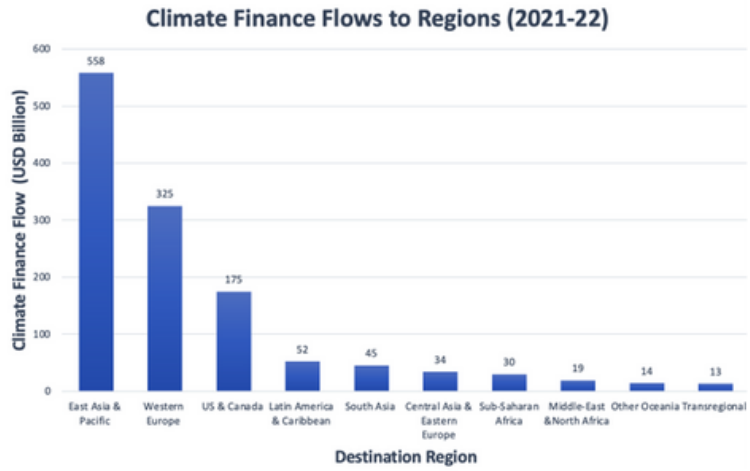
A decade after Paris, the world's delivery performance reveals a significant breach of the fairness expectations embedded in India's commitments. The Global Landscape of Climate Finance 2023 shows that average annual climate finance reached approximately USD 1.3 trillion in 2021 and 2022, almost double the 2019 and 2020 level. However, USD 173 billion of this increase reflects better measurement than real capital expansion, so the world remains far behind the scale of investment required. Mitigation needs alone exceed USD 8.4 trillion annually by 2030, revealing a widening gap between promised ambition and actual resourcing.



Source: Self-made using data from Climate Policy Initiative (2023)

However, the composition of instruments highlights a more structural injustice. Debt accounts for 61 percent of total climate finance, and market-rate project debt makes up the majority of this, while grants constitute only a marginal share. The consequence is that developing economies are effectively borrowing to address a crisis that stems from historical industrialization elsewhere. Meanwhile, rising global interest rates increase the burden further for emerging economies like India that must finance new low-carbon infrastructure while continuing to expand energy access.

Geography intensifies this inequity. In 2021 and 2022, 84 percent of all tracked climate finance was raised and spent domestically, while only USD 203 billion crossed borders. Total flows by region illustrate that funding is heavily concentrated in East Asia and Pacific, Western Europe and North America, leaving highly vulnerable regions with minimal access. East Asia and the Pacific accounted for 51 percent, Western Europe for 26 percent and the United States and Canada for 15 percent. Regions with high institutional and financial capacity therefore retain most of the finance and use it to fund their own energy transitions at scale.



Source: Self-made using data from Climate Policy Initiative (2023)

This distribution reflects a system governed not by climate justice but by the logic of markets, risk perceptions and existing institutional strength. Although Least Developed Countries received only about USD 30 billion, a little over 2 percent of global climate finance in 2021 and 2022, and the most climate-affected nations received less than 2 percent, developed countries together retained more than 44 percent of total flows and Emerging Markets and Developing Economies excluding China received only 14 percent. Moreover, balance sheet financing and market-rate debt dominate finance to EMDEs, intensifying debt servicing pressures, while the small project sizes that LDCs and EMDEs are able to secure reflect the challenges they face in accessing large, transformative investments. Loans account an enormous share of public climate finance provided, amounting to almost 70% of the total ($42.4 billion) between 2016 and 2020. In this regime the financial burden falls hardest on those who contributed least to the problem. Nevertheless, middle-income countries in Asia and Africa are the largest receivers of public climate finance. India, with low per-capita emissions but substantial development needs, must attempt a demanding and costly clean-growth transition without a commensurate share of international support. The result is a persistent misalignment in which vulnerability is penalised, responsibility is externalised and the cost of transition falls hardest on those who contributed least to the problem.

India's domestic financial circumstances sharpen this concern. Earlier estimates of adaptation spending, often cited at 2.6 percent of GDP, were overstated because they included broad development expenditure that was not specifically directed to climate resilience. When measured accurately, India faces a large shortfall. Meeting current NDC objectives requires nearly USD 2.5 trillion by 2030 and about 56.68 trillion rupees for adaptation alone, investments concentrated in critical developmental sectors where commercial returns are low and private investment remains limited. India must expand energy access for millions while simultaneously decarbonising earlier than any industrialised economy did. This creates a more expensive development pathway and generates a global finance paradox. Cheaper capital flows to rich high-emitting economies, while low-emitting and highly vulnerable societies bear the highest financing costs. The evidence therefore confirms India's position that the climate finance system is fundamentally misaligned and structurally biased against those who must transition fastest.

India's Global Diplomacy

India has responded to these external constraints not with withdrawal but with strategic diplomacy that seeks to reshape climate governance in more equitable directions. The Panchamrit commitments announced at COP26 signalled a move from defensive burden-sharing arguments to proactive global leadership, although India maintains that its ambition remains contingent on fair access to finance and technology. As G20 President in 2023, India reframed climate action as a driver of global economic transformation, prioritizing financial architecture reform, capital de-risking and cooperative clean-technology development.
India has also begun to design alternative institutions that respond to the needs of the Global South. The International Solar Alliance allows developing countries to pool demand and scale solar deployment, while the Coalition for Disaster Resilient Infrastructure shares India's advanced capabilities in cyclone response and flood preparedness with vulnerable regions worldwide. These initiatives shift influence over energy and resilience norms towards countries historically excluded from agenda-setting processes. India also played a key role in operationalising the Loss and Damage Fund at COP29, marking an important breakthrough by recognising that climate impacts warrant compensation, not charity.

