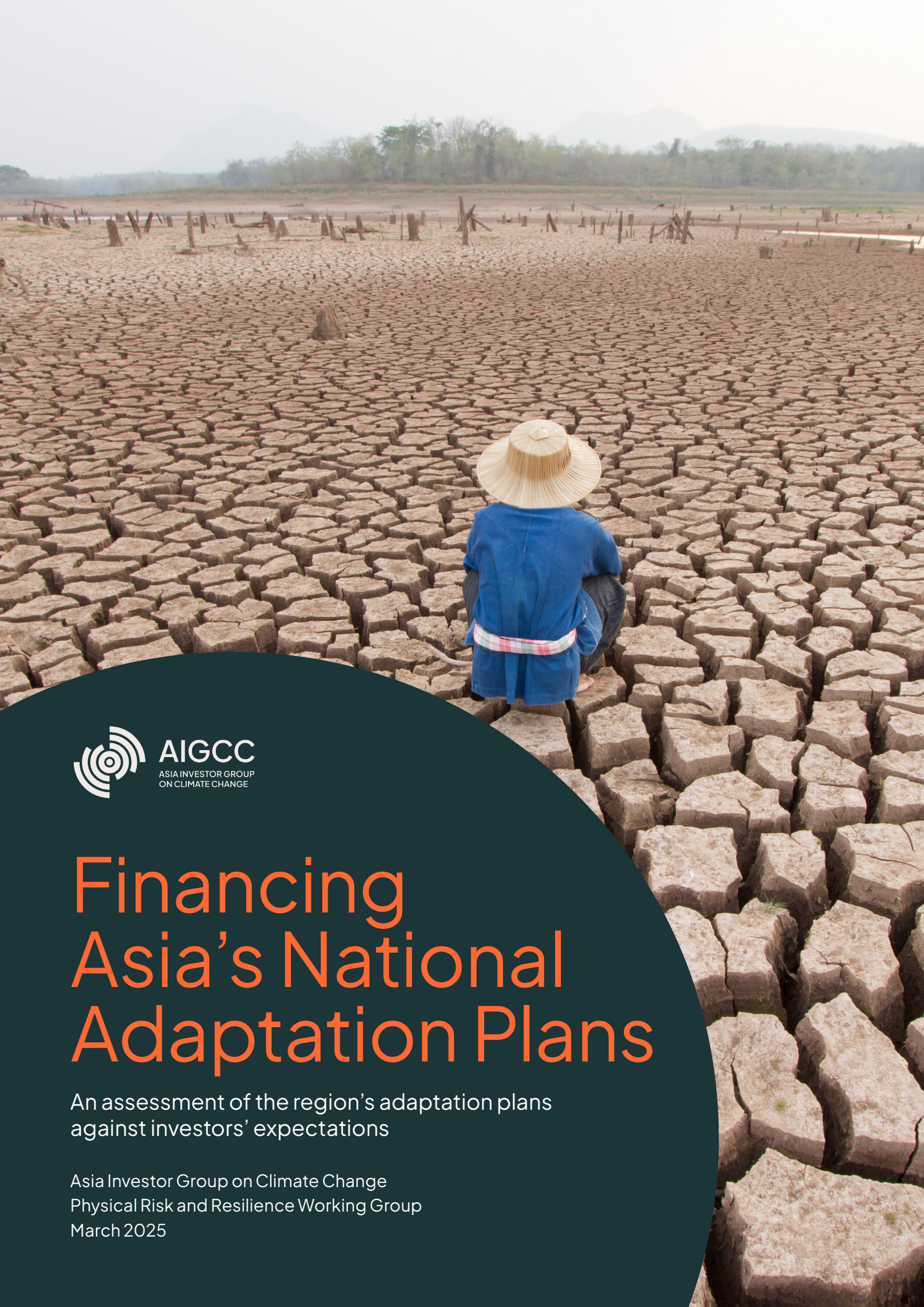

AIGCC
ASIA INVESTOR GROUP ON CLIMATE CHANGE

Financing Asia's National Adaptation Plans

An assessment of the region's adaptation plans against investors' expectations

Asia Investor Group on Climate Change
Physical Risk and Resilience Working Group
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Foreword

Rebecca Mikula-Wright
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Asia's economic story of the past 20 years has been world-leading growth, with few exceptions. Asian companies are at the forefront of technology, manufacturing, transport and heavy industry. In developing countries, millions have been lifted from poverty.

Now, with extreme weather, water risks and climatic disruptions already causing severe economic damage, the region's leading policymakers have recognised that green transformations will protect their gains and power the next decades' growth.

The Asia Investor Group on Climate Change (AIGCC)'s latest data on Asia's investor market shows that 75% of investors have recognised that climate is a material financial risk.

However, although Asian policymakers increasingly act on the science and economic realities, and investors have already put billions into renewable energy, green transport and other promising decarbonisation solutions, investments in adaptation and resilience are severely lacking.

There is a USD187–359 billion gap between what is allocated to adaptation per year and what is needed.

Evidently, markets, which are fundamentally shaped by policy, are not functioning properly enough to address this significant challenge. We need to be realistic about why. Only some adaptation and resilience assets and activities produce cash flows – even if they're value-creating, protecting capital value and future revenues.

Although protecting value is a very real and material reason to invest new capital, the business cases for such resilience investments rely on accurate climate science, scenarios and proper assessments of vulnerability and financial impact into the future. Given the system-level vulnerabilities to physical risk and the shared benefits of resilience, unlocking public and private capital will also need financial innovation and collaboration between investors, governments and business.

Large investors and governments are aligned in their interests: If Asia's growth continues, protected from climate-related damage and disruption, investors will make better returns for their beneficiaries. Likewise, Asian governments' surest path to continued development and growth, as well as prosperous and safe citizens, requires adaptation and resilience to the climate damage that is already unavoidable.

Well-designed and implemented National Adaptation Plans (NAPs), updated and improved by each generation, could lay the foundation for the next 20, 30 and 40 years of mutual benefit: For investors, for governments and for the people in Asia who we all ultimately serve.

This report is AIGCC's contribution to making that happen. We thank the members of AIGCC's Physical Risk Working Group for their guidance in this report.

Rebecca Mikula-Wright
CEO
Asia Investor Group on Climate Change

Contents

1. Executive summary

The Need

Globally, economies are already exposed to the mounting financial risks and implications brought by the increasing frequency and severity of extreme climate events.

Economies in Asia are particularly prone to the effects of floods, extreme heat and sea level rise.[1]

Significant resources will be needed to implement adaptation plans beyond the capabilities of most governments working alone. Protecting Asian economies and populations, therefore, requires strong partnerships and collaboration among governments, private enterprises and financiers.

Current Policy Environment for Adaptation and Resilience Investment

Current policy signals and incentives, however, have not stimulated enough private capital investment into resilience and adaptation. Governments need the opportunity to enact policy that unlocks private finance for adaptation and influences corporates' adaptation plans.

