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Financing Climate Adaptation in States

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Preface

Finance for actions to address climate change is scarce and a highly contested topic of negotiation at the global level. Climate finance has historically been—and continues to be—mitigation heavy, with adaptation finance constituting a meagre share of total climate finance flows. However, the need for adaptation finance is more urgent as the impacts of climate change on vulnerable communities and regions are becoming more pronounced by the day. The November 2025 Conference of the Parties (COP30) to the United Nations Framework Convention on Climate Change (UNFCCC) at Belém, has called for mobilising at least US$1.3 trillion per year by 2035 for climate action, as well as tripling the scale of adaptation finance.* This move, while welcome, does not provide clarity regarding the sources for generating these resources and the ways in which they are to be deployed for the benefit of stakeholders.

In the struggle for adaptation to climate change, subnational actors have played a key role. This is particularly true of federal systems of governance such as India. State, local and regional bodies in our country are exposed to adverse impacts but lack the resources and capacities to deal with the growing risks of climate change. Climate action, particularly initiatives to promote adaptive capacity at the subnational level, are crucial to ensure that damages from the consequences of climate risks are contained

* United Nations. 'Belém COP30 Delivers Climate Finance Boost and a Pledge to Plan Fossil Fuel Transition', 22 November 2025, https://news.un.org/en/story/2025/11/1166433 (accessed 14 March 2026).

to the maximum possible extent. Organising additional finance to support such adaptation action in the country is therefore an urgent need.

Finance for adaptation actions undertaken by subnational actors in India comes primarily from Central and State budgets. These budgetary resources are mainly deployed for taking up developmental initiatives and are already stretched thin. With climate risks threatening developmental advances, building resilience into social and economic systems has become the need of the hour, mandating additional cost for local entities. This often leaves the question of additional finance for adaptation with no concrete answers.

In this context, the policy paper strives to understand the financial architecture for adaptation in Indian states. The paper seeks to map the current sources of climate finance available to the states and understand the gap in finance. Additionally, potential sources of adaptation finance have been examined, along with the current challenges in accessing them. The need for private sector engagement in rallying resources for adaptation has also been analysed, with some recommendations provided to increase finance flows for the uptake of adaptation action at the subnational level in India.

C. K. MISHRA

Financing Climate Adaptation in States: Challenges and Opportunities

ABSTRACT

Climate change is intensifying, leading to severe impacts on society at every level. The states and local level institutions need to act urgently to help communities adapt to climate change and protect economic infrastructure from further adverse impacts. According to the climate strategy at present, adaptation often receives less attention than mitigation. Adaptation needs are largely mainstreamed with the ongoing developmental programmes at state and city levels. A more effective strategy could be based on the clear identification of climate risks and relevant financing needs. It could involve all sources of finance—public and private, domestic and international, bilateral and multilateral, among others—especially through innovative instruments. The Centre could partly augment the resources of the states through the devolution based on climate vulnerability index. Results-based financing linked to adaptation outcomes can significantly enhance private sector investments. The paper addresses, from this perspective, the current issues involved in finance for adaptation, existing sources and scale, and suggests ways of enhancing finance at the state level to address the gaps.

Key words: *Climate Change, Adaptation Finance, states, subnational actions, public finance, private finance, climate impacts, resilience*

INTRODUCTION

As governments around the world are facing increasing pressure to augment the scale and magnitude of their climate initiatives, the role of subnational[1] actors in achieving the goals of the Paris Agreement is becoming progressively critical. A report by United Nations Development Programme (UNDP) states that 50 to 80 per cent of adaptation and mitigation actions necessary to tackle climate change globally are or will be implemented at the subnational level of governance (Network of Regional Governments for Sustainable Development & The Climate Group, 2010). In federal countries like India, this number remains higher, with almost all the adaptation action being undertaken at the subnational levels due to its localised and context-specific nature. Moreover, the knowledge of local contexts, experience of managing community expectations and proximity to affected areas naturally positions these as primary actors in adaptation to climate change.

Given the diversity of climatic regions and increasing adverse impacts of climate change on vulnerable populations, India relies heavily on its states to implement the national climate agenda. The National Action Plan on Climate Change (NAPCC) launched in 2008 had affirmed that the Plan will be guided inter alia, by the principle of 'effective implementation through unique linkages – with civil society, LGUs, and public-private partnerships' (MoEF&CC, 2008). The strategy for involving the subnational or state level actors in the Plan, however, was not clearly defined, leaving serious gaps in scaling up adaptation actions at that level.

While climate action at state and local levels is critically important for India to meet adaptation and mitigation goals, its full potential is often constrained by a range of challenges—primary among them being the lack of adequate finance. Climate finance is both limited in availability and difficult to navigate, often obscured by complex technical requirements that significantly hinder access to funding. Further, a larger chunk of the total climate finance goes towards mitigation actions at the national as well as state level.

This paper attempts to identify the challenges faced in implementing adaptation actions by states, the current sources of climate finance, particularly adaptation finance, the instruments and methods of current financing, and suggest possible ways of scaling up adaptation finance for them.