India's climate diplomacy has further consolidated its leadership profile at COP30 in Belém, where it shaped outcomes around equity and the enabling conditions required for developing countries to decarbonise. India effectively led both the BASIC coalition and the Like-Minded Developing Countries bloc, positioning itself as a central negotiator for the Global South. Its priorities on climate finance, technology access, adaptation and trade-related climate measures were successfully reflected in the final decision texts, notably through the establishment of a dedicated work programme on Article 9.1 to hold developed countries accountable for legally binding finance obligations. India also secured a Just Transition Mechanism to ensure that labour and economic adjustments in developing countries remain equitable, and flexible, nationally determined indicators for the Global Goal on Adaptation. Importantly, India advanced discussions on unilateral trade measures such as carbon border adjustments that threaten developing economies' competitiveness. The creation of a Technology Implementation Programme, recognising endogenous innovation and affordable access to technology, further reflects India's strategic agenda.

This trajectory illustrates how India uses its structural disadvantages as diplomatic leverage. For India, exposure to climate risks becomes a source of leadership in resilience governance and exclusion from advanced technologies motivates efforts to build innovation capabilities at home. India increasingly positions itself as a system architect by combining critique of finance and technology inequities with the creation of collective-interest platforms that expand access, representation, and agency for the Global South. In doing so, India redefines climate cooperation as a project of shared security and prosperity.

Conclusion

A comparative reading of the 2015 baseline and the 2025 status across all commitments shows a positive but uneven trajectory. Emission intensity demonstrates the most apparent success among the commitments analysed. Beginning from a reconstructed 2005 baseline, India's documented intensity decline was already down 21 per cent by 2014, 24 per cent by 2016, 33 per cent by 2019, and 36 per cent by 2020. The 33–35 per cent target was hit almost ten whole years ahead of schedule. Large-scale renewable uptake and efficiency schemes are what lie beneath this performance, and analysed evidence suggests continued improvement, but the limitation is the same, like the persistence of rising absolute emissions to feed India's ever-growing energy demands as a developing nation which is still undergoing meaningful electrification of its rural areas which are leading to an increase in demand for electricity and causing phenomenon like rolling blackouts.

Renewable energy provides us with a mixed picture. India will overshoot the non-fossil fuel capacity share well ahead of 2030, crossing over 50 per cent by this year (2025) and recording days where more than half of its power generation came from green sources. Solar expansion has been extraordinary because of a rapid cost decline and almost unparalleled domestic manufacturing growth, yet India fell far short of its 175 GW renewable capacity goal by 2022 and, by 2025, had achieved less than half of the updated 500 GW target. Wind stagnation, persistent land and transmission constraints and limited offshore deployment affect progress. The divergence between a high capacity share and a modest generation share reflects the unresolved grid integration and storage bottlenecks.

Forest carbon performance is the most ambiguous. Official calculations indicate that the total additional carbon sinks since 2005 may already be close to the 2.5–3.0 billion-tonne target's lower limit, meaning that India may be able to meet its commitment by its target year of 2030. However, the headline gains may be undermined by underlying institutional and environmental shortcomings, as seen by the reliance on plantations, methodological difficulties in FSI evaluations, worries about survival rates, regulatory gaps in CAMPA use, and disputes over land rights, which have plagued progress from the start. The quantity of the sink is increasing, but the quality, longevity, and other factors are still unknown, requiring further impartial and exhaustive institutional studies.

On finance, technology and diplomacy, India's concerns at COP 21 have been validated as global climate finance flows remain insufficient, heavily debt-driven and regionally concentrated, which are limiting the enabling conditions that were assumed in India's commitments. Despite this, India has managed to make 'significant progress' towards its self-imposed commitments; whether those commitments themselves are enough is, in itself, a separate Pandora's box of debate.

Looking to 2030, the next five years require accelerating renewable deployment beyond the solar-led model, addressing storage and grid bottlenecks, and managing coal reliance and improving forest governance quality rather than merely expanding plantation statistics while also ensuring the accurate documentation and release of transparent, comparable emissions data. India's first decade since Paris, therefore, reflects substantial structural gains and significant remaining gaps. It is a trajectory that is neither a complacent success nor a delayed failure.

India has taken incredible strides, especially when compared to other 'developed' countries, which have begun rolling back climate action due to climate denial, but India's current trajectory is not enough to secure long-term climate stability, safeguard its development prospects/aspirations, or shield its most vulnerable populations. The gap between progress and what the future demands is still vast, and closing it is no longer optional.

"In the past, we could afford a long gestation period before undertaking major environmental policy initiatives. Today the time for a well-planned transition to a sustainable system is running out. We may be moving in the right direction, but we are moving too slowly. We are failing in our responsibility to future generations, and even to the present one." - Kofi Annan, Former Secretary-General of the United Nations.