Government action also directly determines the exposure and vulnerability of companies' assets to physical climate risks.

In developing their adaptation strategies and initiatives, financial institutions will thus look towards governments for clear and comprehensive views of and action plans to address physical risks.

AIGCC's Work on Adaptation and Resilience

AIGCC, as an investor network of over 70 asset managers and owners across 11 markets in Asia, has prioritised adaptation and resilience through a Physical Risk and Resilience Working Group since 2021.[2] This group's work has helped:

- equip investors with the knowledge necessary to understand portfolio exposure to physical climate risks
- engage companies across Asia in the development of resilience plans
- engage governments to coordinate adaptation and resilience financing approaches with companies and other stakeholders.

Investor Expectations of National Adaptation Plans

AIGCC's Working Group articulated seven key investor expectations of the national adaptation planning process in 2022 based on extensive stakeholder consultation.[3] The expectations include basing adaptation planning on scenario analysis and ensuring corporate disclosure of physical risks.

AIGCC has now analysed nine Asian markets' adaptation planning and their alignment with the seven investor expectations and 12 sub-expectations.

- China
- Hong Kong SAR[4]
- India
- Indonesia
- Japan
- Korea
- Malaysia
- Singapore
- Thailand

The assessment framework and market-level analysis are available on an online dashboard.[5] The dashboard content will be updated following the release of new information or the announcement of policies on adaptation planning.

Analysis Results

Results across the market are mixed.

Several markets have implemented promising examples of best practices, especially in collaborative initiatives such as:

- Japan's Climate Risk Industry-Government-Academia Collaboration Network and A-PLAT data platform aim to foster partnerships across stakeholders to enhance risk information accessibility and exchange.
- China's localised climate finance pilots aim to mobilise financing for various adaptation projects initiated from the bottom-up by public and private institutions.

Nonetheless, significant gaps remain, particularly:

- a lack of accessible information on physical climate risks and impacts to sectors
- a lack of quantification of risk and vulnerabilities at sectoral or sub-national levels that prevent a comprehensive view of risks
- insufficient information about investor and private-sector consultations and channels
- unclear adaptation project pipelines and financing pathways to mobilise private capital in adaptation planning.

Actions

Addressing these barriers to increasing systemic resilience requires the collective efforts of governments and investors.

Government priorities should include:

- enhancing the accessibility and clarity of NAP processes and implementations
- engaging early with investors on NAPs
- developing and communicating a pipeline of adaptation projects
- helping develop instruments that mobilise private investment
- expanding and communicating climate scenarios and risk analysis

1 IPCC (2022). Sixth Assessment Report – Fact Sheet Asia: Climate Change Impacts and Risks.
2 See more information on AIGCC's Physical Risk and Resilience Working Group.
3 AIGCC (2022). Investor Expectations of National Adaptation Plans in Asia.
4 SAR = special administrative region.
5 Please refer to the Dashboard for an assessment and analysis of adaptation plans and policies by market.

Investor priorities should include:

- advocating for regulations that enable investment in resilience
- building their capacity to integrate adaptation and resilience considerations into their investment practice
- engaging companies on resilience measures and financing options.

This analysis of adaptation planning alignment will help investors understand the progress and direction of adaptation planning across jurisdictions. It is also a resource for accelerating their policy engagement around adaptation finance.

Governments can also use this analysis to examine ways to integrate investor perspectives in developing their NAPs and policies.

2. Background: The urgency of climate change adaptation planning

The UN Environment Programme's[6] 2024 Emissions Gap Report highlights that the global community is not on track to achieve the goals set out in the 2015 Paris Agreement. Mitigation actions have fallen short of emissions reductions needed to limit global warming to 1.5 °C. Global greenhouse gas emissions reached a record 57.1 gigatons of CO_2 equivalent in 2023, putting the world on course for 2.6 °C of warming. While achieving a 1.5 °C pathway remains technically possible, to do so requires a 42% reduction in emissions by 2030 and a 57% reduction by 2035.[7]

Globally, economies are already exposed to the mounting financial risks and implications brought by the increasing frequency and severity of extreme climate events. Economies in Asia are particularly prone to the effects of floods, extreme heat and sea level rise.[8] Highly dense coastal cities such as Bangkok, Jakarta and Ho Chi Minh City are exposed to the impacts of rising sea levels and subsidence.[9] Cities across the Asia-Pacific region may also observe increases in heatwave durations, with the durations of annual longest heatwaves lasting 23–25 days on average under a 3°C scenario.[10] Recent economic modelling by the Network for Greening the Financial System (NGFS) suggests that physical climate impacts would reduce Asia's gross domestic product by approximately 14% by mid-century if current global climate policy trajectories continue.[11]

The Intergovernmental Panel on Climate Change (IPCC)'s 6th Assessment Report[12] underscores the urgency of prioritising climate adaptation and resilience alongside goals towards net zero emissions. Significant resources and strong partnerships among government, private enterprises and financiers are needed to implement adaptation plans. Governments have primarily undertaken initial adaptation assessments and planning. However, to activate the private sector, they recognise the need for stronger emphasis and partnerships on adaptation and resilience planning and implementation within government and across sectors. This includes comprehensively assessing present and future risks of climate change, unlocking investment and financing opportunities and implementing and scaling adaptation initiatives through policies. The recent United Nations Climate Change Conference (COP) in Baku (COP29) further highlighted and reinforced the need for urgent action to create adaptation plans that would promote adaptation financing.[13]

Current policy signals and incentives have not stimulated enough private capital investment into resilience and adaptation. The Asian Development Bank estimates that only USD34 billion of adaptation finance has been mobilised in the Asia-Pacific region in 2021–2022. This is well below the estimated USD102–431 billion in annual investment needs from 2023 to 2030.[14] Efforts to accelerate finance flows by deploying innovative financial instruments or public-private partnerships are urgently needed to bridge financing gaps to insure and de-risk infrastructure and adaptation projects. Governments must examine ways to unlock private finance, align finance flows towards adaptation and create enabling environments for investor participation.

Private-sector measures are highly interdependent on public policy plans

An organisation's physical climate risks are a function of exposure and vulnerabilities to climate-related hazards.[15] Besides the financial value and asset sensitivity to disruption or damage, overall exposure and vulnerability are highly shaped by geographic location and the characteristics of the built environment surrounding an asset or property (e.g., proximity to a river channel). These will directly determine hazard exposure. Moreover, disruption to critical infrastructure like road networks, utility facilities and ports can harm business operations. Conversely, resilience in surrounding infrastructure and supply chains reduces operational and revenue risk. Government policies on land-use planning and implementing risk mitigation measures (e.g., constructing stormwater channel systems for flood prevention) heavily determine an asset's exposure to physical climate risks. Equally, corporate action plans on adaptation depend on the directions and existing efficacies of public policies on adaptation. **In developing adaptation strategies and initiatives, financial institutions will look to governments for clear and comprehensive views of physical risks at the national and sub-national levels**.