SIGNIFICANCE OF ADAPTATION FINANCE

Finance for climate actions is disproportionately skewed towards mitigation actions. Adaptation to climate change has consistently received a smaller share of climate finance and continues to remain the most underinvested area of climate action. Globally, adaptation finance accounted for 4.98 per cent of total climate finance flows in 2021–22, with a large portion of it coming from public finance sources (Buchner et al., 2023). The 2023 *Adaptation Gap Report* of the United Nations Environment Programme (UNEP) estimated that the current adaptation finance gap was of the order of about US$194–366 billion per year (UNEP, 2023). Despite the climate risks and vulnerabilities across the globe, the finance for scaling up adaptation operations has not increased.

In India, while the share of adaptation finance flows in total climate finance flows has grown, it continues to be extremely low, with 98 per cent of it coming from domestic sources—mainly State and Central budgets (Chakravarty et al., 2024). In 2023, the cumulative investments in all adaptation sectors in India amounted to US$899 million, while climate mitigation, in contrast, attracted US$4.7 billion in 2023 (Sareen & Shankar, 2024).

The Government of India has consistently held that the fundamental prerequisite of development is adaptation, especially the minimisation of vulnerability and exposure (MoEF&CC, 2023). The Initial Adaptation Communication (IAC) of the Government of India to the UNFCCC stated that India's total adaptation relevant expenditure in 2021–22 was of the order of 5.6 per cent of its GDP (MoEF&CC, 2023). It further stated that this would only increase as global temperature rise continues with increasing impacts experienced by vulnerable communities and economic systems. The *Economic Survey of India 2025*, conducted by the Department of Economic Affairs, stated that between FY16 and FY22,[2] India's adaptation expenditure has increased from 3.7 per cent to 5.6 per cent of its GDP (DEA, 2025a). Proper development can go a long way in securing a better standard-of-living for communities and reducing vulnerabilities to the effects of climate change. Investments through regular development programmes can also build adaptive capacities of communities and systems to a significant extent.

RESOURCES FOR ADAPTATION

The need to urgently accelerate adaptation action underscores the importance of mobilising resources for its implementation. Adaptation has always been viewed as a public good, thereby restricting private sector investments to a significant extent. While public finance can take the lead in financing climate adaptation, the role of the private sector needs to be recognised, expanded and effectively utilised. Additionally, the perceived risks—such as the lack of a business case, challenges with regard to measuring its progress or even the lack of clarity on what constitutes adaptation action—limit private sector financing.

Innovative financing instruments and mechanisms are needed to ensure greater participation of different stakeholders in putting resources together.

The localised context of adaptation actions functions as a major constraint on raising resources from private and corporate sources. India's diverse geography of coastal areas, drylands, the Himalayan belt and the landlocked urban areas, among others, has unique vulnerabilities and varied adaptation needs. The absence of clear assessment of the extent of exposure to hazards and vulnerability of social groups to the repercussions of climate change makes it difficult to understand, track and monitor changes in adaptive capacity, deterring investments from the private sector.

Considering the multiple development challenges faced by the country and the limited outlays for meeting the multitude of social, economic and security needs, the availability of public finance for climate action in India is likely to remain inadequate. Supplementing public finance with other sources of finance, including from the private sector, and designing an appropriate framework for their participation must, therefore, be prioritised.

ROLE OF STATES IN INDIA'S CLIMATE ACTION

The states act as the first line of defence against climate-induced disasters or extreme events. The diversity of the country in terms of topography, climate and socio-economic vulnerabilities implies that there cannot be a one-size-fits-all solution for the varied climatic needs. Moreover, almost all climate vulnerable sectors such as agriculture, water, ecosystem, forests and biodiversity, urban and rural habitat, and traditional knowledge and heritage are state subjects, requiring a strong role of the states in ensuring resilience and the well-being of communities most susceptible to the effects of climate change.

India first outlined its approach to climate actions through the National Action Plan on Climate Change (NAPCC) in 2008. In 2009, the prime minister directed all states to develop their State Action Plans on Climate Change (SAPCC). With an aim to facilitate local actions in the sectors identified under the eight missions of the NAPCC, the states were advised to develop SAPCCs in line with the goals of the missions and programmes of climate action identified within the NAPCC.

There were two rounds of SAPCCs that were developed in the country. Those in the first round, submitted during 2010–11, contained financial outlays that merely reflected the total developmental needs in each sector identified as climate vulnerable. The additionality of resources in terms of promoting adaptation in the relevant sectors was not identified. The Plans did not envisage projects beyond the government programmes already in progress to pursue the missions. The SAPCCs had to soon be revised, taking into consideration the new obligations undertaken by the Government of India in the form of the Nationally Determined Contributions (NDCs) under the Paris Agreement on climate change.

In 2015, the Ministry of Environment, Forest and Climate Change (MoEF&CC) issued guidelines for revising the SAPCCs to reflect the evolving international discourse on climate change, the country's new commitments defined under the NDCs and the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC). These guidelines were launched with new definitions and ideas on framing key concepts such as climate risks, vulnerabilities and hazards. The revised SAPCCs were much more robust and comprehensive with a common framework for climate risks and vulnerability assessment adopted—along with budgets for implementation and plans for monitoring and evaluation. Thirty-four states and union territories (UTs) out of the 38 at the time, either prepared or updated their SAPCCs in line with NAPCC (PIB, 2023).

