Maharashtra Climate Finance Access and Mobilization Strategy

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This report has been prepared by the State Climate Action Cell, Environment and Climate Change Department, Government of Maharashtra and Maharashtra Institution for Transformation (MITRA) in partnership with WRI India, to mobilize climate finance aligned with the Maharashtra State Action Plan on Climate Change 2.0 (SAPCC 2.0) and the Viksit Maharashtra 2047 Vision Document.

About WRI India

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Maharashtra Climate Finance Access and Mobilization Strategy

Message

Maharashtra contributes 13% to the country's GDP. As a state poised for rapid economic growth, it is our vision to propel Maharashtra into a $1 Trillion economy by 2027-28. As one of India's largest state economies, Maharashtra's development trajectory will significantly influence the country's growth and climate ambitions.

At the same time, about 77% of Maharashtra's cropped area and over 90% of its districts are vulnerable to climate risks with significant exposures to extreme weather events across its coastline and districts. Therefore, climate action is not just an environmental necessity but a core economic and development priority for the State.

Maharashtra has outlined its climate ambitions through the SAPCC 2.0 and the Viksit Maharashtra 2047 vision document. However, converting these objectives into implementable outcomes requires strong coordination between planning, budgeting, and financing. Public expenditure alone is insufficient to meet the scale of investment needed by the State. It is therefore an economic imperative to strengthen the State's capability to access, structure and crowd in diverse sources of finance, including public, private, domestic, and international. MITRA, along with the Government of Maharashtra and World Bank, is implementing wastewater recycling in Tier-2 and Tier-3 cities to treat 3,036 MLD of sewage and enable at least 80% reuse through financially sustainable, circular-economy-based models under Maharashtra Urban Water Supply Sanitation & Reuse Program.

The Maharashtra Climate Finance Access and Mobilization Strategy (CFAMS) positions climate action as integral to the State's economic transformation and development ambitions. Anchored in fiscal realism, the strategy strengthens the effectiveness of public climate spending while using it as a catalytic lever to crowd in private capital through blended finance, risk-mitigation instruments, and market-based mechanisms. By strengthening project preparation, institutional coordination, and investment pipelines, the CFAMS creates the conditions for scalable capital formation in climate-resilient infrastructure, clean energy, and adaptive systems, supporting Maharashtra's pathway to a USD 1 trillion economy while generating jobs, productivity gains, and long-term fiscal resilience.

The CFAMS lays the foundation for integrating climate action into Maharashtra's growth strategy by strengthening financial systems and investment frameworks that support a resilient, competitive and inclusive development pathway for the State.

Praveen Pardeshi

CEO, MITRA & Chief Economic Advisor to Hon'ble Chief Minister
Government of Maharashtra

Foreword

The challenge of climate change has emerged as a defining factor in the developmental trajectory of India in the 21st century. Maharashtra, as a primary contributor to the national economy, is particularly susceptible to the increasing frequency and intensity of extreme weather events, including erratic rainfall patterns, prolonged heatwaves, and recurring floods. These climatic fluctuations necessitate a robust and coordinated institutional response to safeguard the state's economic assets and ensure the well-being of its citizens.

In alignment with India's international commitments under the Paris Agreement and the updated Nationally Determined Contributions (NDCs), the Environment and Climate Change Department of Maharashtra has revised the **State Action Plan on Climate Change (SAPCC) as Pathways to 2030**. This comprehensive framework provides a scientific basis for risk analysis and delineates sectoral recommendations for adaptation and mitigation. However, the effective implementation of these strategies is fundamentally dependent on the timely mobilization and efficient allocation of financial resources.

The revised SAPCC identifies an estimated climate budget of approximately **INR 3 lakh crores** to achieve the state's climate ambitions. To bridge the requirements identified within this framework, the State Climate Action Cell has developed the **Climate Finance Access and Mobilization Strategy (CFAMS)** with support from WRI India and Maharashtra Institute for Transformation (MITRA). This strategy serves as an essential enabler, transforming policy objectives into actionable investment pipelines and strengthening the state's capacity to access diverse funding channels.

The CFAMS is anchored in the four key principles of Integration. Inclusion, Innovation and Integrity. However, the operationalization of this strategy also follows a four-pronged approach focusing on policy governance, the catalytic use of public finance to complement private investment, capacity building for bankable project structuring, and the localization of climate action through district and city-level plans. By institutionalizing climate budget tagging and fostering closer coordination between state departments, financial institutions, and multilateral partners, Maharashtra aims to create a stable and predictable environment for climate-aligned investments.

This strategy is not merely a financial roadmap but a foundational pillar of the **'Viksit Maharashtra 2047'** vision. It reflects our commitment to transitioning toward a low-carbon, climate-resilient economy while maintaining our trajectory of economic growth. Through the concerted efforts of the State Climate Action Cell and our various stakeholders, we are confident that the CFAMS will guide Maharashtra in turning its climate priorities into tangible and lasting outcomes for future generations.

Abhijit Ghorpade
Director,
State Climate Action Cell,
Department of Environment and Climate Change, Government of Maharashtra

Acknowledgements

Mobilizing climate finance at scale represents a shared opportunity to demonstrate collective leadership and long-term commitment. Maharashtra's journey toward climate resilience is shaped by the combined efforts of institutions and individuals working to align development with sustainability.

As climate risks intensify and development aspirations expand, the Climate Finance Access and Mobilization Strategy (CFAMS) aims to strengthen Maharashtra's readiness and ability to attract, access, and deploy climate finance in a strategic, inclusive, long-term resilience aligned approach.

We express our sincere gratitude to the Hon'ble Chief Minister of Maharashtra, Shri Devendra Fadnavis, and the Hon'ble Deputy Chief Ministers, Shri Eknath Shinde and Smt. Sunetra Pawar, for their visionary leadership and steadfast commitment to accelerate low-carbon growth, strengthen adaptive capacities, and safeguard the economic and environmental assets for future generations in Maharashtra.

We gratefully acknowledge the dedicated efforts of the sectoral experts at the State Climate Action Cell (SCAC) and the Maharashtra Institution for Transformation (MITRA), whose timely contributions and commitment to advancing Maharashtra's climate and development priorities has been central to the formulation of this strategy.

Deepest gratitude is extended to our valued knowledge partner, WRI India and we acknowledge the significant contributions of the WRI India expert team, particularly Mr. Saransh Bajpai, Ms. Neha Misra, Mr. Aryan Bajpai, and Ms. Gauri Atre, whose technical expertise and sustained engagement were instrumental in the development of this strategy. We are equally grateful for the guidance and insights provided by Ms. Ulka Kelkar and Ms. Preety Bhandari, which helped strengthen the strategic foundations and overall coherence of the CFAMS. We also acknowledge the contributions of WRI India experts and communications team, including Mr. Rajit Sengupta, Ms. Apoorva Grover, and Mr. Shreyas Joshi whose efforts were critical in shaping the report in its final form.

We extend our sincere thanks to the contributions of representatives from the Ministry of Environment, Forest and Climate Change, State departments, DFIs, regulators, financing institutions, and philanthropic organizations for their constructive feedback and active participation, including through the Workshop on the Climate Finance Access and Mobilization Strategy for Maharashtra held on 27 September 2024 and subsequent consultations.

The Maharashtra CFAMS articulates a strategic and enabling framework to progressively align financial flows with Maharashtra's climate priorities, resilience objectives, and broader development trajectory, while supporting the implementation of the updated Maharashtra SAPCC and the aspirations set out in the Viksit Maharashtra 2047 vision.

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Aman Mittal
Joint CEO, MITRA

Abhijit Ghorpade
Director, State Climate Action Cell

Maharashtra, which contributes nearly 13% of India's GDP, plays a pivotal role in the nation's low-carbon transition. Accelerated climate action in the state can safeguard existing livelihoods while catalyzing green jobs, strengthening resilient growth, and advancing India's broader climate ambitions.

Maharashtra Climate Finance Access and Mobilization Strategy (2025-2030)

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1. INTRODUCTION

Climate change has emerged as one of the most significant challenges to India's development in the 21st century. Over the past few decades, the country has experienced an increase in the frequency of extreme weather events, accompanied by noticeable shifts in both temperature and rainfall patterns. Episodes of excessive rainfall, prolonged heatwaves and recurring floods have grown more common and more severe, affecting regions across the country. The Climate Risk Index 2025 ranked India sixth globally in terms of climate vulnerability between 1993 and 2022 and further highlighted that the country experienced losses worth USD 180 billion (Adil et al. 2025).

The Government of India has undertaken a range of measures in recent years to address the growing risks posed by climate change, focusing on building resilience to current and future impacts through adaptation and mitigation. India became a signatory to the international Paris Agreement on Climate Change in 2015, which aims to limit the rise in global temperature to well below 2 degrees C (3.6 degrees F) and preferably to 1.5 degrees C (2.7 degrees F), above pre-industrial levels by the end of the century. In line with these international commitments, India articulated its Nationally Determined Contributions (NDCs) (Government of India 2022) and announced a Long-Term Low Greenhouse Gas Emission Development Strategy (LT-LEDS) (Ministry of Environment, Forests and Climate Change 2022). Annexure A highlights targets set by India under its updated NDC. Together, these frameworks outline a range of national targets and strategic pathways that demonstrate India's determination to confront climate change while pursuing sustainable development.

To meet its NDC commitments, India has implemented a wide range of climate actions across mitigation and adaptation. On the mitigation front, initiatives such as the National Green Hy-

drogen Mission (Ministry of New and Renewable Energy 2023) and the Production Linked Incentive (PLI) Scheme for High-Efficiency Solar PV Modules aim to expand renewable energy capacity and reduce emissions intensity. At the same time, adaptation efforts have focused on integrating disaster-resilience measures across key sectors, including agriculture, water, health and infrastructure. These actions are supported by national policy frameworks such as the National Action Plan on Climate Change (NAPCC) and the National Action Plan for Climate Change and Human Health (NAPCCHH). Reflecting India's federal structure, climate planning has also been extended to the subnational level through State Action Plans on Climate Change (SAPCCs) and city-level climate action plans, enabling greater coherence and coordination across levels of governance.

Despite these policy and institutional efforts, India faces a substantial gap between its climate ambitions and the financial resources required to achieve them. Meeting mitigation and adaptation goals across key sectors will require rapid acceleration in climate finance. Studies estimate that India will need around USD 467 billion by 2030 for decarbonizing power, steel, cement and transport (Raj and Mohan 2025). In addition, the Government of India projects adaptation costs of ₹566.8 lakh crore by 2030 in a business-as-usual scenario (Ministry of Environment, Forests and Climate Change 2024). Mobilizing such large-scale investment is a central challenge on India's climate path.

Maharashtra is one of India's most economically significant states, contributing nearly 13% to the national GDP with a Gross State Domestic Product (GSDP) of approximately USD 435 billion in 2022-23, the highest among all Indian states (Planning Department, Government of Maharashtra). Given its substantial contribution to India's GDP and its critical role in agriculture and manufacturing, Maharashtra plays a pivotal role in India's transition to a low-carbon economy and broader efforts to address climate change. Strengthening climate action across subnational levels in Maharashtra, with greater focus and urgency, is therefore essential to ensure a resilient and sustainable growth trajectory.

Despite rapid urbanization pressures, Maharashtra has taken several steps in recent years to advance climate action.

In recent years, Maharashtra has taken several steps to advance climate action within the state. It updated its SAPCC in 2025, outlining a strategy to decarbonize emissions-heavy sectors and boost the resilience of vulnerable sectors, especially agriculture and water resources. The state also launched policies such as the Green Hydrogen Policy, Electric Vehicle (EV) Policy and the Just Transition Roadmap to support India's NDC targets (Climate Group, 2025). To ensure local climate action and the implementation of strategies devised under the updated SAPCC, the state is now supporting the development of district- and city-level climate action plans. Dedicated climate action cells will be established across 43 AMRUT cities with the aim of achieving net-zero emissions by 2050 and building resilience to extreme weather events. The state government has also collaborated with several Multilateral Development Banks (MDBs) and philanthropic organizations to channel finance towards climate action.

However, as one of India's fastest urbanizing states, Maharashtra faces mounting pressure to balance rapid economic growth with sustainable development. Urban expansion has intensified demands on infrastructure, water resources and energy systems, while also increasing exposure to climate-related risks such as floods, heatwaves and droughts. Hence, the state requires significant resources to bridge the high demand for climate finance to support the state's transition toward low-carbon, climate-resilient urban development and to address developmental challenges.

1.1 Need for a Climate Finance Access and Mobilization Strategy for Maharashtra

A Climate Finance Access and Mobilization Strategy (CFAMS) for Maharashtra aims to build on the state's existing climate action efforts and to enable mobilization of financing required to achieve adaptation and mitigation objectives. By creating clear investment pipelines, strengthening coordination between state departments, financial institutions and international partners and strengthening project preparation capacities, the strategy will position Maharashtra to attract diverse funding sources of climate finance. It will help Maharashtra bridge its climate finance gap, scale up green infrastructure and ensure that financial resources are efficiently channeled toward inclusive and sustainable development.

What is a Climate Finance Access and Mobilization Strategy?

A Climate Finance Access and Mobilization Strategy (CFAMS) refers to a systematic plan to identify, secure and allocate financial resources for implementing climate actions. It aims to bridge the climate finance[1] gap by diversifying funding sources across public and private, domestic and international channels. The strategy facilitates accelerated access to finance by ensuring sustained financial flows to support mitigation, adaptation and resilience-building initiatives planned by the state.

1.2 Vision of Maharashtra CFAMS

Aligned with "Viksit Maharashtra 2047," the vision of the state's CFAMS is "To enable Maharashtra to achieve a climate-resilient and sustainable five-trillion-dollar economy by 2047 through the strategic mobilization and effective utilization of climate finance that accelerates low-carbon growth, strengthens adaptive capacities and safeguards the state's economic and environmental assets for future generations".

1.3 Objectives of Maharashtra CFAMS

The objectives of the Maharashtra CFAMS are to strengthen the state's capacity to attract, access and deploy climate finance effectively over both short-term and long-term horizons. They provide a structured framework to align financial resources with Maharashtra's climate priorities, resilience goals and long-term development vision. The strategy is:

1. To identify and mobilize climate finance from domestic and international, public and private sources, ensuring that financial resources are directed toward Maharashtra's most climate-vulnerable sectors and regions and at a scale commensurate with its developmental and resilience needs.

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[1]Climate finance refers to local, national or transnational financing, drawn from public, private and alternative sources of financing, that seeks to support mitigation and adaptation actions that will address climate change (Source: UNFCCC n.d.)

As per India's draft Climate Finance Taxonomy Framework (Ministry of Finance, Department of Economic Affairs 2025),

- Mitigation is defined as activities which includes improvements in energy efficiency or reduction in emission intensity and avoidance of GHG emissions including through the expansion of non-fossil fuel energy, etc.

- Adaptation is defined as activities that enhances resilience, including sustainable water management, ecosystem protection and restoration and geography-specific adaptation measures to lower the negative impacts of climate change.

2. To facilitate the flow of finance towards climate actions that advance the implementation of Maharashtra's updated State Action Plan on Climate Change (SAPCC), while simultaneously contributing to the achievement of India's Nationally Determined Contributions (NDCs) and Long-Term Low Emission Development Strategy (LT-LEDS).
3. To address challenges and barriers in accessing climate finance at scale by strengthening institutional coordination and fostering collaboration among Maharashtra's cities, state departments, the central government, multilateral development banks, philanthropic organizations and other relevant stakeholders through a clearly articulated set of climate finance priorities.
4. To strengthen capacity-building, research and innovation across institutions and sectors in Maharashtra, enabling enhanced access to and mobilization of climate finance through improved technical readiness, project development and knowledge exchange.

1.4 Principles of Maharashtra CFAMS

The strategy is guided by the "4-I Principles," which ensure coherence, equity and accountability. Together, they underpin coordinated action, equitable resource distribution and innovative financial solutions that enhance the state's capacity to mobilize and effectively utilize climate finance for sustainable and resilient development.

1 **Integration:** Systematically integrating climate considerations into all planning and budgeting processes is central to an effective CFAMS. This includes assessing current and future physical, fiscal, and transition risks; identifying relevant stakeholders; aligning with climate action plans; and accounting for budgetary implications. This principle will guide both vertical and horizontal coordination of climate finance across Maharashtra, aligning priorities and actions from the state to district, municipal, and village-level institutions, as well as across key departments such as agriculture, water resources, and industry.

It will also foster collaboration with external stakeholders, including civil society, NGOs, and investors, to establish a cohesive and inclusive framework for financing climate action.

