



# Financing Adaptation in India

## Recent Developments and Emerging Pathways

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# EXECUTIVE SUMMARY

**Adaptation is emerging as a critical component of India's national and subnational planning, with progress made on related policy and implementation.** The updated Nationally Determined Contribution (NDC) and the 2025-26 Economic Survey of India both emphasize adaptation, and the upcoming National Adaptation Plan (NAP) aims to bring existing efforts together under a cohesive strategy to integrate adaptation into plans and policies across economic growth and development. Updated State Action Plans on Climate Change (SAPCCs) also place greater emphasis on enabling factors for subnational implementation. This report captures the evolving climate risk and policy context for adaptation, presents state-level adaptation finance requirements as outlined in SAPCCs, and explores avenues to increase adaptation finance.

**India faces substantial and geographically diverse climate risks that threaten its development gains** (Adil et al. 2025). The country acknowledges that the most effective adaptation strategies tap opportunities arising from development requirements while also addressing climate vulnerabilities (MoF 2026). The Initial Adaptation Communication estimates that approximately INR 56.68 trillion (USD 684.6 billion)<sup>1</sup> will be required for adaptation under a business-as-usual scenario until 2030. However, increasing climate-induced pressures and developmental needs could raise requirements to INR 72 trillion (USD 854.16 billion)<sup>2</sup> (MoEFCC 2023). Identifying and investing in adaptation early can reduce future economic and fiscal pressures, as well as losses and damages.

**While these estimates describe future finance requirements, available data on current flows show where adaptation finance is coming from.** Domestic public finance remains the backbone of India's adaptation response, accounting for 94.5% of tracked flows in fiscal year (FY) 2023/24<sup>3</sup> (CPI 2026a). Given the scale and diversity of the country's adaptation needs, strengthening public finance must be complemented by efforts to diversify sources, including, where appropriate, mobilizing private capital.

**Analysis of national and state-level adaptation planning and financing highlights India's evolving policy architecture and need for more targeted approaches to scale adaptation finance.**

## KEY FINDINGS

**State-level assessments highlight the importance of localized adaptation interventions.** Adaptation actions identified in SAPCCs vary across states based on climate risks, socioeconomic and fiscal contexts, and sectoral priorities, underscoring the need for location-specific, locally appropriate technologies and solutions.

1 Given that the MoEFCC (2023) signifies 2023–24 as the base year of its analysis, the conversion assumes an annual average exchange rate of 1 USD: 82.79 INR (Available [here](#)).

2 As per PIB 2024a

3 The scope of the tracked adaptation flows comprises disaster risk management, on-farm adaptation-related agricultural activities and adaptation-related health activities.

**Updated SAPCCs for six states emphasize adaptation finance elements that support implementation within state planning frameworks.**<sup>4</sup> These SAPCCs—for Maharashtra, Meghalaya, Mizoram, Punjab, Tripura, and Uttar Pradesh—identify key enabling factors for implementing each state’s adaptation strategy. Factors include climate-related risk information, technical capacity, financing pathways, institutional coordination, and monitoring and evaluation systems. In addition, the SAPCCs outline existing or proposed institutional structures responsible for coordinating and executing these strategies, indicating a greater focus on implementation.

**SAPCCs of Maharashtra and Uttar Pradesh exemplify granular approaches to translating adaptation priorities into financing frameworks.** Uttar Pradesh provides a detailed assessment of finance needs, available scheme-based finance allocations, and subsequent gaps. It highlights activity-level finance gaps and how to meet them through public budgetary resources and alternative sources of finance. Maharashtra’s SAPCC provides granular climate risk assessments at the district and subdistrict (*taluka*) level, along with projected sectoral investment requirements. It is accompanied by a Climate Finance Access and Mobilization Strategy, which provides an operational framework for financing diverse identified climate priorities.

**The analyzed SAPCCs report substantial adaptation finance requirements.** The indicative requirements for the six states total INR 3,655.39 billion (USD 43.22 billion)<sup>5</sup> across their respective planning periods up to 2030, or INR 525.52 billion (USD 6.21 billion) annually. Combining this analysis with that done for six other states in the previous report (CPI 2024),<sup>6</sup> the estimated adaptation finance requirements for all 12 states reach about INR 8 trillion (USD 94.67 billion) up to 2030, with annual requirements of about INR 1 trillion (USD 11.47 billion).

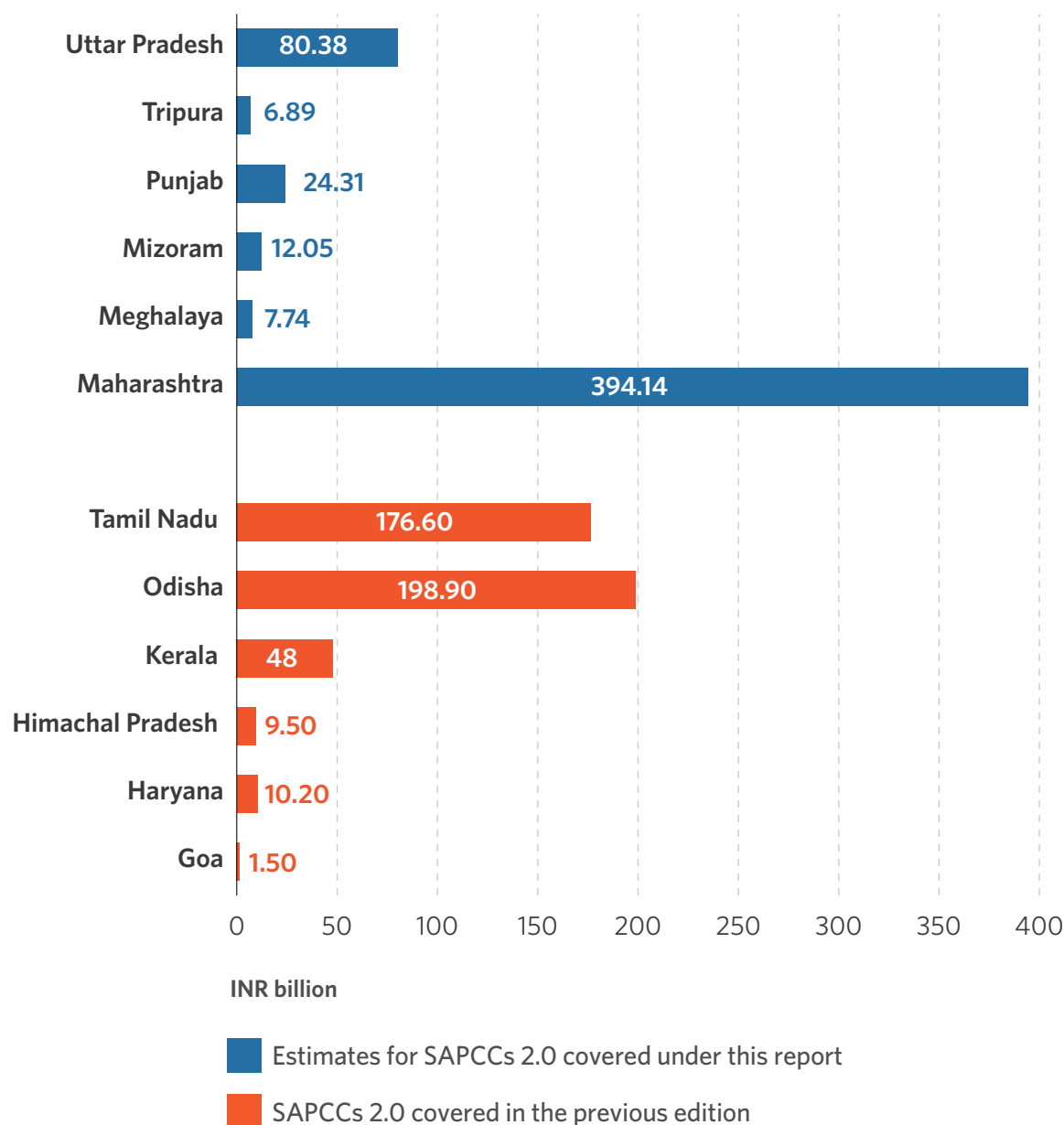
**Figure ES1 breaks down the figures by state, which have varying geographies, populations, and socioeconomic contexts.** These numbers are illustrative only, since requirements across the SAPCCs differ in scope and time periods. The estimates are also likely to be conservative, given evolving definitions while India’s climate finance taxonomy is under development, variations in climate expenditure classification across SAPCCs, and challenges in fully capturing adaptation-related expenditures embedded within broader development programs.

4 The SAPCCs for Maharashtra, Meghalaya, Mizoram, Punjab, Tripura, and Uttar Pradesh were selected for analysis because they are publicly available and include quantitative adaptation finance requirements.

5 The prevailing average exchange rate of 1 USD:84.58 INR for 2024–25 was used, drawing from the RBI Handbook of Statistics on Indian Economy 2025. The report used the same exchange rate throughout, unless otherwise indicated.

6 The previous edition covered adaptation finance estimates for six states: Haryana, Himachal Pradesh, Goa, Kerala, Odisha, and Tamil Nadu.

**Figure ES1.** Estimated annual SAPCC-based adaptation finance requirements of 12 states (up to 2030; INR bn)



**Source:** CPI calculation based on featured SAPCCs

**Note:** The SAPCC-based estimates use different planning periods and costing approaches and should not be interpreted as a national estimate or direct state comparison. The SAPCC budget period is 2023-33 for Goa, 2023-30 for Kerala and Meghalaya, 2024-30 for Maharashtra, and 2021-30 for other states.

**Domestic spending on adaptation-relevant activities has increased as a share of gross domestic product (GDP), from 3.7% in 2015-16 to 5.6% in 2021-22 (MoEFCC 2023).** However, tracking adaptation-specific budgetary expenditure in broader programs and schemes is challenging because adaptation priorities are closely linked to development objectives and often not separately identified in public budgets.

**Importantly, states' adaptation finance requirements should be viewed in the context of their broader economic and fiscal growth objectives.** States approach adaptation within different economic and fiscal contexts. The federal fiscal structure offers an important lens on the financing environment in which Indian states plan, prioritize, and implement adaptation action. States' own resources and Union transfers play key roles in supporting state-level development and adaptation priorities.

**Bridging gaps in adaptation finance will take more than a simple increase in the quantum of flows.** This will require systems-level approaches that pool and combine public and private finance, build dedicated platforms to enable adaptation action, and support existing institutional arrangements at the state and local government levels. Developing climate-responsive financing structures and investment-ready project pipelines will be essential to incentivize and integrate adaptation across India's economic and development activities.

**Based on the report's analysis, Table ES1 shows areas for strengthening public finance for adaptation in India, and Table ES2 explores increasing private flows.** Key stakeholders are mapped for each area.

**Table ES1: Strengthening public finance for climate adaptation**

| Solution                                                                                                                                                  | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Key stakeholders                                                                                                                                                  | Adaptation priorities     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>Further inclusion of adaptation priorities in policies, programs and implementation based on the upcoming NAP and India's Climate Finance Taxonomy</b> | <b>The upcoming NAP and the Draft Framework of India's Climate Finance Taxonomy (2025), once finalized, are expected to provide renewed clarity and opportunity to include and prioritize adaptation across development planning and implementation.</b> Aligning NAP adaptation outcomes, draft Climate Finance Taxonomy classifications, institutional frameworks, resources and monitoring systems can further streamline India's adaptation response.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Ministry of Finance (MoF), Ministry of Environment, Forest and Climate Change (MoEFCC) and other sectoral ministries and departments, think tanks, advisory firms | All adaptation priorities |
| <b>Setting up consistent systems for tracking, measurement, and monitoring of adaptation finance</b>                                                      | <b>As India mainstreams adaptation into various sectoral programs, it needs standardized monitoring systems.</b> These can help classify and track adaptation-relevant expenditures and outcomes and build feedback loops for the effective allocation and use of adaptation finance. Such systems and frameworks can also help monitor adaptation components of private sector activities. The effectiveness of the tracking framework will depend on alignment with national priorities, clear methodologies, and capacity building to support successful adoption and implementation. Examples include country level initiatives such as Bangladesh's climate budget tagging under its Climate Fiscal Framework (GoB 2026), and Philippines' standardized climate change typology and coding structure for planning, budgeting, monitoring, and reporting of public climate expenditures (CCC n.d.). Some Indian states also undertake similar exercises, such as Odisha. | MoEFCC, Department of Science and Technology (DST), sectoral ministries and departments at national and state levels, think tanks, advisory firms                 | All adaptation priorities |

| Solution                                                                                                                | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Key stakeholders                                                                                                                                                                                                                      | Adaptation priorities                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Aligning SAPCC priorities with national policies and strengthening implementation</b>                                | <b>Greater consistency in classifying adaptation activities, while retaining state-specific planning flexibility, can improve comparability of finance estimates in SAPCCs across states.</b> The upcoming NAP's expected granular vulnerability assessments and detailed adaptation priorities could enable this. Alignment with NAP adaptation priorities and subsequent implementation planning will help states scale up adaptation finance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | State departments of environment, relevant sectoral departments, state-level coordinating institutions for SAPCCs                                                                                                                     | All adaptation priorities, adaptation resourcing                                                                                                                                                                                                 |
| <b>Strengthening ex-ante and anticipatory disaster risk financing and exploring replication of innovative solutions</b> | <b>Progressively expanding India's evolving disaster mitigation financing architecture can further strengthen states' resilience.</b> Following the introduction of dedicated disaster mitigation funds, deepening focus on ex-ante risk reduction and long-term resilience can build the adaptive capacity of people and systems and generate broader development benefits. The 16 <sup>th</sup> Finance Commission's updates to India's Disaster Risk Index offer a path to mitigate climate-related disasters. Expanding the index to include explicit adaptation requirements can strengthen resilience. States can also explore tailored replication of innovative approaches such as Nagaland's Disaster Risk Transfer Parametric Insurance Solution. The <i>Pradhan Mantri Fasal Bima Yojana</i> is another established example, providing subsidized crop insurance against droughts, floods, cyclones, and hailstorms, among others (PIB 2026a). | National Disaster Management Authority, State Disaster Management Authorities, India Meteorological Department (IMD), state governments, local institutions including city municipalities and village panchayats, insurance providers | Disaster risk management including early warning systems and disaster preparedness, resilient urban development, resilient infrastructure, including new infrastructure and retrofitting existing systems, community resilience and preparedness |

**Table ES2:** Increasing private sector engagement in climate adaptation

| Solution                                                                        | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Key Stakeholders                                                                                                                                                                                                                                                                                                                  | Adaptation Priorities                                                                                                |
|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>Translating climate risk information into adaptation financing decisions</b> | <b>Private investors can use the sectoral physical risk assessments expected in India's forthcoming NAP and the proposed RBI Climate Risk Information System (CRIS) to identify adaptation needs.</b> Combined with on-the-ground assessments, these resources could help investors to identify risks in their portfolios or individual projects, and direct finance to address them. Because this work requires extensive expertise and resources, the RBI-CRIS could provide granular, standardized information as a credible first step for measuring and managing asset-level risks. International standards set by global bodies such as the International Sustainability Standards Board (ISSB) (IFRS n.d) can provide decision useful information on climate related risks, opportunities and learnings across geographies and businesses. | MoEFCC, Reserve Bank of India (RBI), Small Industries Development Bank of India (SIDBI), Securities and Exchange Board of India (SEBI), IMD, DST, industry associations, corporates, micro, small, and medium-sized enterprises (MSMEs), development finance institutions (DFIs), commercial banks, investors, project developers | Climate-proofing portfolios and supply chains, operational resilience including organizational systems and employees |

| Solution                                                                                      | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Key Stakeholders                                                                                                                                                                 | Adaptation Priorities                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Quantifying adaptation benefits and embedding them in investment theses</b>                | <p><b>Quantifying and integrating adaptation benefits into financial decision-making and mechanisms can help build a case for financing such action.</b> While granular evaluation methodologies are sparse and data and information are limited, these value streams can, where quantifiable, enable adaptation investments to yield returns (GFANZ 2026). Aligning financial structures with quantified long-term benefits can also help address the challenge of upfront capital requirements for adaptation projects.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p>MoEFCC, SIDBI, IMD, DST, industry associations, corporates, startups, project developers, DFIs, multilateral development banks (MDBs), investors, research think tanks</p>    | <p>Adaptation technologies and solutions across sectors with scope for private investment, including agriculture, water and infrastructure</p>                                   |
| <b>Strengthening enabling conditions for states to attract private capital for adaptation</b> | <p><b>Strengthening enabling conditions at the state-level to translate adaptation priorities into investment opportunities for private capital will be essential.</b> States can attract private capital through various approaches:</p> <ul style="list-style-type: none"> <li>▪ <b>Output-based payment mechanisms</b>, where a government entity or multilateral financial institution pays for verified outcomes such as flood risks/impacts mitigated, temperatures reduced, groundwater recharged. Côte d'Ivoire's sustainability-linked loan is one such example (see Box 6 for more detail).</li> <li>▪ <b>Pooling finance</b> through fund structures and platforms can help aggregate projects, minimize risks, and attract private capital at scale. Multilateral financial institutions, development finance institutions (DFIs), and government bodies are increasingly exploring blended finance models that combine concessional and commercial finance to finance adaptation projects. Where SAPCCs have proposed such fund structures, technical and resource assistance could support their establishment and operationalization.</li> <li>▪ <b>Guarantee mechanisms</b> by public, multilateral, or DFIs could, subject to mandate and project suitability, help to absorb tail risks that restrict private capital. Existing guarantee instruments in the energy sector offer lessons for the adaptation space. For example, the Omnivore III project, supported by the International Finance Corporation, provides a first-loss equity guarantee structure to support agritech and climate sustainability initiatives in India (Basangwa and Jain 2024).</li> </ul> | <p>National and state-level nodal agencies, sectoral ministries and departments, dedicated SAPCC institutions and funds, MDBs, DFIs, and industry associations</p>               | <p>Resilient infrastructure including critical infrastructure such as energy systems, roads, waste and stormwater management, water supply, housing and commercial buildings</p> |
| <b>Building a pipeline of investment-ready adaptation projects</b>                            | <p><b>A robust pipeline of technically sound, appropriately structured projects could help mobilize private finance.</b> Building this will require public and private stakeholders to jointly design adaptation finance opportunities that meet investor requirements. Project-preparation capacity, climate risk information, and clear policy frameworks can help convert adaptation plans into investment opportunities. For example, the Asian Development Bank Climate Adaptation Investment Planning Program supports developing countries in translating their NAP priorities into adaptation investment plans and pipelines (ADB 2023).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p>MoEFCC, sectoral governments and departments at the national and state levels, DFIs, MDBs, climate funds, philanthropic foundations, corporates, start-ups, and investors</p> | <p>Adaptation technologies and solutions across sectors with scope for private engagement, including agriculture, water and infrastructure</p>                                   |