While this round of revisions brought more cohesiveness and comparability within the SAPCCs, their financial needs and requirements had huge variations and were not proportional to the respective size and population of the states, implying that the distinct lack of analytical basis for estimation and multiplicity in approaches to adaptation also acts as a barrier to the understanding of climate finance at subnational levels. The states need a more nuanced understanding of what constitutes additional needs of climate finance and how it can be leveraged and mobilised at scale.

CITY LEVEL CLIMATE ACTION

As state level climate actions in India moved from the margins to the mainstream, city level climate planning has also begun to gain momentum. Cities and urban conglomerations are increasingly exposed to climate hazards such as floods, inundations and heatwaves. They have begun to recognise climate change as a major threat to their own growth and development, with the effects of climate change on productivity and production processes getting more pronounced. This has added a new layer of response in policymaking and financing of climate-related actions at the decentralised level. The contribution of cities to emissions and its reduction is also significantly high. Global estimates suggest that urban areas are responsible for 70 per cent of global CO_2 emissions, with transport and buildings being among the largest contributors (IPCC, 2023).

Urban Local Bodies (ULBs) of major cities like Mumbai are taking the lead in formulating their own climate action plans. As of now, in addition to Mumbai, the cities of Ahmedabad, Rajkot, Vadodara, Coimbatore, Tiruchirappalli, Tirunelveli, Udaipur and Siliguri have developed their own Net-zero Climate Resilient City Action Plans 2070 (PIB, 2024a). Besides these, the National Institute of Urban Affairs (NIUA) has supported the development of City Climate Action Plans (CCAP) for four Indian cities—Jamnagar, Junagadh, Leh and Pune, that offer tailored climate solutions—mitigation and adaptation—and provide a comprehensive roadmap to a Net-zero and climate resilient future for each city (NIUA, *n.d.*).

CURRENT FINANCE FLOWS FOR SUBNATIONAL CLIMATE ACTION

There are broadly three different sources of climate finance available to states in India: public (domestic), private, and international public finance. Public sources of domestic climate finance, in most cases, are reflected in the outlays provided in the Union Budget for various development programmes, schemes and incentives.

Several of the 2008 NAPCC missions had a direct relationship with adaptation efforts at subnational level, such as the National Mission For Sustainable Agriculture, National Water Mission, National Mission on Sustainable Habitat, National Mission for a Green India and National Mission for Sustaining the Himalayan Ecosystem. These missions were funded with ongoing development programmes of the government in various sectors. The outlays provided to these missions in the past few years as reported by the government are indicated in Table 1.

In 2015, the Government of India established a dedicated domestic fund for climate action—the National Adaptation Fund for Climate Change (NAFCC). The National Bank for Agriculture and Rural Development (NABARD) was involved in its operations and served as its National Implementing Entity (NIE) (NABARD, *n.d.*). Thirty new projects across 27 states and UTs had been sanctioned (PIB, 2022) under the

Fund until its discontinuation in 2022, leaving only ongoing project liabilities with continued funding. This is because the NAFCC was made a non-scheme in November 2022 (PIB, 2024b), meaning that it is no longer a Centrally Sponsored Scheme (CSS) funded either partially or fully by the Central government for implementation in the states and UTs.

The Union Budget of 2025–26 explicitly recognised the need of financing economic transition necessitated by the climate commitments of the government. The budget provided for earmarked outlays for such climate related actions but prioritised green energy transition over adaptation, as increased allocations were provided for solar (increased allocation for Surya Ghar Yojana by 80 per cent to ₹20,000 crore and Pradhan Mantri Kisan Urja Suraksha evam Utthan Mahabhiyan (PM-KUSUM) to ₹2600 crore), green hydrogen (doubled since 2024–25 from ₹3000 crore to ₹6000 crore in 2025–26), and electric mobility (increase of 20 per cent since 2024–25). Thus, the Union Budget continues to favour mitigation action over adaptation despite India's rising vulnerability to climate change, with schemes like the National Coastal Mission witnessing a slash of 96 per cent from ₹50 crore in the last budget to ₹2 crore in 2025–26.

FINANCE COMMISSION AWARDS FOR FOREST AND ECOLOGY

Alongside the sectoral allocations made through relevant development programmes and missions in the Union Budget, the Finance Commission Awards are a major source of finance for state level climate related actions. Since 2010, the Commissions have treated environmental protection as a public good and adopted the principle of allotting a certain share of total devolution to states by using forest cover as proxy for the environment. The states argued that conservation of forests imposes opportunity costs, conservation costs as well as cost disability on the states (Seby et al., 2024).