2 **Inclusion:** Equitable access to financial resources is essential for ensuring that the transition to a resilient and sustainable economy benefits all sections of society. This principle will guide the participation of marginalized groups, women and other underrepresented communities in all planning, budgeting and implementation processes related to climate finance. By strengthening local agencies and promoting transparent, participatory decision-making, it will ensure that diverse perspectives inform financial priorities and that the benefits of climate investments are distributed effectively across Maharashtra.

3 **Innovation:** Diversifying funding sources and creating scalable financial solutions are critical for Maharashtra to meet its growing climate finance needs. This principle will guide the development and adoption of innovative financial instruments, partnerships and delivery mechanisms that attract and leverage private sector participation. It will promote the use of blended finance models, green bonds, and other emerging mechanisms to expand the pool of available resources.

4 **Integrity:** Transparent and accountable financial governance is essential for building confidence among investors, partners and communities. This principle will guide the establishment of robust monitoring, reporting and verification systems to ensure the mobilization and utilization of funds across all levels of implementation. By upholding ethical and fiduciary standards, the strategy will strengthen stakeholder trust, enhance the credibility of Maharashtra's climate actions and ensure that resources are efficiently directed toward achieving measurable and sustainable outcomes.

Maharashtra is one of India's most urbanized states with almost half of its population in cities.

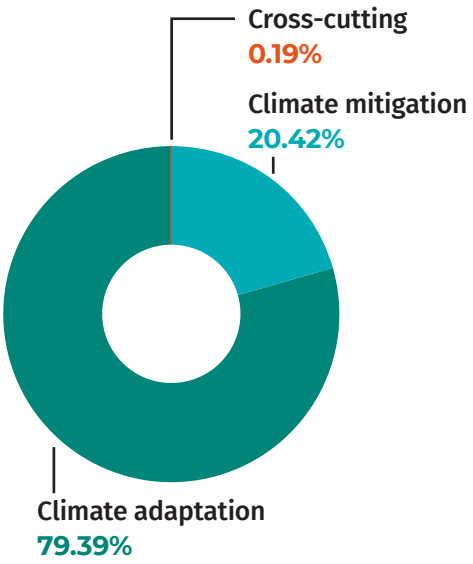
2. CHALLENGES FOR ACCESSING AND MOBILIZING CLIMATE FINANCE IN MAHARASHTRA

Maharashtra's sustained economic strength provides a structural foundation for its leadership in climate action in India. As India's largest state economy for over 60 years and one of its most urbanized states, with 49% of its population living in urban areas, Maharashtra combines scale, productivity and institutional capacity. It is the largest contributor to India's overall services GVA and leads in financial services, accounting for a 24% share, underscoring the depth of its capital markets, financial intermediation and investment ecosystem (Directorate of Economics and Statistics, Planning Department 2025).

Maharashtra is also India's largest agri-food exporter, with annual exports of ₹47,000 crore in FY2024-25, representing an 11% share of national exports. It hosts the country's largest MSME ecosystem with 9 million MSMEs, or 13% of India's total (Directorate of Economics and Statistics, Planning Department 2025). This diversified economic base, spanning services, finance, agri-culture, exports and MSMEs, generates fiscal capacity, investment readiness and resilience, all critical for financing long-term climate transitions.

This economic performance directly strengthens Maharashtra's capacity to lead in climate action spending. The state has demonstrated this through tangible outcomes, including an increase in the share of renewable energy in total installed capacity, from 21% in 2015 to 32% in 2024. Since the launch of its EV policy in 2021, electric vehicle registrations have increased steadily. In 2024, the state registered 650,000 electric vehicles, compared to just 5,000 in 2019 (Directorate of Economics and Statistics, Planning Department 2025). Such progress reflects

Figure 1: Activity-wise categorization of Maharashtra's proposed climate budget (2025-30)



Source: Maharashtra State Action Plan on Climate Change: Pathways for 2030

Table 1: Department-wise segregation of the proposed climate budget

S. No.	Department	Proposed climate budget for 2024-2030 (in ₹ crore)	Percentage of total climate budget (SAPCC)	Total departmental budget in FY2025-26 (in ₹ crore)
1	Water	207,760	69.82	35,243[2]
2	Agriculture	37,099.17	12.47	23,984
3	Relief and Rehabilitation (Disaster Management)	78.4	0.03	765.6
4	Energy	546.8	0.18	26,998
5	Environment and Climate Change	166	0.06	450
6	Habitat	190	0.06	22,835
7	Forest	13,181	4.43	4,021
8	Industries	26,350	8.86	1,087
9	Public Health	8,249.56	2.77	10,631
10	Public Works	2,505.61	0.84	22,155
11	Tourism	32.2	0.01	2,524
12	Transport	1,400	0.47	3,757

Source: Maharashtra State Action Plan on Climate Change: Pathways for 2030

[2]This represents the total amount allocated to the Water Resources Department, Water Supply and Sanitation Department and Soil and Water Conservation Department

not only policy ambition but also the availability of public and private capital, robust financial institutions and an economy capable of absorbing and scaling climate-aligned investments across energy, transport, industry and urban systems.

The updated State Action Plan on Climate Change builds on this economic and institutional strength by systematically estimating the state's climate finance needs. It provides a forward-looking framework to guide investments, align public and private finance and enhance the scale and effectiveness of climate action across sectors.

2.1 Landscape of climate finance in Maharashtra

The updated SAPCC of Maharashtra adopts an analogous estimation method to calculate the cost of climate action for each relevant department for the period 2024-30. The plan indicates that the state will require ₹2.98 lakh crore by 2030 to implement climate actions covering both mitigation and adaptation measures. Figure 1 shows the estimated costs of measures classified as mitigation, adaptation and those containing both.

It can be noted that a majority of the budget has been allocated to climate adaptation. Given the rising frequency of extreme weather events, such as floods, cyclones, droughts and heatwaves in the state, the high allocation to adaptation aims to reduce losses and strengthen the resilience of vulnerable sectors, including agriculture and water resources. The SAPCC further details the climate budgets required by departments responsible for implementing climate action across the state. Table 1 provides a department-wise segregation of the proposed climate budget. It also includes the total budget allocated to each department, providing a reference point to contextualize and assess the scale of climate-related budgetary allocations.

Mumbai was the first city in India and the fourth globally to launch a climate budget in 2024 to implement its climate action plan.

Maharashtra faces acute regional disparities in water availability, with areas such as Marathwada and Vidarbha experiencing recurring water scarcity. Since a significant proportion of the population relies on agriculture, the demand for irrigation water remains consistently high. The SAPCC recognizes this challenge and outlines key interventions such as transferring 50% of the unutilized water stored in reservoirs across the Godavari River basin and harvesting 8,109 million cubic meters (MCM) of runoff annually during normal rainfall years. These measures are designed to enhance water security and reduce the vulnerability of agricultural communities to climate-induced droughts. Given the scale and technical complexity of such interventions, a substantial portion of the climate budget has been directed towards the Water Resources Department, emphasizing not only infrastructure development for water conveyance and storage but also investments in drought resilience and efficient water management systems.

Similarly, the state's reliance on agriculture and industries has led to a significant allocation of climate finance to these sectors. Agriculture, being highly sensitive to climate variability, requires sustained investment in climate-resilient farming practices, irrigation efficiency and crop diversification to safeguard livelihoods. The industrial sector, on the other hand, is both energy-intensive and emission-heavy, necessitating resources for decarbonization, cleaner production technologies and the development of resilient supply chains. These budgetary allocations reflect Maharashtra's dual focus on mitigating emissions from key economic sectors and strengthening the resilience of its infrastructure and productive assets to withstand the growing frequency of extreme weather events.

However, a simple extrapolation of the Water Resources Department's FY 2025-26 budget up to 2030 signals a significant deficit. In 2030, the department's cumulative allocation would stand at ₹1.76 lakh crore, while the proposed climate budget in the SAPCC is projected at ₹2.08 lakh crore, resulting in a climate finance gap of ₹31,545 crore. The department's total budget itself would be insufficient to meet climate-related needs within the State. Extending a similar analysis to the Industries sector, the department's cumulative budget would amount to ₹5,435 crore by 2030, compared to a stipulated climate budget of ₹26,350 crore. This indicative calculation highlights the need not only to expand departmental budgets but, more importantly, to tag expenditures by their climate relevance to accurately assess climate finance needs.

Climate budget tagging analysis

In addition to allocating resources across key state departments, the Government of Maharashtra is mainstreaming climate considerations at the urban level through city climate action plans. The state has also recommended integrating "city climate budgets" into municipal financial frameworks to help cities systematically track, assess and scale their investments in climate action. Such an approach enables Urban Local Bodies (ULBs) identify the share of their budget directed toward mitigation and adaptation initiatives and, over time, align allocations with evolving climate priorities. Furthermore, city-level climate budgets can serve as transparent mechanisms to classify and communicate climate benefits of urban activities, thereby improving the accuracy of financial needs assessments and facilitating access to targeted climate finance from investors and development partners.

Mumbai was the first city in India and the fourth globally to launch a climate budget in 2024. It outlines the financing required to implement the city's climate action plan. Mumbai allocated ₹17,066 crore in capital expenditure and ₹3,268.97 crore in revenue expenditure as its climate

Table 2: Results of Climate budget tagging across relevant departments in Maharashtra

Departments	Total department budget (in ₹ crore)	Department's share in Maharashtra government's total expenditure	Total budget coded for climate tagging (in ₹ crore)	Share of department budget coded for climate tagging (%)	Projected climate-tagged budget, 2024-30 (in ₹ crore)
Environment	446	Less than 1%	429	96%	2,145
Water Resources	32,878	9%	17,999	55%	89,993
Agriculture, Animal Husbandry, Fisheries	27,202	8%	7,913	29%	39,564
Revenue Forests	21,600	6%	12,743	59%	63,717
Industries, Energy and Labor	16,106	4%	14,624	91%	73,119
Public Health	14,662	4%	5,120	35%	25,599
Urban Development	46,943	13%	45,694	97%	22,8470
Rural Development	27,202	8%	18,361	67%	91,804
Public Works	32,074	9%	18,657	58%	93,286
Housing	3,001	1%	2,912	97%	14,559
Planning	28,862	8%	10,091	35%	50,455

Source: (Garimella, Solanki and Bajpai 2025)

budget in FY 2025-26, accounting for almost 38% of the city's total municipal budget. Approximately half of this allocation supports climate mitigation outcomes, while the remaining half contributes to adaptation and resilience.

Table 3: Climate finance gap in Maharashtra

Departments	Projected climate-tagged budget, 2024-30 (in ₹ crore)	Proposed climate budget as per SAPCC (₹ crore)
Environment	2,145	166
Water Resources	89,993	2,07,760
Agriculture, Animal Husbandry and Fisheries	39,564	37,099
Revenue Forests	63,717	13,181
Industries, Energy and Labor Department	73,119	26,897
Public Health	25,599	8,249

Source: Maharashtra State Action Plan on Climate Change: Pathways for 2030 and (Garimella, Solanki and Bajpai 2025)

Although Maharashtra has yet to formally adopt climate budget tagging, an independent climate budget tagging exercise covering 14 state departments based on FY 2023-24 budgets found that only 10% of total state expenditure (₹35,595 crore) was highly climate-relevant, with more than half directed toward adaptation and resilience-focused activities (Garimella, Solanki and Bajpai 2025). The study applies a recognized methodology to tag expenditures specified in departmental budgets in accordance with their relevance to climate: high, medium, low, or marginal. Using this methodology, the following table estimates the climate finance gap in 2030: Leveraging this granular exercise and drawing comparisons with overlapping departments in the SAPCC's proposed climate budget:

In this manner, by adopting a granular methodology, climate finance needs can be more accurately assessed, thereby strengthening strategic planning and resource allocation. This approach also encourages the mainstreaming of a climate lens across departmental budgets for better estimations and accountability on climate action.

Nevertheless, the SAPCC indicates that a substantial share of climate-related expenditure continues to be channeled through public sources, underscoring the government's central role in driving climate action. Maharashtra has benefited from financial and technical support

Table 4: Projects supported by domestic financial institutions (active as of 2024-25) that contribute to climate action in Maharashtra

S. No.	Project title	Department	Funding agency	Type of funding	Amount (in lakh)
1	Land Development Through Soil Conservation Measures (RIDF loan)	Soil and Water Conservation	National Bank for Agriculture and Rural Development (NABARD)	External grant and external loan	0.01
2	Water Conservation Works (RIDF loan)	Soil and Water Conservation	NABARD	External grant and external loan	10,000

Source: (Planning Department 2025)

from national and international public funding mechanisms, enabling targeted projects across both adaptation and mitigation. These include initiatives aimed at enhancing resilience in climate-sensitive sectors such as agriculture, water and infrastructure, as well as interventions focused on promoting clean energy transitions and reducing greenhouse gas emissions. Table 4 and 5 summarize projects supported through external public finance and domestic financial institutions (DFIs).

Table 5: Externally aided projects (active in 2024-25) supporting climate action in Maharashtra

S. No.	Project title	Department	Funding agency	Type of funding	Amount[3] (in ₹ lakh)
1	Project on Climate Resilient Agriculture (Phase-II)	Agriculture	World Bank	External grant and external loan along with state financing	24,599.40
2	Solar project	Energy	Kreditanstalt für Wiederaufbau (KfW) Development Bank	External grant and external loan	0.01
3	Green Energy Corridor	Energy	KfW Development Bank	External grant and external loan	0.01
4	Maharashtra Resilience Development Program	Relief and Rehabilitation	World Bank	External grant and external loan along with state financing	17,550
5	Sustainable Coastal Protection and management investment Program	Home-Ports	Asian Development Bank (ADB)	External grant and external loan	28,000
6	State of Maharashtra Agri-business and Rural Transformation Program (SMART)	Agriculture	International Bank for Reconstruction and Development (IBRD)	External grant and external loan along with state financing	41,994
7	Dam Rehabilitation and Improvement Project (DRIP) - II	Water Resources	Asian Infrastructure Investment Bank (AIIB) and IBRD	External grant and external loan along with state financing	15,000
8	Maharashtra Agribusiness Network (MAGNET) Project	Marketing	ADB	External grant and external loan along with state financing	4,000

Source: Maharashtra Planning Department 2025

[3]This amount highlights the proposed fund by the Department of Finance as part of the Annual Budget for FY 2025-26. The total amount spent under the project will be different.

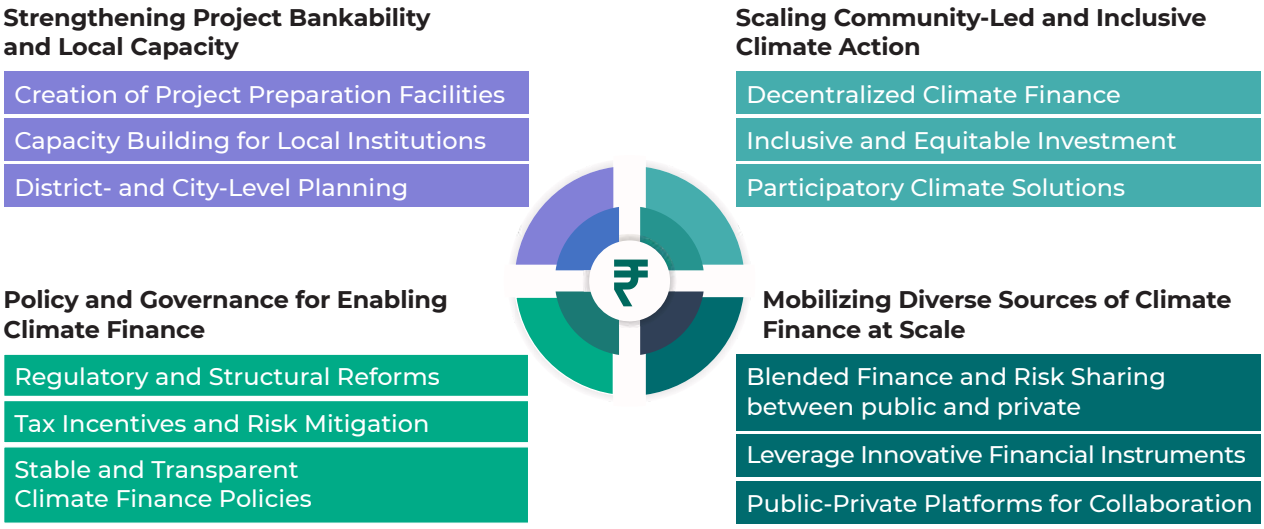
Note: Several other projects funded by NABARD under the Rural Infrastructure Development Fund (RIDF), Long-Term Irrigation Fund (LITF), Infrastructure Development Assistance and Farm Sector Development include components that support communities and relevant stakeholders in building resilience against climate change and improve productivity using sustainable measures (NABARD 2022).

2.2 Challenges for accessing climate finance in Maharashtra

Despite financial assistance from national and international public sources, the volume of finance required by Maharashtra to implement the SAPCC and contribute effectively to India's NDCs far exceeds what public finance alone can deliver.