# LIST OF ABBREVIATIONS

|          |                                                                       |
|----------|-----------------------------------------------------------------------|
| BEE      | Bureau of Energy Efficiency                                           |
| BTR      | Biennial Transparency Report                                          |
| CEEW     | Council on Energy, Environment and Water                              |
| CPI      | Climate Policy Initiative                                             |
| CSR      | Corporate Social Responsibility                                       |
| DEA      | Department of Economic Affairs                                        |
| DFI      | Development Finance Institution                                       |
| DoEF&CC  | Department of Environment, Forest and Climate Change                  |
| DST      | Department of Science and Technology                                  |
| DSTE     | Department of Science, Technology and Environment                     |
| FC       | Finance Commission                                                    |
| FY       | Financial Year                                                        |
| GDP      | Gross Domestic Product                                                |
| GoI      | Government of India                                                   |
| IMD      | India Meteorological Department                                       |
| MDB      | Multilateral Development Bank                                         |
| MEA      | Ministry of External Affairs                                          |
| MoEFCC   | Ministry of Environment, Forest and Climate Change                    |
| MoF      | Ministry of Finance                                                   |
| MoHFW    | Ministry of Health and Family Welfare                                 |
| MSCCC&SD | Meghalaya State Council on Climate Change and Sustainable Development |
| MSMEs    | Micro, small, and medium-sized enterprises                            |
| NAP      | National Adaptation Plan                                              |
| NAPCC    | National Action Plan on Climate Change                                |
| NDC      | Nationally Determined Contribution                                    |
| NDMA     | National Disaster Management Authority                                |
| NDMF     | National Disaster Mitigation Fund                                     |
| NDRF     | National Disaster Response Fund                                       |
| OECD     | Organisation for Economic Co-operation and Development                |
| PIB      | Press Information Bureau                                              |
| PPP      | Public-Private Partnership                                            |

|          |                                                         |
|----------|---------------------------------------------------------|
| RBI      | Reserve Bank of India                                   |
| RBI-CRIS | Reserve Bank of India – Climate Risk Information System |
| RBF      | Results-Based Financing                                 |
| SAPCC    | State Action Plan on Climate Change                     |
| SDMF     | State Disaster Mitigation Fund                          |
| SDRF     | State Disaster Response Fund                            |
| SEBI     | Securities and Exchange Board of India                  |
| SIDBI    | Small Industries Development Bank of India              |
| UNFCCC   | United Nations Framework Convention on Climate Change   |
| WBG      | World Bank Group                                        |

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# 1. INTRODUCTION

**India faces significant and increasing climate risks, including floods and landslides, drought, changing precipitation, sea-level rise, and glacial retreat.**<sup>7</sup> The country is the ninth-most affected by extreme weather, with nearly 430 such events between 1995 and 2024<sup>8</sup> causing economic losses estimated at nearly USD 170 billion,<sup>9</sup> affecting 1.3 billion people and resulting in over 80,000 fatalities (Adil et al. 2025). In the past three years alone, hydro-meteorological disasters across India have claimed around 12,500 lives, 700,000 houses, and affected 12.5 million hectares of cropland (PIB 2026b).

**India's need for adaptation finance is rising.** Climate risks are projected to increase significantly across all major sectors over the next decade (MoEFCC 2025).<sup>10</sup> The country's Initial Adaptation Communication estimates that cumulative expenditure of approximately INR 56.68 trillion (USD 684.6 billion)<sup>11</sup> will be required for adaptation through 2030 under a business-as-usual scenario, rising to INR 72 trillion (USD 854.16 billion)<sup>12</sup> after accounting for developmental needs and climate-induced pressures (MoEFCC 2023). This reinforces the need to mobilize resources across national and subnational levels.

**India is increasingly considering adaptation in development planning, state financing frameworks, sectoral design, and investment planning.** The country's updated NDC aims to increase investment in development programs in climate-vulnerable sectors (GoI 2026), including agriculture, water resources, disaster risk assessment and preparedness, coastal regions, Himalayan ecosystems, and health (MoEFCC 2023, 2026). Many adaptation actions are implemented through broader development programs that involve states. Integrating adaptation into development priorities will require investment beyond existing development expenditures, which could increase development costs (MoEFCC 2025).

**The context in which this assessment was undertaken has evolved since CPI's previous [Financing Adaptation in India](#) report in 2024.** The last edition established foundational analysis of state-level adaptation planning, finance requirements, and gaps. Building on that, the current report captures the evolving climate risk and policy context for adaptation and expands coverage of SAPCCs released from 2024 to the present, with updated adaptation finance requirements. This edition also captures India's growing attention to adaptation across planning and financing processes, as well as avenues for increasing adaptation finance.

7 12% of India's total land area is exposed to floods, 68% is vulnerable to droughts, landslides, and avalanches, and 75% of the coastline is extremely vulnerable to cyclones and tsunamis (NDMA 2023).

8 While India does not have a single official definition of extreme weather events, the India Meteorological Department (IMD) provides an operational classification through its annual Statement on Climate of India and the Climate Hazards and Vulnerability Atlas of India, launched in January 2022. The IMD framework encompasses lightning and thunderstorms, heavy to extremely heavy rainfall, landslides, floods, cold waves, heatwaves, cyclones, snowfall, dust and sandstorms, squalls, hailstorms, and gales (IMD n.d).

9 Inflation-adjusted.

10 The BTR uses the climate risk assessments prepared for India's upcoming NAP.

11 Given that the MoEFCC (2023) signifies 2023–24 as the base year of their analysis, the conversion assumes an annual average exchange rate of 1 USD: 82.79 INR (Available [here](#)).

12 As per PIB 2024a.

The report is structured as follows:

- **Section 2** examines India's enabling policy and institutional environment for adaptation investment with a focus on developments since the last report, including national and state-level frameworks, disaster risk governance, and cross-sectoral adaptation policies.
- **Section 3** assesses available estimates of adaptation finance needs and reported gaps at national and subnational levels, drawing on six updated SAPCCs, including sectoral priorities as reported in the plans.
- **Section 4** analyzes India's adaptation financing structure by examining trends in public finance, alongside state economic and fiscal context, linkages to disaster risk finance, and the emerging private sector engagement in adaptation.
- **Section 5** provides concluding observations and identifies areas to explore the availability and flow of public and private adaptation finance.

## 1.1 APPROACH AND METHODOLOGY

This study combines a literature review with focused research and analytical assessment of updated SAPCCs. Sources reviewed include national and state plans, policies, and strategies; India's relevant international climate submissions; government reports and statistics; relevant academic research; and budgetary estimates and finance needs reported under the National Action Plan on Climate Change (NAPCC) missions and SAPCCs.

The SAPCCs covered in this edition were selected based on the availability of updated documents in the public domain, and the inclusion of quantitative adaptation finance requirements. Of the eight SAPCCs made publicly available since the 2024 edition of this report, six met these criteria: Maharashtra, Meghalaya, Mizoram, Punjab, Tripura, and Uttar Pradesh. Comparable finance insights were unavailable in the SAPCCs for Assam and Chhattisgarh, which were not included in the analysis.<sup>13</sup> The six selected states represent diverse geographic regions, climatic conditions and vulnerabilities, and socioeconomic and fiscal contexts, supporting a broader assessment of adaptation planning and financing approaches. In addition, the indicative planning periods vary across states. Meghalaya's SAPCC covers 2023–30, Maharashtra's 2024–30, and the others cover 2021–30.

This report discusses the sectoral focus of adaptation finance requirements for Maharashtra, Meghalaya, Mizoram, Punjab, and Uttar Pradesh. The analysis does not cover Tripura because its SAPCC does not disaggregate financial allocations by activity type.<sup>14</sup>

## 1.2 SCOPE AND LIMITATIONS

**This report assesses estimated adaptation finance requirements and gaps as presented in SAPCCs, rather than tracking adaptation finance flows.** While the analysis touches on national-level needs, it primarily focuses on states' requirements as articulated in SAPCCs.

<sup>13</sup> Assam's SAPCC does not indicate finance requirements for proposed climate actions. Chhattisgarh's does not distinguish between adaptation and mitigation interventions.

<sup>14</sup> Tripura's SAPCC does not outline the split between finance allocations for sectors by type of activity (mitigation, adaptation, and cross-cutting), making consistent sectoral finance attribution difficult.

Methodological and data limitations hinder comparability across SAPCCs. Key considerations to assist interpretation of the findings include:

**Adaptation finance estimates are not directly comparable across SAPCCs.** Differences in time periods, methodology, assumptions, costing approaches, sectoral coverage, representation, and expenditure classification of adaptation, mitigation, and cross-sectoral activities limit comparison of states' plans and associated finance requirements and gaps.

**Several SAPCCs reference cross-cutting activities** with no clear demarcation between mitigation and adaptation objectives. The assessment uses two approaches, based on the level of available detail:

1. **Activity-level tagging** as provided by the SAPCCs of Mizoram, Punjab, and Uttar Pradesh. These plans provide activity-level financial allocations for adaptation in each sector, linking climate action typologies (adaptation, mitigation, and cross-cutting) with estimated financing requirements (Arora et al. 2024; Government of Mizoram 2025; Government of Uttar Pradesh 2025).
2. **Broad financial allocations** at the sectoral level in the identified adaptation sectors/departments of Maharashtra and Meghalaya. Components classified as cutting across adaptation and mitigation efforts were assumed to carry a 50% adaptation orientation, as done in the previous report. As a result, actual adaptation shares may vary.

**Adaptation finance estimates are representative and not exhaustive.** While this assessment focuses on six updated SAPCCs, other planning and budgeting strategies, such as green budgets, report many other climate-related expenditures and finance estimates. The report does not include these estimates in order to maintain consistency and comparability in the underlying source data. The estimates in the current analysis should therefore be interpreted as indicative SAPCC-based requirements rather than a comprehensive estimate.

As more updated SAPCCs and additional adaptation plans and estimates become available, future iterations of this report will expand the scope to present the latest understanding of India's evolving adaptation finance ecosystem.

## 2. ENABLING POLICY ENVIRONMENT FOR ADAPTATION ACTION IN INDIA

**India's adaptation policy architecture has evolved since the 2024 report.** Adaptation is increasingly emphasized in national climate communications, development planning, and sectoral frameworks. Alongside the NAPCC and SAPCCs, recent developments include the Initial Adaptation Communication (2023), the first Biennial Transparency Report (BTR) (2025), the updated NDC (2026), and the forthcoming NAP. This evolving national adaptation policy context informs subnational planning and financing arrangements.

This section focuses on key components of India's enabling policy environment for adaptation action, including national and subnational plans and programs, disaster risk governance, and sectoral policies and programs relevant to adaptation. This discussion focuses on the evolution and architecture of these frameworks but does not assess implementation or effectiveness.

### 2.1 NATIONAL ADAPTATION POLICY ECOSYSTEM

**India has strengthened its approach to adaptation as a core development imperative.** The Economic Survey 2025-26 recognizes that development and climate change adaptation are intrinsically linked, asserting that effective climate action will involve improving societal capacity to withstand shocks, supported by critical resilient infrastructure (MoF 2026). The updated NDC for 2031-35 also states an intention to 'better adapt to climate change' by increasing investment in development programs in climate-sensitive sectors (Gol 2026). The updated NDC also stresses that enhanced adaptation ambition depends on adequate climate finance, as well as technology transfer and capacity-building support from developed countries (Gol 2026).

India identifies three broad adaptation priorities: strengthening knowledge systems and their contribution to planning and implementation, reducing exposure to climate risk, and building resilience and adaptive capacity (MoEFCC 2025, PIB 2025a). These build upon the Initial Adaptation Communication submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in 2023. This document highlights adaptation as an integral part of India's broader climate governance, driven by national and subnational action (MoEFCC 2023). The NAP is being developed within the vision of *Viksit Bharat 2047*,<sup>15</sup> and will serve as a blueprint for planning and implementation of adaptation interventions (PIB 2025a).

**India's adaptation policy ecosystem spans multiple sectors, with efforts to integrate climate adaptation across existing development schemes.** Adaptation interventions are embedded across multiple ministries and national climate missions, with overlapping components and co-benefits. The NAPCC provides a framework for climate action through nine missions: agriculture, human health, water, energy efficiency, green India, Himalayan ecosystem, solar energy, strategic knowledge on climate change, and sustainable habitat, six of which focus on adaptation (PIB 2025b). In particular, agriculture and water sector interventions focus on climate-resilient agriculture, irrigation, and water-use efficiency (see Section 2.2). Similarly, the National Action

<sup>15</sup> *Viksit Bharat* is India's vision for achieving developed-country status, defined as economic prosperity, social upliftment, environmental sustainability, and effective governance.

Plan for Climate Change and Human Health focuses on health-related vulnerabilities linked to climate change, along with impact management, preparedness, and response (MoHFW 2021). A disaster management policy and its accompanying institutional architecture also support the adaptation ecosystem (see Section 2.3). Key planning entities include the MoEFCC, the Prime Minister's Council on Climate Change, state-level environment departments, and state climate change centers. SAPCCs provide a state-level planning mechanism for translating national adaptation priorities into state-specific strategies.

## 2.2 SECTORAL POLICIES SUPPORTING ADAPTATION

**Adaptation interventions span across sectors and include measures related to preparedness, adaptive capacity, and post-disaster recovery.** Effective implementation requires integrated planning across sectors. To identify cross-sectoral measures that support adaptation, CPI reviewed adaptation-relevant schemes listed in the country's Third National Communication and the Initial Adaptation Communication, alongside selected state policy frameworks.

**India's Initial Adaptation Communication identifies several national and state-level development schemes as adaptation-relevant.** These span agriculture, water, biodiversity, disaster management, health, infrastructure, and livelihoods. Examples include *Pradhan Mantri Krishi Sinchayee Yojana*<sup>16</sup> in agriculture, the *Jal Shakti Abhiyan*<sup>17</sup> in the water sector, forest and biodiversity conservation programs, disaster management activities, and livelihood upliftment programs (MoEFCC 2023). Annexes 1 and 2 provide more detailed mapping.

### Box 1. Agriculture as a key sector for adaptation finance and implementation

**Agriculture is central to India's adaptation efforts, given its economic significance, importance for livelihoods, and exposure to climate risks.** It is the primary source of livelihood for about 46% of the population (up from 44% in 2017-18) and contributes nearly a fifth of national income (MoF 2026). An Indian Council of Agricultural Research (ICAR) assessment identified 310 of 573 districts assessed as facing high or very high climate risk to agriculture (ICAR-CRIDA 2019). Climate impacts have grown significantly, with 1.3 million hectares of cropped area affected by hydro-meteorological disasters in 2024-25 (PIB 2026b). The predominance of small and marginal landholdings also increases the agricultural sector's vulnerability (MoEFCC 2025). Agriculture and allied activities, including horticulture and fisheries, are thus a recurring focus area across SAPCCs.

**The sector's institutional and policy architecture provides a foundation for adaptation finance and implementation.** Key initiatives include the National Mission for Sustainable Agriculture, which focuses on rainfed agriculture, water-use efficiency and soil health, among others, and ICAR's National Innovations in Climate Resilient Agriculture,

<sup>16</sup> *Pradhan Mantri Krishi Sinchayee Yojana* is a centrally sponsored national irrigation scheme that combines various other components, including the Accelerated Irrigation Benefit Programme, Integrated Watershed Management Programme, and On-Farm Water Management. It aims to expand cultivable areas under assured irrigation, improve on-farm water use efficiency to reduce wastage of water, and enhance the adoption of precision irrigation and other water-saving technologies (Gol n.d).

<sup>17</sup> *Jal Shakti Abhiyan* launched in 2019, is a time-bound, mission-mode water conservation campaign in 256 water-stressed districts of India (PIB 2026c).

which supports climate-risk assessment and agricultural contingency planning. These initiatives, along with existing implementation mechanisms, agricultural institutions, and extension services, can continue to be leveraged to achieve adaptation priorities identified in SAPCCs.

### **State-level policy mapping highlights the importance of localized adaptation interventions.**

Plans for states facing flood risks emphasize river management, drainage, and early warning structures, while regions facing drought and water stress focus on interventions such as micro-irrigation schemes and watershed development. Implementation across states thus varies, suggesting that a program's adaptation relevance depends not only on national design but also on the local risk and geography it operates in.

## **2.3 INDIA'S DISASTER POLICY AND GOVERNANCE ARCHITECTURE**

**Climate change and disaster risks are closely interlinked.** Thus, adaptation planning and disaster risk reduction are becoming progressively interconnected policy domains. Many interventions implemented through SAPCCs, State Action Plans for Climate Change and Human Health (SAPCCHHs), and Heat Action Plans align with and are closely supported by disaster management frameworks. These include vulnerability assessments, early warning systems, preparedness measures, and resilience-building investments. India's established disaster governance system plays an important role in planning and implementing adaptation actions. India's Disaster Risk Reduction framework is grounded in the Disaster Management Act, 2005 (amended in 2025), which mandates a coordinated, multi-level approach across central, state, and district governments.