The 13th Finance Commission (2010–15) recommended a grant of ₹5000 crore to the States for conserving forests (PIB, 2010). The 14th Finance Commission (2015–2020) allocated 7.5 per cent of the total financial devolution to states on the grounds that ‘while the forest cover maintained by States provide wider ecological benefits, it also imposes opportunity costs that need to be compensated’ (15th Finance Commission, 2020, p.160). The 15th Finance Commission (2021–26) included ‘ecology’ in this criterion and enhanced the allocation to 10 per cent ‘as a reward for providing ecological services and to overcome the disabilities arising from areas dedicated to dense forests (areas covered by very dense and moderately dense forests)’ (15th Finance Commission, 2020, p. 27). The states are expected to use the resources allocated by the Finance Commissions (FCs) under the ‘forest and ecology’ criterion to maintain and develop forests for mitigating emissions through carbon sequestration, promoting ecological stability and providing livelihoods to vulnerable people.

FINANCE COMMISSION GRANTS TO LOCAL BODIES FOR MEETING SDGS

The 15th Finance Commission further supplemented the resources of states through additional grants for achieving certain sustainable development goals (SDGs). Basic grants were given to ULBs with populations of less than one million; Million-Plus cities were provided performance-linked grants. Performance was measured in terms of improvement in their air quality, meeting the service level benchmarks for urban drinking water supply and sanitation and solid waste management. These grants amounted to

₹4.36 lakh crore including: (i) ₹2.4 lakh crore for rural local bodies; and (ii) ₹1.2 lakh crore for urban local bodies, for the period covering 2021–26 (PRS, 2021).

FINANCE COMMISSION GRANTS FOR DISASTER MANAGEMENT

A significant and critical component of the allocation made by the Finance Commissions for states is the grant for handling disasters (including climate-induced

Table 1: Current Public Finance Flows for Climate Action in India

Source	Timeline	Amount (in ₹ crore)
National Mission for a Green India	2020–25	619.79
National Mission for Sustaining the Himalayan Ecosystem (NMSHE) and National Mission on Strategic Knowledge for Climate Change (NMSKCC)	2020–25	118.00
National Solar Mission	2020–25	25,165.87
National Mission for Sustainable Agriculture	2020–25	235.54
National Mission for Enhanced Energy Efficiency	2021–26	167.00
National Programme on Climate Change and Human Health (NPCCHH)	2020–25	249.49
National Water Mission	2020–25	3.47
National Mission on Sustainable Habitat	2020–25	34,900.97
15th FC grants for local bodies for meeting SDGs	2021–26	43,600.00
FC awards for disaster management	2021–26	45,724.00
National Coastal Mission Scheme	2025–26	2.00
PM-KUSUM	2025–26	2,600.00
Surya Ghar Yojana	2025–26	20,000.00

Source: Multiple sources.[3]

disasters), calamities, relief and rehabilitation. While the losses and damages caused by climatic events to rural–urban settlements and economic infrastructure are partially covered by the disaster management grants, the 15th FC also introduced, for the first time, allocation of funds to states for disaster risk reduction, i.e., mitigation of risks caused by climatic hazards, which is akin to adaptation. The Commission stated that the 'mitigation funds shall be used for those local level and community-based interventions which reduce the risks and promote environment-friendly settlements and livelihood practices' (15th Finance Commission, 2020, p. 56). States were allocated ₹32,031 crore for 5 years (2021–26) for disaster risk mitigation activities while the Centre was provided ₹13,693 crore for this purpose (15th Finance Commission, 2020).

PRIVATE SECTOR FINANCE FOR ADAPTATION

Globally, private sector finance for subnational climate action has been dominated by urban areas, with the private sector accounting for 49 per cent of total tracked urban climate finance in 2021–22 (CCFLA, 2024). While the private sector in India is investing in a few environment-oriented projects in urban areas through Corporate Social Responsibility (CSR) funds, public–private partnership models (PPPs) or blended finance models, the exact numbers are not tracked. Currently, about 7 per cent of total CSR funds are estimated to go to the environment sector in urban areas, making it the largest recipient after healthcare, education and rural development (Chawla, 2022). However, private sector investments in climate action are primarily concentrated in the area of climate mitigation. Globally, out of the total finance tracked for climate adaptation in 2019–20, only 2 per cent was sourced from the private sector (Buchner et al., 2023). Similarly, in India, it is estimated that less than 0.1 per cent of the finance mobilised for adaptation comes from the private sector, while in contrast, 53 per cent of mitigation financing comes from the private sector (Gogoi, Roy & Krishnan, 2023).

This indicates the private sector may be interested in investing in climate action if there is a market that can be developed and returns on investments are ensured. Reports by the Global Adaptation and Resilience Investment (GARI) Group predict an increase in private sector investments in adaptation, anticipating that the escalating impacts of climate change may create a market for deployment of adaptation technologies. The size and scale of market will, however, depend on the clarification regarding what constitutes adaptation action.

INTERNATIONAL SOURCES OF ADAPTATION FINANCE

At present, sources of international finance for climate action include multilateral funds, multilateral development banks (MDBs), private investments, external commercial borrowings and Rupee-denominated bonds. International finance from MDBs, bilateral donors, international investors and global financial institutions have been channelised to some extent as climate finance in India. Several SAPCCs and their revisions were supported by MDBs and bilateral organisations.