The state faces structural and institutional barriers in accessing both public and private finance, affecting stakeholders ranging from financial intermediaries, such as banks and investors, to implementing entities, including local governments, non-governmental organizations and community-based institutions. Opportunities to strengthen access and accelerate climate finance mobilization were identified through stakeholder consultations and a dedicated workshop organized by the State Climate Action Cell, with support from WRI India, on September 27, 2024.

Figure 2: Key themes observed during the Climate Finance Access and Mobilization Strategy workshop



Source: Climate Finance Access and Mobilization Strategy workshop, Authors' analysis

The workshop convened key stakeholders from the finance community, including commercial banks, think tanks, investment banks, venture capital, private equity and DFIs, in addition to high-level representation from the Ministry of Environment, Forests and Climate Change (MoEFCC), Government of India and the Maharashtra Institution for Transformation (MITRA).

The primary goal of these deliberations was to identify supply-side barriers limiting the financial sector's participation in climate mitigation and adaptation projects. The key barriers identified are as follows:

1. **Lack of project prioritization and mapping:** The absence of clearly defined, mapped and prioritized climate action projects aligned with potential funding sources constrains capital mobilization. The ₹3 lakh crore financing requirement identified in the SAPCC for 2024-2030 remains a high-level estimate and requires disaggregation into project-specific pipelines. Without such disaggregation, financial institutions cannot effectively align capital with the state's climate priorities, leading to delays in mobilization. Currently, capital flows are concentrated in lower-risk projects.

In order to restore its land and biodiversity, Maharashtra should scale up local land restoration, accelerate biodiversity restoration business and monetize Access and Benefit Sharing.

2. **Institutional and human capital capacities:** Government departments face shortages of personnel with expertise in climate finance, project bankability and complex financial deal structuring. Political and administrative changes can disrupt project continuity and weaken investor confidence. These capacity and continuity gaps hinder the sustained development of high-quality, long-term climate projects and erode financier confidence.

3. **Risk and structure of pooled finance:** Financial institutions, particularly commercial banks, are hesitant to commit capital to pooled finance facilities (which aggregate the financing needs of multiple municipal bodies) unless anchored by highly credible institutions. The involvement of a central government entity or a Multilateral Development Bank is often viewed as a prerequisite, making it difficult to launch robust, locally driven pooled finance without national or international backing.

4. **Single-window system for innovation:** The current process for pitching and deploying innovative technologies, especially from startups and smaller companies, lacks procedural clarity and institutionalized framework. The absence of a single-window system limits the participation of companies with cutting-edge solutions, which are often the entities preferred by private equity and venture capital investors.

5. **Accountability and transparency:** Private entities require clearly defined and robust payment security mechanisms for government contracts. Reliance solely on general budgetary allocations as funding source is a significant deterrent and undermines trust. Private capital will only participate when payment risk is mitigated, often through mechanisms such as dedicated escrow accounts and first-loss default guarantees.

6. **Lack of a standardized definition for adaptation:** Despite private-sector interest in adaptation, there is no standardized, government-backed definition of "climate adaptation." A clear definition is essential for investors to effectively measure impact, assign metrics and structure financial products for projects, particularly as 79% of Maharashtra's climate financing needs are for adaptation.

7. **The adaptation finance gap:** Adaptation finance remains underfunded because it often lacks clear, immediate revenue models associated with mitigation projects, such as renewable energy. This distinct risk-return profile means adaptation projects rely heavily on public finance and loan-based instruments rather than grants, limiting their ability to attract large-scale private capital needed to meet long-term climate resilience objectives.

Maharashtra is India's largest agri-food exporter, with exports valued at ₹47,000 crore in FY2024-25.

The chart below summarizes the challenges identified by domestic banks, MDBs, private capital and civil society organizations (CSOs) into four key dimensions, disaggregated by concerns expressed by each stakeholder:

Figure 3: Categorization of challenges based on stakeholder consultations

Enabling Regulatory Environment

- Banks flagged concerns around regulatory stability in the state and land acquisition challenges for borrowers in renewable energy projects.
- Private capital expressed concerns over assured government payment for projects.
- MDBs stated that their focus within blended finance facilities is narrow.

Bankable Project Pipeline

- Banks pointed to limited knowledge of government priority projects
- Private capital stated that adaptation and resilience projects are difficult to finance.
- CSOs recommended developing a roster of government projects for climate needs.

Definitional Issues for Adaptation

- MDBs pointed towards a lack of clarity regarding resilience projects.
- Private capital flagged definitional ambiguities surrounding adaptation and their implications.
- CSOs highlighted knowledge gaps in building an economic case/ financing models for adaptation.

Capacities of Government and Financial Institutions

- Banks flagged that government departments lack the capacity to support climate projects.
- Private capital stated that new technologies are difficult to pitch or pilot within government systems.

Source: Climate Finance Access and Mobilization Strategy workshop, Authors' analysis

3. STRATEGY OVERVIEW: ENABLING CLIMATE FINANCE FOR A VIKSIT MAHARASHTRA

Maharashtra contributes to 13.6% of the national GDP with a projected to Gross State Domestic Product (GSDP) of ₹45 lakh crore (approximately USD 50 billion) in FY2024–25. Under its long-term development vision, Viksit Maharashtra 2047, the state seeks to accelerate economic growth while advancing inclusive and sustainable development. The vision targets a USD 1 trillion state economy by 2028 and USD 5 trillion by 2047 (Government of Maharashtra 2025). Climate-resilient development is positioned as a core enabler of this vision, rather than an adjunct. As the state pursues accelerated industrialization, urbanization and agricultural transformation, aligning climate action with economic priorities will play a crucial role in safeguarding long-term sustainable growth and fiscal stability.

The state's development priorities, spread across 16 themes, include growth in agriculture; sustainable urban infrastructure; water security; inclusive health and welfare; clean energy and industrial decarbonization; reliable transport systems and good governance through prudent fiscal management and alternative financing models. While several of these priorities are reflected in the SAPCC, climate financing remains largely dependent on public budgets and concessional sources. At the same time, the state has demonstrated interest in alternate financing sources through innovative instruments like the maiden ₹200 crore green bond issuance by Pimpri Chinchwad Municipal Corporation (PCMC) in 2023 for solarization and water recycling, public–private partnerships in infrastructure and a state-level Infrastructure Investment Trust (InvIT).

The SAPCC highlights the state’s significant exposure to climate-induced shocks, particularly extreme heat, floods, droughts and coastal risks that threaten productivity, public

Mobilizing finance for nature-based solutions, such as green corridors, can strengthen community resilience.

infrastructure, urban systems, and rural livelihoods. If not addressed adequately, these risks could erode gains envisaged under Viksit Maharashtra 2047, increase contingent liabilities and deter private investment.

At the state level, finance gaps include insufficient climate budget allocations, which remain embedded within existing budgetary spends, as highlighted in the previous section. Given the projected climate finance requirements, it is prudent to incorporate climate considerations into the state's core planning, budgeting and investment appraisal processes.

Climate risks imply significant additional capital needs for adaptation. However, adaptation and resilience investments, such as those for urban heat and flood management, basin-level water security, climate-resilient agriculture and health system preparedness, remain dependent on public budget and underfinanced because they are not yet embedded within mainstream sectoral investment pipelines or framed as productivity- and risk-reducing expenditures.

These gaps can be addressed by integrating climate considerations into mainstream infrastructure planning and mobilizing private capital for adaptation, resilience and transition-oriented investments. Strengthening climate integration within planning and finance functions is therefore essential to improve capital efficiency, protect public assets and create credible, investment-ready pipelines capable of crowding in private and alternative sources of climate finance at scale.

As a progressive state, Maharashtra has attracted substantial MDB and bilateral financing, from the World Bank, ADB, AfD, AIIB among others, particularly in transport, energy, urban development and water. While this provides a strong foundation, MDB flows must be better utilized, further leveraged to attract private finance and scaled up to meet the level of investment required to deliver on Viksit Maharashtra 2047 and the Maharashtra SAPCC.

To unlock additional and alternative forms of capital, the state needs to strengthen climate expenditure tracking and project pipelines, improve project structuring and bankability, deploy risk-mitigation instruments such as guarantees and blended finance for higher-risk interventions, scale innovative instruments (green bonds, sustainability-linked financing and outcome-based finance) and create clear policy and institutional signals that crowd in domestic and international private capital. Together, these actions can position Maharashtra as a leading sub-national destination for climate-aligned investment while advancing its long-term development vision.

4. STRATEGIC PATHWAYS: ACCELERATING MOBILIZATION AND CAPACITY ENHANCEMENT

Maharashtra's CFAMS is anchored in a dual-track approach: strengthening climate finance mobilization while enhancing institutional capacities to ensure effective, transparent and impactful climate action. Although notable progress has been made, achieving the full scale of climate impact envisioned under the SAPCC will require a substantial acceleration and deepening of financing flows. For the 2024–2030 period, mobilizing the nearly ₹3 lakh crore envisaged under the SAPCC (equivalent to 11% of the nominal GDP estimated for FY 2024-25) will be critical to sustaining the state's strategic balance between adaptation priorities and mitigation investments.

To accelerate climate finance mobilization, available resources must be strategically deployed to catalyze private sector participation, leverage public and multilateral funds and deliver measurable adaptation and mitigation outcomes. This entails leveraging public funds to catalyze private sector participation while optimizing contributions from the central government, DFIs and Externally Aided Projects (EAP). Enhancing capacities across implementing agencies, DFIs and government departments will ensure transparent, accountable and efficient fund utilization. By optimizing deployment through existing schemes and sector-specific interventions recommended in the SAPCC, Maharashtra can (and must) unlock a diversified climate finance pipeline and meet its adaptation and mitigation targets.

What do we mean by effective mobilization of climate finance?

Climate finance aims to reduce greenhouse gas emissions and enhance carbon sinks, while also reducing vulnerability, strengthening adaptive capacity and mainstreaming resilience across human and ecological systems in response to climate impacts. It includes financing for actions identified in a country's nationally determined contribution, adaptation communication, national adaptation plan, long-term low-emission development strategy (LT-LEDS), or other national plans for implementing and achieving the goals of the Paris Agreement and the objective of the UN Framework Convention on Climate Change (OECD 2024).

Effective mobilization of climate finance refers to the systematic process of identifying, attracting and deploying financial resources to support climate mitigation and adaptation efforts in a coordinated and transparent manner. It ensures that funding flows efficiently across different levels of governance and sectors, reaches communities most vulnerable to climate impacts and promotes sustainable growth.

Guided by the principles of integration, inclusion, innovation, and integrity, the CFAMS will enable Maharashtra to mobilize climate finance through strengthened stakeholder collaboration, strategic use of public and private investment and robust accountability mechanisms, advancing long-term climate resilience and low-carbon development.

From 21% in 2015 to 32% in 2024, Maharashtra is steadily increasing the share of renewables in its energy mix.

5. STRATEGIES FOR SCALING CLIMATE FINANCE IN MAHARASHTRA

Effective mobilization of climate finance requires a structured and strategic approach to ensure that financial resources are directed toward areas of highest impact and relevance. This holistic approach entails comprehensively mapping the state's climate finance needs, aligning financial flows with climate goals, enhancing private sector participation, scaling blended finance and strengthening institutional and regulatory mechanisms. To further strengthen the demand side of the market, improving community-level understanding, streamlining access to finance, aggregating small-scale projects, promoting public-private partnerships, fostering market creation and enabling monitoring, feedback and iterative learning will be crucial to bridge existing gap. This approach requires analyzing sector-specific requirements and aligning interventions and resources with the evolving needs and demands of each sector.

Developing sectoral strategies provides this structure by translating broad climate goals into specific, actionable and finance-ready priorities. This method serves as one of the most

effective approaches for mobilizing climate finance, as it provides a clear framework for prioritizing actions, allocating resources and delineating institutional roles and responsibilities. Additionally, this approach enables comprehensive coverage of both mitigation and adaptation objectives within and across sectors, ensuring that investments are strategically aligned with specific climate and development needs.

5.1 Methodology

The sectoral strategies were formulated through a structured, multi-stage methodological approach. Priority climate actions were identified based on a review of the SAPCC and informed by expert consultations. Subsequently, potential financing pathways were identified through an extensive literature review, along with analysis of suitable financial instruments including both public and private sources of finance. The selection of these instruments was guided by the specific challenges identified within the state, as well as evidence of their effectiveness in India or in other Global South contexts with socio-economic characteristics comparable to India.

Following this, the proposed sectoral strategies underwent further refinement and feasibility assessment through targeted consultations with relevant state departments and state agencies, including MITRA (Maharashtra Institution for Transformation), alongside sectoral experts. These consultations enabled the authors to validate the practicality, institutional readiness and alignment of the proposed strategies with existing policy frameworks and implementation capacities at the state level.

Table 6: Gears of implementation for CFAMS

Implementation gears	Description
Policy frameworks	These refer to the institutional, legislative and regulatory structures that embed climate adaptation and mitigation objectives into sectoral and development planning.
	These frameworks establish mandates, guide implementation and ensure coherence across departments.
Sustained persistent leadership	This refers to the sustained commitment of political, administrative and civil society actors in advancing climate finance goals.
	This includes driving institutional reforms, ensuring interdepartmental collaboration and promoting innovation in financing mechanisms.
Coordination mechanisms	These mechanisms refer to institutional arrangements that facilitate collaboration across sectors, departments and governance levels. They enable alignment of climate finance priorities, promote knowledge sharing and ensure efficient resource utilization.
Information & Tools	These refer to data and knowledge systems, along with analytical instruments that enhance evidence-based decision-making. They enable stakeholders to design, track and evaluate climate finance interventions effectively.
Supportive financial processes	These include mechanisms such as climate budget tagging, expenditure tracking and dedicated climate funds.
	These processes enhance transparency, accountability and the efficient allocation of resources to adaptation and mitigation goals.

Source: (Mogelgaard et al. 2018)

Each sector operates within its own policy framework and institutional structure, both of which shape how a financial strategy can be designed and implemented. For instance, sectors such as agriculture and water resources are largely supported through centrally sponsored schemes, limiting the fiscal autonomy of states in determining their own financing approaches. Similarly, while urban development initiatives are guided by state-level directives, their execution often falls under the purview of municipal corporations, which may mobilize finance independently through instruments such as municipal bonds.

Despite these variations in governance and policy architecture, certain "gears of implementation" remain consistent across sectors and can be leveraged to strengthen the effectiveness and scalability of financial strategies. A WRI report identifies five such gears namely "policy frameworks," "sustained persistent leadership," "coordination mechanisms," "information and tools" and "supportive financial processes" that help accelerate the transition from developing a strategy to its implementation across scales. Table 6 provides a brief explanation of the five gears.

Each sectoral strategy proposed under the CFAMS is supported by the aforementioned gears, along with an additional focus on capacity building. The inclusion of capacity building recognizes that the effectiveness of financial strategies ultimately depends on the institutional and technical capabilities of state agencies, local bodies and implementing partners to design, access and manage climate finance instruments. Furthermore, the strategy acknowledges that coordination mechanisms and supportive financial processes cut across all sectors and therefore are presented as an overarching theme.

While sector-specific strategies are inherently differentiated, their effective implementation necessitates a coordinated and institutionally integrated approach across the state. Hence, the CFAMS also provides recommendations for an institutional governance mechanism designed to operationalize these strategies in a cohesive manner. This approach seeks to ensure a comprehensive and systematic climate finance ecosystem across Maharashtra, encompassing the identification of bankable projects, the development of scalable project pipelines, the strengthening of institutional and administrative capacities and the deployment and execution of innovative financing instruments. Such an institutional framework will enable alignment across departments and agencies, thereby facilitating efficient implementation and sustained impact of climate action initiatives at the state level.

5.2 Sectoral strategies

Sector: Water resources management

Water resources is among the most climate-vulnerable sectors in Maharashtra, with the SAPCC identifying significant regional disparities in water availability. Of the state's 35 districts, 11 are categorized as water-stressed, with less than 1,700 cubic meters of water available per capita per year, while 18 districts are classified as water-scarce, with availability below 1,000 cubic meters per capita per year. Recognizing the critical importance of water security, the SAPCC has allocated a substantial portion of the state's climate budget to enhance the resilience of its water resources.

While water resources management relies heavily on public finance, the growing scale and complexity of climate challenges necessitate the exploration of additional sources of finance. In alignment with these priorities, the CFAMS seeks to strengthen financing for climate action in the water sector through measures including supporting the treatment and reuse of wastewater and promoting the widespread installation of rainwater harvesting structures, to ensure long-term water security and adaptive capacity across the state. Table 7 lists the proposed financial strategy for water resources management.

Maharashtra faces significant exposure to climate-induced shocks, particularly extreme heat, floods, droughts and coastal risks that threaten productivity, public infrastructure, urban systems and rural livelihoods.