**Key national institutional developments** include the National Disaster Management Plan, formulated in 2016 and revised in 2019,<sup>18</sup> the National Policy on Disaster Management (2009), and the National Platform for Disaster Risk Reduction, a multi-stakeholder forum established in 2013.<sup>19</sup> The National Disaster Management Authority (NDMA), the main institutional body, has issued 38 hazard-specific guidelines to date (MHA 2025) and serves as a national body for addressing urban climate change. The National Institute of Disaster Management provides research, training, vulnerability assessments, and tools for synergizing disaster risk reduction with climate adaptation. Sectoral line ministries such as agriculture, water resources, and earth sciences have disaster preparedness and contingency systems, supported by scientific institutions.<sup>20</sup>

**States and Union Territories have their own disaster management authorities**, chaired by the chief minister and state executive committees. At the district level, district disaster management

18 The National Disaster Management Plan aligns with India's national legal mandates, international commitments including the Sendai Framework, Sustainable Development Goals, and Paris Agreement, the Prime Minister's Ten-Point Agenda for disaster risk reduction and underscores social inclusion as a cross-cutting principle.

19 The platform's 2023 session foregrounded local resilience, risk governance, and disaster risk reduction-climate adaptation integration as priorities

20 The Indian Council of Agricultural Research has prepared district-level agriculture contingency plans, while the India Meteorological Department (IMD), Central Water Commission, Geological Survey of India and Indian Space Research Organization provide early warning, flood forecasting, landslide mapping and satellite-based damage assessment.

authorities serve as nodal bodies. States must integrate disaster risk reduction into their development plans and allocate funds accordingly.

**India has established systems for early warning, community preparedness, and disaster response:**

- In relation to technology, data, and early warning systems, initiatives such as the Common Alerting Protocol-based Integrated Alert System have disseminated over 134 billion geo-targeted alerts across all 36 states/union territories in regional languages as of April 2026 (PIB 2026d).
- For community preparedness, the *Aapda Mitra* disaster response scheme has trained over one lakh (100,000) community volunteers across 350 multi-hazard-prone districts, equipped with response kits and insurance cover, and the National Disaster Response Force has expanded to 16 fully operational battalions up to May 2025 (PIB 2024b, NDRF 2025), conducting regular drills across all states and territories.
- Hazard-specific schemes include the National Cyclone Risk Mitigation Project and the National Landslide Risk Mitigation Programme.

**The Disaster Management (Amendment) Act 2025 introduces changes relevant to resilience and climate adaptation planning.** It empowers state governments to constitute Urban Disaster Management Authorities in state capitals and all cities with municipal corporations. These authorities prepare urban disaster plans that address city-specific vulnerabilities, including flooding and heatwaves. The Act also calls for a National Disaster Database covering risk assessments, mitigation plans, and real-time disaster data, reflecting the focus on more granular climate information across adaptation sectors. It also grants statutory status to the High-Level Committee that approves financial assistance from the National Disaster Response Fund (NDRF) and the National Disaster Mitigation Fund (NDMF), formalizing the process and streamlining approvals (PIB 2026e).

## 2.4 STATE-LEVEL ACTION PLANS

**Updated SAPCCs show greater attention to implementation arrangements within state planning frameworks.** Since our 2024 report, updated SAPCCs (referred to hereafter as SAPCCs 2.0) with quantitative adaptation finance estimates were publicly available for six additional states: Maharashtra, Meghalaya, Mizoram, Punjab, Tripura, and Uttar Pradesh. This expands the available evidence on state-level adaptation planning. Compared with earlier plans, the SAPCCs 2.0 emphasize climate risk assessments, vulnerability analysis, sectoral adaptation plans, financing approaches, institutional structures, and monitoring frameworks.

**The assessed SAPCCs 2.0 converge thematically, though implementation details vary across states.** Livelihood resilience is a common adaptation focus, with several plans encouraging crop insurance, alternative livelihood generation, and skill development for vulnerable communities. Other key adaptation areas include water, agriculture, health, biodiversity, infrastructure, and human settlements (MoEFCC 2025). States operationalize these sectoral priorities and cross-cutting themes through a mix of centrally sponsored schemes, state-specific programs, and sector-focused interventions, with linkages to national adaptation priorities and local contexts.

**Box 2. Climate risk assessments and adaptation action**

India has a growing body of research on climate vulnerability and risk across geographies and sectors. Notable assessments are the first BTR,<sup>21</sup> studies by the Department of Science and Technology (DST) which include a national vulnerability assessment and a district-level flood-and-drought risk assessment based on the Intergovernmental Panel on Climate Change (IPCC) framework (MoEFCC 2025; Dasgupta et al. 2024), and sector-specific work such as a district-level agricultural risk assessment by the Indian Council of Agricultural Research-Central Research Institute for Dryland Agriculture (Rama Rao et al. 2019), and the Atlas of Climate Adaptation in Indian Agriculture (ICAR and BISA-CIMMYT 2026).

Subnational and localized assessments can aid ‘place-based’ adaptation planning (Kythreotis et al. 2024). For example, the SAPCCs 2.0 include vulnerability assessments based on the DST’s Common Vulnerability Assessment Framework (DST 2021). These assessments compute sectoral and composite vulnerability indices at the district level, classify districts into vulnerability classes, and identify major drivers of vulnerability across classes.

These assessments offer an opportunity to strengthen linkages across sources and translate findings into accessible, easily interpretable, and decision-useful formats to support locally informed adaptation planning and action.

**The assessed state plans place greater emphasis on enabling factors that can support implementation.** These factors include climate information, technical capacity, financing pathways, and institutional coordination, while also emphasizing the importance of systems for monitoring implementation, alongside investment in physical interventions. The plans combine adaptation actions and strategies with institutional coordination mechanisms, complementarities with ongoing schemes, monitoring arrangements, and potential financing pathways. While institutional architecture differs across states, the plans identify common multi-layered arrangements that combine an apex authority and a state nodal agency or institute, supported by diverse departmental entities and implementing agencies, and technical and knowledge management entities for monitoring progress. Annex 3 summarizes key institutional mechanisms identified in the reviewed SAPCCs 2.0, reflecting different administrative contexts across states.

**In line with the national vision, sectoral focus on plans and strategies is evident at the subnational level.** For example, the SAPCCHH focuses on health-related vulnerabilities and dedicated planning for climate-related health risks. States also produce Heat Action Plans that cover early warning, preparedness levels, and responses to extreme heat events. As of April 2026, 23 states have collaborated with the NDMA to implement such plans (PIB 2026f).

Together, these developments reflect more granular adaptation planning and greater attention to elements that can support implementation under the SAPCCs 2.0. The next section explores how identified adaptation priorities are reflected in reported finance requirements and gaps across the states reviewed.

21 The BTR includes district-level climate risk assessment across all 787 districts and six core sectors as part of the upcoming NAP process.

### 3. INDIA'S ADAPTATION FINANCE REQUIREMENTS AND GAPS

**Available assessments have produced increasingly large estimates of adaptation finance needs.** These range from USD 206 billion between 2015 and 2030<sup>22</sup> in India's Intended NDC, INR 85.6 trillion<sup>23</sup> (approx USD 1 trillion; CPI 2024b) by 2030 per the Department of Economic Affairs (DEA), and a cumulative adaptation expenditure by 2030 of INR 56.68 trillion<sup>24</sup> (USD 684.6 billion) under business-as-usual and INR 72 trillion<sup>25</sup> (USD 854.16 billion) after accounting for development needs and climate-induced pressures (MoEFCC 2015; DEA 2020; and MoEFCC 2023).<sup>26</sup> Adaptation needs are inherently context-dependent, with scale varying according to the scenarios considered, the sectors included, and the timing of action.

#### 3.1 STATES' ADAPTATION FINANCE NEEDS AND PRIORITIES

**India's second generation of SAPCCs builds on earlier plans with more comprehensive climate-action strategies, including for adaptation.** Because major priority areas such as agriculture, water, public health, and disaster management fall under state or concurrent subjects legislatively (MEA n.d.),<sup>27</sup> SAPCCs are critical for identifying states' adaptation finance requirements.

**Several climate interventions generate adaptation and mitigation co-benefits, reducing vulnerability and emissions simultaneously.** This results in different activity classifications across SAPCCs, limiting direct comparison of plans.

**The previous edition of this report provided quantitative adaptation finance estimates for six updated SAPCCs (CPI 2024a).**<sup>28</sup> The sum of indicative adaptation finance requirements for these states was INR 4,351 billion (USD 54.4 billion) over their respective planning periods through 2030, translating to annual finance requirements of INR 444.7 billion<sup>29</sup> (USD 5.25 billion)<sup>30</sup> (CPI 2024a).

22 At 2014–15 prices.

23 At 2011–12 prices.

24 Given that (MoEFCC 2023) signifies 2023–24 as the base year of their analysis, the conversion assumes an annual average exchange rate of 1 USD: 82.79 INR (Available [here](#)).

25 (PIB 2024b).

26 Estimates should be interpreted in the context of their respective underlying assumptions and methodological context.

27 As per the Seventh Schedule of Indian Constitution, legislative responsibilities are distributed across central and state governments. Subjects under the Union and State lists fall within the legislative authority of the central and state governments respectively; those under the Concurrent list can be legislated on by both the central and state governments.

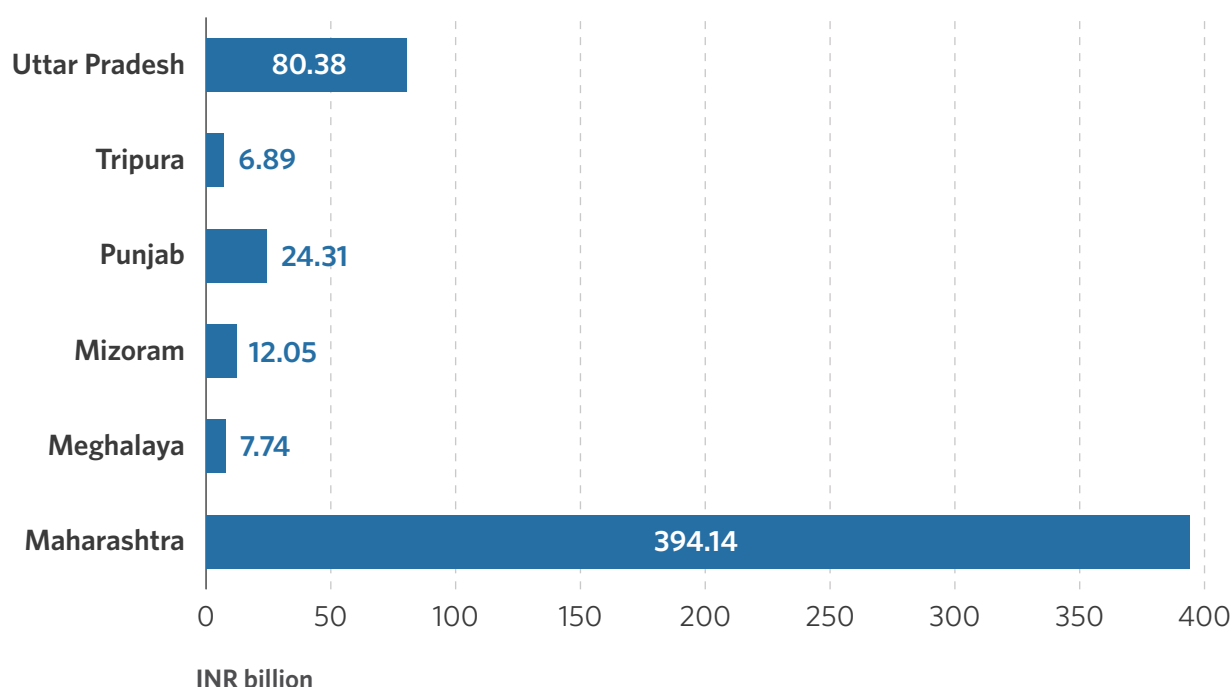
28 The previous edition covered nine states, of which six provided adaptation finance estimates: Goa, Haryana, Himachal Pradesh, Kerala, Odisha, and Tamil Nadu.

29 While calculating annual adaptation investment needs, for SAPCCs with an indicative period of 2023–30, aggregate cumulative needs have been divided by seven; for Maharashtra's SAPCC 2.0 with an indicative period of 2024–30, it is divided by 6; for SAPCCs with an indicative period of 2021–30, aggregate cumulative needs have been divided by 10.

30 The 2024 report used the prevailing exchange rate in 2023 (1 USD: 80 INR), which is why INR 444.7 billion was USD 5.5 billion. The current iteration uses the RBI-stated 2025 exchange rate (1 USD: 84.58 INR), bringing the figure down to USD 5.25 billion.

The current report covers six additional states: Maharashtra, Meghalaya, Mizoram, Punjab, Tripura, and Uttar Pradesh.<sup>31</sup> These states' indicative sum of adaptation finance requirements is INR 3,655.39 billion (USD 43.22 billion) over their respective planning periods up to 2030. Annually, the requirements add up to INR 525.52 billion (USD 6.21 billion),<sup>32</sup> as shown in Figure 1.<sup>33</sup> Differences across states may reflect scope, planning period, sector coverage, methodology for estimating requirements, and the scale or type of interventions included.

**Figure 1.** Estimated annual adaptation finance requirements of six states (up to 2030; INR bn)



**Source:** CPI calculation based on featured SAPCCs

**Note:** Adaptation-related activities were compiled from sectoral budget breakdowns provided in the respective SAPCCs. For activities that include both adaptation and mitigation measures, this analysis attributed 50% of the proposed budget to adaptation. The SAPCC budget period is 2023–30 for Meghalaya SAPCC, 2024–30 for Maharashtra, and 2021–30 for other states.

**Together, the current and previous reports provide estimated adaptation finance requirements across 12 states with varying geographies, populations, and socioeconomic contexts.** The indicative sum of reported adaptation finance requirements across the 12 states totals

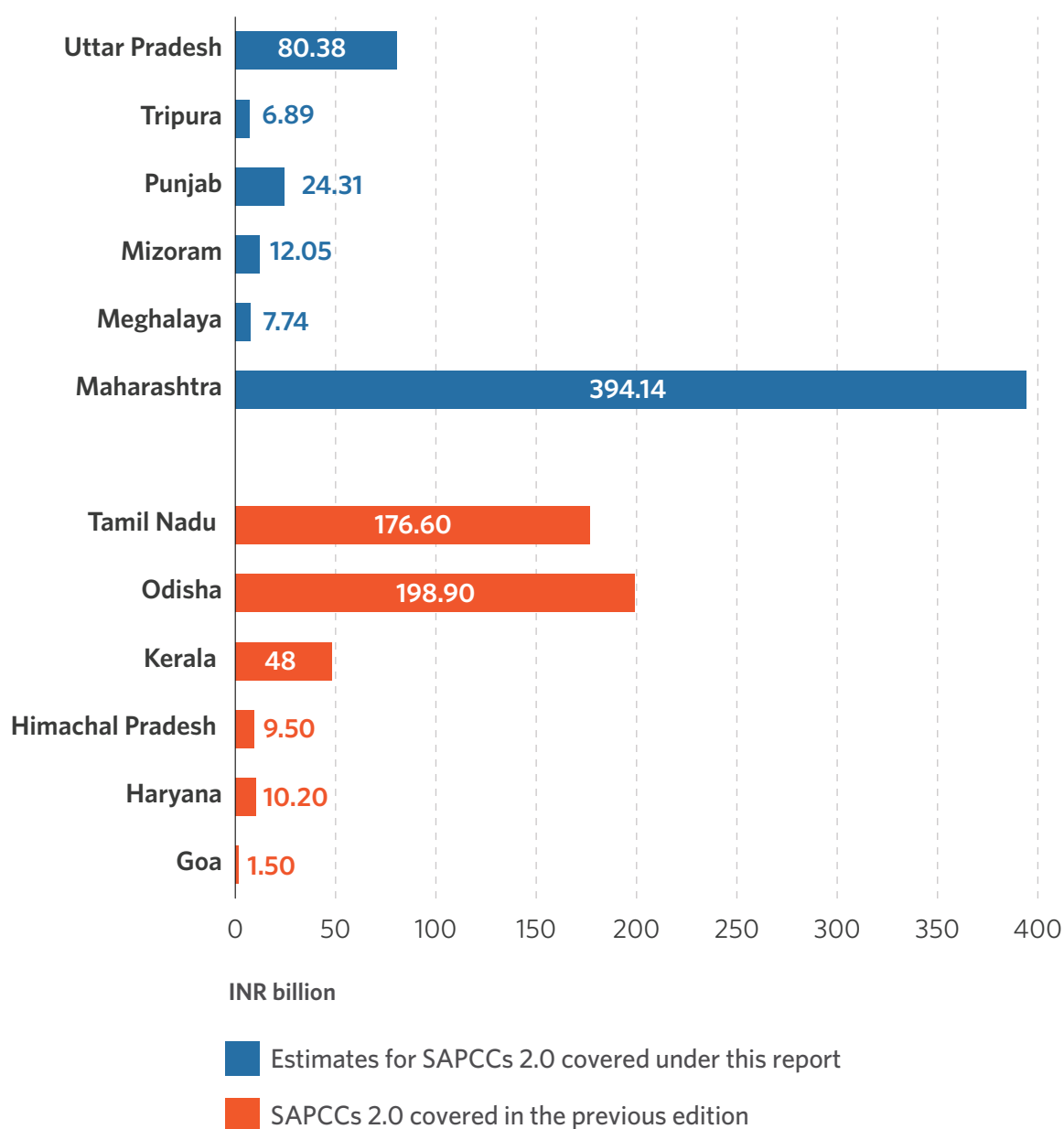
31 The indicative period for Maharashtra's SAPCC 2.0 is 2020–30. However, proposed climate budget-relevant information is available for 2024–30. To ensure consistent analysis across states, we used Maharashtra's proposed budget segregations for the period (2024–30) to arrive at the adaptation estimates. The indicative period of Meghalaya's SAPCC 2.0 is 2023–30. The indicative period of SAPCC 2.0s of Mizoram, Punjab, Tripura and Uttar Pradesh is 2021–30. See the Methodology section for more information.