The private sector plays a crucial role in enhancing resilience to climate change across all sectors. Along with funding

6 United Nations Environment Programme (2024). Emissions Gap Report 2024.
7 Full implementation of existing NDCs with no further ambition puts the world on a trajectory of 2.6 – 3.1 °C of warming. See the UNEP Emissions Gap Report 2024 for more details.
8 IPPC (2022). Fact Sheet on Asia's Climate Change Impacts and Risks (from Sixth Assessment Report).
9 IPPC (2019). Special Report on the Ocean and Cryosphere in a Changing Climate: Chapter 4 – Sea Level Rise and Implications for Low-Lying Islands, Coasts and Communities.
10 World Resources Institute (2024). What Would Cities Look Like With 3 Degrees C of Warming vs. 1.5? Far More Hazardous and Vastly Unequal.
11 NGFS (2024). NGFS Climate Scenarios for central banks and supervisors – Phase V. Modelled climate impacts stem from increased temperatures, a rise in sea levels and changes in rainfall. Extreme weather events that may damage property or affect labour productivity, capital and agriculture yields in specific areas. The models used likely underestimate the risks, do not account for tipping points or large-scale impacts and are based on mid-range estimates of climate damages to economies.
12 IPPC (2021). Sixth Assessment Report.
13 Speech by UN Climate Change Executive Secretary Simon Stiell at a High-Level Dialogue on National Adaptation Plans during the UN Climate Change Conference COP29 in Baku on 18 November 2024.
14 Asian Development Bank (2024). Asia Pacific Climate Report 2024: Catalysing Finance and Policy Solutions.
15 Adaptation & Resilience Investors Collaborative (2024). Investor Playbook for Physical Climate Risk Assessment and Management (p. 6).

adaptation and resilience solution providers, financial institutions (e.g., banks, multilateral institutions, asset managers, asset owners and insurers) can provide finance to de-risk adaptation projects or provide risk transfer solutions. To advance adaptation goals, governments must examine ways to unlock private finance, align finance flows and create enabling environments for investment. **The challenges of the physical impacts of climate change are systemic and best addressed through strong partnerships and collaboration among governments, private enterprises and financiers to deliver and implement adaptation plans effectively**.[16]

As governments across Asia strengthen implementation and coordination on adaptation planning and policymaking, understanding the progress of planning at a national level is a critical first step in assessing directions of travel, existing gaps and collaboration opportunities between investors and governments to enhance climate resilience.

The national adaptation plan process

Parties to the United Nations Framework Convention on Climate Change (UNFCCC) introduced the NAP process in 2011 to facilitate comprehensive medium- and long-term adaptation planning within countries and to help them do so—particularly the least developed countries. The NAP process enables countries to identify and address their medium- and long-term priorities for adapting to climate change and establish the systems and capacities needed to make adaptation integral to their development planning, decision-making and budgeting.[17] It is a central mechanism to meet the 2015 Paris Agreement objectives around adaptation planning, particularly those of Article 7.[18]

The UNFCCC has outlined several principles for achieving transformational adaptation[19] through NAPs, among which include the need for NAPs to be investment-oriented and be designed to tap into the broadest possible range of financing from public, private, domestic and international sources.[20] NAPs should also be evidence-based, drawing upon science, technology and innovation, including geospatial data and be an instrument for leveraging technology transfer and capacity building.

At COP29, the NAP assessment process sought to evaluate and strengthen the NAP framework's effectiveness in advancing adaptation efforts. Key objectives included (a) emphasising the significance of adaptation and the NAP process; (b) recognising the support provided and received for NAP processes; (c) identifying challenges, gaps and needs within the NAP process; and (d) sharing best practices and recommendations to improve the NAP framework, scale up adaptation actions and help countries transition their NAP processes from planning to implementation.[21]

Crucially, as the NAP framework recognises, governments worldwide are at different stages of their adaptation planning. As of November 2024, 62 developing and developed country parties have submitted their NAPs to the UNFCCC.[22] We note that while many countries across Asia have yet to officially submit their NAPs, a large portion has outlined adaptation strategies and priority areas within government plans, often across multiple agencies.[23] Priority adaptation planning areas often include enhancing disaster risk reduction and management, protecting critical infrastructure and implementing sector-specific strategies like those that target agriculture and food security.

However, in many instances, financial institutions and investor perspectives have been absent from national adaptation planning. Multiple barriers continue to complicate the engagement of private financiers in the adaptation planning process, including the lack of information around risks and adaptation options, the absence of enabling institutional frameworks for private-sector participation and inadequate technical capacity across actors to develop and commercialise adaptation products or services.

16 Crawford, A. & Church, C. (2019). Engaging the private sector in National Adaptation Planning Processes. Winnipeg, Canada: International Institute for Sustainable Development.
17 Further information on the NAP process is available in the Annexes and here on the UNFCCC website.
18 Article 7 Paragraph 9 of the Paris Agreement indicates that 'each Party shall, as appropriate, engage in adaptation planning processes and the implementation of actions, including the development or enhancement of relevant plans, policies and/or contributions'. Paragraphs 10 and 11 encourage countries to submit and update 'adaptation communications' that include adaptation priorities, implementation and support needs, plans and actions.
19 See the UNFCCC's technical paper on the definitions, dimensions and pathways of transformational adaptation. In contrast to incremental adaptation, transformational adaptation involves systemic changes in governance, infrastructure or worldviews, and emphasises equity and inclusivity.
20 Principles for achieving transformational adaptation through NAPs were established at the high-level transformational dialogue at the NAP Expo 2024 in Dhaka (22–25 April 2024).
21 International Institute for Sustainable Development (2024). What Is the NAP Assessment at COP 29, and Why Does It Matter?
22 The UNFCCC's list of submitted NAPs is available on here on NAP Central.
23 Throughout this document, we use NAPs synonymously to refer to the national adaptation planning/policy (which may or may not include official elements of the UNFCCC NAP processes).

3. Findings from AIGCC's engagements on adaptation planning and policy

In this context, as an investor network of over 70 asset managers and owners across 11 markets in Asia, AIGCC has prioritised policy engagement on adaptation and resilience to support investors and policymakers to advance adaptation and resilience goals since 2021.

The AIGCC Physical Risk and Resilience Working Group[24] has helped:

- equip investors with the necessary knowledge to understand portfolio exposure to physical climate risks
- engage companies across Asia in developing resilience plans
- engage governments in Asia to coordinate adaptation and resilience financing approaches with companies and other stakeholders.