Table 7: Climate Finance Access and Mobilization Strategy for water resources management

S. No.	Climate intervention	Alignment of climate benefits	Description	Financial mechanism and instruments	Case studies	Timeline	Operational strategy
1	Increasing wastewater treatment and use capacity	Adaptation	To enable reuse of treated wastewater in municipalities by facilitating access to domestic capital.	Pooled bonds to finance water and sanitation services through a state-level entity.	Pooled municipal bond issued by Water and Sanitation Pooled Fund (WSPF) in Tamil Nadu and Karnataka.	Short-to-medium term	- Conduct a targeted pipeline assessment of municipal projects with clear potential for treated wastewater reuse, focusing on feasibility, demand linkages and revenue reliability. - Use standardized screening criteria, drawing on lessons and best practices from the Tamil Nadu Water and Sanitation Pooled Fund, to evaluate technical readiness, institutional capacity and creditworthiness of participating urban local bodies (ULBs). - Develop a multi-layered credit enhancement package including a debt service reserve fund capitalized by the state government, individual ULB escrow accounts, a local debt service reserve fund and a state revenue intercept mechanism through Maharashtra Urban Infrastructure Development Co. Ltd. These measures would extend bond maturities and enhance investor confidence. - Prioritize projects that demonstrate clear reuse pathways and sustainable tariff structures. Develop a pooled eligibility framework to onboard identified projects for collective capital market access.
2	Incentivizing installation of rainwater harvesting systems	Adaptation	To encourage residents and building developers to install and maintain rainwater harvesting structures.	Tax rebates to lower upfront and lifecycle costs faced by households and developers, making adoption financially attractive while aligning private incentives with public adaptation goals.	Promotional surcharges and tax rebates introduced by Pune, Prayagraj and Indore Municipal Corporation.	Short-to-medium term	- Residents can be offered tax rebates or subject to higher tax surcharges higher taxes based on whether a rainwater harvesting system has been installed or not. - This can be done through introducing promotional surcharges in the house tax as per a provision under Property Tax Rules of Municipal Corporation 2000.

Gears of Implementation			
Policy frameworks	Sustained leadership	Information and tools	Capacity building
- Encourage integration of pooled-bond financing clauses into ongoing AMRUT 2.0, Smart Cities and MJP project guidelines to ensure uniform adoption across ULBs. - Leverage the Pooled Finance Development Fund Scheme through MUINFRA for project development assistance and for credit enhancement through Credit Rating Enhancement Fund (CREF).	- MUINFRA could explore the option of inviting larger ULBs such as Mumbai, Navi Mumbai, Thane, Pune, Nagpur to join the pooled entity, thereby reducing risk exposure for smaller ULBs.	- Adapt current reporting templates to standardize project screening, climate tagging, MRV and readiness checklists for pooled-bond candidates.	- Provide training to commissioners, finance officers and engineers on pooled-bond preparation, escrow cash-flow management and investor disclosures via existing training institutes.
- Embed rainwater harvesting compliance checks in building permissions and Occupancy Certificates through references to existing Unified Development Control and Promotion Regulations (UDCPR) provisions and city development control regulations. - Include rainwater harvesting incentive coverage in ongoing AMRUT 2.0 and SBM-U city MoUs and establish monitoring systems for the same.		- Integrate a standard rainwater harvesting rebate calculator and eligibility flags into existing property-tax MIS and e-governance portals used by municipal corporations and councils.	- Conduct awareness campaigns to inform people about the tax benefits as well as the benefits of rainwater harvesting to increase community participation.

Sector: Agriculture

According to ICAR, almost 77% of Maharashtra's cropped area is highly vulnerable to the impact of climate change, droughts and reduced water security (Adhav et al. 2021). The agricultural sector is not only vulnerable to the impacts of climate change but also contributes to the total GHGs emitted by the state. Hence, given the important role of the sector in advancing climate action, the CFAMS seeks to make Maharashtra's agriculture climate-resilient and mitigation-aligned by promoting innovation in sustainable practices, strengthening data-driven credit and insurance systems, rewarding villages that adopt climate-resilient approaches and empowering smallholders to generate value through carbon-sequestering farming systems. The following table lists the proposed financial strategy for the agriculture sector.

Table 8: Climate Finance Access and Mobilization Strategy for agriculture

S. No.	Climate intervention	Alignment of climate benefits	Description	Financial mechanism and instruments	Case studies	Timeline
1	Incentivizing village-level adoption of climate-resilient agriculture	Adaptation	To provide financial incentives to villages that are performing well under Nanaji Deshmukh Krishi Sanjeevani Prakalp (Project on Climate Resilient Agriculture – Phase II).	Performance-based financial support that links climate adaptation outcomes to incentives, rewarding villages that demonstrably adopt and sustain climate-resilient agricultural practices enhancing accountability and scalable change.	Country Climate Change Fund in Kenya Rwanda Green Fund (FONERWA)	Short-to-medium term
2	Supporting insurance credit delivery through enhanced data systems	Adaptation	To supplement existing credit delivery and expand insurance penetration through enhanced data systems.	Weather-based crop insurance enabling timely insurance payouts strengthening last-mile credit delivery while building climate resilience against weather shocks.	CADENA Agricultural Insurance Program in Mexico that provides catastrophe agricultural insurance and direct support to protect small-scale farmers, livestock producers and fishermen from severe weather, using macro-level index insurance.	Short term

CFAMS aims to make Maharashtra's agriculture climate-resilient by promoting sustainable innovation, strengthening insurance systems and incentivizing climate-resilient villages

Operational strategy	Gears of Implementation			
	Policy frameworks	Sustained leadership	Information and tools	Capacity building
- A dedicated performance grant component can be reserved for disbursement as variable top-up funding. - Performance can be assessed through parameters such as increased adoption of climate-smart practices, measurable improvements in crop productivity and climate resilience and enhanced water-use efficiency or soil health indicators. Additional parameters may include livelihood outcomes such as improved farmer incomes or risk reduction, strengthened institutional capacity of FPOs/extension systems, etc. - Villages scoring in the top performance quartile can receive an additional subsidy on climate-resilient assets. - Villages can receive interest subvention on climate-adaptive farm loans and priority access to matching grants for community-level infrastructure like storage and collective processing units.	- Develop strategy with support from World Bank to include performance-based financial support in the next phase of Nanaji Deshmukh Krishi Sanjeevani Prakalp.	- Mandate district PoCRA management units to convene a quarterly "Performance Incentive Review" to identify and nominate top-quartile villages.	- Develop a village-scorecard dashboard that pulls PoCRA monitoring data and geo-layers from the MRSAC to rank villages, track asset adoption and auto-compute incentive amounts.	- Build the capacity of the top-ranking villages to identify projects and utilize the additional performance grant effectively.
- Reduce basis risk by validating insurance triggers through multi-source local climate datasets and village units.	- Identify state- and local-level priorities and actions within the national policy on weather-based crop insurance to gather support and resources from central government.	- Expand the existing state coordination committee on crop insurance to include a "Data and Index Review Sub-committee" to review trigger performance, basis-risk reduction and payout timeliness.	- Develop interoperable climate–data platforms to complement central dashboards existing under Weather-based Crop Insurance Scheme (WBCIS) to improve real-time risk mapping.	- Collaborate with local research institutes and CSOs to enhance local climate and weather data integration to refine risk indices and ensure more accurate, transparent payouts.

S. No.	Climate intervention	Alignment of climate benefits	Description	Financial mechanism and instruments	Case studies	Timeline
3	Supporting smallholder farmers to access and leverage voluntary carbon markets	Mitigation	To empower FPCs to aggregate farm-level carbon gains and leverage carbon markets for additional income while incentivizing long-term sustainable growth.	Carbon credits to monetize farm-level emission reductions and carbon sequestration while unlocking additional income streams and incentivizing sustainable agricultural practices.	Scolel Té Community Carbon Project in Chiapas, Mexico, which enables smallholder and indigenous communities to access voluntary carbon markets through aggregated forestry and agroforestry carbon credits.	Medium -to-long term
4	Scale innovation in agricultural technology including farm mechanization and advanced sustainable practices	Adaptation	To encourage the scaling up of technological innovation (including use of AI, IoT and mechanization) in the agricultural landscape of Maharashtra by leveraging blended finance mechanisms.	First-loss guarantees to improve the risk–return profile of innovative agri-tech investments, thereby making innovations viable for private and blended finance investors. Performance-based incentives as financial rewards for demonstrated adoption and impact of agri-technologies, ensuring public and blended finance supports proven, scalable innovations while accelerating uptake of AI-, IoT- and mechanization-led climate-resilient farming practices.	Credit Guarantee Fund for Farm Mechanization by NABARD	Medium -to-long term

Operational strategy	Gears of Implementation			
	Policy frameworks	Sustained leadership	Information and tools	Capacity building
- The state can enable smallholder farmers to access carbon markets collectively by empowering FPCs to aggregate farm-level carbon gains through standardized contracts, pooled MRV and registry agreements and transparent escrow-based credit sales. - The State Carbon Market Facilitation Desk can support pooling by standardizing aggregation frameworks for FPCs, including common eligibility criteria, contract templates and farmer onboarding protocols. It can coordinate pooled MRV systems, offering technical support, verified methodologies and access to accredited verifiers to reduce transaction costs. The desk could also negotiate registry access and establish escrow-based payment mechanisms to ensure transparency and equitable benefit sharing. - The state may also subsidize verification costs and develop guidelines for FPOs to ensure fair revenue sharing.	- Issue a resolution to authorize FPC-aggregated carbon projects, based on the Indian Carbon Market offset mechanism and ICAR's Framework for Voluntary Carbon Market in Agriculture for eligibility, MRV and registry use.	- Seek support from the Carbon Market Facilitation Unit (explained in the next section) for guidelines on modalities and procedures.	- Seek support from the Carbon Market Facilitation Unit to develop tools for estimation and verification of carbon generated from farm activity.	- Develop modules for FPO boards and field staff on carbon project design, pooled MRV, contract templates, registry onboarding and fair revenue sharing.
- Map initiatives undertaken by FPCs, agri-tech providers and allied actors that demonstrate clear climate-smart innovation, measurable agricultural productivity gains and socio-economic co-benefits. - Apply standardized screening criteria to assess innovation, farmer adoption of readiness, financial sustainability and institutional capacity. Evaluate replicability through regional agro-climatic suitability, scalability of delivery models and alignment with state priorities. - Once projects have been identified, the state could guarantee support to banks/NBFCs to cover the first loss (e.g., 20–40%) on portfolios of loans to FPCs and agritech providers deploying climate-smart technologies to incentivize delivery of concessional loans. - Philanthropic capital may be accessed to provide a performance incentive per verified adoption outcome (e.g., hectares under precision irrigation, water saved, GHG avoided).	- The agriculture department could develop guidelines for priority sectors and support the finance providers in selecting and prioritizing companies and startups that align with the state's priorities and needs. This framework can be aligned with the MahaAgri–AI Policy, which highlights emerging technologies and outlines a project implementation strategy to scale AI for transforming agriculture in the state.	- Conduct pilots across select districts to review guarantee utilization, pipeline quality and incentive disbursements.	- Conduct regular review of adoption outcomes and verify the outcomes through local data including satellite layers, cadastral maps, rainfall and irrigation datasets, individual verification, etc.	- Engage with institutions such as Vanamati to lead short courses for state officials, lenders and agri-tech firms on guarantee structuring and MRV of outcomes.

Sector: Land restoration and biodiversity

Land restoration plays a critical role in Maharashtra's mission to enhance resilience and deliver both adaptation and mitigation benefits for people and ecosystems. While the state has recorded a 14.3% increase in forest cover since 1991 (Forest Department 2024), it now seeks to broaden its focus to include biodiversity conservation, ensuring that restoration efforts generate co-benefits that advance the objectives of the SAPCC and contribute meaningfully to India's updated NBSAP. To enable this transition, the CFAMS aims to strengthen financing for climate action in the land restoration and biodiversity sector by prioritizing the scaling up of restoration initiatives, promoting access and benefit-sharing monetization and accelerating restoration-based enterprises to create sustainable financial and ecological outcomes. The following table lists the proposed financial strategy for land restoration and biodiversity.

Table 9: Climate Finance Access and Mobilization Strategy for land restoration and biodiversity sector

S. No.	Climate intervention	Alignment of climate benefits	Description	Financial mechanism and instruments	Case studies
1	Scaling local land restoration	Cross-cutting	Financing locally-led start-ups, FPCs and NGOs in agroforestry, watershed management and biodiversity conservation, aligned with the Harit Bharat Fund[4]).	Blended finance in the form of: Design and preparation funds (with support from philanthropic foundations); Technical assistance funds; Guarantees and risk Insurance; Concessional finance in the form of grants (for NGOs and capacity building) and customized loans (for-profits) structured like the Harit Bharat Fund (focus on women and first-generation entrepreneurs) Facilitate payment for ecosystem services schemes that channel verified ecosystem benefits into performance-based financing, rewarding restoration actors for measurable benefits such as improved soil health, enhanced groundwater recharge, increased carbon sequestration and strengthened local biodiversity. Enable participation of local communities in voluntary carbon markets through a dedicated Carbon Markets Facilitation Desk (as highlighted in the next section) to generate tradable carbon credits from large-scale forest landscape restoration and afforestation initiatives, to mobilize results-based finance for long-term land restoration outcomes.	Tropical Landscape Finance Facility (TLFF) in Indonesia

[4]Harit Bharat Fund supports local Restoration Champions with capital and capacity-building assistance to scale up landscape restoration initiatives. The fund provides grants for non-governmental organizations and low-interest loans for for-profit enterprises, ranging between ₹20 lakh and ₹2.5 crore. The fund provides focused support on empowering women, first-generation entrepreneurs and champions from other marginalized sections.

Maharashtra has recorded a 14.3% increase in forest cover since 1991. The state now seeks to broaden its focus to include biodiversity conservation, ensuring that efforts generate co-benefits.

Timeline	Operational strategy	Gears of Implementation			
		Policy frameworks	Sustained leadership	Information and tools	Capacity building
Short-to-medium term	- Conduct a targeted pipeline scan to identify projects that deliver clear land restoration outcomes alongside socio-economic co-benefits based on the state agroforestry policy once it is developed. - Undertake structured due diligence using standardized criteria on ecological impact, financial viability, governance readiness and community acceptance to shortlist scalable models. - Assess replicability by mapping ecological similarity, institutional capacity and policy alignment across priority regions. - Develop a prioritized investment portfolio of such projects to channel concessional loans and risk-sharing instruments effectively. - Offer low-interest rate loans combined with a risk-sharing facility (e.g., partial guarantee or first-loss tranche) to enable restoration projects to scale by reducing upfront and operational risks. - Target capital for projects in central regions to scale proven models (e.g., the Grasslands Trust project).	- Develop a state-level agroforestry policy on the lines of the National Agroforestry policy and explore the potential of incorporating blended finance support by bringing in state-owned companies such as Forest Development Corporation of Maharashtra Limited.	- The Department of Environment and Climate Change through the Climate Finance Facilitation Desk, could convene quarterly coordination with NABARD, MSBB and the Forest Department to approve project pipelines and monitor fund flows.	- Maintain a state registry and dashboard of eligible projects, disbursements and outcomes using departmental systems and NABARD monitoring tools, with geospatial layers where feasible. - Publish eligibility, gender criteria and application templates on the Department website and amplify through MSRLM (UMED) and MSSDS portals to reach women and first-generation entrepreneurs.	- MSRLM and MSSDS could deliver short courses on proposal design, unit economics and compliance for NGOs, FPCs and start-ups seeking blended finance

Rapid urbanization in Maharashtra highlights the need to strengthen climate finance mobilization to balance development priorities with environmental sustainability.