32 These estimates are likely to be conservative given the absence of a formal climate finance taxonomy, variations in climate expenditure classification across SAPCCs, and challenges in fully capturing adaptation-related expenditures embedded within broader development programs.

33 The estimates provide an illustrative view of requirements reported by the SAPCCs and should not be interpreted as directly comparable measures.

INR 8,006.39 billion (USD 94.67 billion) up to 2030, with annual requirements of approximately INR 970.22 billion (USD 11.47 billion) (see Figure 2).

**Figure 2.** Estimated annual adaptation finance requirements of 12 states (up to 2030; INR bn)

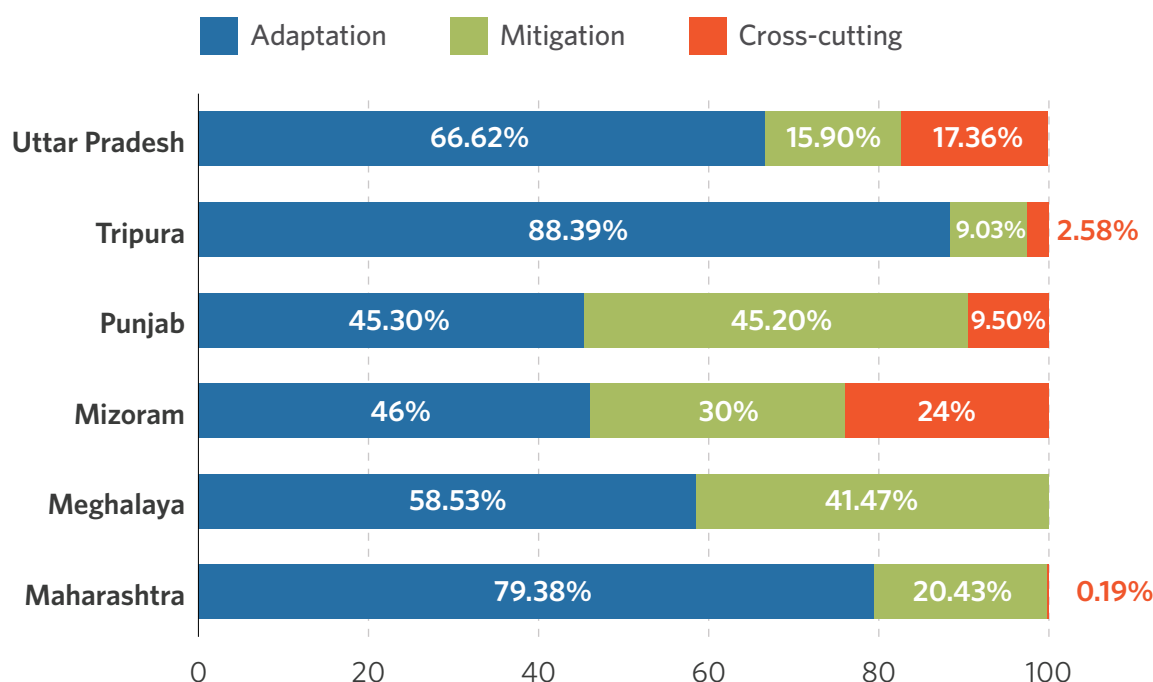


**Source:** CPI calculations based on featured SAPCCs

**Note:** Finance requirements for adaptation-related activities were compiled from sectoral budget breakdowns provided in the respective SAPCCs. For activities covering both adaptation and mitigation measures, this analysis attributed 50% of the proposed budget to adaptation. SAPCCs use different planning periods and costing approaches and should not be interpreted as a national estimate or direct state comparison. The SAPCC budget period is 2023-33 for Goa, 2023-30 for Kerala and Meghalaya, 2024-30 for Maharashtra, and 2021-30 for other states.

Across the six SAPCCs, the proposed adaptation finance requirements account for 45-90% of the climate finance requirements mix.<sup>34</sup> Figure 3 shows the share of adaptation in the proposed budget ranges. This partly reflects SAPCCs' role in identifying state-level responses to climate risks and associated adaptation actions, aligned with national priorities and state-specific contexts (SCOPE n.d.; MoEFCC 2023; Dubash and Jogesh 2014).

**Figure 3.** Reported adaptation, mitigation, and cross-cutting finance requirements in SAPCCs (%)



**Source:** CPI calculation based on featured SAPCCs

**Note:** The total adaptation budget is the sum of the adaptation-specific budget and 50% of the cross-cutting budget. The percentage of adaptation finance is calculated as a share of the total climate finance.

## 3.2 SECTORAL ASSESSMENT FOR SELECT STATES

This subsection explores the sectoral focus of adaptation finance needs for Maharashtra, Meghalaya, Mizoram, Punjab, and Uttar Pradesh. Tripura is excluded since its SAPCC does not disaggregate sectoral allocations by activity type.

**Three common broad areas emerge across the five assessed SAPCCs—water security, sustainable agriculture, and sustainable habitats.**<sup>35</sup> Water accounts for the largest share of adaptation finance requirements in Maharashtra (88%)<sup>36</sup> and Uttar Pradesh (72%). Sustainable habitat takes the majority in Mizoram (77%) and Punjab (54%), and Meghalaya requires the

<sup>34</sup> Sectoral finance comparisons should be made with caution, as different approaches to classifying adaptation, mitigation, and cross-cutting activities influence the composition of financing needs across SAPCCs.

<sup>35</sup> The percentage share is calculated by dividing the proposed sectoral adaptation finance by the total proposed adaptation finance requirement of the state. This is different from the figure above, where adaptation finance is expressed as a share of total climate finance.

<sup>36</sup> Percentages in parentheses are rounded to the nearest whole number throughout the report.

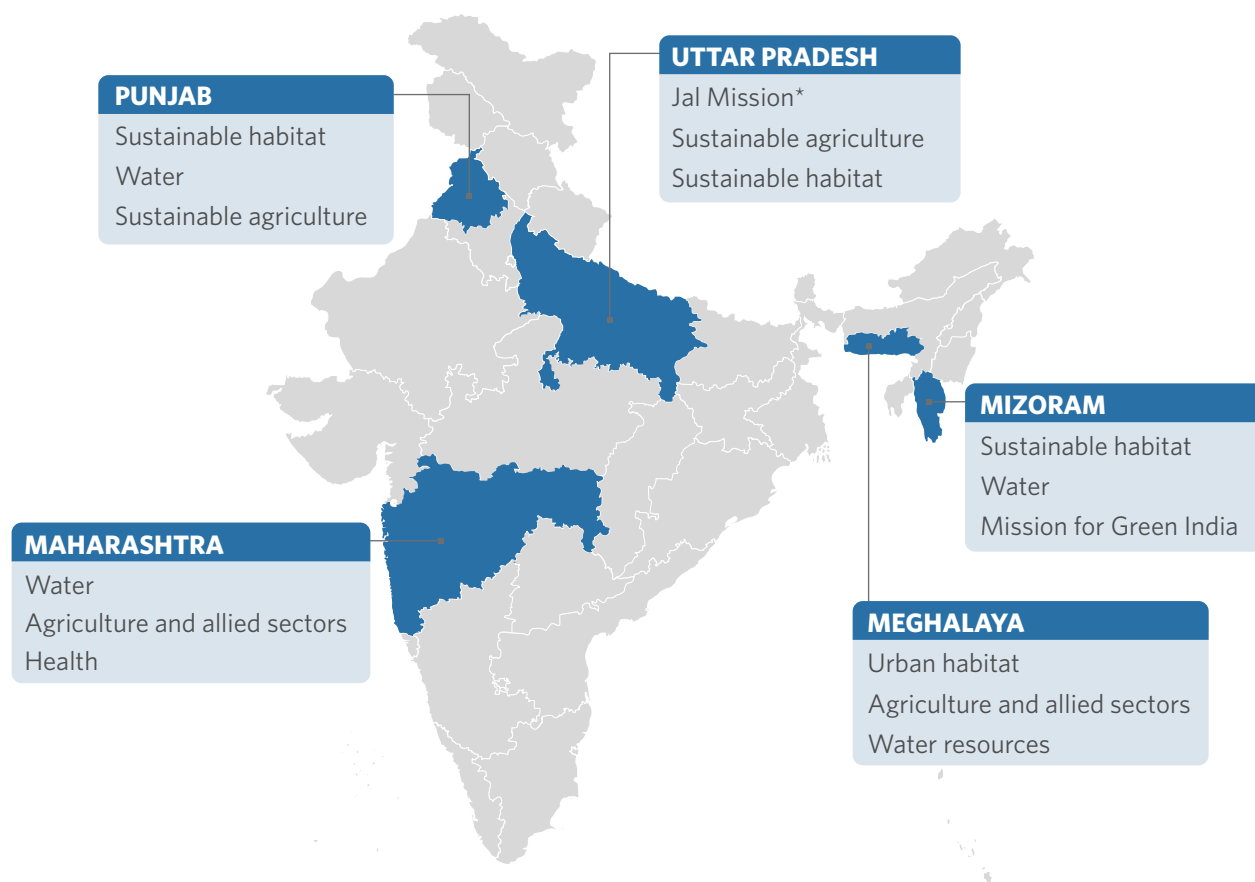
largest share for urban habitat (48%) and agriculture and allied sectors (44%). Figure 4 shows sectors with the largest reported finance requirements across the SAPCCs, and Figures 5-7 show state-specific shares. Activities with cross-sectoral linkages are classified differently across plans. For instance, Punjab's SAPCC classifies several irrigation-related activities within Sustainable Agriculture, while Uttar Pradesh's identifies irrigation as a component of water resources.

### **Box 3. How location and livelihoods shape climate risk**

Climate risks vary across and within Indian states. Differences in agroclimatic zones and localized geographic factors lead to variation in vulnerability and risk profiles at the district level (Dasgupta et al. 2024, MoEFCC 2025), ranging across floodplains, coastal strips, and drought-affected agricultural zones.

Climate-sensitive livelihoods also shape adaptation needs. Up to 75% of India's workforce (around 380 million people) work in highly heat-affected activities such as agriculture and construction (Balsari et al. 2026). The intersection of climate exposure, livelihood dependence, and sector-specific vulnerabilities requires a nuanced understanding of the context-specific climate risks and state-led adaptation planning.

Reported requirements for strategic knowledge are comparatively small. These include Mizoram (0.3%), Punjab (0.1%), and Uttar Pradesh (0.02%). These reported shares may not represent all finance requirements on knowledge and capacity, which may also be integrated in sectoral interventions.

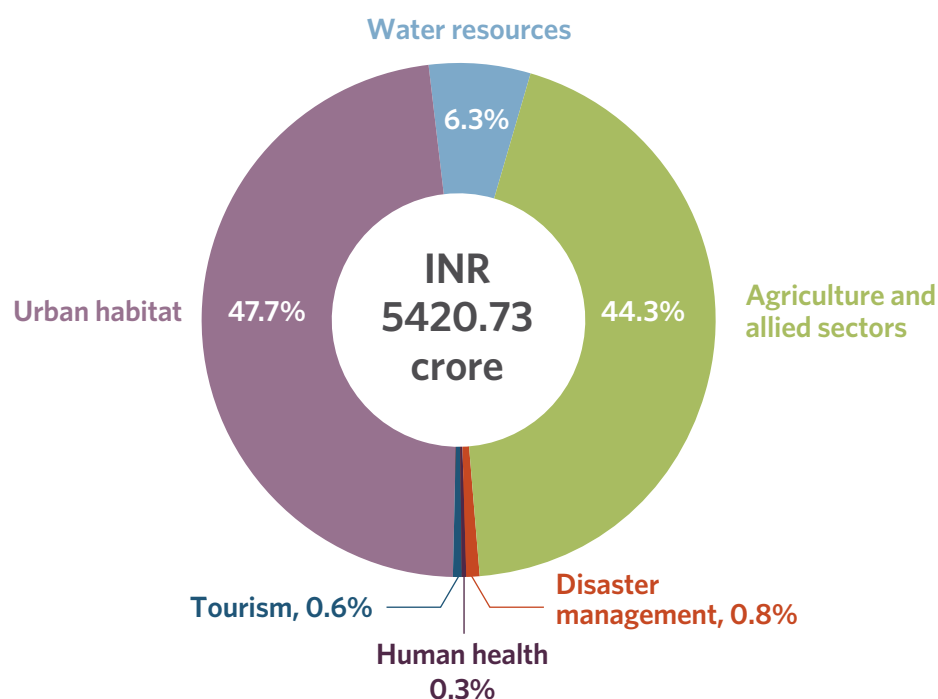
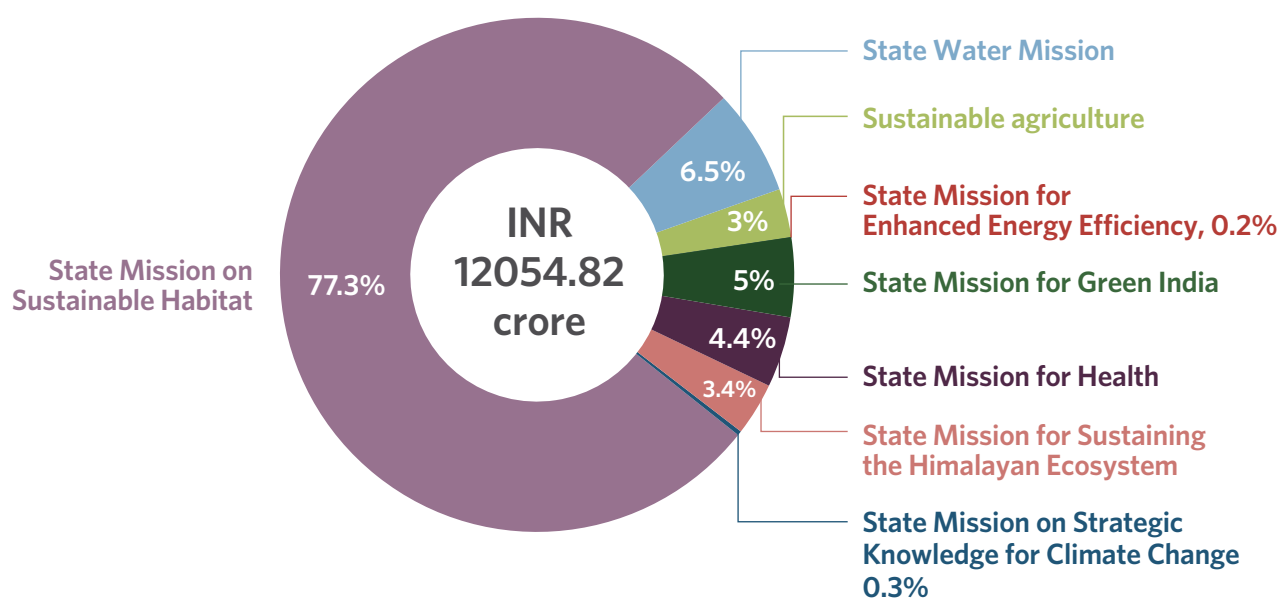
**Figure 4.** Sectors with the largest reported adaptation finance requirements in selected SAPCCs

\*Jal Mission is the flagship water program of the Government of India. (PIB 2026g)

**Source:** Based on SAPCCs assessed

**Note:** Sector definitions and treatment of cross-cutting activities vary across states and are not strictly comparable; the sectors shown here should not be interpreted as any cross-state ranking of adaptation priorities.

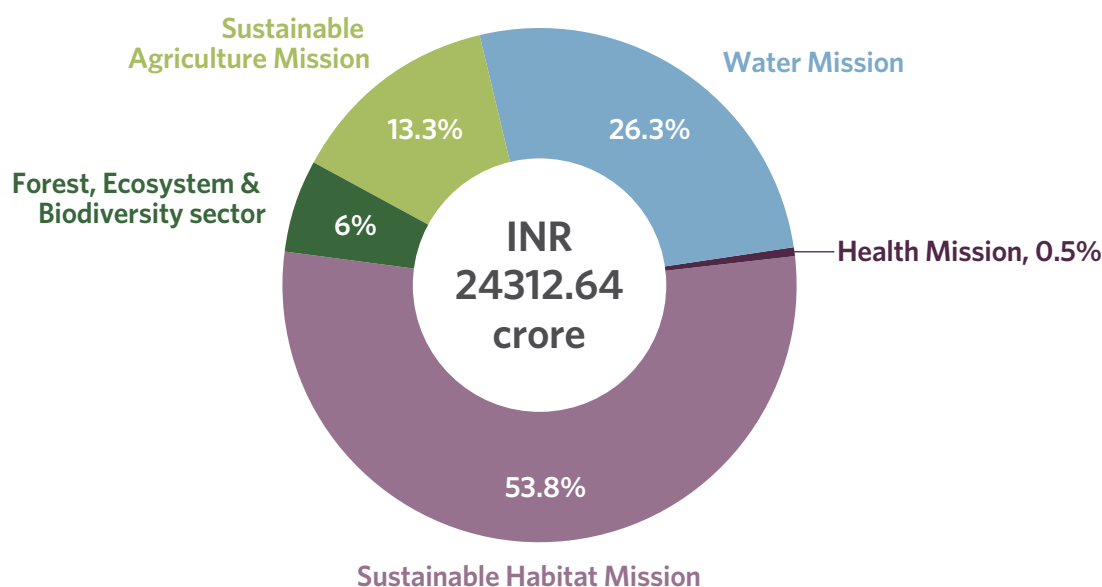
While common areas emerge, relative weight varies across states. This is because state-specific planning priorities, sector definitions and terminologies, including for missions and department groups, and activity coverage differ across SAPCCs, and each state context carries unique geographical and sectoral nuances.