Through a combination of engagement modalities (e.g., submissions to policy and public consultations, investor-led and peer-to-peer engagements and roundtables and publishing knowledge reports), the Working Group has:

- supported investors in engaging with their investee companies to outline risk exposure of company assets and operations while urging companies to develop resilience plans to mitigate risks. In 2021, the Working Group compiled a compendium report[25] to guide investors to identify and quantify physical climate risks within their portfolios.
- Increased financial institutions' understanding of their physical risk exposure (e.g., risks of sea level rise) through open letters and direct dialogue with banks.[26]
- Increased understanding and action on adaptation planning through a series of investor-led policy engagements on adaptation finance across Asian markets. Discussions in these markets have focused on identifying opportunities for adaptation financing, providing accurate and actionable data, implementing resilience taxonomies and encouraging governments to incorporate private-sector involvement in national adaptation planning.

Investor expectations of adaptation planning and NAPs

Following initial engagements and consultations with investor members, the Physical Risk and Resilience Working group articulated seven key investor expectations of the adaptation planning process.[27] This aimed to enhance further dialogue around integrating investor considerations and perspectives within adaptation and resilience planning.

Investors' overarching expectations include:

1. outlining a consistent, national view of physical climate risk
2. basing NAPs on scenario analysis
3. identifying and prioritising vulnerable systems, groups and communities
4. ensuring corporate disclosure of physical risks
5. engaging the private sector and financial institutions
6. including interregional effects and international cooperation
7. including action-oriented points on implementation and financing strategies.

Since publishing these investor expectations in November 2022, AIGCC has convened investors and governments across several roundtable sessions and one-on-one consultations focused on adaptation and resilience in markets throughout Asia. These markets include but are not limited to Hong Kong, Korea, Malaysia, Japan, Philippines, Thailand, Indonesia and Singapore. The main themes and discussion findings from these markets are below. They highlight the existing barriers, gaps and opportunities for climate change adaptation plans and policies.

24 For more information, see AIGCC's Physical Risk and Resilience Working Group. A list of engagements and resources is also available in the Annex.
25 AIGCC (2021). Navigating physical climate risk: A new compendium of tools for Asian investors.
26 AIGCC and China Water Risk (2023). An open letter to Asian Banks on Escalating Physical Climate Risk.
27 AIGCC (2022). Investor Expectations of National Adaptation Plans in Asia.

1. Reinforcing the need and urgency of enabling policy environments for private-sector adaptation measures

Investors emphasise the need and urgency for new policy frameworks and multi-stakeholder partnerships in building resilience to climate change. Investors emphasise that acting to mitigate climate risks where feasible is part of the fiduciary duty they owe to beneficiaries and clients. There is an increasing demand and necessity to consider and integrate investor perspectives into developing adaptation plans. However, a lack of clarity exists on national adaptation goals, participation channels for investors, adaptation investment opportunities and frameworks to support adaptation measures by firms.

What is needed: Governments create policy environments that actively support private-sector participation and establish clear roles for investors in shaping and financing NAPs. *Regulatory and planning frameworks and internal capacity must evolve to support and incentivise private investment in adaptation. This includes embedding resilience considerations into land-use policies, building codes and market regulations. Processes to engage and consult investors in the development and implementation phases of adaptation planning should be established.*

In addition, enhanced collaboration between the public sector, financial institutions and corporations to develop innovative adaptation finance mechanisms, including but not limited to blended finance, can help de-risk projects and unlock the financing required for adaptation. *Active engagement with investors to identify adaptation and resilience investment opportunities, bankable projects and viable financing instruments and models would be required.*

2. Addressing data inadequacy, inaccessibility and lack of transparency

To build an investment case for adaptation, investors would need to quantify the financial implications of physical risks to their assets and operations, including indirect impacts via value chain exposures.

However, this process currently involves significant challenges, including information inadequacies and the lack of consistency in understanding:

- the frequency and severity of hazards (acute and chronic) under various climate change scenarios
- the vulnerability of assets, operations and supply chains to hazards
- the changing vulnerabilities when hazards are complex and/or compounded
- the effectiveness and associated financial benefit of resilience measures.

The availability of high-resolution, consistent and credible data on climate risks is essential for informed decision-making in adaptation planning and investment. However, existing data and methods to quantify physical risks and impacts of adaptation measures – including hazard, exposure and vulnerability metrics – remain nascent and insufficiently credible, granular or consistent for decision-making.[28,29] There is a need to better understand the full financial impacts of projected changes in climate variables across scenarios (e.g., NGFS, IPCC scenarios) and time horizons. This particularly applies at the asset level while recognising the underlying assumptions and limitations of such analysis.[30] While data and analysis should also be consistent and replicable to generate actionable insights, stress testing should also use appropriate timelines and hazard severities that reflect the 'low-regret' or 'cannot be ruled out' scenarios (e.g., projected sea level rise of 2 metres by 2100 and 5 metres by 2150, which the IPCC states cannot be ruled out owing to deep uncertainties related to ice sheet dynamics).[31]

Investors and companies also often need data beyond individual assets to assess physical and operational risks at district or regional levels when making informed decisions on adaptation strategies.

What is needed: Governments should invest in creating a database that consolidates granular, consistent physical climate risk information that is accessible to public and private stakeholders. *Access to credible and granular climate risk data at a property-level across hazards and scenarios will aid companies and investors in comprehensive risk assessment and in developing targeted adaptation strategies. It would be integral in capacity building on adaptation finance. The effect of existing or planned adaptation measures or infrastructure in reducing vulnerability should be quantified and communicated.*

28 G20/OECD (2024). Report on approaches for financing and investment in climate-resilient infrastructure.
29 Bloomberg (2024). Clashing risk predictions cast doubt on black box climate models.
30 The Climate Financial Risk Forum established by the UK Financial Conduct Authority and Prudential Regulation Authority has proposed an 'Aim-Build-Contingency' framework and guide for scenario selection, application and use of hazard data sources. For more information on the Network for Greening the Financial System (NGFS) scenarios, please consult the NGFS' resources page and guidance note.
31 See AIGCC and China Water Risk's open letter to Asian Banks on Escalating Physical Climate Risk for further information.

3. Showing the areas where adaptation financing meets private investors' mandates

Public funding alone cannot meet the scale of adaptation investment needed in most markets. However, private investors have often viewed adaptation investments as not meeting their risk/return objectives. This is particularly so when compared to mitigation projects that can show more apparent benefits in the short term. The scale of many adaptation projects is sometimes too small to attract private investment. Only a fraction of green bond proceeds are directed towards adaptation.

As well as having accurate and granular risk data and the ability to quantify financial exposure (as noted above), investors contend with the real or perceived low cash flows from resilience investments, a lack of strategic policy direction, uncertainty around investment needs and low investor confidence in the transparency and predictability of capital.[32]

In many markets, adaptation is still viewed primarily as a public-sector responsibility and an exception rather than standard practice, with limited value and opportunities for investor involvement. Discussions highlighted that governments must provide clarity on priority adaptation measures and a visible and investable pipeline of adaptation projects to mobilise private capital.

