IMPLEMENTATION GAP ANALYSIS

Beyond Policy Adoption: Assessing Implementation Gaps in Climate Policies in Six Countries

CLIMATE POLICY LAB

Since the Paris Agreement, countries have adopted more ambitious climate policies – but major gaps remain between policy goals and real-world outcomes. Climate Policy Lab has examined the implementation gaps in six emerging economies, identifying structural barriers that hinder effective policy execution. Findings aim to support policymakers in closing these gaps and improving outcomes. Final results will be published in peer-reviewed, open-access journals.

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BRIDGING REALITY WITH BRAZIL'S CLIMATE ASPIRATIONS

Authors: Nora Hampl, Liuca Yonaha, Taciana Stec, and Natalie Unterstell

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Highlights

- Gaps in multilevel governance hinder climate target coordination at the level of states and municipalities.
- Low-levels of decarbonization-oriented procurement prevent the integration of climate priorities in public and private investments.
- Nation-wide upskilling to meet the demands of green industry is necessary to enable industrial transformation.
- Domestic supply chains for low-carbon products including fuels (green hydrogen & biomethane) still need to be developed.

Introduction

In its 2024 NDC (Nationally Determined Contribution) Adjustment, Brazil reconfirmed the country's commitment to its first 2023 NDC, but also set additional targets to be achieved by 2030 and 2035, reducing emissions by 59-67% below 2005 (see Table 1). This renewed climate ambition has been supported by numerous initiatives enacted under the presidency of Inacio Lula da Silva, and were accompanied by a series of recently adopted policies, regulations, and legislative acts. The stated national priorities include low-carbon socioeconomic development and just transition, competitive industrial policy, and an effective environmental policy with strengthened monitoring, law enforcement, and other measures to halt deforestation and ecosystem degradation.

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Table 1: Brazil's 2023 and 2024 NDC Ambitions

as of 27 October 2023	updated November 2024
In 2025, emit a maximum of 1.32 Gt CO_2e (reduction of 48.4% in comparison with 2025)	By 2030, end deforestation
In 2030, emit a maximum of 1.2 Gt CO_2e (reduction of 53.1% in comparison with 2005	In 2035, reduce emissions by 59-67% below 2005
By 2050, achieve net-zero emissions	Ten commitments across three axis: – Territorial and land-use planning – Energy transitions – Sustainable development with social, environmental and climate justice
	Commitments to climate federalism (Union, states, municipalities)

Nevertheless, policy implementation challenges continue to impede Brazil's national climate ambition. In this preliminary study, implementation gaps analysis (IGA) developed by the Climate Policy Lab (CPL) is applied to assess sources of implementation gaps in Brazil. The IGA framework includes four broad categories of policy implementation gaps: (1) *Governance and Institutional Capacity,* (2) *Political Economy and Interests,* (3) *Financial Constraints,* and (4) *Technical and Legal Constraints* (Appendix).

The methodological approach combines policy analysis (using CPL's climate policy inventory),[1] literature review, and qualitative research consisting of semi-structured interviews with country experts. The initially collected cross-country data were supplemented with additional country-specific literature research and interviews with country experts, which were conducted to validate, refute, or expand upon the initial findings. A full list of climate initiatives evaluated in this study, along with specific criteria for selection, is included in Table 2.

USE VALUE

Important gaps and bottlenecks identified in this study provide useful insights for policymakers involved in different stages of policymaking, from policy design and formulation to implementation, monitoring, and post-assessments. As a way of advancing the NDC process and meeting climate objectives, a focus on removing structural barriers identified in this study can improve climate policy implementation and broader policy outcomes. Final results of the research are expected to be made available via open-access published manuscript(s).

Initiatives include policies, programs, strategies, legislative acts, regulatory and planning instruments and other actions that are (i) currently in effect, have been recently enacted, or have recently ended; and (ii) are estimated to have considerable emissions impacts and (iii) effect the achievement of the country's NDC commitment.

Initial Findings

GOVERNANCE AND INSTITUTIONAL CAPACITY

Brazil's highest climate governance structure comprises the Interministerial Committee on Climate Change and Three Chambers: inter-federative, social, scientific (*Decree 12.040, June 5, 2024*),[2] while the NDC's implementation mechanisms consist of the **2024 National Plan on Climate Change** and its Mitigation Strategy (with 7 sectoral mitigation plans) and the Adaptation Strategy (with 16 sectoral adaptation plans) under the framework of the Pact for Ecological Transformation (*Decree 12.223, October 14, 2024*).[3] Multi-level governance and vertical coordination represent basic premises of the integrated climate agenda, inscribed in the **2024 National Plan on Climate Change** and the Mitigation and Adaptation Strategies. However, communications, data flows, and stakeholder engagement across national, regional and local levels remain a challenge. Effective

Table 2: Selected Policies for Implementation Gap Analysis – Brazil

Sector	Policies
Economy-wide	Federal program "Novo Pac"
	Pact for Ecological Transformation (2024)
	NDC - 2024 Brazil Second NDC Adjustment
	2024 Sustainable Taxonomy Interinstitutional Committee (Decree 11,961)
	2024 National Plan on Climate Change
	2022 National System for the Reduction of Greenhouse Gas Emissions (SINARE) (Decree No. 11.075/2022)
Transport	Fuel of the Future
	National biofuels policy (RenovaBio)
	Green Mobility and Innovation Program (MOVER)
	Urban Mobility Program (PROTRANSPORTE)
Energy	Ten-Year Energy Expansion Plan (PDE)
	Micro- and mini distributed generation, Law 14,300 (2022) and related policy on net metering for micro- and small renewable power generation Brazil (2022)
	National Program for the Universalization of Access and Use of Electric Energy in the Legal Amazon (Programa Nacional de Universalização do Acesso e Uso da Energia Elétrica na Amazônia Legal)
	Special Incentive Regime for the Production of Low-Carbon Hydrogen (Rehidro)
Industry	New Industry Strategy (Nova Indústria Brasil, NIB)
AFOLU	The new ABC+ Plan
	The Safra Plan (2024/2025)
	National Payment Policy for Environmental Services (PNPSA)
	National Native Vegetation Recovery Plan (PLANAVEG), 2025-2028
	National Program for the Conversion of Degraded Pastures into Production Systems (PNCPD)
	Plan for Prevention and Control of Deforestation in the Legal Amazon (PPCDAm) (5th phase 2023/27) supported by the 2023 Decree 11,367 on the creation of the Permanent Interministerial Commission for the Prevention and Control of Deforestation in the Legal Amazon
	Action plan for prevention and control of deforestation and fires in the Cerrado Biome (PPCerrado)
	Amazon Fund for the prevention, monitoring and combatting threats to intact Amazon forests supported by the 2023 Decree 11.368 on the Amazon Fund Brazil

Note: Initiatives include policies, programs, strategies, legislative acts, regulatory and planning instruments and other actions that are (i) currently in effect, have been recently enacted, or have recently ended; and (ii) are estimated to have considerable emissions impacts and (iii) effect the achievement of the country's NDC commitment.

communications and data flows – across the Federal government, the Federal District, individual states, and municipalities are not yet in place, and formulations of climate agendas that include participation by civil society, scientific community, and private sector actors – though called for in the **Pact for Ecological Transformation**[4] – are not yet systematized. These institutional constraints negatively impact coordination of national targets at sub-national levels.

POLITICAL ECONOMY AND INTERESTS

Pre-existing research over past several decades has pointed to challenges in balancing economic development and environmental objectives[5] and competing interests and trade-offs between conflicting sectoral objectives, particularly in the agriculture and forestry sectors.[6] *Industry lobby/ resistance* has exacerbated the uncertainty of future demand for potentially more costly decarbonized products and services (**Special Incentive Regime for the Production of Low-Carbon Hydrogen, Rehidro; New Industry Strategy, Nova Indústria Brasil, NIB**). In turn, this uncertainty has been used as an excuse to bargain and/or delay more ambitious decarbonization approaches. The absence of (i) low-carbon supply chains (e.g., domestic supply of green hydrogen or biomethane), and (ii) lack of fossil-fuel phase-out incentives[7] (*incentive misalignment*) have been identified as major challenges to a faster pace of industrial transition.

In the transport sector, several programs and policies have been adopted and/or implemented (**Fuel of the Future, National biofuels policy, RenovaBio, Green Mobility and Innovation Program, MOVER, Urban Mobility Program, PROTRANSPORTE**).[8] At the same time, strategies to address the existing diesel dependence of the passenger and heavy-duty transport sectors, while reducing their fossil fuel demand[9] in the short- and mid-term, still need to be developed.

FINANCIAL CONSTRAINTS

Both *public* and *private investment* need to be aligned with sustainable taxonomy to avoid allocating funds towards conflicting objectives (**2024 Sustainable Taxonomy Interinstitutional Committee**). This implies re-directing funding from *unsustainable* programs with questionable, non-monitored emissions impacts (Federal program "Novo Pac")[10] to *low-carbon, green* infrastructures and development projects, following clearly defined sustainable taxonomy.

In the highest emitting sectors (Agriculture, Forestry, Land Use and Land Use Change – AFOLU), accessible and attractive financial compensation needs to be provided for the preservation of primary forests and native vegetation (**Plan for Prevention and Control of Deforestation in the Legal Amazon, PPCDAm and in the Cerrado Biome, PPCerrado**). Simultaneously, incentives for regenerative forestry and agriculture (**2025–2028 National Native Vegetation Recovery Plan, PLANAVEG; National Program for the Conversion of Degraded Pastures into Production Systems, PNCPD**) need to be extended not only to large-scale producers, but also small-scale family farmers and communities. This may imply a combination of financial instruments (e.g., **National Payment Policy for Environmental Services**), carbon credits and non-financial instruments (e.g., technical and implementation assistance).

Clearly defined government subsidies for *private investment* and the market may help stimulate private investment and de-risk high-cost green infrastructure investment and upfront capital expenditures, particularly for local energy communities and individual renewable energy 'prosumers' (producers and consumers) (**Micro- and mini distributed generation, Law 14.300, 2022 and related policy on net metering for micro- and small renewable power generation Brazil, 2022; National Program for the Universalization of Access and Use of Electric Energy in the Legal Amazon**).[11] At the same time, industry access and business practices need to align with climate policy goals (e.g., carbon emission reduction or land use practices, broad

access and affordability across society, profit-sharing with the government, and reinvestment in R&D.[12]

TECHNICAL AND LEGAL CONSTRAINTS

To fulfill sectoral targets and provide guidance for policymakers across sectors, *emissions data collection, monitoring and verification, oversight and transparency* require improvement in collection and dissemination (*data, communications, and information*). Aside from effective data integration, a broad dissemination of climate knowledge and renewable energy solutions have been deemed indispensable for reducing energy poverty and climate vulnerability not only in urban areas, but importantly, in energy-poor remote rural regions.[13] With respect to economy-wide policy effectiveness over the long[er] term, regularized information flows to policy-makers *during* and *after* policies have been implemented, could improve both *policy design* and the *policy implementation process* itself.

Based on interviewee accounts, attention to *policy design* and particular *choice of technologies* (**New Industry Strategy, Nova Indústria Brasil, NIB; Special Incentive Regime for the Production of Low-Carbon Hydrogen, Rehidro**) that include impact assessment make it possible to track implementation progress, but also inform about the effectiveness of technologies and policy practices that are being introduced in the highest emitting sectors (i.e., AFOLU, industry and transport). Availability and maturity of reliable low-carbon supply chains (e.g., supply of green hydrogen or biomethane) were considered a pre-condition to scaling up of green hydrogen production, distribution, and domestic use.