Of the total green finance flows in India in 2021–22, bilateral and multilateral development finance institutions (DFIs) contributed just above 6 per cent (Chakravarty et al., 2024). Improved clarity and the evolving global discourse on adaptation finance did lead to an increase in adaptation finance from international sources in comparison to previous years. While international finance for adaptation in the country grew by 19 per cent in 2021–22 from 2019–20, it was found to be sourced almost exclusively from public sources with multilateral DFIs contributing

92 per cent of the total international finance flows for adaptation (Chakravarty et al., 2024).

However, international public finance usually comes as debt and requires substantial co-financing capabilities which subnational actors usually lack. International public finance is, nevertheless, of critical importance for scaling up the finance flows for adaptation. With the New Collective Quantified Goal (NCQG) of climate finance being set up under the Paris Agreement, new avenues to secure finance from international financial institutions and MDBs to support climate action at the state levels can be explored.

NEEDS ASSESSMENT OF ADAPTATION FINANCE IN STATES

In 2020, the Department of Economic Affairs, Government of India assessed the needs of climate finance for implementing the NDCs, which commenced in 2021. It estimated the financial requirement for energy, adaptation and forestry sectors together at ₹58,68,612 crore in 2020 and ₹1,18,68,555 crore in 2030. On the other hand, the total availability of finance was estimated to be ₹29,06,425 crore, with the share of international and domestic finance at around ₹9,02,625 crore and ₹20,03,773 crore, respectively (DEA, 2020). The figures have been illustrated in Table 2.

Table 2: Needs and Availability of Climate Finance for Implementing the Nationally Determined Contributions (₹ in crore)

Year of Assessment	Finance Needs	Domestic Finance Available	International Finance Available	Total Available Finance
2020	58,68,612	20,03,773	9,02,625	29,06,425
2030	1,18,68,555	–	–	–

Source: (DEA, 2020).

With financing needs set to double in 2030 compared to 2020 as observed in Table 2, the lack of adequate finance will be a major barrier in scaling up adaptation action in the country. This will further restrict the capacity of subnational actors in taking up climate action.

ADAPTATION NEEDS ASSESSMENT AND SAPCCs

The SAPCCs were designed to include a component on financing climate action that broadly encompassed aspects of financing needs, sources and availability, among others. The first round of SAPCCs (2010–2020) had been developed under the impression that the Central government or international climate change finance would provide resources for implementation of the projects under SAPCC (Kumar, 2018). As a result, the states had seen this as an opportunity to attract more finance from the Centre and had quoted highly inflated and disproportionate climate finance needs in the Plans. By the next round of SAPCCs (2021–2030), however, it was made clear that the states would have to mobilise resources themselves to meet their climate finance needs. This round witnessed states mainstreaming and accommodating climate finance needs from their existing budget plans. Nevertheless, there were huge differences in the understanding of which components within the state budget could qualify as climate relevant to be able to come up with a proper total needs assessment for climate action. It was observed that states were not able to distinguish between standard development activities and additional actions required for climate change in their SAPCCs (Kumar, 2018).

Annexure 1 shows the climate finance needs projected by states in their SAPCCs in the first round. Their climate plans show no clear distinction between mitigation and adaptation needs. However, considering the range of social and economic sectors covered from the point of view of climate vulnerability, it is presumed that the needs reflected in the Plans represent the needs of adaptation. These range from a few thousand crore in case of smaller states like Himachal Pradesh, Sikkim and Kerala to a few lakh crore in case of bigger states like Andhra Pradesh and Tamil Nadu. However, the lack of clear methodology and ad hoc approach to estimation is evident when the projections of states such as Bihar, Uttar Pradesh and Telangana are compared with similarly placed states and are found to have large and incomprehensible variations. It can be observed that the budget of the West Bengal SAPCC is smaller than that of Manipur, and Rajasthan has a SAPCC budget comparable to that of Sikkim—showing that the size and population of states—which are major indicators of exposure, played limited roles in determining their climate finance requirements.

In the second round of SAPCCs prepared and submitted by the states after 2020, the problem persisted. Till 2025, 18 states are reported to have revised their SAPCCs, although no clear confirmation

Table 3: Climate Financing Needs of Different States of India

State/UT	Budget Requirement (Revised SAPCCs) (in ₹ crore)
Mizoram	20,613
Tripura	7,683
Odisha	245,565
Delhi	14,228
Punjab	64,731
Madhya Pradesh	97,153
Tamil Nadu	320,000
Uttar Pradesh	112,204
Himachal Pradesh	10,917

Source: Multiple sources.[4]

could be obtained. Table 3 shows the projections made in the revised SAPCCs; these figures are based on documents that are available in the public domain and reflect the total climate finance needs of the states and UTs. They represent a cumulative assessment of the amount of finance required to implement the actions identified in the Plans.

Climate finance estimates in the second round include a range of sectors considered by the states as climate sensitive in the areas under their respective purview. Thus, barring a few states, most of the SAPCCs have covered sectors that are highly vulnerable to climate impacts. As evident from Table 3, the budget variations in the second round of SAPCCs continue primarily due to a lack of a common methodology for estimating climate finance needs, particularly for adaptation. A consensus on the methodology for calculating the additionality of adaptation actions that have overlap with developmental initiatives is yet to be reached, even at the global level. Different actors using different methodologies come up with varied estimates of adaptation financing, resulting in a lack of comparability and uniformity, which leads to lower investor confidence in the sector.