**Figure 5.** Sectoral adaptation finance requirements (%), Meghalaya**Figure 6.** Sectoral adaptation finance requirements (%), Mizoram

Mizoram's SAPCC identifies the State Mission for Green India as part of its adaptation strategy, with the mission covering important, identified priority areas including forestry and ecosystem-related interventions such as ecological restoration, biodiversity conservation, forest fire management, and sustainable forest management, as well as capacity building of institutions for the same (Government of Mizoram 2025). Although Mizoram's SAPCC

classifies the State Mission for Enhanced Energy Efficiency under mitigation, it also identifies cross-cutting components. This analysis therefore attributes 50% of the mission's proposed budget to adaptation.

**Figure 7.** Sectoral adaptation finance requirements (%), Punjab



**Source:** Based on the featured SAPCCs

**Note:** Values below 0.1 are not captured in the graphic

#### Box 4. Interpreting sectoral adaptation-related finance requirements under SAPCCs

Sectoral shares of adaptation requirements in SAPCCs should not be taken to represent states' overall policy priorities or as directly comparable measures of state adaptation needs. SAPCCs include proposed adaptation-specific finance requirements, while state budgets cover broader development expenditure that may be adaptation-relevant. Relatively small sectoral shares in the reported finance requirements of SAPCCs should not be interpreted as the sector receiving limited attention in the state's broader adaptation or development agenda. Over time, closer alignment between SAPCC priorities and state budgeting processes could help translate adaptation priorities into identifiable adaptation outcomes.

## 3.3 SAPCC DEEP DIVES

This subsection examines the SAPCCs of Maharashtra and Uttar Pradesh as illustrative examples of adaptation planning and financing approaches. Uttar Pradesh has undertaken an explicit, detailed assessment of finance requirements, available scheme-based finance allocations, and the resulting gaps. Maharashtra provides granular climate risk assessment and projected sectoral investment requirements, with an accompanying Climate Finance Access and Mobilization Strategy. Together, the two cases highlight discussions of operational frameworks for financing identified priorities.

### 3.3.1 MAHARASHTRA

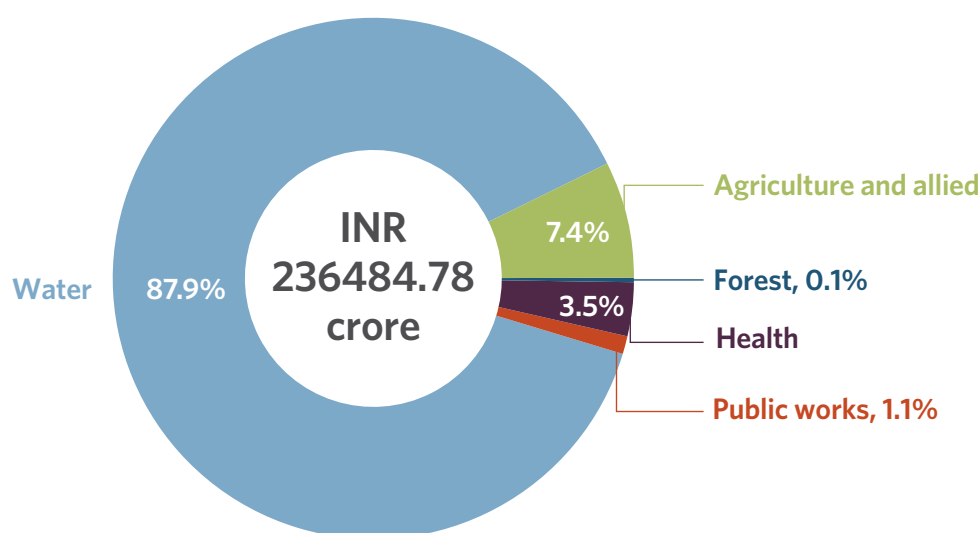
**Maharashtra's SAPCC 2.0 assesses climate risks and impacts across sectors, outlines corresponding sectoral adaptation strategies, and presents information on climate-related budgetary expenditure alongside forward-looking finance requirements.** It presents detailed, activity-level recommendations for pivotal sectors, outlining implementation agencies, financial implications, and expected outcomes to strengthen climate resilience.

**Maharashtra's SAPCC links district-level climate risk assessments to investment planning.** It also provides drought, flood, and cyclone risk profiles at the taluka (subdistrict) level to guide locally tailored adaptation. This assessment finds that 78% of talukas are prone to extreme droughts and 21% to extreme floods, with some drought-prone areas also susceptible to flooding and vice versa.

**The SAPCC assesses existing climate budgetary expenditure alongside future requirements.** Climate-related expenditure accounted for an estimated 12% of the state budget for FY 2023–24. Of this amount, nearly 88% is attributed to adaptation, 9% to mitigation, and the remainder to cross-cutting sectors (DoE&CC, GoM and CEEW 2025). The proposed climate investment requirement for 2024–30 is estimated at INR 2.98 trillion (USD 35.2 billion), with about 80% for adaptation, 20% for mitigation, and the remaining 0.2% for cross-cutting activities (ibid).

**Figure 8 shows that water accounts for nearly 88% of the proposed adaptation budget, agriculture for 7%, and health for 3%.** Given the state's water stress, the allocations focus on augmenting water supply, managing demand, and building more resilient infrastructure.

**Figure 8.** Sectoral share of proposed climate adaptation finance for 2024–30 (%) in Maharashtra SAPCC



**Source:** Based on Maharashtra SAPCC 2.0

**Note:** Only adaptation-relevant departments' proposed budget estimates for 2024–30 are shown; Values below 0.1 are not captured in the graphic

**Maharashtra complements its SAPCC with a Climate Finance Access and Mobilization**

**Strategy, which sets out a framework for financing identified climate priorities.** The strategy presents sector-specific financing approaches, identifies financial mechanisms and instruments, outlines indicative timelines, and specifies implementation mechanisms. This document supports institutional arrangements intended to enable implementation and focuses on establishing climate action cells across 43 Atal Mission for Rejuvenation and Urban Transformation cities to achieve net-zero emissions by 2050 and build resilience to extreme weather events. The strategy discusses establishing a Climate Finance Facilitation Desk within the existing State Climate Action Cell structure to improve coordination, planning, project preparation, and access to diverse sources of finance (Government of Maharashtra 2025).

**While the SAPCC does not estimate a financing gap, the Climate Finance Access and Mobilization Strategy provides an indicative assessment of the projected department budgets.**

According to the Climate Finance Access and Mobilization Strategy, extrapolating the Water Resources Department's FY 2025-26 budget to 2030 would put the department's cumulative allocation at INR 1.76 trillion (USD 20.81 billion), while the SAPCC's proposed climate budget is INR 2.08 trillion (USD 24.59 billion). The indicative difference of INR 31,545 crore (USD 3.73 billion), or about 15% (Government of Maharashtra 2025), results from different assumptions in these strategies and does not necessarily represent a real shortfall. Extending a similar analysis to the industry sector, the state's industries department's cumulative budget would amount to INR 5,435 crore (USD 0.64 billion) by 2030, compared to a stipulated climate budget of INR 26,350 crore (USD 3.12 billion) (Government of Maharashtra 2025).

**Maharashtra's detailed planning approach is supported by a multi-level institutional architecture for SAPCC implementation.**

The institutional structure includes a State-Level Steering Committee on Climate Change, chaired by the Chief Secretary, under the guidance of the Chief Minister's Governing Council on Climate Change. The State Knowledge Management Centre on Climate Change is the focal point for climate-related research. A State Climate Action Cell, established in 2023, supports it and coordinates and supports SAPCC implementation. The SAPCC outlines mechanisms to monitor implementation, including a stock-taking exercise by line departments and the development of key performance indicators to track progress scientifically. The plan also envisages divisional, district, and city-level Climate Action Cells to connect state-level priorities with implementation.

Overall, Maharashtra's approach to climate action combines granular risk assessments, institutional arrangements, and a dedicated climate finance mobilization strategy.

### 3.3.2 UTTAR PRADESH

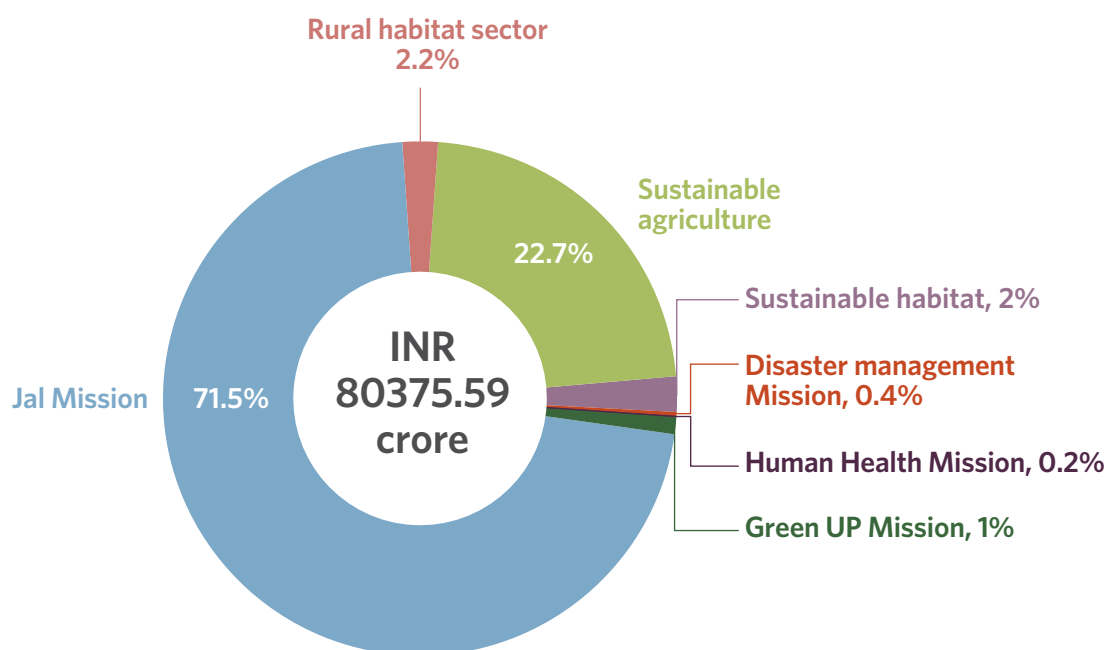
**The Uttar Pradesh (UP) SAPCC 2.0 is among the few to provide detailed activity-level estimates of finance requirements and a corresponding finance gap assessment.**

It prioritizes 179 actions across nine missions covering seven sectors: Agriculture & Allied, Water Resources, Forest and Biodiversity, Energy, Urban & Rural Habitats, Human Health & Disaster Management, and Knowledge Management. Of these, 106 are adaptation actions, 51 are mitigation actions, and 22 are both adaptation and mitigation actions.

**The state estimates the total budget required to implement the SAPCC activities at INR 112,205 crore (USD 13.27 billion).** Of this amount, about 67% is for adaptation specifically and 17% for activities with both adaptation and mitigation components. The total estimated

adaptation budget required across activities is INR 80,376 crore<sup>37</sup> (USD 9.50 billion). The Jal Mission has the highest proposed budget, followed by the Sustainable Agriculture Mission. Together, these areas account for about 95% of the total adaptation requirement.

**Figure 9.** Sectoral adaptation finance requirements (%), Uttar Pradesh



**Source:** Based on the Uttar Pradesh SAPCC 2.0

**Note:** Values below 0.1 are not captured in the graphic

**The UP SAPCC reports an estimated climate finance gap of 28%, with approximately 72% of finance flows mapped to ongoing central and state schemes and programs.** At the sectoral level, the SAPCC reports the largest funding gaps in Green UP,<sup>38</sup> Disaster Management, and Strategic Knowledge. For the Human Health mission, 100% of funding is indicated as secured through government schemes, though the budget requirement is substantially lower than for other missions, at less than 0.2%, or only INR 171 crore (USD 20.2 million). This relatively small requirement detailed in the SAPCC may not reflect the state's overall adaptation-relevant health expenditure. The plan also outlines potential sources to bridge gaps, such as bilateral or multilateral international funding, national funds like the National Adaptation Fund on Climate Change, private grants from Corporate Social Responsibility (CSR) funds, and private finance through green bonds, voluntary markets, and public-private partnerships (PPPs). While the Energy Efficiency & Green Energy segments are mitigation-oriented, the SAPCC identifies

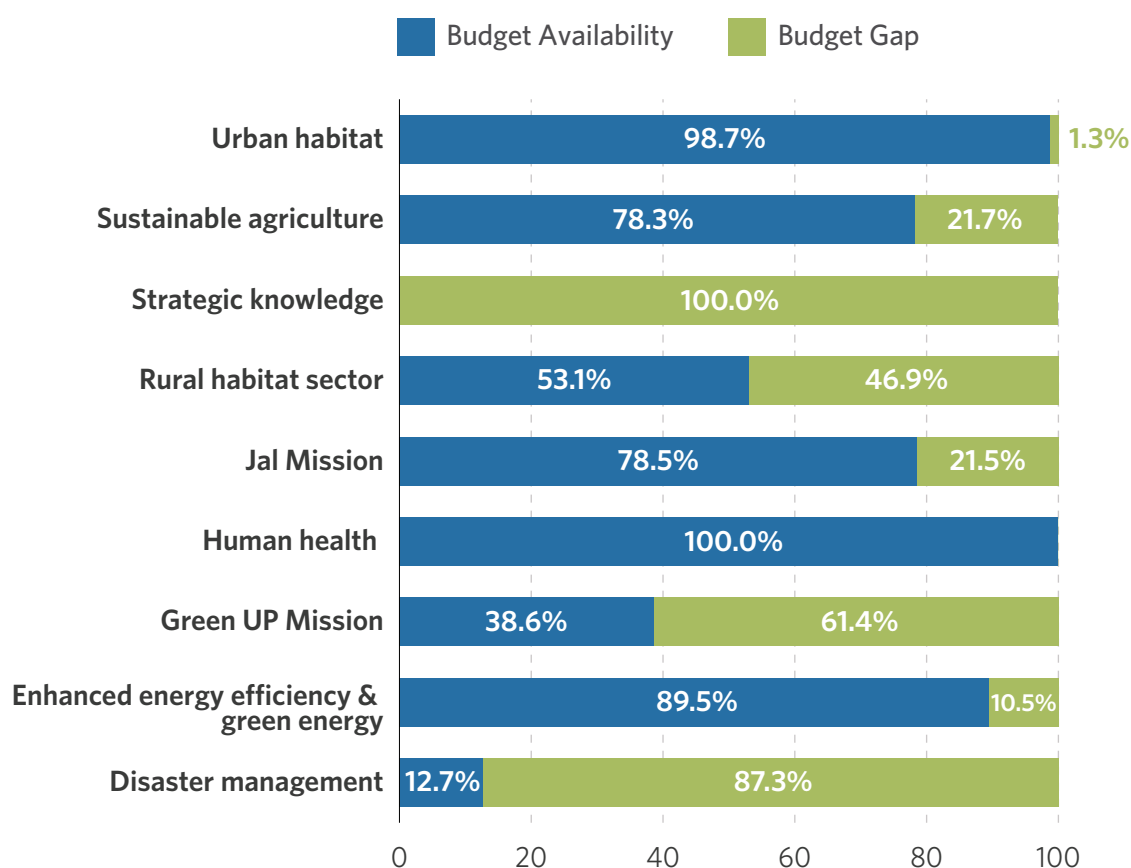
<sup>37</sup> A 50:50 split is assumed for activities and sub-activities that are classified as having both mitigation and adaptation components in the SAPCC document.

<sup>38</sup> The Green UP Mission includes adaptation, mitigation, and cross-cutting actions, covering strategies that focus on agroforestry and forest dependent livelihoods, biodiversity conservation, restoring and enhancement of forest and tree cover, and wetland conservation (Government of Uttar Pradesh 2025).

adaptation elements within them (e.g., efficient cooling). In line with the report's methodology, 50% of the reported finance for these cross-cutting activities has been attributed to adaptation.

**UP's SAPCC highlights institutional mechanisms for coordinating climate action across state departments.** The Department of Environment, Forest and Climate Change (DoEF&CC) guides the formulation and implementation of state climate policy. The UP Climate Change Authority supports SAPCC implementation and oversees overall monitoring and evaluation. The SAPCC also proposes climate change cells across departments to support planning and align sectoral initiatives. The monitoring and evaluation framework in the SAPCC sets out a three-tier system, measuring progress through indicators across (i) strategies and actions, (ii) Missions, and (iii) the overall SAPCC.

**Figure 10.** Uttar Pradesh's adaptation budget and gaps (%)



**Source:** Based on the Uttar Pradesh SAPCC 2.0

Overall, UP's SAPCC shows how to translate state climate priorities into activity-level finance requirements and implementation arrangements. The plan combines activity-level estimation of requirements and gap identification with potential sources of finance, departmental responsibilities, and a framework for monitoring implementation.

## 4. BRIDGING ADAPTATION FINANCE GAPS

This section explores trends in adaptation finance, the economic and fiscal context of states planning and financing adaptation, the linkages and role of disaster risk financing, and the emerging role of private finance in the sector.

### 4.1 ADAPTATION FINANCE IN INDIA: TRENDS AND SOURCES

**Domestic funding remains the predominant source of adaptation finance in India**, rising from 94% in FY 2019-20 to 98% in FY 2021-22 (CPI 2022; CPI 2024b). Adaptation-relevant domestic funding, primarily channeled through government programs and schemes, has increased in both volume and as a share of GDP, rising from 3.7% in 2015-16 to 5.6% in 2021-22 (MoEFCC 2023), as shown in Table 1. Because adaptation priorities are closely linked to development objectives, tracking identifiable adaptation-specific budgetary expenditure across all states remains challenging.