A budget for retraining and capacity building to support green economy (including circular bioeconomy) has not yet been allocated nor integrated in *policy design.* Domestic capacity for green jobs including state-of-the-art climate technologies still needs to be developed (*human talent*).

Implications For Climate Ambition

Under the framework of the **Pact for Ecological Transformation,** aligning the objectives stated in the **2024 National Plan on Climate Change** and its Mitigation and Adaptations Strategies (i.e., continued strengthened efforts to protect tropical rainforests and vital biomes, and the importance of a development model that respects the rights of indigenous and traditional peoples), could meet both the national climate agenda and motivate a continued support by international like-minded climate partnerships.

Even though specific *international pressures* exist (e.g., imported green taxonomy definitions that may not be compatible with domestic context), these could be offset by (i) implementing policies for environmental preservation that include specific targets to halt deforestation and ecosystem degradation, and (ii) adopting circular [bio]economy development trajectories aiming to improve resource efficiency and carbon intensity when compared with linear development models.[14] In the energy sector, the carbon footprint of the oil and gas sector need to be re-evaluated in the context of achieving net-zero targets and just transition – goals embedded in the **Pact for Ecological Transformation.** Accordingly, fossil fuel subsidies that have reached US $16.34 billion in 2023 need to be balanced against the disproportionately lower share of subsidies for renewables (US $3.61 billion).[15]

To address challenges of *multi-level governance* and *vertical and horizontal climate policy coordination,* actionable climate and emissions data need to be disseminated across relevant actors at different scales. Among other things, integrating national climate agendas implies data and knowledge flows across the Federal government level, the Federal District, and individual states and municipalities, and ensuring that climate science reaches civil society, the private sector, and local communities. Finally, upskilling of human talent needs to take place across multiple levels – at the state, municipality, and local levels and bridge human capital needs at different temporal scales (from short-, to mid- and long-term). ●

Endnotes

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Appendix

TYPOLOGY OF IMPLEMENTATION GAPS

CATEGORIES	DEFINITION	EXAMPLES
Group 1: Governance and Institutional Capacity		
Vertical coordination (multilevel governance)	Alignment across national, regional, and local levels of government in climate policy objectives and implementation.	Misalignment in climate policy implementation, timeline, or targets between federal and state levels.
Horizontal coordination	Alignment among ministries and agencies at the same level of government in climate policy objectives and implementation.	Fragmented efforts and conflicting actions (e.g., competitions between ministries for resources).
International pressures/ factors	International and external legal and financial/political dynamics that act as barriers.	Donor-driven conditionality (e.g., IMF or WB's conditions on aids that might restrict policy implementation); WTO rules on export subsidies.
Institutional capacity	Organizational structures, norms, rules, and human resources that enable policy delivery.	Limited expertise, bureaucratic inefficiencies, poor coordination, poor communications.
Group 2: Political Economy and Interests		
Political will	Commitment by political actors to support climate policy decisions and their outcomes.	Delay of policies due to vested interests in fossil fuels, partisan divides, changes in electoral cycles, lack of (or incoherent) incentives.
Competing goals	Tensions between climate objectives or other economic, political, or development objectives.	Trade-offs between emissions reduction and industrial expansion.
Stakeholder engagement/ coordination	A systematic process of identifying and interacting with individuals, groups, or organizations that have a stake in a policy or project.	Public consultation held but stakeholder inputs are not integrated; local groups being excluded from decision-making.
Consumer behavior	Behavioral resistance or unintended reactions to climate policies.	Rebound effects from fuel-efficient cars leading to increased vehicle use.
Industry lobbying / resistance	Strategic actions by industries to delay, weaken, or reshape climate policies that challenge their interests.	Coal industry lobbying against early retirement of coal plants or carbon taxes.
Incentive misalignment	Conflicting incentives across climate and non-climate policies that undermine intended outcomes.	Subsidies for fossil fuels, or market-based incentives that contradict carbon pricing mechanisms.
Group 3: Financial Constraints		
Public investment/ finance	Provision of public finance during each stage of policy implementation.	Unavailability of funds required for a project scheduled for implementation from 2015 to 2020 during the 2019–20 financial year due to a shock to the source of revenue that paid for the implementation of the policy.
Private investment/ finance	Availability of and access to private finance that is required for the implementation of a policy.	Unavailability of sufficient private capital due to a poor estimation by the government of the level of risk that banks were willing to take on.

(continued on the next page)

TYPOLOGY OF IMPLEMENTATION GAPS

Group 4: Technical and Legal Constraints		
Technology	Availability and maturity of low-carbon technologies needed.	Mismatch between policy's technological needs and the existing technological infrastructure.
Data, communications, and information	Availability of flow of data and information, availability of information technology and monitoring systems, and the effectiveness of communication between actors.	Emissions data not being collected; lack of reporting to policymakers after the implementation of policies; lack of MRV systems.
Policy design	The initial phase of the policy process which includes identification of actors, instruments, setting of targets, allocation of responsibilities, and establishment of implementation frameworks.	Exclusion of relevant actors; ambiguous targets; unclear division of responsibilities among implementing agencies.
Legal mechanisms	Legal mechanisms available to address issues related to policy non-compliance, enforcement, or disputes.	Insufficient legal tools or mechanisms to enforce policy decisions or when the existing laws are not equipped to address compliance issues.
Human talent	Skilled personnel and institutional leadership to drive innovation and implementation.	Limitations in knowledge, skills, innovation or entrepreneurship in the general population.

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BRIDGING THE GAP BETWEEN CHINA'S CLIMATE AMBITION AND ACTION

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CLIMATE POLICY LAB

Highlights

- Implementation gaps remain one of the key challenges for China in achieving its climate targets.
- Despite strong climate governance and financial capacity, implementation gap analysis identifies four major sources of gaps: competing policy goals, limited institutional capacity, technology concentration, and weak data, communications, and information systems.
- Closing these gaps will require a systemic and coherent approach that balances development objectives with emissions reductions while ensuring incentive alignment across actors and sectors.

Background

In a new climate pledge announced at the September 2025 United Nations Climate Summit, Chinese President Xi Jinping committed to cutting the country's greenhouse gas emissions by 7%–10% from peak levels by 2035. The pledge outlines a series of sectoral and cross-cutting targets, including: achieving a 30% share of non-fossil fuels in total energy consumption; reaching 3,600 gigawatts of combined wind and solar power capacity; expanding the national emissions trading system; further promoting the deployment of electric vehicles; increasing forest stock volume to over 24 billion cubic meters; and building a climate-resilient and adaptive society (Table 1).

The new pledge reaffirms China's earlier commitment to peak greenhouse gas emissions before 2030, marking a critical milestone in the country's contribution to global climate action. According to the Climate Policy Lab's latest policy gap analysis on China's climate targets, both modeling results and expert surveys suggest that China's "1+N" policy framework is broadly sufficient for achieving the 2030 carbon peaking target, with significant

Table 1: China's Climate Targets

Target type	First NDC (2016)	Second NDC (2021)	Third NDC (2025)
Carbon Peaking and Carbon Neutrality	Peak "around 2030 and making efforts to peak earlier"	Peak "before 2030" and achieve carbon neutrality before 2060	Cut GHGs to 7-10% below peak levels by 2035
Carbon intensity	↓ by "60–65%" in 2030 from the 2005 level	↓ by "over 65%" in 2030 from the 2005 level	
Non-fossil share of primary energy consumption	↑ to "around 20%" by 2030	↑ to "around 25%" by 2030	↑ to 30% by 2035
Forest stock volume	↑ by 4.5 billion cubic meters in 2030 from the 2005 level	↑ by around 6 billion cubic meters in 2030 from the 2005 level	↑ by around 24 billion cubic meters in 2030 from the 2005 level
Installed capacity of wind and solar power		↑ to over 1,200 GW by 2030	↑ to over 3,600 GW by 2035

emission reductions expected to come from the decarbonization of the power sector and the expansion of the emissions trading system.[1] However, the analysis also highlights significant challenges to meeting the 2060 carbon neutrality goal. Among the most pressing is the policy implementation gap, defined as the discrepancy between the intended and actual outcomes that occur after policies are adopted.

To examine China's climate policy implementation gaps, we employ a qualitative research design that integrates climate policy inventory analysis, literature review, and semi-structured interviews.[2] More than 100 climate-related policy documents were collected and systematically analyzed. The authors independently scored each policy based on their potential emissions reduction effects and distilled the results into 22 key policies (Table 2). A structured typology of implementation barriers was developed to categorize the main sources of implementation gaps (Appendix). In addition, ten semi-structured interviews were conducted between June and August 2025 with both Chinese and international experts in the fields of climate, energy, and technology. These interviews provided nuanced insights into policy-specific implementation gaps and offered empirical grounding for the analytical framework developed in this study.

Findings

An examination of China's existing "1+N" climate policy inventory reveals that the country's major mitigation efforts have primarily targeted the energy, buildings, industry, and transportation sectors. In contrast, areas such as agriculture, waste management, aviation and shipping, and climate adaptation have received comparatively less policy attention and exhibit lower policy intensity. Recent studies focusing on specific

1 Zhang, Fang, Kelly Sims Gallagher, Minshu Deng, Hengrui Liu, Robbie Orvis, and Xiaowei Xuan. "Assessing the Policy Gaps for Achieving China's Carbon Neutrality Target." Environmental Science & Technology 59, no. 34 (2025): 18124-18133. https://doi.org/10.1021/acs.est.4c12478

2 As the policy outcomes have not yet materialized, conducting a quantitative analysis of the implementation gap is currently infeasible.

Table 2: Selected Policies for Implementation Gap Analysis – China

Sector	Policies
Buildings	Peaking Emissions in Rural and Urban Construction
Cross-cutting	Construction of Dual Control System for Carbon Emissions
	Establishment of Product Carbon Footprint Management System
	Green Consumption Promotion
	National Emissions Trading System
	National Strategy for Climate Change Adaptation
Energy	Coal Power Decarbonization / Promoting Clean and Efficient Development of Coal-Fired Power Generation
	Geothermal Energy Development
	Green Electricity Trading Development
	Medium- and Long-Term Development of the Hydrogen Energy Industry
	Nuclear Energy Development
	Pumped Hydro Storage Development Plan
	Wind and Solar PV Power Development and Construction
Environment	Nature-based Solutions
Finance & Investment	Climate Investment and Financing Project
	Development of Green Bonds
Industry	Energy-Saving and Carbon Reduction in Key Energy-Consuming Industries
	New Energy Storage Manufacturing Industry
	Regulation of Ozone-Depleting Substances and Hydrofluorocarbons
Innovation & Technology	Market-Oriented Green Technology Innovation System
	Science and Technology Support for Carbon Peaking and Carbon Neutrality
Transport	Battery Recycling for New Energy Vehicles

policy instruments, such as the national emissions trading system, have provided valuable insights into implementation challenges. However, a broader, cross-sectoral examination of China's climate policy implementation remains underdeveloped.

Mapping the available evidence and interview results against the Climate Policy Lab's typology of implementation gaps (Appendix), our analysis reveals several key characteristics of China's climate policy implementation gaps:

- China has demonstrated strong inter-departmental coordination and financial capacity, with relatively limited implementation gaps in these areas.
- The major implementation gaps are concentrated in the categories of *Political Economy and Interests and Technical and Legal Constraints.*
- The identified gaps tend to be cross-cutting, affecting multiple sectors and levels of governance.

Below we summarize the four most prevalent sources of climate policy implementation gaps.

COMPETING GOALS

A recurring theme is that multiple policy instruments pull in different directions, with implementation privileging near-term objectives such as price stability, energy security, and output growth over consistent decarbonization signals. Several interviewees characterized the Emissions Trading System (ETS) as institutionally present yet uneven in its influence on operations and investment when cost signals are low or cannot be passed through. Further discussion on electricity trading identified a push-pull in between market liberalization and ad hoc administrative measures, noting that when the latter dominate, signals for flexible resources and renewable integration weaken.