At the subnational level, there is a clear need for guidance to states for methodological alignment on the calculation of adaptation finance needs. An assessment of financing needs will help to take stock of the scale of finance that is available and the amount that needs to be generated. It will also be critical to understand and measure the impact of adaptation finance especially in terms of the adaptive capacities and resilience built for communities and systems.[5]

CHALLENGES IN ADAPTATION FINANCE

The need for adaptation to climate change is rising in states because of the increasing adverse impacts of climate change. At the same time, the present sources of finance are limited. This necessitates that the challenges in mobilising adaptation finance by states are clearly identified.

Climate adaptation finance, being localised and context-specific, suffers from lack of clarity of definition and funding. Different stakeholders define adaptation differently within specific contexts. This leads to confusion for officials at the state level, thereby preventing their access to international and even domestic sources of finance. A common definition, or at least an explicit enumeration of the specific indicators of adaptation across the economic and social sectors, will go some way in providing much-needed clarity around adaptation action. Hopefully, the global indicators being negotiated at the UNFCCC towards the identification of the Global Goal on Adaptation will help movement in this regard.

Overlap of adaptation with development makes it difficult to identify the incremental financing needs for adaptation. Adaptation action has huge overlaps with the development agenda. The level of development of a region, community or system directly determines its vulnerability to the impacts of climate change. More developed regions tend to be less vulnerable to these impacts; their capacity to adapt is higher and their ability to respond to shocks is greater. Social safety nets and better standards of living enhance the adaptive capacity. It is therefore imperative that adaptation is subsumed in development. However, it may be useful to identify the additionality of adaptation action within development activities so that development measures are more sustainable and resilient. Climate markers and earmarked outlays linked to adaptation outcomes within the development spending may even make it possible to attract private capital towards financing the incremental cost of adaptation in developmental activities.

Perceived and actual risks deter private investors from investing in climate adaptation. Risks to financing include unclear revenue flows, non-monetised social or environment-based benefits, high upfront costs with uncertain returns, and difficulties in measuring or tracking the impact and long-term projections of results. It might be worthwhile to work around these by building resilience, especially in key economic sectors which affect the private sector directly. Deployment of de-risking mechanisms would be useful in generating finance to meet the incremental cost from private sector in such cases.

Markets for deployment of adaptation technologies can be created if standardised products and financing solutions are developed. Much of the adaptation action involves traditional and contextual practices that use locally available resources, materials and systems to ensure effective and low-cost solutions. However, the demand for standardised adaptation technologies is likely to increase in the future. Communities and systems may require new technologies and solutions to reduce vulnerability from climate risks and impacts. The private sector can support development, production and marketing at scale of such innovative technologies, provided that procurement is guaranteed through government-backed incentives and subsidies.

Assessment of adaptation finance is often difficult because of lack of clarity over what constitutes adaptation or even climate finance at large. The lack of proper estimates of financing needs and requirements leads to ambiguity around adaptation action, thereby deterring investments from private investors. Clarity and consensus on a common methodology for calculating adaptation finance needs will be a huge step towards bridging the finance gap. Besides, it will also help in tracking the progress made in adaptation action.

Absence of a framework for measuring adaptation outcomes hinders both evaluation of adaptation actions and raising and deployment of resources. Such framework is necessary not only to ensure effective utilisation and budgeting of public funds for adaptation in ongoing or new programmes, but also to attract private sector finance which is highly sensitive to results and measurable impacts. Given the localised and context specific nature of adaptation, actions vary significantly across regions.

This is currently being worked upon by the Government of India through its climate finance taxonomy, which aims to provide much-needed clarity on the actions and initiatives that would be considered as climate action. In the first draft framework of India's climate finance taxonomy, Tier 1 included activities, projects and measures that contribute to adaptation and resilience building, particularly in areas of agriculture, food security and water. Tier 2 included those that improve adaptation and enhance resilience (DEA, 2025b).

While this is an important starting point, it may be necessary to go beyond the taxonomy to identify and measure outcomes and impacts of adaptation actions. A focus on the monitorable indicators of adaptation in the taxonomy could provide the necessary flexibility to accommodate regional differences in adaptation practices within the country while also providing the clarity investors seek to understand the results of adaptation.

LACK OF COHERENCE IN GOVERNANCE STRUCTURES FOR ADAPTATION

Within the states, different departments and administrative bodies contribute in varying capacities to take the climate strategy of the state forward.

Development of SAPCCs is carried out through a nodal department, usually the Department of Environment, in consultation and coordination with other relevant sectoral departments. The governance structure of these Plans is not uniform across the country. While in most cases, the Department of Environment is the nodal agency for development and implementation of the SAPCCs, in some states the mandate falls within the Department of Science and Technology or the Department of Forests. In some states, new Climate Change departments or cells within existing departments were established to carry out the task, which made the existing governance structure for climate action at the subnational level in India very fragmented and incoherent. The nodal department plays a key role in defining the priorities of the SAPCCs that drive the climate agenda of the respective states. The lack of structured and effective governance system at the subnational level significantly hampers the implementation of the Plans. As a result, despite having state driven climate action strategies, the SAPCCs are yet to yield optimal results.