What is needed: Stakeholders should generate awareness of adaptation as a growth opportunity beyond risk management and loss avoidance. *Specific examples of good practices that highlight the value and co-benefits of adaptation projects along with development or mitigation goals should be communicated (e.g., developing adaptation projects simultaneously as resilient real estate or carbon management infrastructure).*

To address the above gaps, governments and investors must collaborate to provide clarity through a pipeline of bankable adaptation projects with clear objectives, timeframes and avenues for investor participation. This should occur alongside new financial instruments or mechanisms that facilitate public and private capital flows *and should be integrated within adaptation plans and communicated to investors.*

32 Tall et al. (2021). Enabling Private Investment in Climate Adaptation and Resilience: Current Status, Barriers to Investment and Blueprint for Action.

4. Need for sector-specific adaptation strategies and interagency coordination mechanisms

Exposure and vulnerability to physical risks like floods and heat and water stress vary across sectors and geographies. The utilities, real estate, and healthcare sectors are particularly vulnerable. Additionally, disruption to infrastructure assets due to extreme climate events, such as the flooding of power, communication or transport systems, can have cascading impacts. However, the impacts at the sectoral level and across boundaries are poorly understood or quantified.

To obtain a comprehensive view of risk exposure and impacts, companies and investors must examine physical risks and impacts by sectors and across the value chain. Effective adaptation planning requires sector-specific strategies that address unique vulnerabilities and resilience needs while coordinating across sectors and agencies, including finance ministries. For example, urban infrastructure may need dedicated or augmented flood protection systems. In contrast, healthcare facilities must prioritise heat-resistant designs but also rely on infrastructure for workforce and supplies availability.

What is needed: Governments (across departments and agencies) should work collaboratively with private-sector participants to assess sector-specific risks and identify initiatives and financing mechanisms for adaptation across sectors. *NAPs should define resilience goals for critical sectors, similar to sectoral emissions reduction plans, while also emphasising a whole-of-government approach and interagency coordination.*

4. Assessing alignment of adaptation plans and policies with investor expectations

This section overviews nine priority Asian markets' progress on adaptation planning:[33]

- China
- Hong Kong SAR
- India
- Indonesia
- Japan
- Korea
- Malaysia
- Singapore
- Thailand

It also describes our framework for analysing the alignment of their planning with the seven investor expectations and 12 sub-expectations. The assessment draws on publicly available documents on adaptation policies at the national level, including:

- official NAPs and Adaptation Communications (ADCOMs) submitted to the UNFCCC[34]
- published climate change adaptation action plans and documents
- climate impact assessment reports
- press releases or announcements on adaptation policies (e.g., mandatory regulations on corporate climate disclosures).

There are limitations to relying solely on publicly available online documents that may not fully represent planning processes nor comprehensively capture actual implementation already done. The analysis in the following section is current as of January 2025. Still, it does not attempt to track or assess the progress of adaptation planning or implementation over time, nor at the sub-national level. Instead, it provides a snapshot of current planning considerations at the national level that are in alignment with investor expectations.

This document is a resource to inform investors on the progress status and direction of adaptation planning across jurisdictions for further engagement and as a reference that can further accelerate adaptation finance. It is also a starting point for relevant government departments to understand how investor expectations and perspectives can feed into national adaptation planning.

Each investor expectation is classified according to a 'Green-Amber-Red' matrix that reflects the level of progress and alignment of adaptation planning. The classification is based on qualitative and objective indicator assessments, such as the presence of an interministerial or interagency coordinating body for adaptation planning.

Adaptation planning progress across nine asian markets

Countries should implement a national adaptation policy instrument by 2025, according to calls in the UNFCCC's first Global Stocktake. Countries are expected to review and update their NAPs around every five years, adapting to any contextual changes and integrating updated climate risk information. This typically aligns with the submissions of the Nationally Determined Contributions (NDCs).

The nine markets differ in their progress and approaches to adaptation planning. Adaptation initiatives are presently coordinated or implemented in different forms and may exist across the national or sub-national levels (e.g., provincial/municipal governments or agencies) but may not be integrated or documented as part of national adaptation policies. Markets also differ in their priority areas for adaptation planning and implementation. Table 1 outlines progress made in developing adaptation plans across the nine markets.[35]

33 To provide an additional point of comparison for investors, we have also included an assessment of Australia's progress on adaptation planning within the Annexes in view of the Investor Group on Climate Change (IGCC)'s ongoing engagements with the Australian Government.

34 The Grantham Research Institute on Climate Change and the Environment and Climate Policy Radar have developed a global database of climate laws and policies. Except for Thailand, the nice jurisdictions have not officially submitted their NAPs to the UNFCCC but have each done different degrees of adaptation planning and communication.

35 References to relevant publications mentioned for each market are available in the assessment dashboard.

Table 1. Status and progress of adaptation planning and submission of official NAPs to the UNFCCC

Market/jurisdiction	Status
1. China	• No NAP submitted to UNFCCC • Integrated climate adaptation as part of the National Climate Change Adaptation Strategy (2035) and 14th Five-Year Plan (2021–2025) • Submitted first Adaptation Communication in 2021; released 4th National Communication on Climate Change in 2023
2. Hong Kong SAR	• Does not submit a NAP as a SAR but has outlined a Climate Action Plan 2050 (released in October 2021). This builds on Climate Action Plan 2030+ released in 2017 • Adaptation priorities are also shared in China's National Communication to the UNFCCC
3. India	• No NAP submitted to UNFCCC • Developed National Action Plan on Climate Change (NAPCC) in 2008 comprising eight national missions, each coordinated by an assigned ministry • 34 states/union territories have developed State Action Plans on Climate Change aligned with NAPCC framework • Established National Adaptation Fund for Climate Change to support adaptation activities • Submitted first Adaptation Communication in 2023
4. Indonesia	• No NAP submitted to UNFCCC • Submitted first Adaptation Communication (ADCOM to UNFCCC in 2022. This builds on previous documents, including the Enhanced NDC 2022, NDC Roadmap on Adaptation (2022), the Long-Term Strategy for Low Carbon and Climate Resilience (LTS-LCCR) 2050 and NAPCC Adaptation (RAN-API) 2014 • Indonesian Ministry of Finance published the report, 'Enabling Environment for Private Sector Engagement in Climate Change Adaptation Projects' in 2020
5. Japan	• No NAP submitted to UNFCCC • NAP first published and approved by government in 2015, with the latest revision in October 2021; implementation in progress • Second ADCOM released in 2023 • Climate Change Adaptation Act (2018) mandates formulating regional adaptation plans that align with national goals, reviewed every 5 years
6. Korea	• No NAP submitted to UNFCCC • Third National Climate Change Adaptation Plan (NCCAP) (2021–2025) implementation in progress; first NCCAP formulated in 2010 • Submitted first ADCOM to UNFCCC in 2023 • Requires NAP to be implemented and reviewed every 5 years under the Framework Act on Carbon Neutrality and Green Growth for Coping with Climate Crisis, enforced in 2022
7. Malaysia	• No NAP submitted to UNFCCC; currently in development by 2026 • Published 12th Malaysia Plan (2021–2025) and Mid-Term Review in 2023, incorporating plans for NAP • Published a National Climate Change Policy 2.0 and 4th National Communication in 2024
8. Singapore	• No NAP submitted to UNFCCC • Published its 5th national communication to the UNFCCC in 2022, integrating a section on vulnerability and adaptation measures as its first ADCOM
9. Thailand	• Submitted NAP in 2024 focusing on 6 sectors; implementation in progress and efforts to strengthen NAP process outlined