INSTITUTIONAL CAPACITY

Experts underscored the uneven delivery capacity (in terms of people, processes, verification, and project preparation) across regions and policy instruments. In green finance, interviewees highlighted varied interpretations of taxonomies, limited bandwidth for third-party verification, and thin pipelines for bankable projects beyond mature renewables. On market-oriented green innovation, experts praised strong upstream R&D but described a potential lack of cost-benefit assessment. Capacity gaps act as multipliers that dampen otherwise sound policy designs.

TECHNOLOGY CONCENTRATION

Experts emphasized the importance of developing a diversified portfolio of emissions-reduction technologies to avoid excessive concentration in a few established sectors. In practice, many local governments have adopted similar technology priorities, which, combined with intense domestic competition, have contributed to overcapacity in several clean-energy industries. Aligning financial and institutional resources with regional resource endowments, industrial bases, and technological capabilities could improve the efficiency of innovation support and encourage complementary rather than overlapping technology development. Significant technological gaps remain in several emerging areas, including hydrogen, geothermal, and carbon capture, utilization, and storage (CCUS). Addressing these gaps would likely require a coordinated approach that strengthens research and development capacity, supports pilot and demonstration projects, and facilitates the development of enabling infrastructure.

DATA, COMMUNICATIONS, AND INFORMATION

Ensuring the accuracy, reliability, and comparability of climate data collected from multiple sources remains a persistent and systemic challenge. In many cases, data collection is fragmented across different government bodies and agencies, resulting in duplicated efforts, gaps, and inconsistencies that hinder coherent policy design. Interviewees highlighted that the absence of unified methodologies and reporting standards further complicates efforts to compare, integrate, and validate data across regions and domains. On the communications and information side, inadequate transparency and data-sharing channels exacerbate the problem.

Implications

China has made substantial progress in adopting climate policies and setting emission reduction targets over the past decade. Historical evidence indicates that China has often exceeded its stated climate commitments. However, both expert surveys and modeling results suggest that gaps in policy implementation remain a critical constraint to achieving the country's carbon neutrality goal. Four common sources of implementation gaps were identified and discussed, including competing goals, institutional capacity, technology concentration, and data, communications, and information. These challenges are systemic and interrelated, suggesting that piecemeal solutions are unlikely to be effective. Strengthening policy implementation will therefore require an integrated and coherent approach, enhanced institutional capacity, diversified technology portfolios, transparent data-sharing mechanisms, and better aligned stakeholder incentives. ●

Appendix

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International pressures/ factors	International and external legal and financial/political dynamics that act as barriers.	Donor-driven conditionality (e.g., IMF or WB's conditions on aids that might restrict policy implementation); WTO rules on export subsidies.
Institutional capacity	Organizational structures, norms, rules, and human resources that enable policy delivery.	Limited expertise, bureaucratic inefficiencies, poor coordination, poor communications.
Group 2: Political Economy and Interests		
Political will	Commitment by political actors to support climate policy decisions and their outcomes.	Delay of policies due to vested interests in fossil fuels, partisan divides, changes in electoral cycles, lack of (or incoherent) incentives.
Competing goals	Tensions between climate objectives or other economic, political, or development objectives.	Trade-offs between emissions reduction and industrial expansion.
Stakeholder engagement/ coordination	A systematic process of identifying and interacting with individuals, groups, or organizations that have a stake in a policy or project.	Public consultation held but stakeholder inputs are not integrated; local groups being excluded from decision-making.
Consumer behavior	Behavioral resistance or unintended reactions to climate policies.	Rebound effects from fuel-efficient cars leading to increased vehicle use.
Industry lobbying / resistance	Strategic actions by industries to delay, weaken, or reshape climate policies that challenge their interests.	Coal industry lobbying against early retirement of coal plants or carbon taxes.
Incentive misalignment	Conflicting incentives across climate and non-climate policies that undermine intended outcomes.	Subsidies for fossil fuels, or market-based incentives that contradict carbon pricing mechanisms.
Group 3: Financial Constraints		
Public investment/ finance	Provision of public finance during each stage of policy implementation.	Unavailability of funds required for a project scheduled for implementation from 2015 to 2020 during the 2019–20 financial year due to a shock to the source of revenue that paid for the implementation of the policy.
Private investment/ finance	Availability of and access to private finance that is required for the implementation of a policy.	Unavailability of sufficient private capital due to a poor estimation by the government of the level of risk that banks were willing to take on.

(continued on the next page)

TYPOLOGY OF IMPLEMENTATION GAPS

Group 4: Technical and Legal Constraints		
Technology	Availability and maturity of low-carbon technologies needed.	Mismatch between policy's technological needs and the existing technological infrastructure.
Data, communications, and information	Availability of flow of data and information, availability of information technology and monitoring systems, and the effectiveness of communication between actors.	Emissions data not being collected; lack of reporting to policymakers after the implementation of policies; lack of MRV systems.
Policy design	The initial phase of the policy process which includes identification of actors, instruments, setting of targets, allocation of responsibilities, and establishment of implementation frameworks.	Exclusion of relevant actors; ambiguous targets; unclear division of responsibilities among implementing agencies.
Legal mechanisms	Legal mechanisms available to address issues related to policy non-compliance, enforcement, or disputes.	Insufficient legal tools or mechanisms to enforce policy decisions or when the existing laws are not equipped to address compliance issues.
Human talent	Skilled personnel and institutional leadership to drive innovation and implementation.	Limitations in knowledge, skills, innovation or entrepreneurship in the general population.

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INDIAN NATIONAL CLIMATE POLICY IMPLEMENTATION – A BRIEF REVIEW

Authors: Siddharth Jain and Tarun Gopalakrishnan

CLIMATE POLICY LAB

Key Insights

- (a) Policy design issues are the most significant barrier to the implementation of Indian climate policies, followed by (b) weak vertical coordination, (c) gaps in data, communication, and information systems, (d) inadequate technological readiness, (e) inconsistent legal enforcement and compliance, and (f) competing policy goals.
- Policies require clearer implementation pathways, defined institutional responsibilities, and measurable targets.
- India's federal structure demands better alignment between central targets and state-level enforcement.
- A unified digital Monitoring, Reporting, and Verification (MRV) platform is needed to track compliance across policies.
- Public procurement and R&D incentives need to be aligned in order to foster domestic manufacturing of critical technologies.
- Transitioning from voluntary or incentive-based schemes to enforceable mandates is essential.
- Balancing climate ambition with developmental and energy-security objectives requires cross-sectoral planning instruments that internalize trade-offs early in the policy cycle.

Introduction and Methodology

In furtherance of, and in addition to, its three stated Intended Nationally Determined Contribution (INDC) targets – (a) reduce emissions intensity of the economy 45% below 2005 levels by 2030, (b) increase the installed capacity of non-fossil fuel energy to 50%, and (c) create an additional carbon sink of 2.5 to 3 Billion tonnes by 2030 – India has a broad range of climate policies that can be classified into the following sectors: (a) economy wide, (b) energy, (c) forestry, (d) energy efficiency, industry, and buildings, and (e) transportation. The policy

Table 1: Selected Policies for Implementation Gap Analysis - India

Sector	Policies
Economy-wide	National Green Hydrogen Mission
Energy	Emission standards for coal fired power plants
	GST coal compensation cess
	National Solar Mission
	Wind–Solar Hybrid Auction
	Viability Gap Funding Scheme under the Jawaharlal Nehru National Solar Mission Phase II
	Viability gap funding for development of Battery Energy Storage Systems (BESS)
	Renewable Energy Certificates (RECs) and Renewable Portfolio Obligations (RPOs)
	Accelerated Depreciation Tax Benefit for wind and solar energy
	Inclusion of green finance under RBI's Priority Sector Lending
	National Offshore Wind Energy Policy
	National Smart Grid Mission
	Ujwal DISCOM Assurance Yojana (UDAY)
	Green Energy Corridor Project
Forestry	National Mission for a Green India
	Finance Commission Incentive for Creation of Carbon Sink
	INDC Target on Forestry – carbon sink of 2.5 to 3 GtCO2e through additional forest and tree cover by 2030
Energy Efficiency, Industry, & Buildings	National Mission for Enhanced Energy Efficiency
	Perform, Achieve, and Trade (PAT)
	National Program on Energy Efficiency and Technology Upgrade of MSMEs
	India Cooling Action Plan
	Energy Conservation Building Code for Residential Buildings
	Energy Conservation Building Code for Commercial Buildings
	Green Steel Taxonomy for India
	India Green Steel Roadmap and Action Plan
Transport	National Electric Mobility Mission Plan
	Faster Adoption and Manufacturing of (Hybrid)and Electric Vehicles (FAME) I and II
	Corporate Average Fuel Efficiency (CAFÉ) standards
	Bharat Stage (BS) pollution emission standards for cars and two wheelers
	Bharat Stage (BS) pollution emission standards for heavy duty vehicles

instruments used are diverse, ranging from fiscal policies such as the Coal Compensation Cess[1] and the Finance Commission's incentive to states for the creation of a carbon sink, and regulatory policies such as the Bharat Stage emission standards for passenger vehicles, to market-based mechanisms such as the Carbon Market Framework and Carbon Credit Trading Scheme. All put together, the large portfolio of policies (Table 1) attempts to achieve a range of objectives in addition to the reduction of emissions, including fostering innovation and structural change towards a green economy and incentivizing investments in climate adaptation.

A recent paper by the Climate Policy Lab[2] found that under a business-as-usual scenario with current policies, India's emissions will not reach net zero by 2070. The paper evaluated possible net zero pathways but did not study whether and how implementation gaps may hinder the achievement of climate goals. Despite some notable successes, such as in the cases of the expansion of installed solar capacity through the National Solar Mission and the widespread adoption of emission standards for passenger vehicles due to the Bharat Stage regulations, evidence on whether the country has been able to meet its climate policy goals is inconsistent. This policy brief provides a summary of findings from the Climate Policy Lab's ongoing Implementation Gap Analysis project on India that attempts to fill the aforementioned gap in the literature. This project's research design involves the combination of a comprehensive literature review with semi-structured interviews with climate policy experts in order to ascertain the implementations status of the policies being studied and the nature of implementation gaps that may affect them based on a policy gap typology created for this purpose with 17 different policy gaps broadly classified into four groups: (a) governance and institutional capacity, (b) political economy and interests, (c) financial constraints, (d) technical and legal constraints. The 31 policies under study have been chosen based on their identification as India's most important climate policies during the Climate Policy Lab's India Policy Gap Analysis project.

Key Findings

Preliminary findings, based on a literature review and 5 expert opinions, reveal that (a) policy design is most commonly cited as an implementation gap, with it being cited for 20 policies, followed by (b) vertical coordination – 12 policies, (c) data, communications, and information – 11 policies, (d) technology – 10 policies, (e) legal mechanisms – 9 policies, and (f) competing goals – 9 policies (see Figure 1). The definitions of each of these gaps according to the Implementation Gap Analysis framework are found in the Appendix.

The heatmap (Figure 2) visualizes where literature and stakeholder interviews converge in identifying policy implementation gaps. Each point reflects one source – either the literature or an individual interviewee – flagging a specific gap. Policies with no identified gaps were excluded from the figure; however, this absence reflects the scope of the sources consulted and should not be interpreted as evidence that no gaps exist.