WAY FORWARD

As current finance for adaptation is largely dependent on public sources, new ways in which finance can be mobilised to help states address climate risks and impacts need to be explored. Analysing the current landscape reveals that public finance can be leveraged to acquire greater amounts of private finance if a few specific steps are undertaken. Some of the possible ways for scaling up adaptation finance are discussed below:

Augmenting the sources of public finance: Considering that public finance is the biggest contributor to adaptation finance at present, it is important that public sources of finance for states are enhanced to address climate vulnerabilities and risks. States that are more vulnerable to climate change and have limited access to alternative sources need special support.

In India, Finance Commissions are constituted every five years to recommend financial devolution between the Central and State governments and among the State governments. The 16th Finance Commission, which has a mandate to make recommendations on the principles and quantum of financial devolution from the Centre to the states for the period of 2026–2031, could consider climate vulnerability as a criterion of needs assessment and horizontal devolution of divisible resources among states. A certain share of the total pool may be divided on the basis of an index of vulnerability for districts that can be designed and developed in a scientific manner.

Leveraging public finance: Available sources of public finance can be capitalised on to mobilise more finance from other sources through use of mechanisms such as public–private partnership models (PPPs), blended finance facilities or market-based interventions. These approaches, if used strategically, can raise money for adaptation action, especially in areas that have assets of high economic value or are densely populated.

Climate Finance Taxonomy: The Union Budget of 2024–25 announced the development of a climate finance taxonomy to drive greater investment towards climate action. This could be an opportunity for India to advance adaptation agenda. Taxonomy is designed to provide greater clarity on what the government endorses as climate action and would be immensely useful if it included an exhaustive list of activities contributing to or improving adaptation.

Innovative financing instruments and mechanisms: Use of innovative financing instruments such as insurance, bonds and blended finance facilities is critical to bring in private sector investments in adaptation. Identifying common risks in regional clusters such as sea level rise or its impacts for the coastal belt can help insurance companies build a market around adaptation and resilience. MDBs such as the World Bank have successfully raised private finance from capital markets in the form of sustainability bonds for wildlife conservation and restoration of the Amazon rainforest. Additionally, blended finance facilities owned or backed by governments can be used to pool in diverse resources for adaptation.

Adaptation outcomes measurement framework at the state level: Development of a suitable outcome measurement framework and budgeting of development programmes (having adaptation components) on this basis may go a long way in clear and monitorable evaluation and financing of adaptation at the subnational level. An outcome-based, inclusive taxonomy would attract private sector investments and blended finance from MDBs, which are increasingly exploring results-based financing options (Pathak & Padmanabhi, 2025). Monitorable indicators can be chosen using the 59 accepted indicators of the Global Goal on Adaptation at the recently concluded COP30 in Belém.[6]

Coherence of governance structures: A coherent institutional framework laying out the governance structure of the SAPCCs can help in ensuring effective implementation. Current arrangements suffer from fragmented responsibilities and poor coordination among departments, which hamper progress on climate action. In this regard, a possible integration of adaptation aligned departments such as the State Disaster Management Authority and the Department of Water Resources along with mitigation aligned departments, such as the Department of Forest and Department of Renewable Energy, could promote greater coordination, avoid duplication of responsibilities and resources—while also helping to align the mandates of relevant departments to the overall climate strategy of the state, as proposed in the SAPCCs.

Role of Financing Institutions (FIs): MDBs, DFIs and FIs can play a key role in mobilising finance for climate adaptation in India. They can help de-risk private investments through credit guarantees or first loss guarantees for new technologies. Co-financing facilities can be created by bringing together entities with similar mandates to support the adaptation agenda. Convening FIs to understand the scope and volume of finance required can be a critical first step. A common platform where different stakeholders can convene to discuss financing priorities, opportunities and existing challenges will also prove useful.

Regulatory and fiscal incentives: Regulations and policies can be used to incentivise private sector investment in adaptation. This may be especially helpful where new technologies and products need to be deployed to address climate risks. India holds huge potential to manufacture climate sensitive and responsive technologies, such as sustainable cooling units; the market and scale for consumption already exists. Fiscal and financial enablers such as tax exemptions, conducive manufacturing ecosystems, creation of production parks and more, can help enhance the market for such technologies.

CONCLUSION

Adaptation needs of states are currently underfunded—their identification is often difficult because adaptation efforts are mainstreamed in the development programmes. This mainstreaming of adaptation within the development agenda is generally considered the best policy to secure sustainable and resilient growth. However, some mechanisms need to be created to support additional financing of incremental adaptation needs. Any action on this count can be led by public sources and leveraged to mobilise more private sector investments. Creating business models with low risks by the public sector can boost investor confidence, thereby enabling higher participation from private sources. Furthermore, the budgets of the governments may introduce adaptation outcomes as the levers for earmarked developmental outlays. Understanding and bringing out the additionality of adaptation outcomes will not only enable private investments but allow the government spending to be planned well.