**Table 1.** Adaptation-relevant spending as a share of GDP (%)

| Yea     | Adaptation-relevant spending as a share of GDP (%) |
|---------|----------------------------------------------------|
| 2000-01 | 1.45                                               |
| 2003-04 | 1.79                                               |
| 2005-06 | 1.91                                               |
| 2008-09 | 2.56                                               |
| 2009-10 | 2.84                                               |
| 2015-16 | 3.70                                               |
| 2021-22 | 5.60                                               |

**Source:** Based on MoF 2011 and MoEFCC 2023

**Note:** Estimates are shown only for years for which data was available in the cited sources; data was not available for the intervening years. Estimates are not comparable across years as the scope and methodology differ across MoF and MoEFCC assessments

**International adaptation finance remains limited relative to needs.** International adaptation finance to developing countries globally stood at USD 26 billion in 2023, even as adaptation needs rose to an estimated USD 310-365 billion per year by 2035 (UNEP 2025). If finance flows remained at their 2023 level, these figures point to an annual gap of USD 284-339 billion by 2035, with needs about 12-14 times current international flows (UNEP 2025). Concerns have also been raised about the gap between committed international adaptation spending and

actual disbursements, with a previous DEA analysis indicating a shortfall between promised climate finance flows and what developing countries actually received (MoF 2015). For India, international adaptation finance remains an important complementary source, with continued emphasis on the critical need to expand access to concessional finance, advanced technologies, and capacity-building programs (MoEFCC 2025).

**India's climate finance architecture continues to evolve across diverse channels.** Recent strategies emphasize strengthening DFIs, expanding insurance coverage against climate risks, and deepening domestic capital markets. Potential wider climate financing approaches include issuing sovereign green bonds, providing targeted credit lines and financing schemes to support climate-related investments, and developing sustainability-linked funding guidelines to improve disclosure quality and investor confidence in climate-based investments (MoF 2026). These developments provide a broader financing context with opportunities for adaptation-specific instruments to evolve further.

## 4.2 SUBNATIONAL ADAPTATION FINANCE: ECONOMIC AND FISCAL CONTEXT

**States approach adaptation differently based on their economic and fiscal contexts.** State governments account for two-thirds of public spending in India (NITI Aayog 2026), with their purview spanning multiple areas of public expenditure. SAPCCs also identify state budgets and existing public programs as important sources of adaptation finance. The federal fiscal structure thus provides an important perspective on the financing environment within which Indian states plan, prioritize, and implement adaptation action (Arora and Ghosh 2026).

### 4.2.1 FISCAL CONTEXT OF STATES

Economic and fiscal contexts vary across states and evolve over time. These are reflected in indicators such as states' own revenue mobilization, fiscal balance and revenue balances, outstanding debts<sup>39</sup> as a share of gross state domestic product, capital expenditure as a share of total expenditure, and the share of Union transfers in revenue receipts. Drawing on the 16th Finance Commission (FC-16) report, Table 2 lists these indicators for FY 2023–24 to illustrate different dimensions of state fiscal structure. These indicators provide a fiscal context for the SAPCC-based adaptation finance requirements and are not intended as a comparison of states' fiscal health and capacity to finance adaptation. Adaptation financing takes place in a broader setting influenced by various economic, fiscal and institutional factors that these indicators do not fully capture.

<sup>39</sup> **Fiscal balance** is the difference between a state's total expenditure and total receipts, excluding borrowings, expressed here as a share of GSDP. **Revenue balance** is the difference between revenue receipts and expenditure; a negative balance denotes a deficit and a positive balance denotes a surplus. **Outstanding debts** are stock of liabilities outstanding at the end of the fiscal year.

**Table 2.** Fiscal context of covered states for FY 2023–24

| State         | Own revenue<br>(% of GSDP) | Union transfers<br>(% of total<br>revenue<br>receipts) | Capital<br>expenditure<br>(% of total<br>expenditure) | Fiscal deficit<br>(% of GSDP) | Revenue deficit<br>(% of GSDP) | Total outstanding<br>liabilities<br>(% of GSDP) |
|---------------|----------------------------|--------------------------------------------------------|-------------------------------------------------------|-------------------------------|--------------------------------|-------------------------------------------------|
| Maharashtra   | 7.9                        | 25                                                     | 15                                                    | 2.2                           | 0.3                            | 18                                              |
| Meghalaya     | 7.1                        | 79                                                     | 21                                                    | 6                             | -2.6                           | 40.6                                            |
| Mizoram       | 7                          | 80                                                     | 10                                                    | 2.1                           | -1.8                           | 37                                              |
| Punjab        | 7.2                        | 39                                                     | 4.5                                                   | 4.4                           | 3.7                            | 42.9                                            |
| Tripura       | 4.7                        | 82                                                     | 13                                                    | 0.8                           | -2.8                           | 27.9                                            |
| Uttar Pradesh | 8.2                        | 56                                                     | 22                                                    | 3.2                           | -1.4                           | 29.7                                            |

**Source:** FC-16 report

**Notes:** Own revenue includes both tax and non-tax components. Union transfers and capital expenditure represent approximate shares. For revenue deficit, negative values indicate a revenue surplus. These indicators provide contextual information on states' fiscal structures. They do not constitute an assessment of fiscal health, policy performance, or adaptation financing capacity. No individual indicator provides a comprehensive picture of the financing environment within which states pursue developmental and adaptation priorities.

#### **Intergovernmental fiscal arrangements are an important part of state-level public finance.**<sup>40</sup>

States' own resources, as well as Union transfers, form the broader system supporting state-level development and adaptation priorities. For instance, these arrangements also include mechanisms that address disaster-risk considerations through disaster management grants. Evidence from Indian states indicates some association between intergovernmental transfers and state income levels and state-level climate-related expenditure, along with other economic factors (Mukherjee et al. 2025). Together, these illustrate the complementary roles of different levels of government and financing channels in supporting the flow of finance toward development and climate priorities.

## **4.3 DISASTER RISK FINANCING AND CLIMATE ADAPTATION**

**India's disaster risk financing ecosystem has evolved as recognition of climate change-induced hydrometeorological disasters has grown.** Response and relief continue to account for a substantial share of disaster finance, while dedicated mitigation windows expand opportunities for ex-ante risk reduction and create potential linkages with long-term climate adaptation.

**Financial flows for disaster risk management and adaptation share core objectives of building resilience and reducing risk.** Both adaptation and disaster risk reduction address how hazardous

<sup>40</sup> "Intergovernmental" refers to the Union-state fiscal transfers, as per government terminology.

events interact with exposed and vulnerable communities and assets, focusing on risk reduction, vulnerability reduction, and resilience-building to external shocks (NDMA 2025). Consideration of disaster risk in both adaptation investment and disaster financing approaches is important (Ray et al. 2021).

**Disaster management<sup>41</sup> is explicitly recognized as relevant to climate adaptation across India's key climate policy communications.** India's updated NDC (2026), Initial Adaptation Communication to the UNFCCC, and the BTR identify it as climate-sensitive and adaptation-relevant. India includes it as a priority sector in its updated NDC and forthcoming NAP. In this context, this section considers the synergies and the potential linkages between disaster-risk financing and climate adaptation.

**India's financial architecture for disaster management is shaped by two institutional arrangements: the Disaster Management Act (2005, amended in 2025) and the Finance Commission recommendations and report.** For 2021–26, the 15th Finance Commission (FC-15) recommended a total corpus of INR 1.6 trillion (USD 21.50 billion)<sup>42</sup> for the State Disaster Risk Management Fund, split 80:20 between the State Disaster Response Fund (SDRF) and State Disaster Mitigation Fund (SDMF), with a mirror structure at the national level with the National Disaster Risk Management Fund divided between the NDRF and NDMF.

**The disaster financing envelope has been expanded for 2026–31.** The FC-16 recommended a combined INR 2.04 trillion (USD 24.17 billion) for the SDRF and SDMF from 2026–27 to 2030–31, alongside INR 794 billion (USD 9.39 billion) for the NDRF and NDMF at the national level (FC-16, 2026). States contribute 25% of SDRF and SDMF allocations (reduced to 10% for North-Eastern and Hill states), with the Union Government providing the balance.

### 4.3.1 EXPENDITURE ON DISASTER RESPONSE AND MITIGATION

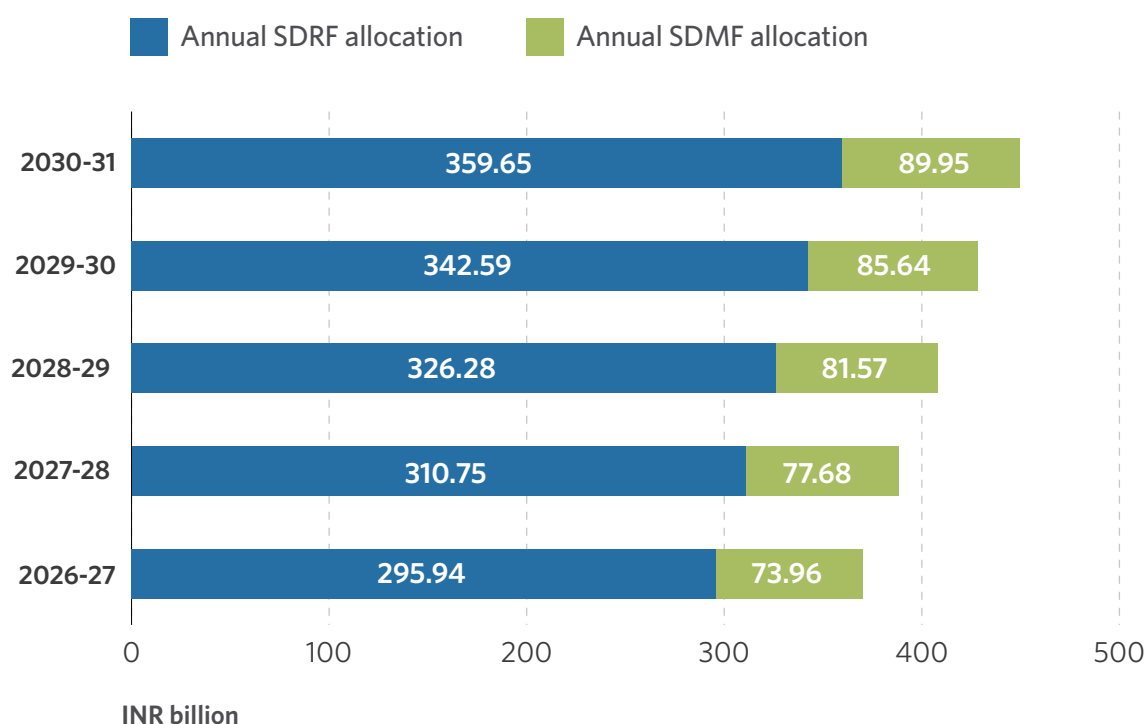
**NDRF releases reflect the continuing role of response and relief funding.** The FC-15 allocation of INR 547.70 billion (USD 6.48 billion) for the NDRF is structured across Response and Relief (40%), Recovery and Reconstruction (30%), and Preparedness and Capacity Building<sup>43</sup> (10%) sub-windows.<sup>44</sup> The Response and Relief window accounted for 54.3% of actual releases (FC-16, 2026), which illustrates the continuing importance of response finance alongside growing mitigation finance. Meanwhile, states can use SDRF funds across the two sub-windows: Response and Relief, and Recovery and Reconstruction.

41 Disaster risk reduction refers to reducing vulnerability and exposure upstream, before disasters occur. Disaster risk management is a broader term that encompasses the full disaster cycle—preparedness, response, recovery and reconstruction — in addition to risk reduction. Both overlap with climate adaptation.

42 Conversion assumes an annual average exchange rate of 1 USD: 74.50 INR for 2021–22. (Available [here](#)).

43 FC-16 recommends that Preparedness and Capacity Building should come under the SDMF and NDMF, as it is a predisaster activity, unlike response, relief, recovery, or reconstruction, which are all postdisaster events.

44 The NDRF comprises two funding windows – the NDRF and NDMF. FC-15 recommended allocating the NDRMF between these windows in 80:20 ratio between these. Accordingly, the amount reported here, which covers the NDRF component, represents 80% of the total NDRMF allocation.

**Figure 11.** SDRF and SDMF allocations for 2026-31

**Source:** Based on FC-16

**Dedicated disaster mitigation funds expand funding for ex-ante risk reduction.** The FC-15<sup>45</sup> introduced national and state disaster mitigation funds, in addition to the response, recovery and preparedness funding, expanding disaster financing to include more ex-ante risk reduction. Since its introduction, more states have established mitigation funds and issued implementation guidelines. Deployed funds cover adaptation-relevant measures spanning flood protection, firefighting systems, dam restoration, stormwater drainage, early warning, and groundwater recharge, illustrating the overlap between disaster mitigation and adaptation.

**Disaster mitigation funds are beginning to be deployed.** After the High-Level Committee received statutory status under the Disaster Management (Amendment) Act, 2025, NDMF deployments in 2025–26 span a range of disaster mitigation activities. This includes INR 24.44 billion (USD 0.29 billion) under the Urban Flood Risk Management Programme Phase II and INR 6.92 billion (USD 0.08 billion) for Assam wetland restoration (PIB 2026e). As of July 2025, releases occurred across three sub-windows: urban flooding, drought assistance and glacial lake outburst flood mitigation.

45 With allocations of INR 320.31 billion for SDMF and INR 136.93 billion for NDMF

**Box 5. Disaster Risk Index in the 16th Finance Commission**

The 16<sup>th</sup> Finance Commission (FC-16) updated the Disaster Risk Index, with the hazard list now covering ten disasters: flood, drought, cyclone, earthquake, landslide, hailstorm, cold wave, cloudburst, lightning, and heatwave.<sup>46</sup> The latter two are classed as state-specific disasters. The methodology aligns with the Intergovernmental Panel on Climate Change and the UN Disaster Risk Reduction framework and calculates disaster risk as a multiplicative function of hazard, exposure, and vulnerability. The Disaster Risk Index informs 30% of the disaster grant allocation under FC-16, with the remaining 70% based on each state's historical disaster-related expenditure.

**4.3.2 ALTERNATIVE DISASTER RISK FINANCING MECHANISMS**

**India's disaster risk financing is driven by public budget transfers, and market-based instruments are nascent and evolving.** Innovative disaster risk financing mechanisms such as insurance, parametric solutions, and catastrophe bonds are increasingly gaining attention.

**Insurance for disasters remains nascent.** Uptake may be influenced by affordability, data, product design, awareness, risk profiles, and market maturity (FC-15 2020). The *Pradhan Mantri Fasal Bima Yojana*, a crop insurance scheme with wide coverage that is jointly funded by the Union and state governments, is an example of a large-scale government intervention. Another example is Nagaland's state-wide parametric insurance solution, a multistakeholder partnership that covers the entire state against extreme rainfall as India's first comprehensive parametric disaster insurance (FC-16, 2026).

**The FC-16 identifies catastrophe bonds and insurance as areas for further exploration.** Scaling parametric insurance, catastrophe bonds and innovative premium financing mechanisms could complement existing mechanisms and help close the protection gap. Multi-stakeholder partnerships for innovative financing solutions could further widen the path for private sector participation in adaptation action.

**4.4 ROLE OF THE PRIVATE SECTOR IN FINANCING ADAPTATION**

**Private actors play an important complementary role to public finance where viable business or de-risking mechanisms exist in accelerating adaptation action.** Globally, tracked private investment in adaptation stood at USD 3.8 billion,<sup>47</sup> out of total tracked adaptation finance flows of USD 64 billion in 2024 (CPI 2026b). The private sector will not meet the full needs for adaptation efforts. Nevertheless, the private sector, including the financial sector and businesses, can participate in certain adaptation areas, including climate-resilient agriculture, water and wastewater, and resilient infrastructure (CPI 2026b; OECD 2026). Table 3 outlines private-sector initiatives across these sectors. Individuals and households, which continue to pay for services to adapt to climate impacts, also form a crucial source. Adaptation needs such as

<sup>46</sup> Eleven states have already notified heat waves as state-specific disasters.

<sup>47</sup> Capturing the actual volume of private finance in adaptation remains challenging due to issues with classifying adaptation finance and limited disclosure incentives and requirements (CPI 2026b).

disaster management, large-scale flood protection, ecosystem conservation and welfare services are expected to continue to require substantial public finance.

**Table 3.** Illustrative examples of private engagement in adaptation technologies and solutions

| Priority adaptation sectors | Examples of private sector engagement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Agriculture                 | <ul style="list-style-type: none"> <li>• Crop monitoring and intelligence by tech companies such as Fasal, <a href="#">SatSure</a>, <a href="#">DeHaat</a></li> <li>• Drip irrigation by <a href="#">Netafim</a>, <a href="#">Jain Irrigation</a></li> <li>• ITC's <a href="#">e-Choupal</a> offers farmers real-time information on weather, market prices, and best practices</li> <li>• <a href="#">Agtual</a> links price risk cover to market and satellite data for crops like maize, soybean, and cotton</li> <li>• Insurtech is designing area-yield index insurance tailored to climate risks, helping de-risk agriculture for farmers</li> </ul>                                                                                                           |
| Water                       | <ul style="list-style-type: none"> <li>• PPP via hybrid annuity under <a href="#">Namami Gange</a> for sewage infrastructure</li> <li>• <a href="#">Swajal's</a> Water ATMs enable decentralized, prepaid clean water</li> <li>• <a href="#">ECOSTP</a> and <a href="#">Ecosoft</a> offer low-cost wastewater reuse solutions</li> <li>• Water.org <a href="#">WaterCredit</a> links microfinance to water, sanitation, and hygiene access</li> <li>• <a href="#">CleanEdge Resources</a> providing zero-liquid discharge for wastewater treatment, funded by Tata Capital</li> </ul>                                                                                                                                                                                |
| Health                      | <ul style="list-style-type: none"> <li>• <a href="#">SEWA's</a> heat-linked microinsurance scaled to cover over 225,000 women</li> <li>• <a href="#">Sustainable Access to Markets and Resources for Innovative Delivery of Healthcare</a> (SAMRIDH) blended finance facility offered grants and debt financing from a pool of USD 250 million in philanthropic and private sector capital to healthcare sector innovation</li> </ul>                                                                                                                                                                                                                                                                                                                                |
| Infrastructure              | <ul style="list-style-type: none"> <li>• Startups like <a href="#">Ant Studio</a> promote passive cooling with VC and private funding; <a href="#">Asian Paints</a> offers cool roof products; and <a href="#">Infosys</a> pilots radiant cooling via corporate capex for commercial use</li> <li>• For power sector resilience, <a href="#">Tata Power-DDL</a> is deploying smart grids with geographic information systems through corporate capex and PPPs</li> <li>• Companies like <a href="#">Bitubin</a> are using innovative materials to improve road durability in extreme conditions</li> <li>• <a href="#">Ibisa</a> and <a href="#">mistEO</a> are developing parametric insurance using insurance-linked securities and risk transfer tools</li> </ul> |

**Note:** Sources linked in the table

**Most of India's tracked adaptation efforts<sup>48</sup> are funded by domestic public expenditure** (CPI 2026a). At the same time, market expectations for private action on climate risk management and adaptation are evolving through regulatory guidelines, investor requirements, and voluntary frameworks. While private investment is expanding, as illustrated by the examples in Table 3, private adaptation investment has yet to reach scale.