POLICY DESIGN

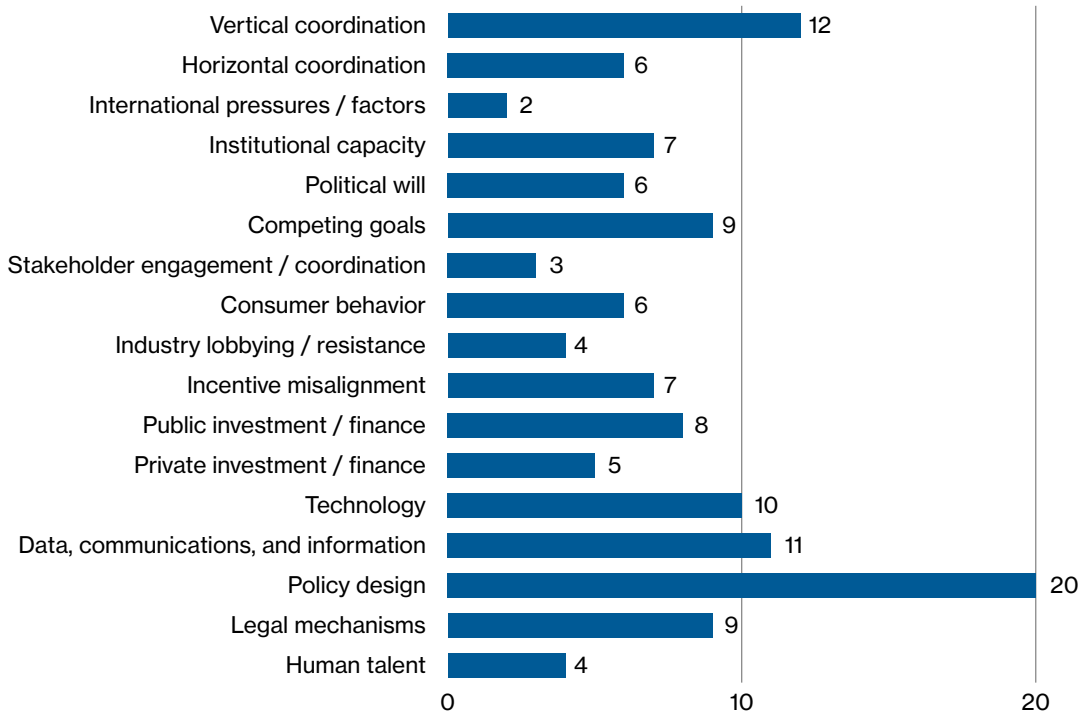
Problems with policy design were found to impact the majority – 20 out of 31 – of policies studied.[3] The strongest evidence was found with respect to (a) the National Green Hydrogen Mission, (b) Thermal Plant Emission Standards, (c) the National Solar Mission, (d) the Wind-Solar Hybrid Auction policy, (e) Renewable Energy Certificates (RECs) and Renewable Purchase Obligations (RPOs), (f) the National Mission for a Green India, (g) the Perform, Achieve, and Trade (PAT) scheme, (h) India Cooling Action Plan, (i) National Electric Mobility Mission Plan, and (j) Corporate Average Fuel Efficiency standards.

1 A tax of INR 400 per tonne of coal.

2 Narassimhan et al., 'Is Net Zero Net Positive? – Opportunities and Challenges for Pursuing a Socio-Economically Sensitive Net-Zero Transition for India', *Climate Policy* 25, no. 7 (2025): 1029–43. https://doi.org/10.1080/14693062.2024.2432931

3 'Strongest evidence' is defined for the purposes of this memo as policies that were identified as falling within the respective implementation gap by either (a) the literature review and one or more interviewees or (2) two or more interviewees

Figure 1: Number of policies that each implementation gap affects



The National Green Hydrogen Mission reflects strong ambition but limited planning for market creation. By focusing largely on supply-side measures, the policy overlooks mechanisms to generate domestic demand, such as credit systems, purchase mandates, or long-term offtake agreements. Combined with the higher cost of green hydrogen and a complex regulatory landscape across states, this deters private investment and risks, confining the sector to export markets. Similarly, the Thermal Power Plant Emission Standards lack clarity on cost recovery and tariff treatment, discouraging compliance as plants face higher marginal costs and operational uncertainty. Even with adequate raw materials such as limestone, the absence of systems to ensure consistent supply reflects gaps in the supporting policy framework.

The National Solar Mission and related instruments also illustrate how design misalignment can undermine implementation. Renewable projects are often completed long before the required transmission infrastructure, delaying deployment and reducing investor confidence. The policy's focus on large-scale generation has left rooftop solar lagging due to weak net metering and grid integration incentives. The Wind–Solar Hybrid Auctions highlight procedural weaknesses, with no uniform eligibility or land acquisition criteria leading to speculative, non-viable bids. Market and incentive schemes such as Renewable Purchase Obligations (RPOs) and Renewable Energy Certificates (RECs) suffer from weak enforcement and misaligned incentives, while the Green India Mission and PAT program combine ambitious targets with inconsistent timelines and limited follow-through. The National Electric Mobility Mission Plan similarly sets aspirational goals without the supporting infrastructure or accountability mechanisms to realize them.

VERTICAL COORDINATION

Problems with vertical coordination were found to impact 12 out of 31 policies studied. The strongest evidence was found with respect to (a) the National Solar Mission, (b) RECs and RPOs, and (c) the Energy Conservation Building Codes for Residential (ECBC-R) and Commercial Buildings (ECBC-C).

Figure 2: Heatmap of Policy Gaps Identified by Literature and Interviewees

Each point represents one source – either the literature or an individual interviewee – identifying a policy gap.

	Vertical coordination	Horizontal coordination	International pressures / factors	Institutional capacity	Political will	Competing goals	Stakeholder engagement / coordination	Consumer behavior	Industry lobbying / resistance	Incentive misalignment	Public investment / finance	Private investment / finance	Technology	Data, communications, and information	Policy design	Legal mechanisms	Human talent
National Green Hydrogen Mission	1				1	3				1	1	1	4		2		1
Thermal Plant Emission Standards	1	2		1	3	2	1		5	1	2	1			3	1	
GST Coal Compensation Cess															1		
National Solar Mission (NSM)	4	2				1	1			2			2		4	1	
Wind - Solar Hybrid Auction															2		
VGF for Development of Battery Energy Storage Systems												1					
RECs and RPOs	3	1			1	1		1						1	2	2	
Accelerated Depreciation Tax Benefit															1		
National Offshore Wind Energy Policy	1	1		1									1		1		
National Smart Grid Mission													1	1	1		1
Ujwal DISCOM Assurance Yojana (UDAY)				1	2			2			1			1	1		1
Green Energy Corridor Project																1	
National Mission for a Green India											1				2		
Finance Commission Carbon Sink Incentive	1					1									1		
Indian INDC Target on Forestry – 2.5 to 3 GtCO2e carbon sink by 2030	1						1				1			1	1		
National Mission for Enhanced Energy Efficiency					1	1				1		1		1	1		1
PAT (Perform, Achieve, and Trade)				1		1			1					2	2	1	
India Cooling Action Plan	1					1		1			1		1	1	2		
Energy Conservation Building Code – Residential Buildings	2	1		2						1				2		1	
Energy Conservation Building Code – Commercial Buildings	2	1		2										1		1	
Green Steel Taxonomy for India			1						1				1	1			
India Green Steel Roadmap and Action Plan			1			1			1			1	2	1	1		
National Electric Mobility Mission Plan								1			1		2		2	2	
Faster Adoption and Manufacturing of (Hybrid) and Electric Vehicles (FAME) I and II	1										1		1		1		
Corporate Average Fuel Efficiency (CAFÉ) standards										1					2	1	
Bharat Stage (BS) pollution emission standards for cars and two wheelers	1			1	1			2									
Bharat Stage (BS) pollution emission standards for heavy duty vehicles								1		1			1				

In the National Solar Mission, the central government's targets are constrained by uneven state-level implementation capacities, poor financial health of DISCOMs, and a lack of subnational policies for grid flexibility or rooftop solar compensation. In the case of the RECs and RPOs framework discoms are rarely penalized for non-compliance, and regulators are reluctant to enforce penalties. Similarly, the Energy Conservation Building Codes (ECBC) for both residential and commercial buildings reveal institutional misalignment: while national ministries are increasingly aware of policy frameworks, subnational agencies often lack capacity or technical knowledge to implement them effectively.

DATA, COMMUNICATION, AND INFORMATION (DCI)

Problems with DCI were found to impact 11 out of 31 policies studied. The strongest evidence was found in respect of (a) PAT and (b) ECBC-R.

The PAT scheme has achieved relatively strong monitoring among large industries, but data collection from Medium Small & Micro Enterprises (MSMEs) remains inconsistent and often relies on self-reporting. Monitoring and verification systems for smaller enterprises are weak, and lobbying has contributed to lenient performance targets. Similarly, the Energy Conservation Building Code (Residential) faces severe monitoring challenges due to the fragmented and largely informal nature of India's construction industry. Without robust data systems and effective information flows between implementing agencies, compliance tracking remains limited, hampering feedback and learning across levels of governance.

TECHNOLOGY

Problems with technology were found to impact 10 out of 31 policies studied. The strongest evidence was found with respect to (a) the National Green Hydrogen Mission, (b) National Solar Mission, (c) Green Steel Roadmap and Action Plan, and (d) the National Electric Mobility Mission Plan.

The National Green Hydrogen Mission depends heavily on advances in connected technologies, particularly electrolyzers, which remain expensive, inefficient, and largely imported. The absence of domestic manufacturing capacity, coupled with underdeveloped infrastructure for storage, transport, and refueling, constrains large-scale deployment and raises costs. While hydrogen production is technically feasible, scaling it for widespread use faces persistent challenges related to cost, supply chains, and infrastructure readiness. Similarly, the National Electric Mobility Mission Plan struggles with weak technological ecosystems. Battery recycling and circular economy systems are underdeveloped, charging networks remain fragmented, and the lack of standardization across charging technologies has slowed mass adoption.

LEGAL MECHANISMS

Problems with legal mechanisms were found to impact 9 out of 31 policies studied. The strongest evidence was found in respect of (a) RECs and RPOs and (b) the National Electric Mobility Mission Plan.

Weak enforcement mechanisms continue to undermine India's climate policy architecture. The RPO and REC framework illustrates systemic failures in compliance and penalty enforcement. Although both central and state regulations exist, monitoring remains irregular, and penalties for non-compliance are minimal or inconsistently applied. The National Electric Mobility Mission Plan similarly reflects a compliance culture rooted in voluntary aspiration rather than binding obligations. The lack of enforceable targets and failure to implement the 15-year vehicle retirement rule further demonstrate limited legal follow-through.

COMPETING GOALS

Problems with competing goals were found to impact 9 out of 31 policies studied. The strongest evidence was found in respect of (a) the National Green Hydrogen Mission and (b) Thermal Plant Emission Standards.

In the case of the National Green Hydrogen Mission, the drive to expand hydrogen production competes with the need to allocate limited renewable electricity to other industrial or consumer uses. Given the high carbon intensity

of the grid, prioritizing hydrogen production could exacerbate short-term emissions. Similarly, the Thermal Power Plant Emission Standards face resistance due to financial and operational trade-offs. Retrofitting plants involves costly shutdowns that risk supply disruptions and revenue losses for discoms.

Recommendations

India's climate policy landscape demonstrates both scale and momentum but suffers from recurring implementation barriers that cut across sectors. The Implementation Gap Analysis findings provide entry points for reform:

1. Strengthen Policy Design and Delivery Frameworks: Policies require clearer implementation pathways, defined institutional responsibilities, and measurable targets. Policies such as the National Green Hydrogen Mission would benefit from integrated demand-creation mechanisms (offtake agreements, credit frameworks) and transparent cost-recovery structures for industries and utilities. Establishing ex-ante delivery frameworks with monitoring indicators can improve accountability.