As states drive the adaptation agenda in India, it is useful to launch comprehensive training programmes to build the capacity of officials in the area of addressing climate change in general, and adaptation in particular. Understanding how adaptation outcomes can be measured and different finance sources tapped to achieve such outcomes is critical to effective implementation of the climate change agenda in states.

Notes

1. In this paper, ‘subnational’ is used interchangeably with ‘state’ or ‘local’ levels. The nomenclature is aligned with the international usage to include actors at state, regional and local levels, including cities.
2. Refers to Fiscal Years 2016 and 2022.
3. Source for national missions under the NAPCC: https://www.pib.gov.in/PressReleasePage.aspx?PRID=2147752 (accessed 16 March 2026); Source for the Finance Commission grants: https://prsindia.org/policy/report-summaries/report-15th-finance-commission-2021-26 (accessed 29 April 2026); Source for National Coastal Mission, PM-KUSUM and Surya Ghar Yojana: Union Budget 2025–26: https://www.indiabudget.gov.in/doc/Budget_at_Glance/bag7.pdf (accessed 29 April 2026).
4. Revised SAPCCs are sourced from the respective state websites. Mizoram: https://forest.mizoram.gov.in/uploads/

qms/45aab4c95e697bead079c53a3180b8cf/sapcc-upto-2030-mizoram.pdf (accessed 29 April 2026); Tripura: https://dste.tripura.gov.in/sites/default/files/2024-06/Tripura%20State%20Action%20Plan%20on%20Climate%20Change%202.0.pdf (accessed 29 April 2026); Odisha: https://climatechangecellodisha.org/pdf/Odisha_SAPCC_2021-30..pdf (accessed 29 April 2026); Delhi: https://environment.delhi.gov.in/sites/default/files/environment/generic_multiple_files/delhi_sapcc_06022019.pdf (accessed 29 April 2026); Punjab: https://moef.gov.in/uploads/2017/09/Punjab.pdf (accessed 29 April 2026); Madhya Pradesh: https://www.nitiforstates.gov.in/public-assets/Policy/policy_files/GSSNAD000290.pdf (accessed 29 April 2026); Tamil Nadu: https://environment.tn.gov.in/assets/images/0e6625edea51bfbc9a7b779baae92584.pdf (accessed 29 April 2026); Uttar Pradesh: https://upccce.org/public/UPLOADS/REPOSITORY/DOC/27_stateactionplan.pdf (accessed 29 April 2026); Himachal Pradesh: https://dest.hp.gov.in/sites/default/files/PDF/SAPCC%202021-30-web.pdf (accessed 29 April 2026).

5. India's National Adaptation Plan (NAP) is likely to assess the estimated current adaptation expenditure and costs. This methodology can be used by the states to come up with their respective numbers on adaptation needs and expenditure.
6. COP30 (2025) held at Belém, Brazil identified 59 relevant indicators for Global Goal on Adaptation in relevant sectors; these are of help in identifying the monitorable indicators as useful and applicable. See page 5 to 9 of the Decision at: https://unfccc.int/sites/default/files/resource/cma7_8a_gga_auv.pdf (accessed 29 April 2026).

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ANNEXURE 1: BUDGETS OF THE FIRST SAPCCs

State/UT	Timeline	Budget (in ₹ crore)
Andaman and Nicobar Islands	2013–18	406.46
Andhra Pradesh	2012–17	319,490.00
Arunachal Pradesh	2012–17	6,523.00
Assam	2015–20	58,415.24
Bihar	2012–17	2,193.50
Chandigarh	2012–17	17,467.54
Chhattisgarh	NA	NA
Delhi	NA	NA
Daman and Diu	NA	NA
Gujarat	2014–19	24,644.61
Haryana	2012–17	56,565.00
Himachal Pradesh	2012–17	1,560.00
Jammu and Kashmir	2012–17	6,739.41
Jharkhand	2013–18	3,178.80
Karnataka	2013–18	6971.89
Kerala	2014-19	1,170. 40
Lakshadweep	2012–17	1,019.87
Madhya Pradesh	2014–19	4,700.00
Maharashtra	NA	NA
Manipur	2013–18	3,914.55
Meghalaya	2011–16	6,298.00
Mizoram	2012–17	3,675.26
Nagaland	2012–17	3,943.49
Odisha	2010–15	17,000.00
Puducherry	2012–17	825.37
Punjab	2012–17	58,796.00
Rajasthan	2014–19	262.00

Sikkim	2010–15	133.00
Tamil Nadu	2012–17	4,04,455.00
Telangana	2014–17	2,53,906.00
Tripura	2012–17	12,660.00
Uttar Pradesh	2014–18	46,946.00
Uttarakhand	2014–19	8,833.00
West Bengal	2012–17	1,710.00

Source: Ministry of Environment, Forest and Climate Change https://moef.gov.in/state-action-plan-on-climate-change (accessed 12 March 2026).

The figures in Annexure 1 reflect total climate finance needs of the states/UTs. It is a cumulative assessment of the amount of finance required to implement the actions identified in the SAPCC.

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