Information asymmetry and a lack of proven revenue models are barriers to scaling private sector adaptation investment. India's private sector—including financial institutions, asset managers, corporations, and MSMEs—has begun to acknowledge and address needs arising from current and future climate risks. However, these efforts are nascent and fragmented. While there is broad recognition of the adverse impacts of physical climate risks on macroeconomic parameters and the economic benefits of adaptation action, there is little clarity on how to translate these into financial returns (Rising et al. 2026).

<sup>48</sup> The scope of the tracked flows includes disaster risk management, on-farm adaptation-related agricultural activities and adaptation-related health activities.

**Many adaptation projects lack short-term financial returns and have nascent investment theses, uncertain cash flows, and small ticket sizes.** This mismatch with investor timelines and requirements makes it difficult to raise private commercial capital (CPI 2024c). Unlike mitigation projects such as utility-scale solar installations that generate direct, predictable cash flows from power sales, adaptation measures often yield public goods or deferred, avoided losses. Because these outcomes are difficult to monetize, private capital remains largely on the sidelines. Further, inadequate information on what qualifies as adaptation, and how it is tagged and assessed, makes it challenging to capture the quantum of initiatives and drive concerted private sector efforts (CPI 2024d; CPI 2026c).

#### 4.4.1 CSR AND ADAPTATION FINANCE

**In India, reported initiatives to integrate climate risk considerations into management and operations are largely confined to large corporations.** While smaller companies and MSMEs may already be responding to climate impacts on their operations, evidence on such actions is lacking. Select large corporations are adopting methodologies to assess and quantify climate risks and prioritize adaptation action across their operations, while also supporting MSME partners across their supply chains through their CSR budgets. India's CSR mandate, which requires companies in certain categories to spend at least 2% of net profit on social and environmental activities, provides a stable and trackable source of private capital for social impact (ICC 2026). CSR-eligible sectors cover priority areas such as the environment, health, gender equality, and disaster management. However, as of 2025, the mandate did not cover climate action, making it difficult to determine the climate relevance of CSR activities. Although CSR spending is a private capital source, it is driven by regulation, does not seek returns, and is akin to grant funding.

**CSR budgets can help build resilience of supply chain actors and implement community adaptation measures around their operations.** This translates into action for employees, dependent livelihoods, and MSMEs that form part of company value chains. The government also supports MSMEs in their climate journeys through schemes including the MSE Green Investment and Financing for Transformation Scheme and the MSE Scheme for Promotion and Investment in Circular Economy (PIB 2024c; BEE 2026). These can serve as entry points for CSR to support MSME adaptation efforts. The recent Companies (Corporate Social Responsibility Policy) Amendment Rules 2026 allow companies to use part of their CSR spending on zero-coupon, zero-principal instruments (NSE 2026).<sup>49</sup> These instruments can therefore finance adaptation activities, which fall within the Social Stock Exchange's ambit of eligible activities (NSE 2025). Companies can also use their CSR budgets to build resilience in communities around their operational sites, especially in mining and industry, with the dual objective of minimizing environmental impacts and fostering long-term community well-being (Kumar et al. 2022).

#### 4.4.2 THE GROWING ROLE OF THE FINANCIAL SECTOR IN CLIMATE RISK

**India's financial sector has begun assessing and integrating physical risk considerations across its frameworks, portfolios and operations to varying degrees.** Climate-related financial disclosure requirements set by the Securities and Exchange Board of India (SEBI) and the

<sup>49</sup> Zero coupon zero principal instruments must be issued by non-profit organizations listed on the Social Stock Exchange, a Stock Exchange segment that supports social enterprises (NSE 2026).

Insurance Regulatory and Development Authority of India (IRDAI) are building momentum around climate risk considerations in the financial sector. Beyond regulations, initiatives such as SEBI's environmental, social, and governance debt securities framework are beginning to generate market activity in both mitigation and adaptation. Through these securities, Samunnati Financial Intermediation & Services Private Limited has raised INR 500 million (USD 5.91 million) via green bonds to finance climate-smart agriculture. Cities such as Ghaziabad, Ahmedabad, Vadodara and Nashik are to issue green bonds earmarked for sewage treatment and reuse, industrial wastewater treatment facilities and water supply (SEBI 2026; Samunnati 2024).

The past five years have seen progress in the prioritization of climate risk and green and adaptation initiatives within the financial sector:

- RBI's 2024 draft Disclosure Framework on Climate-Related Financial Risks underscores the implications of climate-related risks on the country's financial stability, and once finalized and implemented, will require specified entities to disclose their climate-related financial risks and opportunities (RBI 2024).
- SEBI, which regulates India's capital and securities market, requires the top 1,000 listed companies to report their sustainability and climate initiatives under its Business Responsibility and Sustainability Reporting framework (SEBI 2021).
- IRDAI's Master Circular on Corporate Governance for Insurers (2024) requires insurers to establish a climate risk management framework.

#### 4.4.3 ROLE OF THE PUBLIC SECTOR IN INCREASING PRIVATE ADAPTATION INVESTMENT

**Public sector adaptation efforts are crucial for increasing private participation in adaptation.**

Defining adaptation solutions and activities, while accounting for local contexts, can help standardize and categorize adaptation activities. India's upcoming NAP is expected to provide granular sectoral vulnerability assessments and aligned adaptation priorities that can guide the design and implementation of adaptation solutions. India is also preparing its Climate Finance Taxonomy and has released a draft framework as a step toward standard classifications of adaptation activities (MoF 2025a). While this taxonomy, once released, can improve clarity and alignment for adaptation-related finance, effective operationalization will require a robust and cohesive enabling environment (Bhaptia et al. 2025).

**Providing operational pathways and clear directives for integrating adaptation into projects can help align private action with national and state-level adaptation priorities.** These could include developing an adaptation project pipeline, PPPs such as hybrid annuity models, and risk-transfer mechanisms through government-backed guarantees. Alongside developing the NAP, India is working to build investable adaptation project pipelines to mobilize public- and private-sector investments (UNDP 2024). Public finance will also play a key role in supporting households and small and micro enterprises in building their resilience and incentivizing their engagement in adaptation efforts.

**Public finance can increase private sector finance for adaptation in several ways.** These include risk mitigation tools such as guarantees to reduce expected losses and risk transfer mechanisms such as insurance, which the public and private sectors can co-develop to mitigate climate risks and ensure access at scale. Blended finance models, tailored to project types and

financing needs, can make projects feasible for investors through debt flexibility, project de-risking, and project development loans (British International Investment 2025). Results-based financing (RBF) can integrate adaptation into infrastructure projects and crowd in private-sector capital by attaching lending to predefined, measurable adaptation benefits (CPI 2021). RBF can be implemented through various instruments and approaches such as sustainability-linked loans (see Box 6), conservation impact bonds, and adaptation benefit mechanisms (NAP Global Network 2024).

#### **Box 6. Côte d'Ivoire's sustainability-linked loan: A case of result-based financing**

Côte d'Ivoire's Sustainability-Linked Finance Framework and sustainability-linked loan provide a useful example of how government-driven initiatives can create an enabling environment for accessing multiple sources of adaptation finance. Côte d'Ivoire's Sustainability-Linked Finance Framework outlines the country's strategic sustainability priorities in the energy and forestry sectors and links them to specific key performance indicators. This has enabled the country to secure its first sustainability-linked loan of EUR 433 million (USD 505 million) in the form of a sovereign loan, with private finance channeled through World Bank Group (WBG) guarantees, combining a first-loss guarantee by the International Bank for Reconstruction and Development and a second-loss guarantee by the Multilateral Investment Guarantee Agency (WBG 2026). Standard Chartered supported the process by structuring the loan as the sole lender (Standard Chartered 2025).

The transaction illustrates how several elements can combine to mobilize private finance: a government sustainability framework with measurable targets; MDB guarantees that reduce investor risk; and commercial-bank structuring and lending. Clear linkages to quantified sustainability performance targets and collaborative efforts to create an enabling environment and de-risk have helped build models for mobilizing private finance.

**States are instrumental in facilitating private investment in adaptation, with SAPCC priorities serving as an entry point for investor-friendly initiatives.** The 12 updated SAPCCs assessed across this and the previous report show diverse mentions of the private sector and potential financing pathways. Some common observations within the SAPCCs include:

- Reference to public finance as anchor funding for adaptation efforts, and private finance as complementary. PPPs receive the most mentions, indicating that public finance needs to leverage and catalyze private finance for adaptation.
- Most SAPCCs are more specific on the role of the private sector in relation to mitigation activities than adaptation.
- Private forest landowners, private healthcare providers, agricultural value chain players, and the tourism sector are frequently mentioned stakeholders, especially in the context of their role in adaptation efforts.
- Some states such as Kerala and Assam emphasize the assessment of climate risks and the integration of adaptation measures by the private sector, including agro-based industries, tourism, small businesses, road transport and real estate, to ensure business continuity.

- CSR is a commonly cited source of private finance.
- Where financial mechanisms and instruments are concerned, green bonds, voluntary carbon markets, climate risk insurance, and de-risking mechanisms such as guarantees are mentioned. Uttar Pradesh provides an illustrative example: the Ghaziabad Municipal Corporation raised INR 1.5 billion (USD 17.74 million) by issuing green bonds for a tertiary water treatment plant. Goa proposes a revolving fund and special purpose vehicle for pooling finance from different sources for climate action.

**Collaborative efforts among diverse public and private actors are bringing together perspectives for driving adaptation action.** The NAP consultation and formulation process brought together stakeholders from across sectors and areas of expertise and implementation (PIB 2025). RBI is undertaking similar consultations and initiatives, including the Climate Risk Information System, a platform for providing climate information to integrate climate risk into financial reporting and valuation (Sharma 2026).

## 5. CONCLUDING OBSERVATIONS

**India's policy architecture continues to evolve at the national and state levels, with increasing support for implementation.** The updated SAPCCs provide more detail on adaptation priorities, reported finance requirements, institutional arrangements, and other enabling environment factors crucial to translating these priorities into implementation. India continues to deepen its climate goals and adaptation action, with public expenditure on adaptation steadily increasing as a share of GDP from 3.7% in 2015-16 to 5.6% in 2021-22 (MoEFCC 2023).

**India's increasing frequency and intensity of climate events, and its high vulnerability to climate change, necessitate a substantial and urgent increase in adaptation financing** (MoEFCC 2025, GoI 2026, NDMA 2023, Adil et al. 2025). Currently, adaptation finance is mainly sourced from domestic public resources, and international finance remains restricted. In addition, reported requirements vary across states, reflecting local priorities and differences in plans' scope, planning periods, costing methods and institutional capacity and fiscal conditions.

**Private finance can complement public flows in scaling adaptation where proven revenue models and de-risking mechanisms exist.** However, a gap remains between what is investable and the role that the private sector is expected to play in adaptation. Current private engagement in adaptation remains fragmented because of a lack of proven business models with cash-flow certainty and financial returns, small ticket sizes for adaptation projects, limited methodologies and data, and uncertainty about the requisite skills and partnerships.

**The findings point to three priorities:** clearer classification and tracking of adaptation finance, continued strengthening of states' capacity to translate SAPCC priorities into financed action, and better project preparation to channel finance from different sources. Together, these would help direct finance toward locally identified needs and use available resources more effectively.

**Based on the report's analysis, the two tables below show areas to strengthen public finance for adaptation in India and explore increasing private flows.** Key stakeholders are mapped for each area.

## 1. STRENGTHENING PUBLIC FINANCE FOR CLIMATE ADAPTATION

| Solution                                                                                                                                                  | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Key stakeholders                                                                                                                                  | Adaptation priorities                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| <b>Further inclusion of adaptation priorities in policies, programs and implementation based on the upcoming NAP and India's Climate Finance Taxonomy</b> | <b>The upcoming NAP and the Draft Framework of India's Climate Finance Taxonomy (2025), once finalized, are expected to provide renewed clarity and opportunity to include and prioritize adaptation across development planning and implementation.</b> Aligning NAP adaptation outcomes, draft Climate Finance Taxonomy classifications, institutional frameworks, resources and monitoring systems can further streamline India's adaptation response.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | MoF, Ministry of Environment, Forest and Climate Change (MoEFCC) and other sectoral ministries and departments, think tanks, advisory firms       | All adaptation priorities                        |
| <b>Setting up consistent systems for tracking, measurement, and monitoring of adaptation finance</b>                                                      | <b>As India mainstreams adaptation into various sectoral programs, it needs standardized monitoring systems.</b> These can help classify and track adaptation-relevant expenditures and outcomes and build feedback loops for the effective allocation and use of adaptation finance. Such systems and frameworks can also help monitor adaptation components of private sector activities. The effectiveness of the tracking framework will depend on alignment with national priorities, clear methodologies, and capacity building to support successful adoption and implementation. Examples include country level initiatives such as Bangladesh's climate budget tagging under its Climate Fiscal Framework (GoB 2026), and Philippines' standardized climate change typology and coding structure for planning, budgeting, monitoring, and reporting of public climate expenditures (CCC n.d.). Some Indian states also undertake similar exercises, such as Odisha. | MoEFCC, Department of Science and Technology (DST), sectoral ministries and departments at national and state levels, think tanks, advisory firms | All adaptation priorities                        |
| <b>Aligning SAPCC priorities with national policies and strengthening implementation</b>                                                                  | <b>Greater consistency in classifying adaptation activities, while retaining state-specific planning flexibility, can improve comparability of finance estimates in SAPCCs across states.</b> The upcoming NAP's expected granular vulnerability assessments and detailed adaptation priorities could enable this. Alignment with NAP adaptation priorities and subsequent implementation planning will help states scale up adaptation finance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | State departments of environment, relevant sectoral departments, State-level coordinating institutions for SAPCCs                                 | All adaptation priorities, adaptation resourcing |

| Solution                                                                                                                | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Key stakeholders                                                                                                                                                                                                                      | Adaptation priorities                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Strengthening ex-ante and anticipatory disaster risk financing and exploring replication of innovative solutions</b> | <p><b>Progressively expanding India's evolving disaster mitigation financing architecture can further strengthen states' resilience.</b></p> <p>Following the introduction of dedicated disaster mitigation funds, deepening focus on ex-ante risk reduction and long-term resilience can build the adaptive capacity of people and systems and generate broader development benefits. The 16<sup>th</sup> Finance Commission's updates to India's Disaster Risk Index offer a path to mitigate climate-related disasters. Expanding the index to include explicit adaptation requirements can strengthen resilience. States can also explore tailored replication of innovative approaches such as Nagaland's Disaster Risk Transfer Parametric Insurance Solution. The <i>Pradhan Mantri Fasal Bima Yojana</i> is another established example, providing subsidized crop insurance against droughts, floods, cyclones, and hailstorms, among others (PIB 2026a).</p> | National Disaster Management Authority, State Disaster Management Authorities, India Meteorological Department (IMD), state governments, local institutions including city municipalities and village panchayats, insurance providers | Disaster risk management including early warning systems and disaster preparedness, resilient urban development, resilient infrastructure, including new infrastructure and retrofitting existing systems, community resilience and preparedness |