2. Improve Vertical and Horizontal Coordination: India's federal structure demands better alignment between central targets and state-level enforcement. Creating joint federal-state implementation compacts, supported by predictable fiscal transfers and technical assistance, could bridge capacity gaps. Inter-ministerial coordination units, particularly linking energy, industry, and finance, would help synchronize timelines and investment decisions.

3. Enhance Data, Monitoring, and Information Systems: A unified digital Monitoring, Reporting, and Verification (MRV) platform is needed to track compliance across policies. Data transparency can facilitate investor confidence and adaptive policymaking. For schemes involving MSMEs and buildings, standardized reporting templates and stronger institutional linkages between central and subnational agencies can address current information asymmetries.

4. Advance Domestic Technology Ecosystems: Public procurement and R&D incentives should be aligned to foster domestic manufacturing of critical technologies such as electrolyzers, energy storage, and low-carbon industrial processes. Strengthening public-private demonstration programs and technology partnerships can accelerate cost reduction and diffusion.

5. Reinforce Legal and Enforcement Mechanisms: Transitioning from voluntary or incentive-based schemes to enforceable mandates is essential. Revising penalty frameworks for non-compliance (such as in the RPO & REC systems) and ensuring legal clarity on dispute resolution can improve compliance culture. Judicial and regulatory capacity-building should complement this shift.

6. Manage Competing Goals through Integrated Planning: Balancing climate ambition with developmental and energy-security objectives requires cross-sectoral planning instruments that internalize trade-offs early in the policy cycle. Conducting climate-impact assessments for major energy and industrial policies can help prevent contradictions between short-term economic priorities and long-term emissions goals. ●

Appendix

TYPOLOGY OF IMPLEMENTATION GAPS

CATEGORIES	DEFINITION	EXAMPLES
Group 1: Governance and Institutional Capacity		
Vertical coordination (multilevel governance)	Alignment across national, regional, and local levels of government in climate policy objectives and implementation.	Misalignment in climate policy implementation, timeline, or targets between federal and state levels.
Horizontal coordination	Alignment among ministries and agencies at the same level of government in climate policy objectives and implementation.	Fragmented efforts and conflicting actions (e.g., competitions between ministries for resources).
International pressures/ factors	International and external legal and financial/political dynamics that act as barriers.	Donor-driven conditionality (e.g., IMF or WB's conditions on aids that might restrict policy implementation); WTO rules on export subsidies.
Institutional capacity	Organizational structures, norms, rules, and human resources that enable policy delivery.	Limited expertise, bureaucratic inefficiencies, poor coordination, poor communications.
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Public investment/ finance	Provision of public finance during each stage of policy implementation.	Unavailability of funds required for a project scheduled for implementation from 2015 to 2020 during the 2019–20 financial year due to a shock to the source of revenue that paid for the implementation of the policy.
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TYPOLOGY OF IMPLEMENTATION GAPS

Group 4: Technical and Legal Constraints		
Technology	Availability and maturity of low-carbon technologies needed.	Mismatch between policy's technological needs and the existing technological infrastructure.
Data, communications, and information	Availability of flow of data and information, availability of information technology and monitoring systems, and the effectiveness of communication between actors.	Emissions data not being collected; lack of reporting to policymakers after the implementation of policies; lack of MRV systems.
Policy design	The initial phase of the policy process which includes identification of actors, instruments, setting of targets, allocation of responsibilities, and establishment of implementation frameworks.	Exclusion of relevant actors; ambiguous targets; unclear division of responsibilities among implementing agencies.
Legal mechanisms	Legal mechanisms available to address issues related to policy non-compliance, enforcement, or disputes.	Insufficient legal tools or mechanisms to enforce policy decisions or when the existing laws are not equipped to address compliance issues.
Human talent	Skilled personnel and institutional leadership to drive innovation and implementation.	Limitations in knowledge, skills, innovation or entrepreneurship in the general population.

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BRIDGING IMPLEMENTATION GAPS FOR INDONESIA'S NET ZERO TRANSITION

Authors: Soyoung Oh, Malvika Pradhan, Putri A. Agustina, and Michael Kurniawan

CLIMATE POLICY LAB

Key Insights

- Indonesia has adopted a wide range of climate policies across the energy, land use, transport, and industry sectors. Yet while ambition is high on paper, implementation remains uneven across 15 major policies we examined.
- This analysis identifies key barriers in implementing Indonesia's climate policies across different sectors and concludes with recommendations to bridge the implementation gap.
- Strengthening public finance, addressing competing goals through aligning incentives, and enhancing governance will be needed to translate climate ambition into credible action.

Background

Indonesia's climate policy portfolio is both diverse and expansive. It has included market-based mechanisms, such as the hybrid emissions trading scheme and carbon tax, as well as fiscal instruments like feed-in tariffs and biofuel subsidies. Additionally, it encompasses regulatory frameworks for green buildings and sector-specific strategies, including REDD+ (Reducing Emissions from Deforestation and Forest Degradation) and the deployment of electric vehicles. These policies are designed not only to reduce emissions but also to foster innovation and accelerate transformation towards a low-carbon economy (Figure 1). The President also aims to reach 100 percent renewables in 10-15 years.

This study reviews 15 key climate policies identified through Climate Policy Lab's Indonesia policy inventory and literature review, complemented by semi-structured interviews with Indonesian experts (Table 1).

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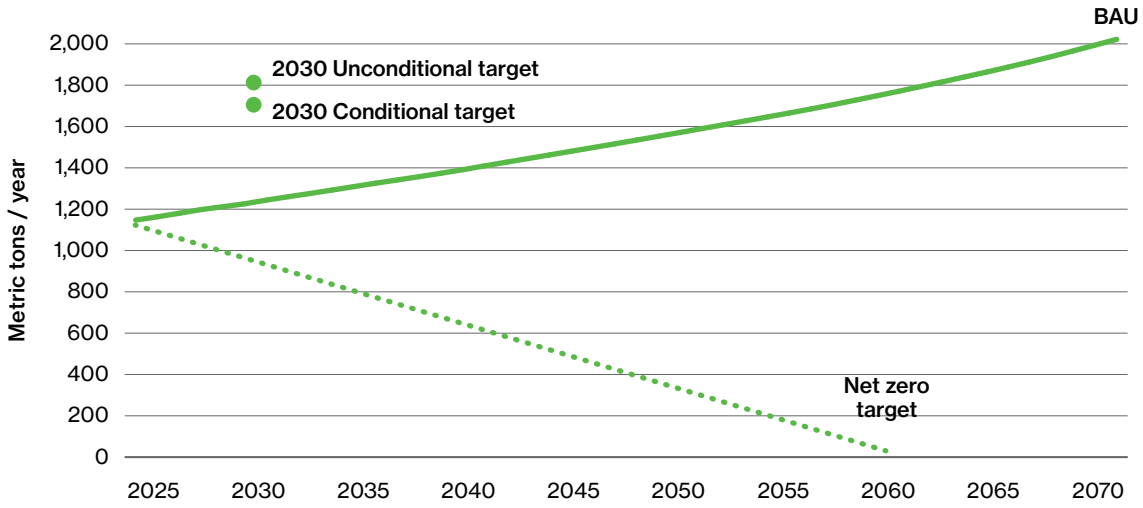
Figure 1: Indonesia's emissions trajectory between 2025 and 2070



Source: Authors based on Energy Policy Simulator (new EPS Indonesia version here).

Table 1: Selected Policies for Implementation Gap Analysis – Indonesia

Sector	Policies
Energy	Hybrid emissions trading scheme (ETS) and carbon tax in the power sector
	Feed-in tariffs (solar PV, biomass, hydropower, solid waste)
	Biofuel development policies (e.g., biodiesel mandate, subsidies)
	A coal-fired power plant retirement initiative
	Carbon Capture and Storage (CCS) initiative
	Waste to Energy strategy and policy
Forestry	Reducing emissions from deforestation and forest degradation (REDD+)
	A permanent moratorium on new forest clearance
	Indonesian Sustainable Palm Oil Certification System (ISPO)
	Long-term National Forestry Plan (RKTN) 2011-2030
	A multi-business forestry policy
	Agroforestry & Social Forestry
Ecosystems / Blue economy	Mangrove restoration policy
	Blue bonds initiative
Transport	EV Deployment and Infrastructure Program
	Transit Oriented Development (TOD) concept in urban area
Industry	Improving industrial energy efficiency
Building	Regulations on the implementation of green buildings

Note: 15 policies were selected through literature review and stakeholder engagement with Landscape Indonesia to identify significant climate policies in Indonesia based on Climate Policy Lab's Indonesia policy inventory. The inventory was compiled using official government publications, supported by international databases such as the IEA databases, and prior academic and policy research on Indonesia. Policies were considered 'significant' if they cover a large share of sectoral emissions, target sectors with high decarbonization potential, involve substantial fiscal or regulatory levers, and/or send strong ambition signals in national or international frameworks. As these are policies with significance, they may already receive more political attention, financing, or institutional support than other, smaller-scale measures. Thus, we acknowledge that the implementation gaps we observe are likely a lower-bound estimate relative to the broader universe of climate-related policies.

By assessing both the intended goals and actual implementation status of these policies, the analysis highlights why progress has been uneven. The findings highlight persistent implementation gaps (see Appendix Table 1 for categorization) arising from competing policy priorities, limited institutional capacity, and a lack of political will and public finance.

Key Findings

FINANCIAL CONSTRAINTS

Public finance emerges as the most binding constraint across nearly all sectors. High-impact initiatives, such as early coal-fired power plant retirement, mangrove restoration, and REDD+, require grant-based or concessional financing to be viable. Yet funding flows remain limited and heavily reliant on donor finance or state-owned enterprises with limited fiscal space.

Following the U.S. withdrawal from the Just Energy Transition Partnership (JETP), questions arose about Indonesia's ability to retire coal assets at scale, with only one major project (Cirebon-1) currently on track for early retirement. Similarly, efforts to scale carbon capture and storage (CCS) or waste-to-energy (WtE) plants face bankability issues due to unclear revenue models and regulatory uncertainty.

POLITICAL ECONOMY AND INTERESTS

The energy and forestry sectors face barriers of political economy and interests – namely, insufficient political will, competing goals, and industry lobbying or resistance. For instance, coal remains politically and economically entrenched, protected by subsidies and energy security narratives.

The persistence of fossil fuel subsidies distorts market signals, undermining efforts to attract private investment in renewables and energy efficiency. For instance, feed-in tariffs on solar PV, hydropower, and biomass have been cancelled and replaced by a ceiling price auction as they failed to create a bankable environment due to uncompetitive rates and opaque revisions. In the meantime, the Emissions Trading Scheme (ETS) price has been low (below $1/ton in 2023[1]) with low trading volume, and the carbon tax has been delayed, limiting the effectiveness of Indonesia's pricing instruments in the power sector. PLN's[2] reliance on subsidized coal further deters renewable power purchase agreements. The resulting incoherent policy mix sends contradictory signals to the market on the country's climate ambition.

Land-use policies face similar contradictions. The impact of permanent moratorium on new forest clearance and the mangrove restoration program has been weakened by competing priorities such as food security and regional development. For instance, the government's decision to allow development activities in conservation zones undercuts its own environmental goals. These examples reveal how competing goals, industry resistance, and fragmented incentives erode the feasibility of climate policies.