S. No.	Climate intervention	Alignment of climate benefits	Description	Financial mechanism and instruments	Case studies
2	Restoration business acceleration	Cross-cutting	Fostering and scaling restoration-oriented businesses (agroforestry, sustainable agriculture, Nature-based Solutions)	• Accelerator Program Funding through CSR/ Philanthropy/ MDBs • Seed Grants / Patient Capital to validate business models to address the lack of patient capital through Impact Investor Networks.	Restoration Factory in Brazil that supports the emergence of commercially viable, community-inclusive and climate-resilient businesses that restore ecosystems and preserve landscapes.
3	Access and Benefit Sharing (ABS) Monetization	Adaptation	Utilizing Maharashtra's pioneering State Biodiversity Management Board (MBMB) and its statutory funds to generate revenue from biological resources.	• Statutory Biodiversity Funds (generated from ABS levies) as a mandated revenue stream that can be reinvested in ecosystem-based adaptation and long-term conservation of climate-resilient biological resources. • Micro-grants for Biodiversity Management Committees (BMC)-led conservation efforts enabling outcome-based payments for protection and restoring mangroves, conserving indigenous crop varieties and maintaining community seed banks thereby decentralizing ABS finance. • Venture Capital Fund (as a non-monetary benefit) for benefit claimers to transform biodiversity knowledge and genetic resources into scalable, market-linked enterprises, enabling benefit claimers to convert conservation into sustained adaptive livelihoods and unlock innovative business models.	Similar mechanisms exist in Brazil and Colombia

Timeline	Operational strategy	Gears of Implementation			
		Policy frameworks	Sustained leadership	Information and tools	Capacity building
Short-to-medium term	- Adopt a Land Accelerator-like model for Maharashtra: a cohort-based program with mentorship, technical training and direct linkage to investors. - Provide pilot funding and support in impact measurement to prepare entrepreneurs for private capital	- Integrate a Land Accelerator-style cohort within the Maharashtra Startup, Entrepreneurship and Innovation Policy 2025 under MSINS to channel CSR, philanthropy and MDB support to restoration-oriented startups	- Integrate seed and follow-on financing pathways by linking selected cohorts to Startup India Seed Fund Scheme and SIDBI's Fund of Funds AIF network - Invite entities such as 'Nabventures' and the facilitators like Impact Investors Council (IIC) to serve as investor partners for demo and pipeline reviews for NbS enterprises.	- Adopt the WRI Land Accelerator playbook for mentorship, investment readiness and impact-measurement basics to standardize cohort support.	- MSRLM and MSSDS could deliver short courses on proposal design, unit economics and compliance for NGOs, FPCs and start-ups seeking blended finance .
Medium term	- Invest in capacity building for BMCs to finalize People's Biodiversity Registers (PBRs). - The MBMB must actively enforce and collect ABS levies from users of biological resources (research, pharma, cosmetics, etc.). - Monetized funds should be directed back to benefit claimers and for local conservation/ restoration activities	- Direct Maharashtra State Biodiversity Board (MSBB) and BMCs to enforce and route ABS collections per the Maharashtra Biological Diversity Rules, 2008 into the Local Biodiversity Fund and applicable state funds. The use of ABS revenues must be tied with the conservation priorities identified in either the state SAPCC or India's NBSAP.	- Strengthen leadership commitment by mandating regular review of ABS revenue performance and direct officials to integrate mone-tization targets into departmental action plans.	- Use the MSBB portal's BMC registry and notifications to publish ABS fee instructions, claim processes and lists of eligible benefit claimers. - Accelerate PBR comple-tion using the MSBB–WOTR "How-to" PBR manual and NBA guidance so BMCs can validate claims and resources.	- Roll out district-level trainings for BMCs on levy collection, ABS agreements and record-keeping using NBA/ MSBB training materials.

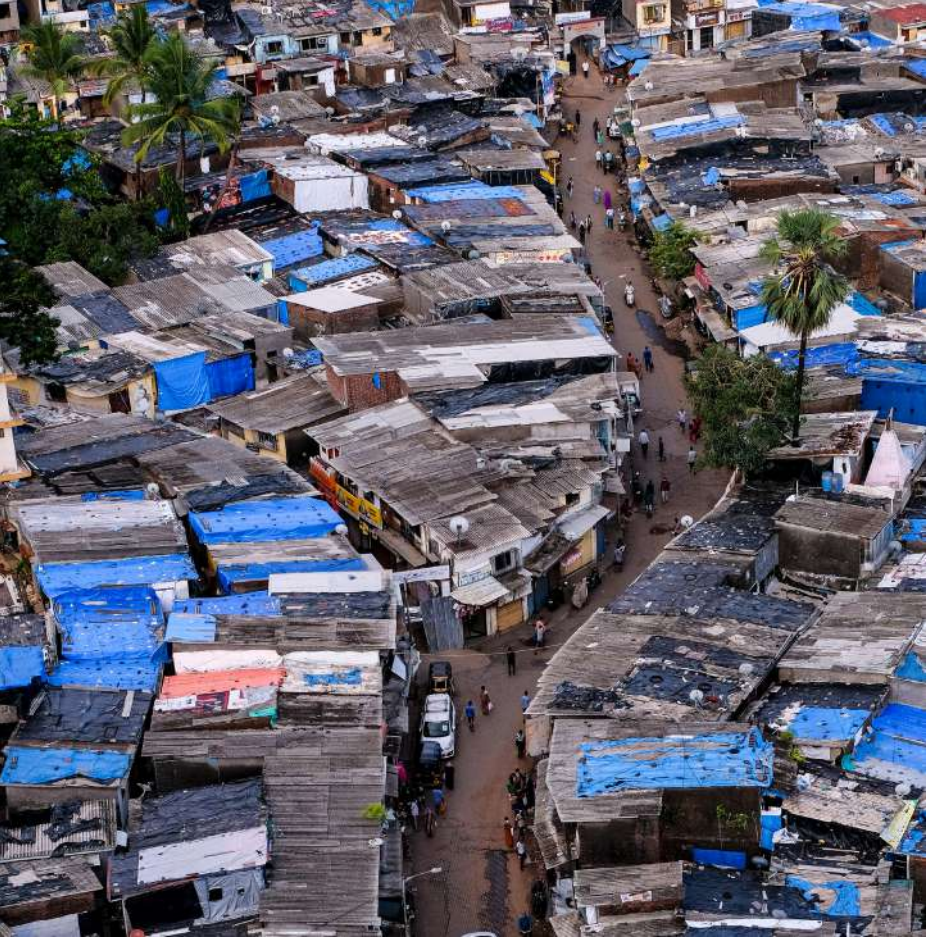
Sector: Cities and human settlements

Maharashtra's SAPCC highlights the increasing vulnerability of urban habitats to climate-induced hazards such as floods, droughts, cyclones, landslides and heatwaves. These risks are further compounded by rapid urbanization and population growth, which place additional strain on urban infrastructure and essential services. In response to these challenges, the CFAMS aims to enhance the financing of climate action in urban areas by aligning climate-resilient projects with broader developmental plans, strengthening project preparation capacities, facilitating access to capital markets for urban local bodies and promoting the integration of blue-green infrastructure to build adaptive, sustainable and climate-resilient cities.

While the proposed financing mechanisms are relevant across all urban contexts, cities with stronger municipal finance practices, such as GIS-enabled property tax assessment and collection, improved user charge recovery and prudent fiscal management, will be better positioned to channel resources toward climate-aligned investments. The 43 AMRUT tier I/II cities, with dedicated city climate action cells and ambitions to achieve net zero emissions by 2050, must assume a leadership role and work in close coordination with the state to mobilize and channel climate finance, while also guiding cities to strengthen their climate action and financing capacities. The following table lists the proposed financial strategy for cities and human settlements.

Table 10: Climate Finance Access and Mobilization Strategy for urban-aligned climate transformations

S. No.	Climate intervention	Alignment of climate benefits	Description	Financial mechanism and instruments	Case studies	Timeline
1	Accessing Capital Markets / Financial Intermediation (Tier I/Tier II cities)	Cross-cutting	To support Urban Local Bodies (ULBs) in navigating the complexity of bonds and capital markets, ensuring a mechanism "delivers a facility that hosts money."	Pooled Municipal Bonds (Green/Climate Bonds); State-Level Fund/Facility that can aggregate the project level borrowing needs and credit profiles of multiple Tier I and Tier II ULBs, reduce transaction and credit risk and provide a centralized, professionally managed platform that enables smaller municipalities to access capital markets for climate-resilient and green urban infrastructure.	Tamil Nadu Urban Development Fund (TNUDF) pooled municipal bond	Short term



The climate vulnerability of urban habitats is on the rise. Rapid urbanization and population growth further aggravate the problem.

Operational strategy	Gears of Implementation			
	Policy frameworks	Sustained leadership	Information and tools	Capacity building
- Conduct state-level consultations on developing pathways to improve Own Source Revenue for municipal corporations and on the potential of ULBs in leveraging pooled finance for climate action in the state - Create a financial intermediary: Establish a state-level entity to raise capital and on-lend to cities, acting as a gateway to financial instruments beyond municipal budgets and schemes. This can be done either through the Climate Finance Facilitation Desk or can be hosted by the Department of Urban Development	- Align ULB borrowing limits, revenue-reform milestones based on recommendations provided by Reserve Bank of India on municipal finances as well as recommendations provided by the 15th Finance Commission of India and climate-tagging requirements with existing state grant and national scheme guidelines	- MUINFRA could explore the option of inviting larger ULBs such as that of Mumbai, Navi Mumbai, Thane, Pune, Nagpur, etc. to join the pooled entity which will allow the smaller ULBs to assume less risk	- Maintain a live pooled-finance pipeline dashboard that aggregates city projects by theme and quantifies expected climate benefits to guide issuance timing. This could be hosted under the Climate Finance Mobilization Unit proposed under the institutional and governance reforms highlighted in the next section. - Adapt current reporting templates to standardize project screening, climate tagging, MRV and readiness checklists for pooled-bond candidates	- Provide training to commissioners, finance officers and engineers on pooled-bond preparation, escrow cash-flow management and investor disclosures via existing training institutes

S. No.	Climate intervention	Alignment of climate benefits	Description	Financial mechanism and instruments	Case studies	Timeline
2	High-quality project preparation (Tier I/ II cities)	Cross-cutting	To rapidly convert city challenges into high-quality, high-impact projects (not necessarily immediately bankable) by addressing the cities' lack of time and resources	Project Preparation Facility (PPF) (Modeled on WRI-NIUA/ MoEFCC facilities) for providing standardized, bankable project preparation that converts climate priorities into investment-ready proposals that can successfully attract public, private and blended finance.	Project Development and Monitoring Facility (PDMF) in Philippines	Short-to-medium term
3	Integrated Mobility and Green Corridors (Tier I/II/ III cities)	Cross-cutting	To reduce GHG emissions from transport while simultaneously utilizing transport corridors (Metro/ BRT) to deploy Nature-based Solutions (NbS) for climate adaptation (cooling, flood control)	Land Value Capture (LVC); Green Bonds (earmarked for transport and NbS) that can capture transit-induced land value gains and channeling them into long-term finance for low-carbon mobility and Nature-based Solutions, delivering simultaneous transport decarbonization and urban climate resilience.	Medellín Green Corridors Project in Colombia	Short-to-medium term

Operational strategy	Gears of Implementation			
	Policy frameworks	Sustained leadership	Information and tools	Capacity building
- ULBs must propose a nodal team to coordinate with the Climate Finance Mobilization Unit to jointly refine project concepts and secure technical assistance for proposal preparation, financial structuring and compliance with funder requirements - Centralize Expertise (Ecosystem Approach): Create an external "Ecosystem of Expertise" (non-profits, consultants) at the state level to proactively support the state's intent and delivery on these commitments. This ecosystem of expertise should be constituted at a state level so that it can be plugged in, rather than building individual city-level capacity long-term.	- Embed a Climate Finance Facilitation Desk (explained in detail below) within existing Government Resolutions, aligned with SAPCC, AMRUT and Smart Cities, with standard clauses enabling technical assistance drawdown	- Set up clear accountability mechanisms, measurable milestones and maintain consistent interdepartmental coordination through regular engagement	- Deploy a single online intake form and screening rubric on the state portal interoperable with toolkits such as those developed by NIUA, to triage city proposals rapidly	- Create an empaneled roster of vetted experts with on-call terms of reference so ULBs can access the ecosystem through the PPF without new hiring
- Begin by conducting a focused land value capture assessment around proposed and existing transport corridors to map zones of highest appreciation potential. - Undertake detailed spatial analysis, property valuation studies and development intensity projections to quantify revenue opportunities. Based on this, identify appropriate instruments such as betterment levies, development charges, TOD premiums, or land pooling mechanisms, supported by enabling policy and regulatory provisions. - Monetize Urban Development: Leverage the increase in land value created by new transport infrastructure to finance green spaces and related urban projects	- Based on the Land-value capture guidelines published by Niti Aayog, integrate LVC tools such as betterment levy, premium FSI and impact fees into existing development plans, DCRs and TOD policies, with a fixed share dedicated for NbS	- Encourage existing Metro/BRT project management units to manage an annual LVC and NbS allocation plan and publish use-of-proceeds statements	- Create a GIS corridor atlas by combining current cadastral, land price, drainage, heat and flood-risk layers to prioritize LVC zones and NbS sites	- Provide training through state training institutes for planners, engineers and finance officers on LVC modeling, NbS design and green bond disclosure

S. No.	Climate intervention	Alignment of climate benefits	Description	Financial mechanism and instruments	Case studies	Timeline
4	Blue-Green Infrastructure for urban mobility (Tier I/II cities)	Cross-cutting	To protect critical public infrastructure, such as transport lines, healthcare infrastructure, power generation and supply, etc. from increasing flood risk by restoring wetlands, mangroves and water channels which act as urban water sponges.	Public-Private Partnerships (PPP) enabling risk-sharing and lifecycle financing, bringing private capital and technical expertise to design, implement and maintain blue-green infrastructure integrated with urban mobility systems. Devolution of City Budget (following Mumbai's climate budget trend) allowing targeted, faster investments, enabling cities to fund locally relevant flood-resilience solutions that protect critical transport and public infrastructure.	Bishan–Ang Mo Kio Park naturalization project in Singapore	Short-to-medium term
5	Basic Needs-Aligned Climate Projects (Tier II/III Cities)	Cross-cutting	All ULBs must identify immediate urban challenges within their existing list of functions defined under Article 243W of the Constitution (e.g., water, drainage) that also have the potential to achieve climate-related benefits (e.g., flood-resilient drainage). Once such activities are identified, consider existing incentives offered by state and central schemes such as AMRUT to leverage pooled financing or municipal bonds.	Once such activities are identified, consider existing incentives offered by state and central schemes such as AMRUT to leverage pooled financing or municipal bonds.	Bishan–Ang Mo Kio Park naturalization project in Singapore	Medium-to-long term

Operational strategy	Gears of Implementation			
	Policy frameworks	Sustained leadership	Information and tools	Capacity building
- Secure Private Sector Involvement: Engage non-profits and for-profits for the development and maintenance of public green infrastructure.	- Issue model PPP clauses for nature-based flood mitigation and permit performance-linked O&M payments based on the guidelines developed by Department of Economic Affairs, India and PPP toolkits developed by MUIDCL - Add wetland, mangrove and water-channel restoration as PPP-eligible assets in city development plans and municipal procurement schedules tied to climate budget lines	- Encourage municipal corporations to designate accountable officers and include blue-green infrastructure budgets in annual estimates and climate budget annexures	- Integrate blue-green infrastructure layers into existing municipal GIS and require their use in DPR templates and project appraisals	- Support development of a playbook or update PPP toolkits developed by MUIDCL that provide guidance on procurement, performance metrics, maintenance protocols, etc. to municipal engineers
- Undertake a structured screening of all core programs against key climate risks and resilience needs and mandate climate-responsive objectives in every new or revised initiative - Establish clear guidelines within existing institutional units for integrating adaptation considerations into planning, budgeting and implementation	- Encourage formulation of scheme-aligned DPR and city development plans to require climate co-benefit tagging and consider hazard-specific adaptation-related key performance indicators	- Institutionalize sustained leadership by establishing dedicated urban resilience task forces in Tier II and Tier III cities to align basic service improvements with long-term climate resilience and financing objectives. These could also be a part of city climate action cells currently being developed under the guidance of SCAC.	- Develop a framework for identification of climate co-benefits or utilize the World Bank's methodology to identify adaptation, resilience and mitigation co-benefits for existing urban development projects. The former will integrate socio-economic considerations but will require time for development; while the other will provide general insights but can be integrated sooner.	- Enhance municipal capacity through targeted training and technical assistance programs focused on the design, aggregation and management of projects suitable for pooled financing mechanisms.

Sector: Disaster risk and coastal management

Maharashtra has experienced an exponential increase in risks due to extreme weather events. According to the climate risk analysis conducted by the state as part of its updated SAPCC, 35% of talukas in Maharashtra have a high risk of extreme droughts. Additionally, while the overall risk of talukas remains relatively low for floods and cyclones, the state has witnessed abnormal flooding events in recent decades. The CFAMS aims to channel finance towards strengthening disaster risk management to improve the resilience of people, ecosystems, the economy and infrastructure, thereby reducing the impact of extreme climate events on other sectors and geographies. The CFAMS, listed in the table below, highlights initiatives such as improved coastal management, extension of last-mile connectivity of Early Warning Systems, investments towards ecosystem-based adaptation approaches and technological advancements.