## 2. INCREASING PRIVATE SECTOR ENGAGEMENT IN CLIMATE ADAPTATION

| Solution                                                                        | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Key Stakeholders                                                                                                                                                                                                                                                                                                                  | Adaptation Priorities                                                                                                                   |
|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Translating climate risk information into adaptation financing decisions</b> | <p><b>Private investors can use the sectoral physical risk assessments expected in India's forthcoming NAP and the proposed RBI Climate Risk Information System (CRIS) to identify adaptation needs.</b></p> <p>Combined with on-the-ground assessments, these resources could help investors to identify risks in their portfolios or individual projects, and direct finance to address them. Because this work requires extensive expertise and resources, the RBI-CRIS could provide granular, standardized information as a credible first step for measuring and managing asset-level risks. International standards set by global bodies such as the International Sustainability Standards Board (ISSB) (IFRS n.d) can provide decision useful information on climate related risks, opportunities and learnings across geographies and businesses.</p> | MoEFCC, Reserve Bank of India (RBI), Small Industries Development Bank of India (SIDBI), Securities and Exchange Board of India (SEBI), IMD, DST, industry associations, corporates, micro, small, and medium-sized enterprises (MSMEs), development finance institutions (DFIs), commercial banks, investors, project developers | Climate-proofing portfolios and supply chains, operational resilience including organizational systems and employees                    |
| <b>Quantifying adaptation benefits and embedding them in investment theses</b>  | <p><b>Quantifying and integrating adaptation benefits into financial decision-making and mechanisms can help build a case for financing such action.</b> While granular evaluation methodologies are sparse and data and information are limited, these value streams can, where quantifiable, enable adaptation investments to yield returns (GFANZ 2026). Aligning financial structures with quantified long-term benefits can also help address the challenge of upfront capital requirements for adaptation projects.</p>                                                                                                                                                                                                                                                                                                                                   | MoEFCC, SIDBI, IMD, DST, industry associations, corporates, startups, project developers, DFIs, multilateral development banks (MDBs), investors, research think tanks                                                                                                                                                            | Adaptation technologies and solutions across sectors with scope for private investment, including agriculture, water and infrastructure |

| Solution                                                                                             | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Key Stakeholders                                                                                                                                                                 | Adaptation Priorities                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Strengthening enabling conditions for states to attract private capital for adaptation</b></p> | <p><b>Strengthening enabling conditions at the state-level to translate adaptation priorities into investment opportunities for private capital will be essential.</b></p> <p>States can attract private capital through various approaches:</p> <ul style="list-style-type: none"> <li>▪ <b>Output-based payment mechanisms</b>, where a government entity or multilateral financial institution pays for verified outcomes such as flood risks/impacts mitigated, temperatures reduced, groundwater recharged. Côte d'Ivoire's sustainability-linked loan is one such example (see Box 6 for more detail).</li> <li>▪ <b>Pooling finance</b> through fund structures and platforms can help aggregate projects, minimize risks, and attract private capital at scale. Multilateral financial institutions, development finance institutions (DFIs), and government bodies are increasingly exploring blended finance models that combine concessional and commercial finance to finance adaptation projects. Where SAPCCs have proposed such fund structures, technical and resource assistance could support their establishment and operationalization.</li> <li>▪ <b>Guarantee mechanisms</b> by public, multilateral, or DFIs could, subject to mandate and project suitability, help to absorb tail risks that restrict private capital. Existing guarantee instruments in the energy sector offer lessons for the adaptation space. For example, the Omnivore III project, supported by the International Finance Corporation, provides a first-loss equity guarantee structure to support agritech and climate sustainability initiatives in India (Basangwa and Jain 2024).</li> </ul> | <p>National and state-level nodal agencies, sectoral ministries and departments, dedicated SAPCC institutions and funds, MDBs, DFIs, and industry associations</p>               | <p>Resilient infrastructure including critical infrastructure such as energy systems, roads, waste and stormwater management, water supply, housing and commercial buildings</p> |
| <p><b>Building a pipeline of investment-ready adaptation projects</b></p>                            | <p><b>A robust pipeline of technically sound, appropriately structured projects could help mobilize private finance.</b> Building this will require public and private stakeholders to jointly design adaptation finance opportunities that meet investor requirements. Project-preparation capacity, climate risk information, and clear policy frameworks can help convert adaptation plans into investment opportunities. For example, the Asian Development Bank Climate Adaptation Investment Planning Program supports developing countries in translating their NAP priorities into adaptation investment plans and pipelines (ADB 2023).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p>MoEFCC, sectoral governments and departments at the national and state levels, DFIs, MDBs, climate funds, philanthropic foundations, corporates, start-ups, and investors</p> | <p>Adaptation technologies and solutions across sectors with scope for private engagement, including agriculture, water and infrastructure</p>                                   |

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# ANNEXURES

## ANNEX 1. MAPPING OF ADAPTATION SCHEMES IN THE INITIAL ADAPTATION COMMUNICATION

| Sector      | Scheme                                                            |
|-------------|-------------------------------------------------------------------|
| Agriculture | Accelerated Irrigation Benefit Programme                          |
|             | Agriculture Technology Management Scheme                          |
|             | Animal Husbandry Infrastructure Development Fund                  |
|             | Breed development of Livestock and Poultry                        |
|             | Command Area Development and Water Management (CAD&WM)            |
|             | Dairy Infrastructure Development Fund                             |
|             | Extension and Innovation                                          |
|             | Feed and Fodder Development                                       |
|             | <i>Har khet ko Paani</i> Per drop more crop (Micro Irrigation)    |
|             | Horticulture Mission for Northeast and Himalayan States (HMNEHS)  |
|             | Livestock Census and Integrated Sample Survey                     |
|             | Livestock Health and Disease Control                              |
|             | <i>Mahila Kisan Sashaktikaran Pariyojna</i>                       |
|             | Mission for Integrated Development of Horticulture (MIDH)         |
|             | Monitoring, Modeling and Networking (CCSAMMN)                     |
|             | National Animal Disease Control Programme                         |
|             | National Bamboo Mission                                           |
|             | National Horticultural Mission (NHM)                              |
|             | National Innovations in Climate Resilient Agriculture             |
|             | National Livestock Mission                                        |
|             | National Mission for Sustainable Agriculture                      |
|             | National Mission on Agricultural Extension and Technology (NMAET) |
|             | National Programme for Dairy Development                          |
|             | National Rural Livelihood Mission - Deendayal Antyodaya Yojana    |
|             | <i>Paramparagat Krishi Yojana</i>                                 |
|             | <i>PM Fasal Bima Yojana or PM Crop Insurance Scheme</i>           |
|             | <i>PM Kisan Samman Nidhi (PM-Kisan)</i>                           |

| Sector                                               | Scheme                                                                                          |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Agriculture                                          | PM Krishi Sinchayee Yojana                                                                      |
|                                                      | Rainfed Area Development                                                                        |
|                                                      | <i>Rashtriya Krishi Vikas Yojana (RKVY)- RAFTAAR</i>                                            |
|                                                      | <i>Rashtriya Gokul Mission</i>                                                                  |
|                                                      | SMAE: Sub-Mission on Agricultural Extension                                                     |
|                                                      | SMAM: Sub-Mission on Agricultural Mechanization                                                 |
|                                                      | SMPP: Sub-Mission on Plant Protection and Plant Quarantine                                      |
|                                                      | SMSP: Sub-Mission on Seed and Planting Material                                                 |
|                                                      | Soil Health Management                                                                          |
|                                                      | Sub-mission on Agroforestry                                                                     |
| Coastal Zones                                        | Beach Environment and Aesthetics Management System (BEAMS)                                      |
|                                                      | Blue Economy: Integrated Development and Management of Fisheries                                |
|                                                      | Coastal and Marine Protected Areas                                                              |
|                                                      | Green India Mission                                                                             |
|                                                      | Green Skill Development Programme (GSDP)                                                        |
|                                                      | Indian National Centre for Ocean Information Services                                           |
|                                                      | Integrated Coastal Zone Management Project (Phase I)                                            |
|                                                      | Intensification of Forest Management Scheme (IFMS)                                              |
|                                                      | Nagar Van Udyan Yojana                                                                          |
|                                                      | National Coastal Mission                                                                        |
|                                                      | PM Van Dhan Yojana                                                                              |
| Disaster risk reduction and resilient infrastructure | Aapda Mitra (Friends in Emergency)                                                              |
|                                                      | Atal Mission on Rejuvenation and Urban Transformation                                           |
|                                                      | Coalition for Disaster Resilient Infrastructure                                                 |
|                                                      | Cyclone Risk Mitigation Infrastructure                                                          |
|                                                      | Early Warning Dissemination Systems                                                             |
|                                                      | National Cyclone Risk Mitigation Project                                                        |
|                                                      | National Disaster Management Policy 2009 & DM Act 2005 & National Disaster Management Plan 2019 |
|                                                      | National Mission for Sustainable Habitat (NMSH)                                                 |
|                                                      | Swachh Bharat Mission (Rural and Urban)                                                         |
|                                                      | Technical Assistance for Multi-hazard Risk Management                                           |
|                                                      | Village Disaster Management Plans                                                               |
| Environment and climate change                       | LIFE or Lifestyle for Environment                                                               |

| Sector               | Scheme                                                          |
|----------------------|-----------------------------------------------------------------|
| Fisheries            | PM Matsya Sampada Yojana (PMMSY)                                |
| Forestry             | Compensatory Afforestation Act (CAMPA) 2016                     |
|                      | National Mission on Biodiversity and Human Well-being           |
|                      | Project Elephant                                                |
|                      | Project Tiger                                                   |
| Gender               | Mahila Shakti Kendra                                            |
|                      | Mahila E- Haat                                                  |
|                      | STEP (Support to Training and Employment Programme for Women)   |
| Himalayan Ecosystems | Assam Agricultural Competitiveness Project                      |
|                      | Hill Area Development Plan                                      |
|                      | Mid-Himalayan Watershed Development Project                     |
|                      | National Mission for Sustaining the Himalayan Ecosystem (NMSHE) |
|                      | National Mission on Himalayan Studies (NMHS)                    |
|                      | Securing Livelihoods in the Himalayas                           |
|                      | The Meghalaya Community-led landscape management project        |
| Health               | Integrated Disease Surveillance Programme (IDSP)                |
|                      | Intensified Mission Indradhanush 3.0                            |
|                      | Janani Shishu Suraksha Karyakram                                |
|                      | Janani Suraksha Yojana                                          |
|                      | National Digital Health Mission                                 |
|                      | National Mental Health Programme (NMHP)                         |
|                      | National Non-Communicable Diseases (NCD) Programme              |
|                      | National Programme on Climate Change and Human Health           |
|                      | National Vector Borne Disease Control Program (NVBDCP)          |
|                      | PM Ayushman Bharat Health Infrastructure Mission                |
|                      | PM Jan Aarogya Yojna                                            |
|                      | PM Swasthya Suraksha Nidhi                                      |
|                      | PM Swasthya Suraksha Yojna                                      |
|                      | Rashtriya Bal Swasthya Karyakram (RBSK)                         |
| Institutions         | Prime Minister's Council on Climate Change (PMCCC)              |

| Sector | Scheme                                              |
|--------|-----------------------------------------------------|
| Water  | Atal Bhujal Yojana                                  |
|        | Grey water recycling and reuse scheme               |
|        | Jal Jeevan Mission                                  |
|        | Jal Shakti Abhiyan                                  |
|        | Namami Gange                                        |
|        | National Aquifer Mapping and Management Programme   |
|        | National Plan for Conservation of Aquatic Ecosystem |
|        | National River Conservation Programme               |
|        | National Water Mission                              |
|        | Sahi Fasal                                          |
|        | The Dam Rehabilitation and Improvement Programme    |

**Source:** Based on MoEFCC 2023

## ANNEX 2. SECTORAL STATE-LEVEL POLICY INSTRUMENTS SUPPORTING ADAPTATION ACTION

| State       | Sector              | State Sponsored Programs/ Schemes                                                                                     |
|-------------|---------------------|-----------------------------------------------------------------------------------------------------------------------|
| Maharashtra | Agriculture         | Rashtriya Krishi Vikas Yojana — Remunerative Approaches for Agriculture and Allied Sector Rejuvenation (RKVY-RAFTAAR) |
|             |                     | Restructured Weather Based Crop Insurance Scheme (RWBCIS)                                                             |
|             | Water sector        | Har Khet ko Paani                                                                                                     |
|             |                     | Per Drop More Crop                                                                                                    |
|             | Cooling strategy    | State of Maharashtra's Agribusiness Rural Transformation Project (SMART)                                              |
|             |                     | Maharashtra Agribusiness Network (MagNet) Project                                                                     |
|             | Strategic Knowledge | Maharashtra State Climate Action Cell                                                                                 |
|             |                     | Majhi Vasundhara Mission Directorate                                                                                  |
|             | Health              | Swasthya Mitra                                                                                                        |
|             |                     | Navsanjeevani Yojana.                                                                                                 |

| State         | Sector                  | State Sponsored Programs/ Schemes                                                  |
|---------------|-------------------------|------------------------------------------------------------------------------------|
| Meghalaya     | Sustainable Agriculture | Horticulture Mission for Northeastern Hill (HMNEH)                                 |
|               |                         | Meghalaya Agriculture Response Vehicle Scheme (2022)                               |
|               | Water Sector            | Cherrapunjee Ecological Project- Restoration of Degraded Lands Under Sohra Plateau |
|               |                         | Meghalaya State Water Policy (2019)                                                |
|               | Forest sector           | Meghalaya Aroma Mission, 2012                                                      |
|               | Health Sector           | Meghalaya Health Policy, 2021                                                      |
|               | Strategic Knowledge     | Meghalaya State Council on Climate Change & Knowledge                              |
| Punjab        | Sustainable Agriculture | State Action Plan for Management of Paddy Straw                                    |
|               |                         | Healthy Soil and Safe Food & Nutrition Sub-Missions under Mission Tandarust Punjab |
|               | Water sector            | Setting up of Punjab Water Regulation & Development Authority                      |
|               |                         | Punjab Preservation of Sub-soil Water Act-2009                                     |
|               | Forest sector           | Green Punjab Sub-Mission under Mission Tandarust Punjab                            |
|               |                         | Punjab Biological Diversity Rules, 2016                                            |
|               | Health sector           | Mission Tandarust Punjab                                                           |
|               | Strategic Knowledge     | Punjab State Council for Science and Technology                                    |
| Tripura       | Sustainable Agriculture | Antodaya Annapurna Yojana (AAY)                                                    |
|               |                         | Aajeevika - National Livelihood Mission                                            |
|               | Water sector            | Flood Management Programme                                                         |
|               |                         | Rainwater Harvesting Programme                                                     |
|               | Forest sector           | Tripura Eco-Tourism Corporation (TETCO)                                            |
|               |                         | Rubber Mini Mission                                                                |
|               | Health sector           | Tripura Government Health Scheme (TGHS)                                            |
|               | Strategic Knowledge     | Tripura State Climate Change Cell (TCCC)                                           |
| Uttar Pradesh | Sustainable Agriculture | UP Atmanirbhar Krishak Samanvit Vikas Yojana                                       |
|               |                         | Promotion of Farmer Producer Organization and Business Activities scheme           |
|               | Water Sector            | Uttar Pradesh Water Sector Restructuring Project                                   |
|               |                         | Flood protection works and embankment construction                                 |
|               | Forest sector           | State Forest Policy (2017)                                                         |
|               |                         | Uttar Pradesh Eco-Tourism Policy (2014)                                            |
|               | Health sector           | Uttar Pradesh State Health Policy (2018)                                           |
|               | Strategic Knowledge     | Uttar Pradesh Climate Change Authority                                             |

**Source:** Based on various considered SAPCCs 2.0;

**Note:** For all states under "Health" sector, the State Action Plan on Climate Change & Human Health (SAPCCHH) is made available.

## ANNEX 3. INSTITUTIONAL ECOSYSTEM ACROSS STATES

| State       | High-level authority                                                                                                                                                                           | State-level coordinating and knowledge institutions                                                                                                                                                                                                                                                                                                            | Departmental and sub-state arrangements                                                                                                                                                                                                                     |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maharashtra | State-Level Steering Committee on Climate Change chaired by the Chief Secretary, under the guidance of the Chief Minister's Governing Council on Climate Change                                | State Climate Action Cell under the Environment and Climate Change Department; State Knowledge Management Centre on Climate Change for research and knowledge management                                                                                                                                                                                       | Line departments and proposed Divisional, District and City Climate Action Cells; divisional, district and city cells led by Divisional Commissioners, District Collectors and Municipal Commissioners, respectively                                        |
| Meghalaya   | Meghalaya State Council on Climate Change and Sustainable Development (MSCCC&SD) chaired by the Chief Minister; State-Level Steering Committee on Climate Change headed by the Chief Secretary | Meghalaya Climate Change Centre within the Meghalaya Basin Development Authority, identified as the State Nodal Agency                                                                                                                                                                                                                                         | Implementing departments appoint climate-change nodal officers; the State SDG Cell is proposed as a member of the state-level steering committee to support alignment and oversight of SDG-related climate actions                                          |
| Mizoram     | Apex body on climate change at state level, headed by the Chief Minister; Executive body headed by the Chief Secretary                                                                         | State Climate Change Cell under the Environment, Forest and Climate Change Department; envisaged as the focal institution and technical secretariat for monitoring and reporting                                                                                                                                                                               | Principal implementing agencies and supporting departments identified for individual activities; departmental working groups and nodal officers envisaged for reporting and monitoring, including engagement of officials dealing with departmental finance |
| Punjab      | State Steering Committee on Climate Change chaired by the Chief Secretary; Review and Monitoring Committee chaired by the Administrative Secretary, Science, Technology and Environment        | Directorate of Environment and Climate Change as the State Nodal Agency that will monitor progress of SAPCC 2.0 and mainstream climate change activities with other flagship schemes of the State; Punjab State Climate Change Knowledge Centre, set up in the Punjab State Council for Science and Technology, for research integration and capacity building | Mission-wise 7 nodal departments/agencies and implementing organizations; departmental nodal officers report progress to the State Nodal Agency                                                                                                             |
| Tripura     | Apex body on climate change at state level, headed by the Chief Minister; Executive body headed by the Chief Secretary                                                                         | Department of Science, Technology and Environment (DSTE) as the State Nodal Agency; Climate Change Cell under DSTE as the central coordinating institution; DSTE and the Tripura Climate Change Cell jointly lead Strategic Knowledge Management                                                                                                               | Principal implementing and collaborating departments/agencies identified for individual strategies; the Climate Change Cell coordinates with line departments and supports localization and implementation of proposed interventions                        |

| State         | High-level authority                                                                                                                                                                                                                                                                                                                                                            | State-level coordinating and knowledge institutions                                                                                                                                                                                      | Departmental and sub-state arrangements                                                                                                                           |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Uttar Pradesh | Department of Environment, Forest and Climate Change (DoEF&CC) as the apex authority; a Chief Minister-led Apex Committee is proposed for the operation of the Uttar Pradesh Climate Change Authority (UP CCA); Governing Body under the apex committee, with the Chief Secretary as the President, and other members including principal secretaries from all key departments. | Directorate of Environment, as part of the DoEF&CC, as the nodal agency for the purpose of coordinating preparation and revision of SAPCC with other key departments of the state; UP CCA oversees the implementation of eight missions. | SAPCC implementing agencies, comprising nine mission core committees, report to the UP CCA; Mission-wise nodal departments, core groups and implementing agencies |

**Source:** Based on various SAPCC 2.0 documents

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