GOVERNANCE AND INSTITUTIONAL CAPACITY

Fragmented governance remains a core structural barrier. Vertical coordination failures between national policies and subnational planning frameworks undermine consistency, as subnational governments often lack the capacity to integrate climate targets into their development plans. Horizontal misalignment across agencies further leads to regulatory overlap and policy incoherence. For instance, the mangrove restoration program was hindered by conflicting spatial planning priorities between local and national authorities. Similarly, REDD+, the transit-oriented development concept, and early coal-fired power plant retirement policies have struggled to move forward due to coordination gaps and fragmentation across ministries.

1 ICAP (2025) Indonesian Economic Value of Carbon Trading Scheme. https://icapcarbonaction.com/en/ets/indonesian-economic-value-carbon-nilai-ekonomi-karbon-trading-scheme

2 PLN refers to Perusahaan Listrik Negara, the fully state-owned electricity company of Indonesia.

TECHNOLOGICAL AND LEGAL CONSTRAINTS

Climate policies have faced challenges around technological and legal constraints, which represent systemic bottlenecks due to the high costs of imported technologies, weak local R&D, and limited infrastructure. For instance, electric vehicles (EV) deployment suffers from insufficient charging stations and inadequate grid capacity. The CCS initiative also lacks CO2 transport and storage infrastructure, while green building standards face the high costs of materials.

Legal barriers stem from ambiguous and overlapping mandates, slow permitting, and limited enforcement power. Forest moratorium and green building standards lack binding penalties for non-compliance. The ISPO (Indonesian Sustainable Palm Oil) certification system remains hindered by unclear land tenure and weak auditing.

Recommendations

Indonesia has set ambitious targets and designed comprehensive policies, but delivery remains inconsistent. Coal retirement remains limited, and the full-scale implementation of both the carbon tax and the national ETS has been repeatedly delayed. Despite the ambitious goals outlined in the FOLU Net Sink 2030 strategy[3], forest protection outcomes remain limited due to weak and inconsistent enforcement and verification across provinces. Finance continues to be the choke point across nearly all sectors, while fossil fuel subsidies and the entrenched interests of fossil fuel industries weaken price signals and slow the pace of transition.

The next five-year time frame is a critical policy window to close the gap between ambition and delivery. The political transition offers a chance for the new administration to set a durable energy and climate agenda, particularly by integrating climate goals with national priorities such as the upcoming Second NDC. These priorities will be closely linked to Indonesia Emas 2045 (Golden Indonesia 2045 Vision),[4] which can shape the RPJMN 2025-2029 (national development plan). This alignment can ensure that climate ambition is institutionalized within long-term development planning, helping to raise energy targets, strengthen domestic pressure for implementation, and bridge delivery gaps.

On the finance side, the restructuring of the JETP, the expansion of Article 5 and 6 mechanisms, and access to Green Climate Fund resources create avenues to address financial constraints for fully executing early coal retirement and scaling up renewables. Importantly, Indonesia's fossil fuel subsidy represents a major source of potential financing that could be reallocated toward renewable investments, grid infrastructure, and just transition measures.

On the international stage, while Indonesia's G20 presidency ended in 2022, the country remains active in G20 Troika discussions as a former chair and is positioning itself as a regional energy hub. These platforms provide strategic opportunities to secure external financing and technical partnerships to address financial and technological implementation gaps.

If coupled with stronger domestic coherence, phasing down fossil subsidies, realigning incentives, and building institutional capacity, Indonesia can translate international partnerships into credible domestic delivery. In short, the convergence of political, financial, and international windows provides an important moment to move from ambition to action. By seizing these windows, Indonesia could strengthen its trajectory toward meeting its 2030 NDC and 2060 net-zero goals, given that ambition is raised and implementation gaps are effectively addressed.

3 Ministry of Environment and Forestry (2023) FOLU Net Sink: Indonesia's Climate Actions Towards 2030 https://www.menlhk.go.id/cadmin/uploads/PHOTO_BOOK_FOLU_NET_SINK_Indonesia_s_Climate_Actions_Towards_2030_a3d4f1fa43.pdf

4 The Golden Indonesia 2045 Vision sets goals for the country to be a sovereign, advanced, fair and prosperous by its centennial in 2045.

Appendix

TYPOLOGY OF IMPLEMENTATION GAPS

CATEGORIES	DEFINITION	EXAMPLES
Group 1: Governance and Institutional Capacity		
Vertical coordination (multilevel governance)	Alignment across national, regional, and local levels of government in climate policy objectives and implementation.	Misalignment in climate policy implementation, timeline, or targets between federal and state levels.
Horizontal coordination	Alignment among ministries and agencies at the same level of government in climate policy objectives and implementation.	Fragmented efforts and conflicting actions (e.g., competitions between ministries for resources).
International pressures/ factors	International and external legal and financial/political dynamics that act as barriers.	Donor-driven conditionality (e.g., IMF or WB's conditions on aids that might restrict policy implementation); WTO rules on export subsidies.
Institutional capacity	Organizational structures, norms, rules, and human resources that enable policy delivery.	Limited expertise, bureaucratic inefficiencies, poor coordination, poor communications.
Group 2: Political Economy and Interests		
Political will	Commitment by political actors to support climate policy decisions and their outcomes.	Delay of policies due to vested interests in fossil fuels, partisan divides, changes in electoral cycles, lack of (or incoherent) incentives.
Competing goals	Tensions between climate objectives or other economic, political, or development objectives.	Trade-offs between emissions reduction and industrial expansion.
Stakeholder engagement/ coordination	A systematic process of identifying and interacting with individuals, groups, or organizations that have a stake in a policy or project.	Public consultation held but stakeholder inputs are not integrated; local groups being excluded from decision-making.
Consumer behavior	Behavioral resistance or unintended reactions to climate policies.	Rebound effects from fuel-efficient cars leading to increased vehicle use.
Industry lobbying / resistance	Strategic actions by industries to delay, weaken, or reshape climate policies that challenge their interests.	Coal industry lobbying against early retirement of coal plants or carbon taxes.
Incentive misalignment	Conflicting incentives across climate and non-climate policies that undermine intended outcomes.	Subsidies for fossil fuels, or market-based incentives that contradict carbon pricing mechanisms.
Group 3: Financial Constraints		
Public investment/ finance	Provision of public finance during each stage of policy implementation.	Unavailability of funds required for a project scheduled for implementation from 2015 to 2020 during the 2019–20 financial year due to a shock to the source of revenue that paid for the implementation of the policy.
Private investment/ finance	Availability of and access to private finance that is required for the implementation of a policy.	Unavailability of sufficient private capital due to a poor estimation by the government of the level of risk that banks were willing to take on.

(continued on the next page)

TYPOLOGY OF IMPLEMENTATION GAPS

Group 4: Technical and Legal Constraints		
Technology	Availability and maturity of low-carbon technologies needed.	Mismatch between policy's technological needs and the existing technological infrastructure.
Data, communications, and information	Availability of flow of data and information, availability of information technology and monitoring systems, and the effectiveness of communication between actors.	Emissions data not being collected; lack of reporting to policymakers after the implementation of policies; lack of MRV systems.
Policy design	The initial phase of the policy process which includes identification of actors, instruments, setting of targets, allocation of responsibilities, and establishment of implementation frameworks.	Exclusion of relevant actors; ambiguous targets; unclear division of responsibilities among implementing agencies.
Legal mechanisms	Legal mechanisms available to address issues related to policy non-compliance, enforcement, or disputes.	Insufficient legal tools or mechanisms to enforce policy decisions or when the existing laws are not equipped to address compliance issues.
Human talent	Skilled personnel and institutional leadership to drive innovation and implementation.	Limitations in knowledge, skills, innovation or entrepreneurship in the general population.

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ACHIEVING MEXICO'S CLIMATE AMBITION DESPITE INSTITUTIONAL WEAKNESS

Authors: Nora Hampl and Daniel Alegre

CLIMATE POLICY LAB

Highlights

- Public data systems, fiscal policy, and institutional accountability were identified as key factors hindering climate policy implementation.
- Access to digital public infrastructure, carbon tax policy, regulation, and standard enforcement that reflect climate priorities would likely improve both climate policy process and outcomes.
- Cross-sectoral policy design is needed to ensure economy-wide interaction with improved climate outcomes.

Introduction

Heavily impacted by climate change, Mexico remains committed to mitigating its impacts through a broad range of decarbonization policies.[1,2] To decouple economic growth from greenhouse gas emissions and fluorinated gases, the carbon intensity of Mexico's main emitting sectors needs to decrease.[3]

While pre-existing research on climate policy adoption gaps and climate governance have generated valuable data points for climate policymakers tasked with economy-wide climate agenda integration and/or decarbonization, there is still a limited understanding of implementation gaps, defined here as the *discrepancy between intended and actual outcomes after policy adoption.* In this preliminary study, implementation gaps analysis (IGA) developed by the Climate Policy Lab (CPL) is applied to assess sources of implementation gaps in Mexico. The IGA framework includes four broad categories of policy implementation gaps: (1) *Governance and Institutional Capacity,* (2) *Political Economy and Interests,* (3) *Financial Constraints,* and (4) *Technical and Legal Constraints* (Appendix A).

Climate initiatives evaluated in this study were selected from the International Energy Agency[4] and CPL[5] policy databases based on the following criteria: "initiatives" include policies, programs, strategies, legislative acts, regulatory and planning instruments and other actions that are (i) currently in effect, have been recently enacted, or have recently ended; (ii)

Table 1: Selected Policies for Implementation Gap Analysis – Mexico

Sector	Policies
Economy-wide	2022 Nationally Determined Contribution (NDC)
	2025 Plan Mexico
	2019 National Development Plan (2019-2024)
	2020 Environment and Natural Resources Sector Program (PROMARNAT) (2020-2024) (AFOLU)
	2012 General Law on Climate Change (GCCL)
	2021 Special Climate Change Program (PECC) (2021-2024)
	2012 General Ecological Planning Program of the Territory (POETG)
	2020 Emissions Trading System (ETS) Pilot Program (SMCE)
	2020 National Emissions Registry (RENE)
	2020 National Strategy to Reduce Short-Lived Climate Pollutants
	2016 Special Tax Law on Production and Services - Carbon Tax and Credits
Energy	2024 Clean Energy Government Axis Plan
	2022 Program for Development of the National Electric System (PRODESEN)
	National Program for Sustainable Energy Use (PRONASE) (2020-2024)
	2024 National Strategy for Electricity Sector 2024-2030 Mexico
Agriculture	2020 Sectorial Agriculture and Rural Development Program (2020-2024)
Forestry	2020 National Forestry Program (2020-2024, PRONAFOR) (includes PES)
	Conservation for Sustainable Development Program (Programa de Conservación para el Desarrollo, PROCODES – program linked to PROMARNAT and CONANP's protected areas)
	2022 Compensation Guidelines of the Program for Land Use Change in Forest Land

are estimated to have considerable emissions impacts and (iii) effect the achievement of the country's NDC commitment (Table 1).

USE VALUE

This study provides insights about important gaps and bottlenecks identified in current processes of climate-related policy implementation in Mexico. As such, it can be used by policymakers to avoid or minimize policy incoherence across scales, sectors, and governance structures. In a broader sense, it can guide policymakers to identify and/or address structural barriers that hinder successful climate policy implementation, as part of the NDC process.

Initial Findings

Mexico's initial 2015 NDC included a *level of specificity* (i.e., cost of inaction versus cost of implementation) that provided a distinct opportunity to translate the articulated ambition into effective climate policies. The subsequent political cycle, however, was marked by an absence of federal climate leadership, which became reflected in a weaker 2020 NDC lacking *clear allocation of responsibilities, timelines, and resources.*

At the same time, however, 18 subnational governments have acted independently and approved 12 state level climate change laws,

some of which include a 2050 net zero target – a commitment that the federal government has yet to enshrine in national law. Progress is being made at the subnational level to mobilize regulations, strategies, resources, and action plans that could support NDC implementation.