Comparison and assessment framework: Planning alignment with investor expectations

Drawing on available planning and policy documents on climate change adaptation from each market at the market or national level, we assess the overall alignment of adaptation planning with seven overarching investor expectations and 12 sub-expectations.

Each investor expectation and sub-expectation is classified using either 'Green-Amber-Red' or 'Yes/No' as it appropriately reflects the extent of progress and alignment of adaptation planning. The assessments are qualitative, but objective and transparent. The classification scheme for each sub-expectation is as follows:

- Green: Advanced level of progress or alignment (or presence of an indicator for yes/no classification)
- Amber: Mixed or moderate progress or alignment, or insufficient information/more information required
- Red: Attention required (or absence of an indicator for a yes/no classification)

At the expectation level, an expectation is classified as:

- Green: only if all sub-expectations are assigned Green
- Amber: if at least one sub-expectation is classified Amber or Red
- Red: only if all sub-expectations are classified Red.

The assessment framework, overview of findings and market-level analysis are available via an online dashboard. The dashboard contents will be updated after the release of new information or policy announcements on adaptation planning.

Table 2. Comparison and assessment framework describing the classification criteria for the 7 investor expectations and 12 sub-expectations

Expectation	Sub-expectation (if any)	Extent of progress or alignment		
		Green: Advanced	Amber: Mixed Progress (further work or information required)	Red: Attention required
1. Outlining a consistent, national view of physical climate risk	Overall	Granular or detailed climate hazard and impact assessment findings across country communicated, with data platform development on physical risk. Cross-coordination mechanism through an interministerial coordination body.	Climate hazard assessment and communication undertaken, but with limited detail communicated; insufficient detail on or lack of interagency cross-coordination mechanisms.	No consideration of or communication of physical risk assessment findings; absence of interagency coordination mechanism.
	1a. Development of physical risk data platform	A physical risk data platform has been launched or developed (open or limited access).	A physical risk data platform is planned or under development.	No existing physical risk data platform or plans for platform development.
	1b. Hazard or vulnerability assessment conducted at local levels (as applicable)	Granular assessment/quantification/mapping of risks down to provincial/municipal/state/district levels conducted and communicated.	Some assessment of risks undertaken to describe vulnerable provinces/states/districts, with high-level descriptions or insufficient detail.	Limited to no assessment and communication of risks to specific regions or areas within jurisdiction.
	1c. Coordination of adaptation planning by an interministerial committee/body	Adaptation planning and implementation coordinated by interministerial/agency body, including the Ministry of Finance, with clear go-to authority for coordinating adaptation initiatives.	Interministerial/agency body for adaptation planning or implementation formed, but without clear go-to authority or involvement of the Ministry of Finance/ More information needed.	No formation of interministerial committee/body or coordination mechanism for adaptation.
2. Basing NAPs on scenario analysis	Overall	References to worst-case scenarios and multiple time horizons, quantification and analysis of vulnerability and impacts across key risks and sectors.	Hazard projections and trends generally assessed. Scenarios or time horizons may be lacking, or effects across risks and sectors not assessed.	Limited consideration of only a single/ no scenario; limited description of physical risk impacts or hazard projections.
	2a. Use of multiple scenarios, including 'worst-case'	Yes/No		
	2b. Use of long-term time horizon beyond 2050	Yes/No		
	2c. Quantification of impacts and vulnerabilities across hazards	Detailed assessment/quantification and communication of impacts and vulnerabilities (loss and damage projections) across hazards and sectors beyond hazard projections.	Intermediate assessment and communication of physical risks with impacts broadly described or assessments limited to hazard projections/ More information needed.	Little to no assessment or communication of physical risks and vulnerabilities beyond hazard projections.
3. Identifying and prioritising vulnerable systems, groups and communities	Overall	Vulnerable groups identified, with efforts or actions to prioritise them detailed.	Some description of plans to address the needs of or prioritise vulnerable groups.	No mention or recognition of the need for adaptation measures to address vulnerable communities.

(continued)

Table 2. Comparison and assessment framework describing the classification criteria for the 7 investor expectations and 12 sub-expectations *(continued)*

Expectation	Sub-expectation (if any)	Extent of progress or alignment		
		Green: Advanced	Amber: Mixed Progress (further work or information required)	Red: Attention required
4. Ensuring corporate disclosure of physical risks	Overall	Mandatory disclosure of physical risks implemented or announced, aligned with an internationally recognised disclosure standard.	Delayed implementation of mandatory disclosure, or non-alignment with an international standard.	Absence of mandatory disclosure requirement on physical risks.
	4a. Implementation of mandatory disclosure before 2026	Yes/No		
	4b. Alignment with internationally recognised disclosure standard required	Yes/No		
5. Inclusion of interregional effects and international cooperation on adaptation	Overall	Interregional risks (e.g., transboundary water use, supply chain risks) clearly considered and identified for current or future risk assessments; channelling of resources for regional capacity building.	Some identification of interregional risks and recognition of need for coordination across boundaries but insufficient detail.	Absence of consideration for interregional risks and insufficient response plans.
	5a. Recognition of interregional risks (e.g., transboundary water use, supply chain risks) in adaptation plans	Yes/No		
	5b. Leadership or participation in multilateral/regional forums on adaptation	Yes/No		
6. Engagement with the private sector and financial institutions	Overall	Platforms established or forums planned that are avenues for consultations, with private-sector roles outlined (including financial institutions).	Some description of avenues for private-sector/financial institution consultation and/or participation, generally insufficient information.	No planned avenues or limited mention of involvement of private-sector/financial sector in adaptation planning.
	6a. Presence of consultation and communication platforms with financial institutions and private enterprises	Yes/No		
	6b. Roles of private-sector enterprises in providing adaptation solutions or services outlined	Yes/No		
7. Inclusion of action-oriented points on implementation and financing strategies	Overall	Clear strategies and actions established to identify financing gaps, develop a pipeline of fundable projects, and deploy financing instruments.	Some efforts to identify finance gaps, avenues and engagement strategies for financing. Some stakeholder roles outlined, with limited details of action plans or implementation.	Absence of clear plans or implementation of financing strategies and avenues for project financing.