Table 11: Climate Finance Access and Mobilization Strategy for disaster and coastal management

S. No.	Climate intervention	Alignment of climate benefits	Description	Financial mechanism and instruments	Case studies	Timeline
1	Ensuring last-mile connectivity of Early Warning Systems (EWS)	Adaptation	To ensure that existing early warning systems across multiple hazards and sectors (including agriculture) effectively reach and are actionable for sparsely settled local communities	Philanthropic support to fund non-revenue, last-mile gaps to aid disaster management.	Flood Forecasting and Early Warning System in Bangladesh, supported by philanthropic grants, technical support from Google and implemented in partnership with NGOs and government agencies, which delivers last-mile flood warnings to vulnerable and remote communities.	Short term
2	Improved flood hazard mitigation through a Real- Time Flood Decision Support System (RTDSS)	Adaptation	To strengthen flood forecasting and management in Maharashtra through the integration of multi-source satellite and hydrometeorological data, field surveys and advanced hydraulic modeling.	Flood Risk Innovation and Real-Time Decision Support Fund (FRI-RTDS Fund) designed to benefit from avoided flood losses, thereby reducing disaster-related fiscal outlays.	Weather and Climate Information Services (WISER) Innovation Fund, financed by UK FCDO, which supports technology-driven early warning systems and climate risk decision-support tools in vulnerable countries.	Short-to-medium term

Maharashtra's CFAMS highlights initiatives including integrated coastal management, strengthened last-mile connectivity of early warning systems and technological innovation.

Operational strategy	Gears of Implementation			
	Policy frameworks	Sustained leadership	Information and tools	Capacity building
- Identify and support NGOs to design and implement community-embedded EWS projects focused on last-mile dissemination, localization of alerts and community response protocols, with philanthropic grants covering capital and operational costs. - Use philanthropic grant support to finance digital, communication and outreach infrastructure (mobile alerts, community intermediaries, local volunteers) while requiring measurable service delivery and reach outcomes.	- Based on IFRC's community-based EWS principles and the state disaster management plans, support philanthropies in identifying relevant NGOs	- Mandate district authorities, under the State Disaster Management Authority, to systematically identify sparsely settled and hard-to-reach communities using census data, village habitation records and disaster vulnerability maps and to designate these areas as priority last-mile EWS zones.	- Develop and standardize simple, interoperable tools (mobile dashboards, alert-tracking logs, community feedback registers) in Marathi and other local languages that allow NGOs and district authorities to monitor early warning reach, receipt and usability across dispersed settlements	- Strengthen community-level capacity through training of local volunteers, extension workers and trusted intermediaries to interpret early warning messages and ensure timely, actionable communication
- Establish a state-managed Flood Risk Innovation and Technological Fund capitalized through bilateral donor contributions and philanthropic grants, with defined windows for technology innovation, system integration and pilot deployment aligned with existing flood management priorities. - Allocate a portion of the fund to competitively identify and support innovative forecasting, modeling and decision-support technologies that can be technically integrated with existing institutional systems and data streams of agencies such as IMD - Use the remaining fund resources to support system integration, capacity building and sustained operation of the Real-Time Flood Decision Support System within existing state institutions, ensuring institutional ownership and long-term usability.	- Align existing water resources and dam operation policies with disaster management protocols to enable the use of innovation-funded decision-support tools for coordinated reservoir operations and real-time flood risk management	- Ensure collaboration between existing institutions such as IMD and SDMA for technical validation, data management and operational decision-making to ensure integration of identified new technologies into current flood forecasting and response systems.	- Upon identification of innovative technologies, establish a web-GIS–based decision support platform with real-time data ingestion, hydraulic model operation, scenario management and reservoir release optimization tools, to allow use by state agencies for flood forecasting and coordinated dam operations	- Establish ongoing technical support and refresher training mechanisms, financed through the innovation fund, to ensure state and district officials can routinely operate the GIS tools, update models and apply outputs for coordinated flood risk management decisions

S. No.	Climate intervention	Alignment of climate benefits	Description	Financial mechanism and instruments	Case studies	Timeline
3	Integrated Coastal Management	Adaptation	To implement Coastal Zone Management Plans (CZMPs), conservation of coastal and marine resources, identification and management of Ecologically Sensitive Areas (ESAs), coastal hazard preparedness and marine litter management	Blue Bonds for dedicated, low-cost capital from investors to finance Coastal Zone Management Plans, enabling implementation of conservation, hazard preparedness, while linking returns to measurable environmental outcomes.	Seychelles Blue Bond	Medium-to-long term

Maharashtra's climate budget is heavily tilted toward adaptation, a necessary defense given the state's climate vulnerability.

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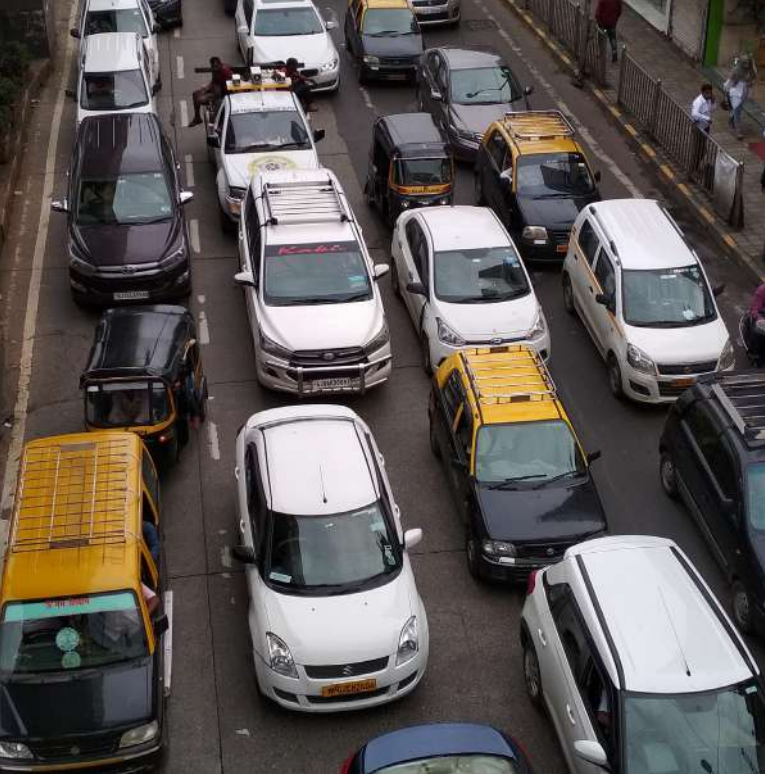
Operational strategy	Gears of Implementation			
	Policy frameworks	Sustained leadership	Information and tools	Capacity building
- Conduct a comprehensive coastal climate risk and vulnerability assessment to identify high-risk coastal hotspots and priority intervention areas. - Identify and create a pipeline of coastal and marine projects that demonstrably reduce climate and environmental risks while generating bankable economic and co-benefits. - Develop a Blue Bond use-of-proceeds framework with clearly defined, ring-fenced expenditure windows for CZMP implementation, ESA management, coastal hazard preparedness and marine litter management. - Coordinate with the Climate Finance Facilitation Desk to structure, issue, manage and report on the Blue Bond in line with recognized blue and green bond principles developed by Climate Bonds Initiative (CBI).	- Based on the Coastal Regulation Zone (CRZ) enforcement mechanisms and Maharashtra Maritime Policy 2023, develop a state-level Blue Finance and Bond Issuance framework, specifying eligible coastal expenditures, institutional responsibilities and reporting requirements without creating parallel structures.	- Ensure a formal inter-departmental coordination mechanism linking Maharashtra Coastal Zone Management Authority, the State Disaster Management Authority, the Maritime Board and Urban Local Bodies to ensure unified project selection, implementation oversight and monitoring for Blue Bond–financed coastal and marine interventions.	- The state should ensure that existing coastal, marine and disaster-risk datasets (CZMP layers, CRZ maps, ESA boundaries, shoreline change, hazard and loss data) are updated and used to inform project identification, prioritization and investment appraisal for Blue Bond financing	- Training on coastal risk assessment, project bankability and Blue Bond use-of-proceeds management, etc. could be provided, building on existing climate finance and CRZ implementation competencies.

Sector: Transport

The transport sector contributes approximately 19% of Maharashtra's total energy-related emissions (GHG Platform India n.d.), with major sources including road, rail, aviation and shipping activities. The state also has the highest number of registered motor vehicles in India, accounting for 35.39 million vehicles, or about 12% of the national total (Ministry of Road Transport & Highways: Transport Research Wing 2019). Recognizing the significant role of the transport sector in achieving its emission reduction goals, Maharashtra has initiated a transition towards cleaner fuels such as electricity and hydrogen and has demonstrated steady progress in this direction. Building on these efforts, the CFAMS aims to accelerate the decarbonization of the transport sector through a targeted financial strategy that prioritizes electric vehicle adoption, electrification of heavy-duty transport, the promotion of technological innovation and the integration of financial and operational mechanisms to enable large-scale adoption and long-term sustainability. The following table lists the proposed financial strategy for the transport sector.

Table 12: Climate Finance Access and Mobilization Strategy for transport (with a focus on transition to EV and freight electrification)

S. No.	Climate intervention	Alignment of climate benefits	Description	Financial mechanism and instruments	Case studies	Timeline
1	Financial and operational integration	Mitigation	Ensuring CPOs, discoms and insurance sectors are aligned with the pace of EV adoption.	• Discom funding (from State/MDBs) to strengthen financial capacity.	CalCAP Zero-emission Heavy-duty program	Short term
2	Technology and business model innovation	Mitigation	Enabling technology upgrades and pilot projects for emerging EV and related logistics models.	• Technology Upgradation Fund with initial government-infused capital of ₹50 crore (leveraging the R&D fund as outlined in the EV policy) • OEM-bankrolled capacity building grants; venture and angel funding (for long-term innovation); equipment financing.	UK's Advanced Propulsion Centre with a dedicated Automotive Transformation Fund; EU's Alternative Fuel Infrastructure Fund to decarbonize transport.	Short-to-medium term
3	Municipal & inter-city bus fleet electrification	Mitigation	Accelerating the transition of public transport fleets.	• DPR Preparation Grants (State/Multilateral funding), PM E-Bus Sewa and other Central/State schemes.	European Local Energy Assistance (ELENA); California's Metropolitan Transportation Commission Planning Technical Assistance	Short-to-medium term



Maharashtra has the highest number of registered motor vehicles in India, accounting for 35.39 million vehicles, or about 12% of the national total.

Operational strategy	Gears of Implementation			
	Policy frameworks	Sustained leadership	Information and tools	Capacity building
- Design and provide low-interest loans for MSME and HDV transition with Bank of Maharashtra. - Engage IRDAI and insurance companies to explore insurance product innovation for EVs. - Invest in capacity building to strengthen an understanding of EV uptake, enabling DISCOMs to accommodate future load and align their plans with CPOs	- Incorporate insurance product innovation for EVs into existing MSME policies of the state to facilitate risk coverage and enhance consumer confidence.	- Encourage periodic consultations with regulators and banks such as Bank of Maharashtra to align financial instruments with EV adoption targets and for CPOs (e.g., bringing charging infra to road boundaries).	- Create an analytical dashboard to track loan disbursement trends, insurance uptake and grid readiness for EV adoption	- Conduct joint workshops for CPOs, Discoms and financial institutions to strengthen understanding of EV demand forecasting and infrastructure financing
- Earmark funds for technology upgradation within the centralized EVs funds. - Select members of the steering committee of the EV Taskforce to oversee pilot implementation. - Create a platform to scale innovation, complemented by business-model innovation, involving accelerators/incubators such as those recognized by MAITRI and joint accelerators such as those by Villgro and CEEW.	- Embed the Technology Upgradation Fund within the Maharashtra EV Policy (2025) and align it with the state's R&D Mission to ensure consistent capital inflow.	- Establish a Technology Innovation Steering Committee under the Department of Industries, with the support of Department of Environment to oversee fund allocation and pilot implementation.	- Create a digital repository of EV technology pilots under MIDC and develop standardized evaluation templates to assess pilot scalability and track performance.	- Facilitate accelerator-led workshops for MSMEs on accessing ventures, angels and equipment financing for technology adoption and innovation scaling.
- Integrate DPR preparation grants for electric bus projects into the Maharashtra EV Policy (2025) to streamline funding access under state and central schemes. - Partner with transport undertakings and technical institutes to train officials on DPR development. - Fund the development of Detailed Project Reports (DPRs) for electric bus proposals (e.g., in Mumbai) and for identifying efficient inter-city/state routes for charging infrastructure development.	- Integrate DPR preparation grants for electric bus projects into the Maharashtra EV Policy (2025) to streamline funding access under state and central schemes. - Align inter-city and inter-state electric bus route planning with the CMP of cities and SAPCC to ensure coordinated infrastructure rollout.	- Institutionalize annual progress reviews on e-bus deployment to ensure consistent oversight.	- Encourage the use GIS-based tools to map optimal charging and depot sites along major inter-city corridors.	- Partner with transport undertakings and technical institutes to train officials on DPR development, demand modeling and cost–benefit analysis for e-bus projects.

S. No.	Climate intervention	Alignment of climate benefits	Description	Financial mechanism and instruments	Case studies	Timeline
4	MSME EV Transition	Mitigation	Supporting the shift of auto MSMEs from Internal Combustion Engine (ICE) to EV manufacturing, particularly in Pune and Aurangabad clusters.	• State EV Transition Fund (State EV Policy 2025) /window (blended public-philanthropic capital). • Affordable interest-rate loans from Bank of Maharashtra and other banks to support ICE to EV transitions. • Credit guarantees (via philanthropies/catalytic capital) to improve Credit Guarantee Fund Trust for Micro and Small Enterprises.	EU's Alternative Fuel Infrastructure Fund to decarbonize transport.	Medium-to-long term
5	Heavy Duty Vehicle (HDV) electrification	Mitigation	Developing charging infrastructure for freight movement (ports and expressways) and electrifying last-mile logistics for industrial clusters.	• Viability Gap Funding (VGF) for Charging Point Operators (CPOs) • Private sector capital mobilized through land-use concessions, • Retail financing (for smaller trucks) with credit enhancement. • State-level payment security mechanisms for electric bus deployments	Germany's 1.6bn euro E-Truck Charging Hub; EU's 111mn euro funding to Milence for deploying charging infrastructure hubs.	Medium-to-long term

Innovative financial instruments can unlock private and blended capital investment for the renewable electrification of public transportation, accelerating a cleaner, more efficient and inclusive transition to sustainable mobility.

Operational strategy	Gears of Implementation			
	Policy frameworks	Sustained leadership	Information and tools	Capacity building
- Mobilize the announced R&D fund under the new EV Policy and budgetary allocations into a centralized fund. - Establish a cross-departmental EV Transition Taskforce to lead the implementation of the fund. - Develop an EV-readiness diagnostic toolkit for MSMEs. - Leverage the centralized fund to attract catalytic capital and to support MSME retooling and reskilling, in partnership with universities	- Integrate EV retooling and reskilling incentives within the existing Maharashtra Electric Vehicle Policy (2025) to streamline implementation - Embed EV supply-chain localization targets in District Industrial Centre (DIC) to align MSME development goals with the state's climate and industry policies	- Establish a cross-departmental EV Transition Taskforce to coordinate ongoing implementation of the transition fund.	- Develop an EV-readiness diagnostic toolkit for MSMEs under the Udyog Mitra platform, integrating existing data from DICs and industry associations.	- Partner with technical universities and industry associations to institutionalize on-site training programs for component redesign, battery assembly and supply chain adaptation.
- Conduct Viability Gap Studies to identify the top 10 financially viable heavy-duty corridors for charging stations. - Government could offer concessional land leasing rates and identify sites to de-risk private sector investment especially to install charging infrastructure. - Provide subsidies on toll tax for electric trucks to improve operational viability.	- Guidelines under the MIDC Land Allotment System could incorporate concessional land leasing for charging stations.	- Develop freight electrification targets and toll waiver mechanisms in alignment with the support of State Climate Action Cell.	- Develop a centralized digital platform to map freight movement, EV adoption and charging infrastructure performance for real-time monitoring.	- Partner with logistics associations to train fleet operators and CPOs on financing mechanisms and EV maintenance practices.

Sector: Energy and industrial decarbonization

This sector is highly relevant from a mitigation perspective, as electricity generation accounted for the largest share (58%) of total energy-related emissions in 2018 (GHG Platform India n.d.). While the share of renewable energy has increased significantly in recent years, the state continues to rely on fossil fuels for its electricity needs. However, Maharashtra has implemented a range of policies and plans to scale up renewable energy sources. It is the first state in India to establish a green energy fund to support renewable energy transmission infrastructure. Hence, given the sector's central role in driving emissions reductions, the CFAMS proposes strategies to mobilize finance to advance Maharashtra's low-carbon industrial transformation by promoting clean energy deployment, enhancing industrial energy efficiency, scaling circular economy and green construction practices and accelerating the shift toward decentralized renewable energy systems. The following table lists the proposed financial strategy for the energy sector.