Based on CPL's preliminary analysis, Mexico's implementation gaps converge around politically inconsistent planning, policy incoherence, and/or incentive misalignment that are co-related to weakened institutions and challenges in vertical and horizontal coordination. Breakdown in vertical coordination seems to be due in part to (i) missing infrastructure for data sharing and dissemination of actionable climate knowledge, but also (ii) unclear mandates to act across scales. Lack of data and actionable knowledge affects not only federal planning but also the ability of states and municipalities to act effectively.

GOVERNANCE AND INSTITUTIONAL CAPACITY

Inconsistencies between formal commitments made under the ***Nationally Determined Contribution (NDC 2022)*** and the operational capabilities of institutions responsible for executing the commitments are a barrier to progress. *INECC,* the national body responsible for greenhouse gas inventories, only publishes data every four years and with substantial delays, with implications for federal planning, and state and municipal climate action. Additionally, this lag limits the country's ability to track its progress while undermining the accountability of sectoral actors.

Compared to its previous 2014 version, the ***Special Climate Change Program (PECC 2021–2024)*** lacks mitigation quantification, policy impact modeling, and a dedicated budget. Furthermore, the program's role in institutional planning has been diminished and no longer functions as a core coordination tool across sectors or ministries. Similarly, coordination of national targets at the level of states and municipalities remains challenging. Reforms of the ***General Law on Climate Change (LGCC)*** resulted in weakening of climate institutions (e.g., *INECC* lost autonomy), and inter-ministerial coordination mechanisms overall became much less effective. Breakdown in vertical coordination was considered by the interviewees a critical implementation barrier across the country.

On the upside, subnational climate ambition at the level of states (e.g., Yucatán, Baja California Sur, Quintana Roo, Jalisco and Campeche) illustrate how regional priorities (i.e., forestry in Yucatán or blue carbon in coastal areas) can shape climate action and unlock regulatory processes, strategies, resources, and action plans that can directly support NDC implementation.

POLITICAL ECONOMY AND INTERESTS: POLICY DESIGN, COMPETING GOALS, INDUSTRY LOBBY, INCENTIVE MISALIGNMENT

The recent ***2019–2024 National Development Plan (PND)*** has provided a policy framework that clearly manifested competing climate and development goals and incentive misalignment. The PND prioritized "energy sovereignty" (understood as "sovereignty of fossil fuels") while allocating significant public investment toward further development of fossil fuel infrastructure (i.e., oil refining, gas expansion – all while reducing regulatory certainty for renewables).[6] By implication, high-level development strategies that have maintained carbon-intensive trajectories have neutralized or rendered ineffective climate instruments like the *NDC* and *PECC.*

In a related way, regulatory and legal barriers to distributed solar energy prevail, where the current ***Electricity Industry Law*** disadvantages households and small-scale producers who face significant grid access and pricing disincentives. These disincentives, along with legal constraints deter private investment in distributed renewables and contradict the government's stated transition goals (*competing goals*).[7]

FINANCIAL CONSTRAINTS

A lack of alignment between the *NDC* and federal spending priorities was identified as a key barrier to a faster pace of decarbonization. This misalignment between the government's stated climate objectives and actual budgetary allocations is evident in the majority of climate-related funds being directed toward major

investments in natural gas infrastructure and large-scale construction projects whose emissions impacts are uncertain or potentially counterproductive. At the subnational level, where climate plans exist, they do not translate into enforceable programs with assigned resources. At the state level, only a few governments, such as those of Guanajuato and Jalisco, have successfully created dedicated budget lines for mitigation programs, while the majority of others lack the autonomy or coordination with the Ministry of Finance to do so.

A carbon tax was originally created under the ***2016 Special Tax Law on Production and Services (IEPS)*** to incentivize emissions reductions and fund climate-related projects. Despite being a nationally adopted policy, it lacks both coherence and integration into the wider mitigation framework (e.g., strategies for clean transport, energy transition, or urban planning). While purely fiscal in nature, it is disconnected from broader climate objectives and lacks compensatory mechanisms.

TECHNICAL AND LEGAL CONSTRAINTS

Plan México 2025, the government's principal long-term planning instrument, includes decarbonization scenarios and energy transition narratives,[8] yet these are linked neither to specific *sectoral emissions targets, nor to legally binding mechanisms.* Even though the *Plan's* scenarios assume a reduction in emissions, neither the policy tools nor investments that would make such reductions credible have been made explicit. As such, the *Plan* lacks operationalization instruments (budget, emissions caps, enforcement mechanisms) and cannot guide implementation nor be used for cross-sectoral monitoring.

Weak alignment between planning and implementation is evident in the General Law on Climate Change (LGCC), originally approved in 2012, and reformed several times since. In its inception, the progressive legislation provided mechanisms for long-term planning and institutional independence, but subsequent reforms have weakened the law to the point of removing reference to 2050 climate targets altogether.

Similarly, ***PRODESEN,*** the annual electricity system development program, previously generated transparent projections and scenario analysis.[9] However, the current version no longer provides technical details such as generation capacity by technology type, making it impossible to assess whether the system is moving toward the NDC-compatible pathway.[10] This *data vacuum* makes it impossible to monitor policy implementation progress and broader policy impacts.

Implications For Climate Ambition

Based on the analysis of interviewee accounts, for climate ambition to translate into measurable outcomes, the institutional architecture needs to be restored, and emissions planning should be depoliticized while linking its instruments to finance, transparency, accountability, and enforceable legal structure.

The preliminary results of CPL's implementation gap analysis suggest that existing climate policies need to be checked for compatibility across sectors or scales. Long-term vision documents like *Plan México* or the *NDC* should be supported by binding mechanisms and cross-sectoral enforcement. Accountability and transparency that have been eroded should be enhanced, and implementation responsibilities clearly assigned, with necessary resources allocated. Multi-level institutional re-staffing by country climate experts and policy practitioners would address the existing implementation gaps in specific ways: (i) strengthening of institutions, (ii) provisioning of timely, transparent and broadly disseminated data, and (iii) integrating finance systems to align planning with execution – all of which are needed to advance progress in climate policy implementation. This holds true for recent climate policy adoption successes at the subnational level, where similar concerns apply – will the climate plans that have been adopted by individual states translate into enforceable programs, with resources allocated over the long[er] term?

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Appendix

TYPOLOGY OF IMPLEMENTATION GAPS

CATEGORIES	DEFINITION	EXAMPLES
Group 1: Governance and Institutional Capacity		
Vertical coordination (multilevel governance)	Alignment across national, regional, and local levels of government in climate policy objectives and implementation.	Misalignment in climate policy implementation, timeline, or targets between federal and state levels.
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Institutional capacity	Organizational structures, norms, rules, and human resources that enable policy delivery.	Limited expertise, bureaucratic inefficiencies, poor coordination, poor communications.
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Political will	Commitment by political actors to support climate policy decisions and their outcomes.	Delay of policies due to vested interests in fossil fuels, partisan divides, changes in electoral cycles, lack of (or incoherent) incentives.
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Incentive misalignment	Conflicting incentives across climate and non-climate policies that undermine intended outcomes.	Subsidies for fossil fuels, or market-based incentives that contradict carbon pricing mechanisms.
Group 3: Financial Constraints		
Public investment/ finance	Provision of public finance during each stage of policy implementation.	Unavailability of funds required for a project scheduled for implementation from 2015 to 2020 during the 2019–20 financial year due to a shock to the source of revenue that paid for the implementation of the policy.
Private investment/ finance	Availability of and access to private finance that is required for the implementation of a policy.	Unavailability of sufficient private capital due to a poor estimation by the government of the level of risk that banks were willing to take on.

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TYPOLOGY OF IMPLEMENTATION GAPS

Group 4: Technical and Legal Constraints		
Technology	Availability and maturity of low-carbon technologies needed.	Mismatch between policy's technological needs and the existing technological infrastructure.
Data, communications, and information	Availability of flow of data and information, availability of information technology and monitoring systems, and the effectiveness of communication between actors.	Emissions data not being collected; lack of reporting to policymakers after the implementation of policies; lack of MRV systems.
Policy design	The initial phase of the policy process which includes identification of actors, instruments, setting of targets, allocation of responsibilities, and establishment of implementation frameworks.	Exclusion of relevant actors; ambiguous targets; unclear division of responsibilities among implementing agencies.
Legal mechanisms	Legal mechanisms available to address issues related to policy non-compliance, enforcement, or disputes.	Insufficient legal tools or mechanisms to enforce policy decisions or when the existing laws are not equipped to address compliance issues.
Human talent	Skilled personnel and institutional leadership to drive innovation and implementation.	Limitations in knowledge, skills, innovation or entrepreneurship in the general population.

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FROM AMBITION TO DELIVERY: ADDRESSING SOUTH AFRICA'S CLIMATE POLICY IMPLEMENTATION GAPS

Authors: Seth Owusu-Mante and Kate Hua-Ke Chi

CLIMATE POLICY LAB

Key Insights

- South Africa has established one of Africa's most comprehensive climate policy frameworks, yet persistent implementation gaps continue to weaken overall progress.
- The analysis shows that these gaps span all four dimensions of policy implementation, including governance and institutional capacity, financial constraints, technical and legal limitations, and political-economy interests, affecting both national and sectoral policy outcomes.
- Flagship initiatives such as the Renewable Energy Independent Power Producer Procurement (REIPPP) Programme and Just Energy Transition Investment Plan (JET-IP) have mobilized investment and international support, but decarbonization progress is constrained by grid limitations, weak inter-agency coordination, and policy incoherence, including continued coal commitments.
- As South Africa adopts ambitious new climate legislation and targets – the Climate Change Act (Act 22 of 2024), Renewable Energy Masterplan, Sectoral Emission Reduction Targets, and its 2025 National Determined Contribution (NDC) to the Paris Agreement – our findings provide key insights to help ensure that these efforts are not undermined by the same implementation challenges that constrained previous efforts.

Introduction

South Africa's climate policy landscape, as detailed in Climate Policy Lab's most recent inventory, comprises about 80 direct and indirect policies targeting greenhouse gas (GHG) mitigation across the energy, transport, industry, forestry, and agriculture sectors, along with economy-wide and cross-cutting measures for adaptation and resilience. Collectively, these policies anchor the country's national actions and international commitments to the Paris Agreement, as articulated in two successive Nationally Determined Contributions (NDCs). The 2021 NDC pledged to limit GHG emissions to 398–510 Mt CO_2e (2021–2025) and 350–420 Mt CO_2e (2026–2030), targets that represented

a significant enhancement of ambition relative to the 2015 INDC. A draft 2025 NDC, now under review for submission to the UNFCCC, retains the 2026–2030 bounds while introducing an indicative 2035 range of 320–380 Mt CO_2e and, for the first time, articulates a net-zero CO_2 goal by 2050, with a target to deploy 36 GW of renewable energy capacity by 2035.

Despite notable policy progress, South Africa has struggled to meet several of its climate targets, largely due to implementation challenges as identified in our previous study. Building on this evidence, this policy brief applies Climate Policy Lab's Implementation Gap Analysis (IGA) framework (see Appendix) to evaluate 15 key climate policies adopted between 2011 and 2023. These policies address emission reduction and climate action across six priority areas (see Table 1): economy-wide (4), energy (2), forestry (1), industry (5), transport (2), and green cities (1). They include a mix of policy plans, strategies, fiscal instruments, regulations, and legislation. In collaboration with South Africa's Presidential Climate Commission, we selected these 15 key policies from our inventory because of their clear and measurable targets and large-scale targeted interventions with high expected sectoral impact.[1]

This analysis combines a comprehensive literature review with semi-structured interviews involving seven sectoral experts, offering both documentary and experiential perspectives on implementation dynamics. Each policy is assessed along four dimensions to identify systemic implementation gaps that have hindered policy delivery: 1) governance and institutional capacity, 2) political economy and interests, 3) financial constraints, and 4) technical/technological and legal barriers.