Table 3. Adaptation policy focus areas across markets

Market/jurisdiction	Adaptation priorities/focus areas identified within adaptation plans and policies
1. China	• Advancing monitoring and early warning capabilities • Improving adaptability of natural and socio-economic systems (e.g., coastal, agricultural, health) • Adjusting regional land-use plans for better adaptation • Establishing institutional mechanisms to integrate adaptation in policies
2. Hong Kong SAR	• Resilience assessment of critical infrastructure under extreme weather and typhoons • Strengthening coastal protection and flood prevention infrastructure • Safeguarding water supply and addressing extreme drought • Enhancing building design and urban forestry to address extreme heat • Strengthening contingency plans and disaster preparation
3. India	• Facilitating localised assessments of vulnerability and risk • Enhancing climate services and early warning systems • Addressing floods • Utilising ecosystem-based approaches for watershed management and coastal protection • Long-term relocation of communities • Promoting research and innovation on technologies addressing climate risk • Ensuring credit supply in rural India • Livelihood diversification and inclusion of marginalised communities
4. Indonesia	• Dual approach: regional and sectoral priority areas for adaptation • 6 priority areas: increasing food security; expanding water resources; investing in energy resources and climate-proofing infrastructure; increasing surveillance and prevention of diseases; improving disaster management and governance; pursuing ecosystem-based adaptation

5. Japan	• 6 focus sectors: Agriculture, Forestry and Fisheries; Natural Disasters; Water Resources; Natural Ecosystems; Human Health; Industrial/Economic Activity
	• Adaptation efforts across sectors include:
	  • enhancing risk information and management among insurers
	  • managing heat impacts on human health and agriculture
	  • assessing and preventing disaster risk
	  • assessing overseas impacts

6. Korea	• Enhancing adaptation of all sectors: water management, healthy ecosystems, nationwide capacity, sustainable agriculture and fisheries, preventing health impacts, strengthening adaptation in industry and energy sectors • Strengthen monitoring, prediction and evaluation: comprehensive monitoring, advanced climate-scenario development and prediction, advancing evaluation tools • Mainstreaming adaptation in society
7. Malaysia	• Five priority areas expected in upcoming plan: public health, agriculture, food security, forestry and biodiversity, water resources and infrastructure (including heat-related impacts) • Flood and disaster management to be strengthened
8. Singapore	• Topics addressed include adapting to sea level rise, building flood resilience, ensuring water sustainability, strengthening biodiversity, enhancing public health and food security resilience, ensuring safe and operational critical infrastructure and managing the urban heat island effect
9. Thailand	• Six focus sectors include water resource management, agriculture and food security, tourism, public health, natural resource management, human settlements and security

Table 4. Overview of findings across 7 investor expectations and 12 sub-expectations

Market	Investor expectations / sub-expectations								
	1. Outlining a consistent, national view of physical climate risk				2. Basing NAPs on scenario analysis				3.Identifying and prioritising vulnerable systems, groups and communities
	Overall Classification	*1a. Development of physical risk data platform*	*1b. Hazard or vulnerability assessment conducted at local levels (as applicable)*	*1c. Coordination of adaptation planning by an interministerial committee/body*	Overall Classification	*2a. Use of multiple scenarios, including 'worst-case'*	*2b. Use of long-term time horizon beyond 2050*	*2c. Quantification of impacts and vulnerabilities across hazards or sectors*	Overall Classification
China	Amber	Amber	Amber	Amber	Amber	Yes	Yes	Amber	Green
Hong Kong SAR	Amber	Green	Amber	Amber	Amber	Yes	Yes	Red	Amber
India	Amber	Amber	Amber	Amber	Amber	Yes	Yes	Amber	Green
Indonesia	Amber	Green	Amber	Amber	Amber	Yes	Yes	Amber	Amber
Japan	Amber	Green	Green	Amber	Green	Yes	Yes	Green	Green
Korea	Amber	Green	Green	Amber	Amber	Yes	Yes	Amber	Green
Malaysia	Amber	Amber	Amber	Amber	Amber	Yes	Yes	Amber	Amber
Singapore	Amber	Amber	Amber	Amber	Amber	Yes	Yes	Red	Amber
Thailand	Amber	Amber	Green	Amber	Amber	Yes	Yes	Amber	Amber

(continued)

Table 4. Overview of findings across 7 investor expectations and 12 sub-expectations *(continued)*

Market	Investor expectations / sub-expectations									
	4. Ensuring corporate disclosure of physical risks			5. Inclusion of interregional effects and international cooperation on adaptation			6. Engagement with the private-sector and financial institutions			7. Inclusion of action-oriented points on implementation and financing strategies
	Overall Classification	*4a. Implementation of mandatory disclosure before 2026*	*4b. Alignment with internationally recognised disclosure standard required*	Overall Classification	*5a. Recognition of interregional risks in adaptation plans*	*5b. Leadership or participation in multilateral/ regional forums on adaptation*	Overall Classification	*6a. Presence of consultation platforms with FIs and private enterprises*	*6b. Roles of private-sector enterprises in providing adaptation solutions or services outlined*	Overall Classification
China	Amber	No	Yes	Amber	–	Yes	Amber	–	Yes	Green
Hong Kong SAR	Green	Yes	Yes	Amber	–	–	Amber	Yes	No	Amber
India	Green	Yes	Yes	Amber	–	Yes	Amber	–	–	Amber
Indonesia	Amber	Yes	No	Amber	–	Yes	Amber	–	Yes	Green
Japan	Amber	No	Yes	Green	Yes	Yes	Green	Yes	Yes	Green
Korea	Amber	No	Yes	Amber	–	Yes	Amber	–	No	Amber
Malaysia	Green	Yes	Yes	Amber	–	-	Green	Yes	Yes	Amber
Singapore	Green	Yes	Yes	Amber	–	Yes	Amber	Yes	No	Amber
Thailand	Amber	Yes	No	Amber	–	–	Green	Yes	Yes	Amber

Adaptation planning analysis across the nine markets reveals a mixed picture of alignment with the seven investor expectations. Significant gaps persist around the availability and accessibility of climate risk information, engagement of the private sector and financial institutions and outlining clear and action-oriented strategies for financing.

1. Outlining a consistent, national view of physical climate risk

Expectation: Governments should regularly do and communicate physical risk assessments of assets, particularly critical infrastructure, and provide periodic, accurate, comprehensive, timely and commercially available records in relation thereto. Publicly accessible datasets and assessments would ensure higher participation by the private sector in the adaptation planning process, and the private sector can work together with governments to consolidate data sources that are used in the assessment process. This assessment should intend to set standards for physical risk assessments that align with international best practice and can be adopted by state/local governments and other actors (e.g., investors) to ensure a nationally consistent view of physical risk. Where information may be too sensitive to share publicly, governments can share information that inspires confidence in risk mitigation.