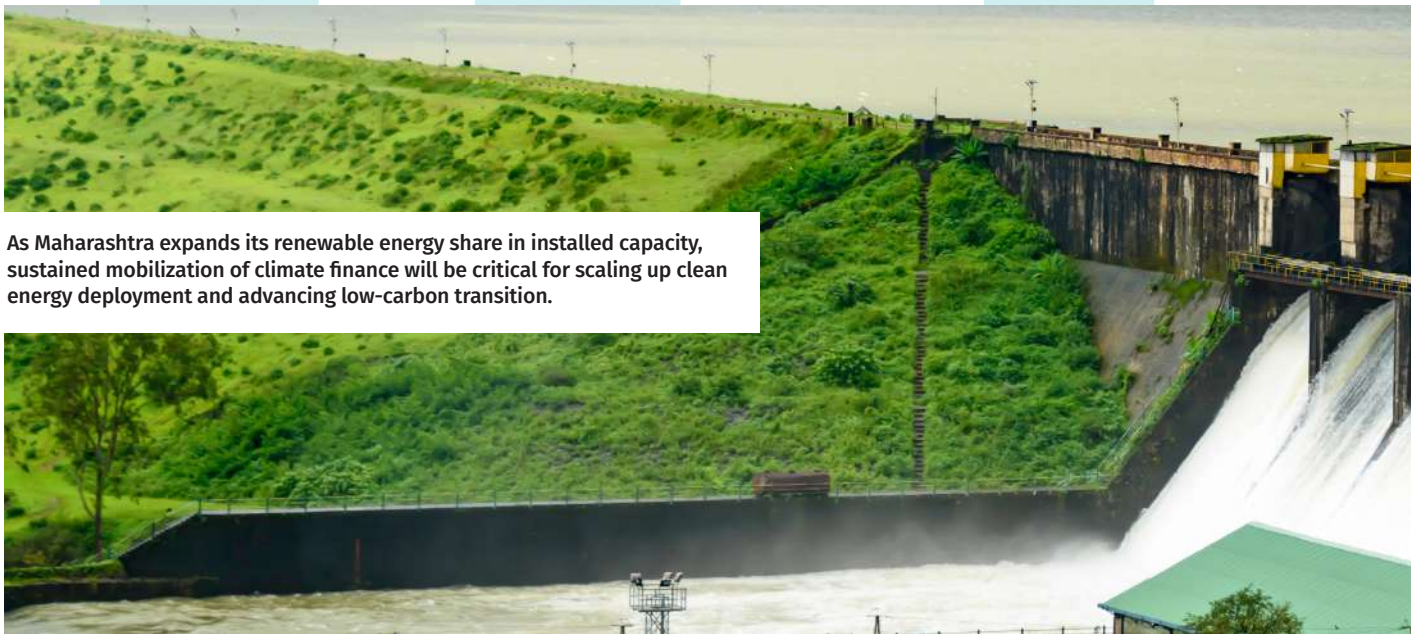
Table 13: Climate Finance Access and Mobilization Strategy for energy and industrial sector

S. No.	Climate intervention	Alignment of climate benefits	Description	Financial mechanism and instruments	Case studies	Timeline
1	De-risk Distributed Renewable Energy (DRE)	Cross-cutting	To provide ecosystem-level support for small-scale, often off-grid, DRE installations in rural and agriculture sectors such as PM-KUSUM.	• Concessional Loans • Capital subsidies • Subvention Support • Blended Finance	Nigeria and Ethiopia's national electrification projects	Short-to-medium term
2.	Develop Sectoral Transition Pathways	Mitigation	To create transition plans for highly concentrated, hard-to-abate industrial clusters to estimate CapEx and OpEx requirements. These decarbonization interventions include promoting energy efficiency, circular economy principles and switching to clean fuels in hard-to-abate sectors like steel, cement and petrochemicals.	• Green bonds and transition finance instruments; • Fiscal incentives (tax breaks/subsidies) • Dedicated Just Transition Fund • Partial risk-sharing facilities for de-risking new technologies	France's rev3 initiative to decarbonize the regional economy	Long term

Maharashtra is the first Indian state to establish a green energy fund to support renewable energy transmission infrastructure.

Operational strategy	Gears of Implementation			
	Policy frameworks	Sustained leadership	Information and tools	Capacity building
- Establish a state-level DRE Mission with a steering committee chaired by the Principal Secretary, Energy. - Identify and aggregate underfunded and new DRE projects with support from MEDA/MSEDCL. - After creating this portfolio of DRE projects, the Finance Department can lead the introduction of credit enhancement mechanisms, including: concessional loans; providing 30-40% capital subsidies and/or subvention support for DRE solution providers.	Facilitate and encourage aggregation of facilities to create a marketable portfolio of DRE projects, especially when the ticket sizes are small.	Establish a State-Level DRE Mission Cell (anchored in MEDA or SCAC) to provide long-term strategic direction and inter-departmental coordination.	Create digital tools like a DRE data and insights portal mapping viable geographies, demand clusters, credit profiles and techno-economic benchmarks, DRE registries and rating tools (for mini-grids, solar pumps, rooftop solar) that can be adopted by banks and DFIs.	Strengthen training and capacity at the rural/local-body level to reduce operation and management costs associated with DRE solutions
- Issue state-level green bonds and encourage municipal bonds for climate-aligned projects. - Institute a Just Transition Fund as devised in the state's Just Transition Policy, widening the scope from coal sectors to other hard-to-abate sectors such as cement and steel. - Develop sector-specific Green Industrial Policies for procurement and production.	Develop sector-specific Green Industrial Policies; Mandate material circularity measures.	Establish public-private partnerships and innovation clusters to facilitate technology transfer and scale-up. Establish a Climate Finance Cell to coordinate bond issues and manage investor relations.	Promote the use of carbon capture utilization and storage (CCUS) and biochar technologies where necessary.	Enhance technical skills in industries for energy auditing, CCUS operation and material efficiency.

S. No.	Climate intervention	Alignment of climate benefits	Description	Financial mechanism and instruments	Case studies	Timeline
3	Accelerate Development and Installation of Alternate Renewable Energy Sources such as Green Hydrogen and Energy Storage solutions (ESS)	Mitigation	To promote the industrial end-use of Green Hydrogen (GH2) as a feedstock and fuel replacement for natural gas/coal in hard-to-abate industries (e.g., fertilizer, steel, chemical manufacturing); Financing the integration of ESS with solar and wind projects, while narrowing the cost gap between green and fossil-based hydrogen, enhance investor confidence and accelerate large-scale adoption.	Generation-based incentives reward actual production of green hydrogen or electricity from renewable-linked ESS, lowering operational costs and improving project bankability for industrial adoption. Public-private offtake to reduce revenue uncertainty, strengthen investor confidence and accelerate deployment agreements of GH2 and ESS in hard-to-abate sectors. Capital Subsidies to lower upfront technology costs. Pricing as favorable pricing signals or carbon-linked premiums can enhance the economic competitiveness of green hydrogen and energy storage, incentivizing industrial users to switch from fossil-based inputs.	Odisha's single-window clearance committee for green hydrogen projects	Medium-to-long-term
4	Encourage Circular Economy and Green Construction	Dual-Benefit (M&A)	Focus on the construction and materials industry by promoting the use of sustainable/low-carbon materials (e.g., fly-ash bricks, green cement) and adopting a circular economy approach to reduce waste.	R&D fund to finance innovation in sustainable construction materials and circular design, accelerating low-carbon, resource-efficient solutions that reduce emissions and construction waste. Tax Rebates and Procurement Mandates to create financial and market incentives for developers and manufacturers to adopt green materials and circular practices.	Circular Procurement Plan in Netherlands; Circular bio-based Europe partnership	Medium-term



As Maharashtra expands its renewable energy share in installed capacity, sustained mobilization of climate finance will be critical for scaling up clean energy deployment and advancing low-carbon transition.

Operational strategy	Gears of Implementation			
	Policy frameworks	Sustained leadership	Information and tools	Capacity building
- Create a dedicated, time-bound clearance process (e.g., under MEDA) for green hydrogen and alternative energy projects. - Introduce generation-based financial incentives for industrial GH2 to encourage procurement and deployment of related equipment in MIDC clusters. - Support the introduction of Public-Private Offtake Agreements (PPAs) for GH2 supply as a de-risking mechanism; Capital subsidies to reduce the upfront cost of energy storage solutions such as BESS.	Introduce a mechanism for Green Premium payments. Establish a Single-Window Clearance Cell: Create a dedicated, time-bound clearance process (e.g., under MEDA) for green hydrogen and alternative energy projects, coordinating approvals from various state bodies (e.g., Fisheries, Coastal Zone Management Authority).	Industry Department and MIDC (Maharashtra Industrial Development Corporation) to lead cluster-specific adoption programs.	Set up a GH2 Monitoring and Verification System for industrial consumption and emissions reduction. Invest state funds to conduct and publish comprehensive geotechnical, geophysical modeling studies to identify locations for alternative RE installations.	Support technical training centers to certify workers in GH2 handling, storage, application within manufacturing plants and offshore wind installation and operation.
- Develop a comprehensive Circular Economy policy with procurement mandates for low-carbon materials in all public infrastructure projects; - Establish dedicated fund on Research & Development (R&D) and innovation (especially for new circular technologies), as well as tax incentives like a reduced VAT rate for repair services.	Implement a comprehensive Circular Economy Policy (e.g., for construction and demolition waste); Update building codes to favor low-carbon materials.	Urban Development Department and Maharashtra Pollution Control Board (MPCB).	Develop a digital platform to track material flows and waste-as-resource opportunities across industrial sectors.	

5.3 Institutional architecture and governance

The successful implementation of CFAMS relies heavily on a robust institutional architecture and sound governance systems. Given the cross-sectoral nature of climate action, effective coordination mechanisms are essential to ensure that financial planning, project design and implementation are aligned across departments and levels of government. The following section highlights the roles and responsibilities of state departments and proposes coordination mechanisms to operationalize the proposed climate finance strategies in Maharashtra.

a. Roles and Responsibilities of State Departments

State departments and implementing agencies are critical enablers for the accelerated mobilization of climate finance required by the state. Their role forms a core pillar of the institutional architecture, shaping governance frameworks that facilitate such access. Horizontally, effective collaboration through coordination mechanisms across departments and sectors is essential to align priorities and avoid duplication of efforts. By strengthening institutional capacities and creating a robust pipeline of bankable and investable projects through technical guidance and standardization, state departments enable the efficient and sustained deployment of capital. Given the executive status of state departments, their leadership enhances credibility and trust among investors and development partners. State departments have a pivotal role in driving long-term sustainable development by channeling finance towards innovative, resilient and climate-aligned projects.

Maharashtra should establish a Climate Finance Facilitation Desk as a central hub for planning and managing climate finance.

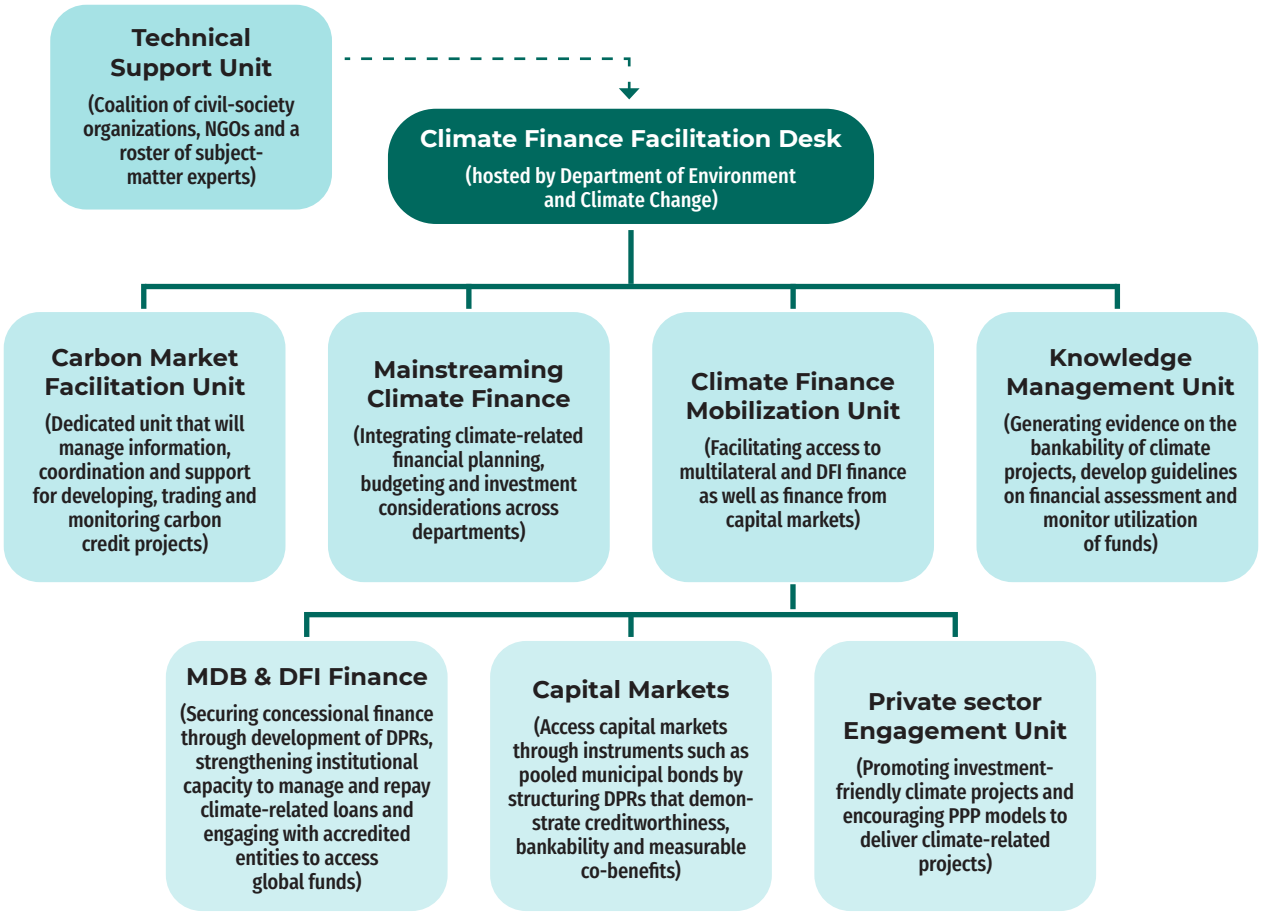
b. Coordination Mechanism

Given Maharashtra's ambitious climate goals and the dynamic global carbon market landscape, the state should establish a Climate Finance Facilitation Desk within the State Climate Action Cell. This desk, under the stewardship of the Environment and Climate Change Department of Maharashtra, would serve as a centralized hub to streamline climate finance strategies and facilitate access to carbon markets, ensuring cohesive action and efficient mobilization of resources to support the state's transition towards sustainability and resilience. The desk would also function as a central node for planning, accessing and managing climate finance across sectors and levels of governance.

The Department of Finance must also play a critical role by working closely with the Department of Environment to provide strategic guidance on budgetary allocations, financial structuring and alignment of climate projects with the state's fiscal and environmental priorities. By coordinating with the Department of Environment, it can facilitate inter-departmental collaboration, streamline the identification and appraisal of climate-resilient and low-carbon projects and ensure efficient mobilization of resources. Furthermore, the Department of Finance can help establish protocols for tracking expenditure, monitoring financial performance and advising on innovative financing instruments, thereby strengthening joint institutional capacity to implement Maharashtra's climate action agenda.

The proposed design, highlighted in Figure 4, will strengthen the state's institutional capacity to identify, prepare and finance climate-resilient and low-carbon projects by engaging with domestic and international sources of finance.

Figure 4: Proposed structure of the Climate Finance Facilitation Desk



The desk will host four units with the following roles and responsibilities:

1. Carbon Market Facilitation Unit

To support effective participation in national and global carbon markets, the unit will:

- Develop a comprehensive guide covering the national and international carbon market landscape, key concepts, eligibility principles, project types and Standard Operating Procedures (SOPs) for developing carbon credit projects.
- Establish an online resource hub with methodologies, modalities, procedures and case studies.
- Set up a centralized system to manage state-led carbon credit projects, standardize the RFP process across departments and ensure rigorous evaluation of proposals by the facilitation desk.
- Conduct workshops and capacity-building programs for key stakeholders, including government officials across departments, industries and Farmer Producer Organizations (FPOs) to enhance awareness and preparedness for accessing carbon market finance.
- Partner with research institutions and experts for technical guidance and knowledge sharing.
- Engage with global organizations and national agencies to stay updated on best practices and policy developments and disseminate these updates through the online resource hub.

2. Mainstreaming Climate Finance Unit

To ensure integration of climate finance across all departments and sectors within the state, this unit will:

- Embed climate-related financial planning, budgeting and investment considerations into the policies and operations of all state departments.