1 These policies were also used for an expert elicitation to determine which are most effective for advancing South Africa's decarbonization goals as part of the Climate Policy Lab's Policy Gap Analysis project.

Table 1: Selected Policies for Implementation Gap Analysis – South Africa

Sector	Policies
Economy-wide	Just Energy Transition Investment Plan - JET IP (2023)
	Updated Nationally Determined Contribution (2021)
	Carbon Tax Act (Act No. 15 of 2019)
	National Development Plan (2012)
Energy	Renewable Energy Independent Power Producer Procurement (REIPPP) Programme (2011)
	Integrated Resource Plan - IRP (2019-2030)
Forestry	Forestry 2030 Roadmap (Forestry Strategy 2009 - 2030)
Industry	The Steel and Metal Fabrication Master Plan (2023)
	National Pollution Prevention Plans Regulation (2017)
	Declaration of Greenhouse Gases as Priority Pollutants (2017)
	Beneficiation Strategy for the Minerals Industry (2011)
	Section 12L - Income Tax Act, 1962 (Act No 58 of 1962)
Green Cities & Buildings	SANS 10400: XA (2011): Energy Usage in Buildings
Transport	Green Transport Strategy (2018 -2050)
	Electric Vehicle Industry Roadmap (2013)

Key Findings

ECONOMY-WIDE

For economy-wide policies, governance and institutional capacity gaps relate mainly to fragmented efforts across multiple government agencies overseeing the four policies. However, the most critical implementation challenge remains finance. For instance, the JET-IP outlines an ambitious funding requirement of US $84.75 billion. However, international pledges amount to only US $12.8 billion, about 15 percent of the total, with only 39 percent allocated to projects as of June 2025 (JET - The Presidency, 2025). In addition, although the JET-IP references a Funding Platform and Projects' Register, it lacks a consolidated mobilization strategy that specifies financing instruments, sources, timelines, and institutional roles, so the pathway for raising domestic and international funds remains unclear.

On the political economy and interests dimension, both the JET-IP and NDC are constrained by tensions between climate ambitions and competing national priorities, where long-term decarbonization goals often conflict with immediate socio-economic needs and pressures, particularly the pursuit of energy security, economic growth, job creation, poverty reduction, and education (Strambo et al., 2024; Xaba, 2025).

Finally, with technical and legal constraints, the Carbon Tax remains limited by design flaws that weaken its impact. Although the tax was set at R120–134/tCO_2 (US $7–8) to be periodically reviewed, exemptions for Eskom, the country's largest GHG emitter, and extensive allowances for other industrial entities reduce the effective rate to just R6–48/tCO_2 (US $0.30–2.60), among the lowest globally. Moreover, the Carbon Tax Act (Act No. 15 of 2019) does not set out how revenues will be allocated or reinvested (as is common with carbon taxes), which limits the tax's potential to support South Africa's just transition and wider decarbonization objectives (SARB, 2024).

ENERGY

While the REIPPPP has successfully mobilized private investments for grid-connected renewable energy capacity, progress has slowed in recent years due to technical bottlenecks. Inadequate transmission infrastructure and limited grid access have delayed project commissioning, leaving many approved projects on hold. These challenges are compounded by limited public investment in grid expansion and institutional capacity constraints, particularly the slow and complex licensing and permitting processes that hinder operationalization (Energize, 2025). This combination of limited grid investment and administrative bottlenecks further impedes achievement of the 2019 IRP target of increasing the renewable energy share of installed capacity from 16% in 2018 to 36.5% in 2030. Ultimately, the key implementation gap across both policies lies in political will, as renewable energy and decarbonization have long featured on South Africa's policy agenda, yet progress remains limited and inconsistent.

FORESTRY

The Forestry 2030 Roadmap faces implementation challenges related to both governance and technical constraints. On the side of governance and institutional capacity, the policy's implementation is characterized by weak vertical coordination, as national targets are often poorly integrated into community-level priorities. At the same time, skills shortages and limited innovation capacity present key technical constraints, limiting progress in sustainable forest management and carbon sink expansion.

INDUSTRY

Similar to forestry, technical challenges, in addition to finance, undermine the implementation of the Steel and Metal Fabrication Master Plan launched by the Department of Trade, Industry and Competition (DTIC) in 2021. Despite its aim to achieve industrial carbon neutrality by 2050, particularly across steel mills, foundries, forges, smelters, and other power-intensive industrial processes, insufficient skilled labor force and technical know-how continue to constrain implementation.

The carbon-intensive electric power generation in South Africa is closely connected with steelmaking and broader industrial processes, emphasizing that decarbonizing the power grid is essential to achieving industrial emissions reductions. On the financial side, high input costs for domestic production, limited government and budgetary incentives, and rising imports continue to challenge the competitiveness of the steel and power–intensive industrial activities, constraining their ability to contribute effectively to decarbonization and economic growth (DTIC, 2021).

GREEN CITIES & BUILDINGS

The National Standard for Energy Usage in Buildings grapples with uneven enforcement, as municipalities vary widely in their ability to apply and monitor efficiency standards. Weak compliance mechanisms and limited local capacity undercut potential gains, as energy efficiency in buildings represents a major opportunity for cost-effective emissions reduction.

TRANSPORT

The implementation of South Africa's Green Transport Strategy (2018–2050) and Electric Vehicle Roadmap (2013) reveals persistent gaps that cut across governance and institutional capacity, finance, technical constraints, and political-economy interests. Governance and institutional weaknesses stem from fragmented departmental mandates between the Department of Transport (DoT) and the Department of Trade, Industry and Competition (DTIC), leading to overlapping responsibilities and slow implementation coordination. Technical and legal constraints compound these challenges: inadequate charging infrastructure, the absence of a regulated pricing framework for charging, and limited local electric vehicle (EV) manufacturing capacity continue to impede progress (DTIC, 2023), with only about 1,000 EVs in circulation as of 2023, out of a total fleet of 12 million vehicles (IEA, 2023).

Financial constraints remain another limitation, as consumer and industrial subsidies and incentives are largely absent, leaving EVs prohibitively expensive for households. Heavy reliance on donor grants and international climate finance, coupled with limited domestic investment, further constrains policy execution. Finally, entrenched political-economy interests, including pressure to safeguard jobs in the automotive and fuel sectors, and competing priorities of poverty reduction, energy security, and industrial employment, create inertia that tempers the pace of EV adoption in South Africa.

Policy Implications

This analysis reveals that while South Africa has built an ambitious climate policy framework, implementation gaps persist across all four dimensions: governance and institutional capacity, financial constraints, political-economy interests, and technical/technological and legal limitations.

To translate ambition into delivery, policy action should target the cross-cutting gaps identified in this brief. Large-scale domestic and private finance for a just energy transition and decarbonization will not materialize without a consolidated mobilization and allocation framework that specifies sources, instruments, institutional roles, and timelines, giving both local and foreign investors predictable signals. A single accountable delivery mechanism across each of the sectors could curb fragmentation and drive policy execution against targets and milestones. Grid readiness must also move to the forefront of energy sector planning through a transmission expansion program, clear grid access rules, and streamlined, time-bound licensing for renewable energy projects. Decarbonization should be explicitly linked to competing socio-economic priorities including job creation, education, local manufacturing, among others so the just energy transition reinforces broader economic development.

In addition, stronger financial incentives for EV adoption and predictable evaluation systems including transparent use of carbon-tax revenues and international funds are vital to ensure that climate policies deliver equitable benefits to communities. Demonstrating credible implementation would not only strengthen South

Africa's climate finance position internationally but also enhance its diplomatic leverage in global negotiations.

As South Africa adopts new policies including the Climate Change Act (Act 22 of 2024), the Renewable Energy Master Plan, the Sectoral Emission Reduction Plans, and the 2025 National Determined Contribution (NDC) to strengthen its climate policy framework, this analysis provides key insights to help ensure that these policies are not undermined by the same implementation challenges that constrained previous efforts.

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Appendix

TYPOLOGY OF IMPLEMENTATION GAPS

CATEGORIES	DEFINITION	EXAMPLES
Group 1: Governance and Institutional Capacity		
Vertical coordination (multilevel governance)	Alignment across national, regional, and local levels of government in climate policy objectives and implementation.	Misalignment in climate policy implementation, timeline, or targets between federal and state levels.
Horizontal coordination	Alignment among ministries and agencies at the same level of government in climate policy objectives and implementation.	Fragmented efforts and conflicting actions (e.g., competitions between ministries for resources).
International pressures/ factors	International and external legal and financial/political dynamics that act as barriers.	Donor-driven conditionality (e.g., IMF or WB's conditions on aids that might restrict policy implementation); WTO rules on export subsidies.
Institutional capacity	Organizational structures, norms, rules, and human resources that enable policy delivery.	Limited expertise, bureaucratic inefficiencies, poor coordination, poor communications.
Group 2: Political Economy and Interests		
Political will	Commitment by political actors to support climate policy decisions and their outcomes.	Delay of policies due to vested interests in fossil fuels, partisan divides, changes in electoral cycles, lack of (or incoherent) incentives.
Competing goals	Tensions between climate objectives or other economic, political, or development objectives.	Trade-offs between emissions reduction and industrial expansion.
Stakeholder engagement/ coordination	A systematic process of identifying and interacting with individuals, groups, or organizations that have a stake in a policy or project.	Public consultation held but stakeholder inputs are not integrated; local groups being excluded from decision-making.
Consumer behavior	Behavioral resistance or unintended reactions to climate policies.	Rebound effects from fuel-efficient cars leading to increased vehicle use.
Industry lobbying / resistance	Strategic actions by industries to delay, weaken, or reshape climate policies that challenge their interests.	Coal industry lobbying against early retirement of coal plants or carbon taxes.
Incentive misalignment	Conflicting incentives across climate and non-climate policies that undermine intended outcomes.	Subsidies for fossil fuels, or market-based incentives that contradict carbon pricing mechanisms.
Group 3: Financial Constraints		
Public investment/ finance	Provision of public finance during each stage of policy implementation.	Unavailability of funds required for a project scheduled for implementation from 2015 to 2020 during the 2019–20 financial year due to a shock to the source of revenue that paid for the implementation of the policy.
Private investment/ finance	Availability of and access to private finance that is required for the implementation of a policy.	Unavailability of sufficient private capital due to a poor estimation by the government of the level of risk that banks were willing to take on.

(continued on the next page)

TYPOLOGY OF IMPLEMENTATION GAPS

Group 4: Technical and Legal Constraints		
Technology	Availability and maturity of low-carbon technologies needed.	Mismatch between policy's technological needs and the existing technological infrastructure.
Data, communications, and information	Availability of flow of data and information, availability of information technology and monitoring systems, and the effectiveness of communication between actors.	Emissions data not being collected; lack of reporting to policymakers after the implementation of policies; lack of MRV systems.
Policy design	The initial phase of the policy process which includes identification of actors, instruments, setting of targets, allocation of responsibilities, and establishment of implementation frameworks.	Exclusion of relevant actors; ambiguous targets; unclear division of responsibilities among implementing agencies.
Legal mechanisms	Legal mechanisms available to address issues related to policy non-compliance, enforcement, or disputes.	Insufficient legal tools or mechanisms to enforce policy decisions or when the existing laws are not equipped to address compliance issues.
Human talent	Skilled personnel and institutional leadership to drive innovation and implementation.	Limitations in knowledge, skills, innovation or entrepreneurship in the general population.

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