- Institutionalize climate-responsive budgeting and ensure that departmental programs and capital investments are aligned with the state's climate priorities.

- Facilitate cross-departmental coordination to identify adaptation and mitigation opportunities within existing schemes, promote the inclusion of climate expenditure codes in budgetary processes and support the integration of climate risk assessments into project appraisals.

3. Climate Finance Mobilization Unit

The unit will focus on enabling the state and local governments to tap into multiple sources of climate finance. It will:

- Develop technically sound and bankable DPRs aligned with global climate finance criteria to access MDB and DFI finance, build institutional capacity for loan management and repayment and engage with accredited entities to access funds such as the Green Climate Fund (GCF), Global Environment Facility (GEF), Adaptation Fund (AF), etc.

- Collaborate with entities such as MUIDCL and support municipal corporations in structuring DPRs that demonstrate creditworthiness, financial viability and measurable climate co-benefits, thereby enabling them to access domestic capital markets and leverage instruments such as pooled municipal bonds.

- Facilitate collaboration with private sector actors through PPPs, blended finance models and co-financing arrangements with the aim to attract private capital into climate projects by promoting investment-ready opportunities and support the development of regulatory and risk-sharing mechanisms that enhance private sector participation.

4. Knowledge Management Unit

This unit will be responsible for producing credible data and insights that demonstrate the bankability and impact potential of climate projects. It will conduct financial and performance assessments to generate evidence that supports investment decisions and policy refinement. The unit will also develop guidelines on financial assessment, project formulation and monitoring of fund utilization to ensure transparency, accountability and efficiency in climate finance delivery. In coordination with the Mainstreaming Climate Finance Unit, it will jointly design and deliver capacity-building and training programs to enhance the technical, financial and institutional competencies of state departments and local bodies in integrating and managing climate finance effectively.

In addition to the main units, a Technical Support Unit will be established as an advisory body consisting of civil society organizations, NGOs and a roster of subject-matter experts that will provide analytical, advisory and implementation support to all functional units within the facility.

The Climate Finance Facilitation Desk will act as a comprehensive coordination mechanism to translate Maharashtra's climate finance strategy into actionable and bankable investments. Through its integrated structure and multi-actor approach, the desk will strengthen the state's institutional ecosystem for accessing, mobilizing and effectively utilizing climate finance at scale.

The proposed Climate Finance Facilitation Desk will bring banks, financial regulators and investors together to strengthen coordination and scale up climate finance across Maharashtra. GANESH DHAMODKAR/ WIKIMEDIA COMMONS

6. CONCLUSION

Maharashtra has taken crucial first steps towards climate action and sustainable development both through the revised SAPCC and the Viksit Maharashtra 2047 vision document. The SAPCC identifies a climate budget of ₹3 lakh crore to finance its outlined climate ambitions. However, a granular climate budget tagging exercise highlights gaps when assessed against sectoral requirements for 2030. It is crucial that a climate-lens be mainstreamed into the budgeting framework for accurate and transparent assessment of climate finance for Maharashtra. The data also reveals that the state budget is heavily tilted toward adaptation, a necessary defense given Maharashtra's vulnerability. This also highlights the increasingly important role of the private sector to meet the State's mitigation requirements.

As climate risks intensify across cities, coasts, agriculture, energy and water systems, the next phase must focus on consolidation. This requires aligning policy and governance systematically, strengthening locally led, inclusive climate action, developing robust and bankable project pipelines and mobilizing diverse sources of Climate Finance at scale. Together, these form a four-pronged approach that can serve as four strong pillars of support for Maharashtra's climate-resilient growth pathway.

Firstly, under the policy and governance pillar, while the SAPCC includes climate risk assessment, this must be periodically reviewed and integrated into budgetary and fiscal decision-making to inform medium term expenditure frameworks and annual budget allocations. At the same time, banking and financial institutions operating in the state must integrate climate priorities into their mandate, aligning with RBI's draft climate risk disclosures requirements. As financial markets deepen, clear and predictable policy frameworks through regulations, taxes and market mechanisms, send strong signals to the private sector enabling a sustained

flow of capital. Climate budget tagging plays a crucial role and should be institutionalized as an annual exercise across state departments to improve transparency, strengthen allocations, paving the way for dedicated climate budgets for improved climate action.

Second, mobilizing finance at scale requires private finance to complement state and municipal budgets. Public finance must increasingly play a catalytic role. National DFI's like NABARD, SIDBI, PFC, IREDA amongst others along with investments from Multilateral and bilateral agencies will be central to this effort. Effective mobilization will need strong coordination across finance, environment and other line departments within the state, as well as close engagement with the Department of Economic Affairs, Ministry of Finance. While India is one of the leading beneficiaries of Green Climate Fund (GCF) resources, vast potential remains for private sector access to funding from agencies like GCF through accredited entities like NABARD and SIDBI. Furthermore, India's domestic carbon markets, statutory taxes, green cess and levies will pave the way for new revenue streams as revenue from fossil fuel sales decline over time. Innovative instruments aligned with international markets like blue bonds, access and benefit sharing; DPR grants must be leveraged beyond state budgets to address both climate and development goals. Emerging instruments such as carbon markets, climate-linked taxes and innovative blended finance structures, as reflected in the sectoral strategies, can further expand the pool of available capital.

Maharashtra should convert city and district climate plans into investable projects supported by fund-utilization mechanisms.

The third pillar which speaks to capacity building and strengthening project bankability is extremely crucial to meet the supply and demand gap for Climate Finance. Private sector requires well structured, robust projects for financing and in that regard, it is important that climate projects are well developed to meet private sector eligibility requirements for lines of credit. Recent Union budget 2026-27 incentives, including support of up to ₹100 crore for single bond issues of ₹1,000 crore and continued incentives under the AMRUT scheme, create new opportunities for districts and ULBs to tap into the debt market for accessing finance. However, realizing this potential will require targeted capacity building in project structuring and compliance. Inadequate data availability and limited risk visibility continue to impede investment potential. In this context, Maharashtra's State Data Authority (SDA) will play a crucial role in aggregating and standardizing data and enabling forward-looking platforms like the Maharashtra Climate Finance Tracking Dashboard.

Finally, localizing and scaling community-led, inclusive climate action will determine impact on the ground. Maharashtra's efforts to develop city- and district-level climate action plans mark an important step forward. The next priority is to translate these plans into investable project pipelines backed by efficient fund-utilization mechanisms.

With this four-pronged approach in place, Maharashtra is well positioned to address core challenges outlined in Figure 3 (Categorization of challenges based on stakeholder consultations) like creating an enabling policy and regulatory environment, building robust and bankable project pipelines, expanding access to finance for adaptation and improving capacities for governments and financial institutions. By doing so, Maharashtra can emerge as a leading sub-national model for climate finance in India, translating ambition into sustained and inclusive climate action.

The CFAMS provides a structured pathway to translate these strategies into actionable investments. It seeks to strengthen institutional readiness, improve access to diverse

Maharashtra should come up with mechanisms that incentivize circular economy and green construction.

financing sources and align climate actions with the state's development priorities. Built on the principles of integration, inclusion, innovation and integrity and with outlined mainstreaming gears, the CFAMS provides a clear way forward for Maharashtra to strengthen its climate finance ecosystem.

The success of a financial instrument depends not just on the instrument but on favorable policy environment and operational processes that can support the deployment and scale of the innovative instruments. Mainstreaming gears as identified across the strategies in the form of policy frameworks, sustained persistent leadership, coordination mechanisms, information & tools and supportive financial processes aim to provide departments with a detailed step by step process to operationalize the financial strategies with the aim of improving implementation and success factors for these interventions.

The strategy reinforces closer coordination among departments, improved technical and financial capacities and stronger partnerships with multilateral, domestic and private financiers for a climate aligned financial ecosystem across Maharashtra. Going forward, the CFAMS aims to guide the state in mobilizing and deploying climate finance more effectively, turning its climate priorities into tangible and lasting outcomes, converting ambition into investable action and lasting, statewide climate aligned transformation.

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ACRONYMS

ABS	Access and Benefit Sharing
ADB	Asian Development Bank
AF	Adaptation Fund
AIIB	Asian Infrastructure Investment Bank
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
BESS	Battery Energy Storage System
BMC	Biodiversity Management Committee
CCUS	Carbon Capture Utilization and Storage
CFAMS	Climate Finance Access and Mobilization Strategy
CGTMSE	Credit Guarantee Fund Trust for Micro and Small Enterprises
CMP	Comprehensive Mobility Plan
CPO	Charging Point Operator
CSO	Civil Society Organizations
CSR	Corporate Social Responsibility
DCR	Development Control Regulations
DFI	Domestic Financial Institution
DIC	District Industrial Centre
DPR	Detailed Project Report
DRE	Distributed Renewable Energy
EAP	Externally Aided Projects
ESS	Energy Storage Solution
FPC	Farmer Producer Company
GCF	Green Climate Fund
GEF	Global Environmental Facility
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIS	Geographic Information System
GSDP	Gross State Domestic Product
HDV	Heavy-Duty Vehicle
IBRD	International Bank for Reconstruction and Development
ICAR	Indian Council of Agricultural Research
ICE	Internal Combustion Engine
IIC	Impact Investors Council
IRDAI	Insurance Regulatory and Development Authority of India
KfW	Kreditanstalt für Wiederaufbau (Credit Institute for Reconstruction)
LITF	Long-Term Irrigation Fund
LT-LEDS	Long-Term Low Greenhouse Gas Emission Development Strategy
LVC	Land Value Capture
MAITRI	Maharashtra Industry, Trade and Investment Facilitation Cell
MBMB	Maharashtra Biodiversity Management Board
MCM	Million Cubic Meters
MDB	Multilateral Development Bank

MEDA	Maharashtra Energy Development Agency
MIDC	Maharashtra Industrial Development Corporation
MITRA	Maharashtra Institution for Transformation
MoEFCC	Ministry of Environment, Forests and Climate Change
MPCB	Maharashtra Pollution Control Board
MRV	Monitoring, Reporting and Verification
MSAPCC	Maharashtra State Action Plan for Climate Change
MSBB	Maharashtra State Biodiversity Board
MSINS	Maharashtra State Innovation Society
MSME	Micro, Small and Medium Enterprises
MSRLM (UMED)	Maharashtra State Rural Livelihoods Mission
MSSDS	Maharashtra State Skill Development Society
MRSAC	Maharashtra Remote Sensing Application Centre
MUIDCL	Maharashtra Urban Infrastructure Development Company Limited
NABARD	National Bank for Agriculture and Rural Development
NAPCC	National Action Plan on Climate Change
NAPCCHH	National Action Plan for Climate Change and Human Health
NBA	National Biodiversity Authority
NBFC	Non-Banking Financial Company
NbS	Nature-based Solutions
NBSAP	National Biodiversity Strategy and Action Plan
NDC	Nationally Determined Contribution
NIUA	National Institute of Urban Affairs
OECD	Organization for Economic Co-operation and Development
PBR	People's Biodiversity Register
PLI	Production Linked Incentive
PM-KUSUM	Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan
PoCRA	Project on Climate Resilient Agriculture
PPA	Public-Private Offtake Agreement
PPF	Project Preparation Facility
PPP	Public-Private Partnership
R&D	Research and Development
RIDF	Rural Infrastructure Development Fund
SAPCC	State Action Plan on Climate Change
SBM	Swachh Bharat Mission
TOD	Transit-oriented Development
UDCPR	Unified Development Control and Promotion Regulations
ULB	Urban Local Body
USD	United States Dollar
VAT	Value Added Tax
VGF	Viability Gap Funding
WBCIS	Weather-based Crop Insurance Scheme
WRI	World Resources Institute

ANNEXURES

Annexure A

India updated its NDC targets in 2022 by including new targets as well as by expanding the scope of existing targets. Table A.1 highlights the set of targets as per India's updated Nationally Determined Contributions.

Table A.1: Targets set under India's updated Nationally Determined Contributions

Target 1	To promote a healthy and sustainable way of living based on traditions and values of conservation and moderation, including through a mass movement for 'LIFE'– 'Lifestyle for Environment' as a key strategy for combating climate change.
Target 2	To adopt a climate-friendly and cleaner path than the one followed hitherto by others at a corresponding level of economic development.
Target 3	To reduce emissions intensity of its GDP by 45% by 2030, from the 2005 level.
Target 4	To achieve about 50% cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030, with the help of technology transfer and low-cost international finance including support from the Green Climate Fund.
Target 5	To create an additional carbon sink of 2.5 to 3 billion tonnes of CO2 equivalent through additional forest and tree cover by 2030.
Target 6	To better adapt to climate change by enhancing investments in development programs in sectors vulnerable to climate change, particularly agriculture, water resources, the Himalayan region, coastal regions, health and disaster management.
Target 7	To mobilize domestic, new and additional funds from developed countries to implement the above mitigation and adaptation actions in view of the resources required and the existing resource gap.
Target 8	To build capacities, create a domestic framework and international architecture for quick diffusion of cutting-edge climate technology in India and for joint collaborative R&D for future technologies.

Annexure B

This annexure presents detailed descriptions of the various financial instruments identified within the CFAMS and outlines the key policies and regulatory frameworks that govern their application. Table A.2 provides an overview of how each instrument operates and the enabling policies developed by the Government of India.

Table A.2: Climate-finance instruments highlighted in CFAMS

S. No.	Climate finance instrument	Description	Enabling national and sub-national policies
1	Blended finance	Blended finance is the use of catalytic capital from public or philanthropic sources to increase private sector investment in sustainable development	NA
2	Credit guarantees	Mechanisms in which a third party, the guarantor, pledges to repay part or all of a loan to the lender in case of borrower default (Gozzi and Schmukler, 2016)	The Government of India has launched several credit guarantee schemes such as Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) and credit guarantees for startups. While Maharashtra does not have a singular policy for providing credit guarantees, several state-owned entities such as the Bank of Maharashtra provide credit guarantees
3	Viability gap funding	A form of financial support provided by the government to make economically desirable but financially unviable infrastructure or public–private partnership (PPP) projects feasible by bridging the gap between project costs and expected private returns	The Government of India launched the Viability Gap Funding Scheme in 2005, which was later revamped in 2020. Under this scheme, VGF support of up to 60% of the total project cost may be provided for sectors including water supply, wastewater treatment, solid waste management and health and education.

S. No.	Climate Finance Instrument	Description	Enabling national and sub-national policies
4	Land-value capture	Land value capture is a financing tool that allows local governments to charge fees and taxes to developers and property owners and raise revenue that can then be reinvested into community and city services.	India does not have a standalone land-value capture policy. However, several entities have integrated it as part of their development plans. For instance, the Municipal Corporation of Ahmedabad used land value capture through projects like the Sabarmati Riverfront Development and Town Planning Schemes (TPS) to fund urban infrastructure. The Reserve Bank of India has also proposed land-value capture for municipal corporations to generate own-source revenues. Additionally, the Ministry of Urban Development identified land-value capture as a mechanism used by states as part of the Value Capture Finance Policy Framework.
5	Land-use concession	It is a legal agreement through which a government or authorized body grants an entity the right to use a specific parcel of land for a defined purpose and period, often under stipulated conditions related to development, environmental compliance and revenue sharing.	
6	Municipal bond	A debt instrument issued by municipal corporations, primarily used to raise funds to finance projects for socio-economic development.	The Securities and Exchange Board of India (SEBI) revised the guidelines related to the issuance of municipal bonds in 2015 to enable ULBs to raise finance. These guidelines were later amended in 2017 and 2019. The Ministry of Housing and Urban Affairs (MoHUA) has further strengthened the ecosystem through incentives under AMRUT 2.0. ULBs can receive ₹13 crore per ₹100 crore raised (up to ₹26 crore) as grant support.
7	Green bond	It is a bond where proceeds are earmarked for financing green projects.	SEBI introduced a framework for listed issuances of green debt securities in 2017, which was later revised in 2023. The framework mandates tracking of proceeds, external certification and anti-greenwashing safeguards. Ministry of Housing and Urban Affairs also introduced an incentive under which a municipal bond classified as a green municipal bond under SEBI's NCS framework will be eligible for ₹10 crore per ₹100 crore raised (up to ₹20 crore), provided the funds are used for climate-aligned sectors like water, sanitation, renewable energy, or urban resilience.
8	Pooled-financing	Pooled financing is a mechanism through which multiple local governments or entities combine their borrowing needs into a single, larger issuance, such as a pooled bond, to access capital markets collectively, reduce borrowing costs and improve creditworthiness through shared risk and economies of scale.	The Government of India approved the Pooled Finance Development Fund (PFDF) Scheme in 2006 to provide credit enhancement to ULBs to access market borrowings based on their credit worthiness through state-level pooled finance mechanisms.

Notes

Notes