In addition, governments should ensure a 'whole-of-government' approach in the coordination of adaptation planning through an interministerial coordination body. Adaptation planning should include the Ministry of Finance to facilitate an enabling environment for risk management and to catalyse private finance for adaptation.

Finding: Significant gaps persist around the availability and accessibility of climate data and risk information. Four out of nine markets have developed physical risk data platforms, including publicly open and limited access tools. VESTAP (Climate Crisis Vulnerability Assessment Tool) in Korea and A-PLAT (Climate Change Adaptation Information Platform) in Japan are notable examples of governments that have begun to enhance the transparency and accessibility of climate hazard and risk data. The A-PLAT platform and its datasets are publicly accessible (see Box 1). Data platforms in Japan and Korea have also facilitated granular assessment and risk mapping down to local district levels. However, access to some of these platforms is presently restricted to a limited audience (e.g., the VESTAP is limited to local governments and the Hong Kong Monetary Authority (HKMA)'s Physical Risk Platform is limited to banks). Developing open and granular information platforms on physical risk and vulnerabilities would facilitate a comprehensive view of risk among finance-sector participants and real-economy stakeholders, accelerating adaptation and resilience efforts.

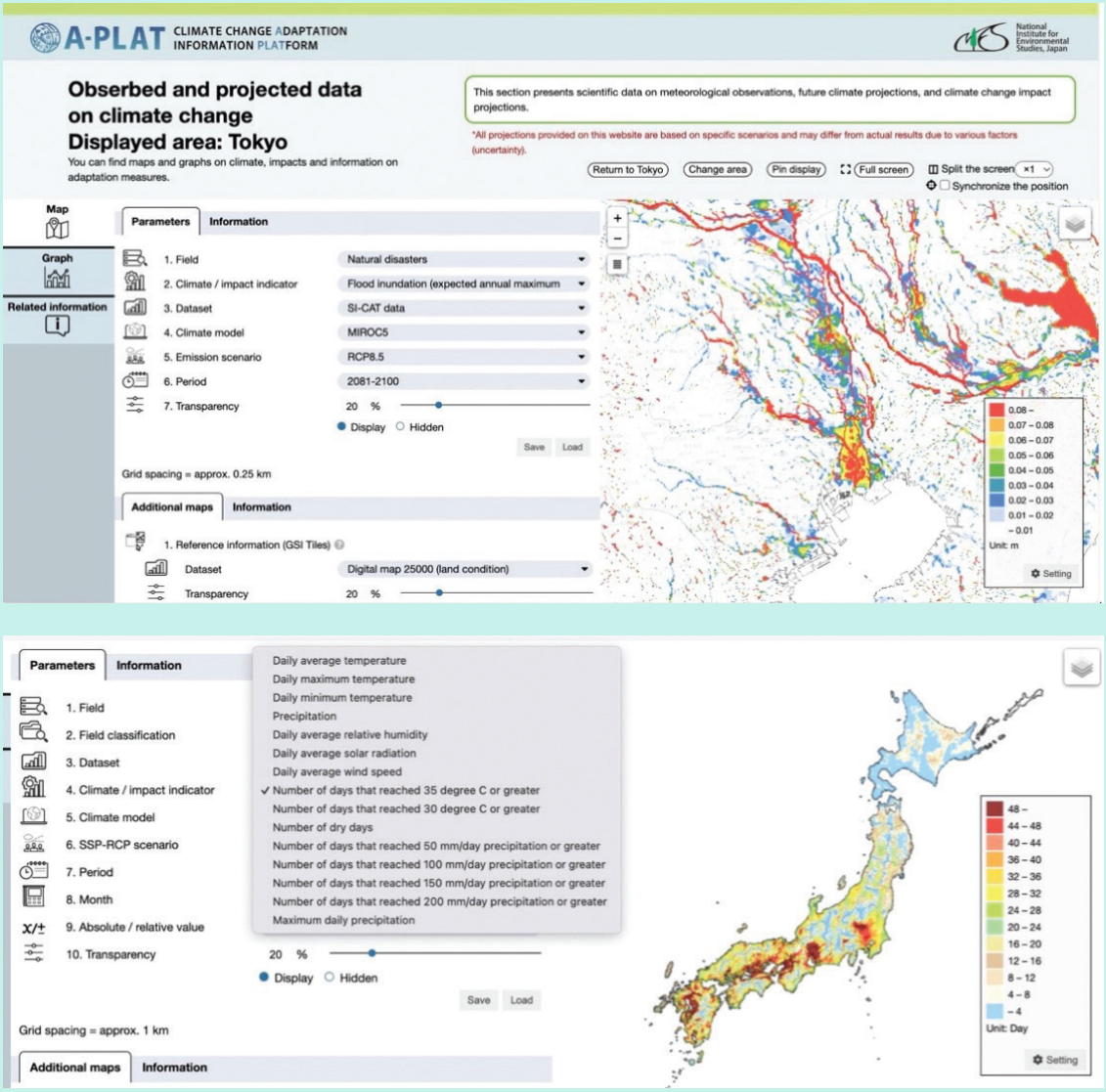
In addition, while assessed markets have also largely implemented an interministerial or interagency coordinating body to lead adaptation planning and recognise the need for a 'whole-of-government' approach, participation of the ministries of finance in adaptation planning is not often articulated or is unclear.

Box 1: Enhancing data accessibility and facilitating a comprehensive view of risk at the national level

Japan: Climate Change Adaptation Information Platform

The Climate Change Adaptation Information Platform (A-PLAT), developed by the National Institute for Environmental Studies (NIES), is Japan's one-stop online resource hub for information on climate change and supports stakeholder decision-making. Information on the platform includes scientific data on and around the observation, monitoring and projection of climate change and its impacts, educational materials for local governments and communities and case studies of successful adaptation initiatives for the private sector.

The platform features an Impact Viewer Atlas,[36] an online Geographic Information System tool that amalgamates a wide range of climate datasets and helps users visualise the impacts of climate change across customisable emission scenarios, parameters, time horizons and models at granular levels nationwide. Featured hazard examples include water resource availability and stress, crop yield, days with precipitation or heat and flood damage extent.



Screenshots from the A-PLAT Impact Viewer Atlas, including a map of expected annual maximum depth due to flood inundation (in metres) in Tokyo (above) and number of days across Japan reaching 35°C or greater (below), with customisable views across hazard and indicator parameters.

Beyond the national adaptation plan, the Climate Change Adaptation Act (a stand-alone law to promote adaptation measures), enacted in 2018, requires local governments in Japan to formulate and implement local adaptation plans.

36 National Institute for Environmental Studies. A-PLAT Impact Viewer Atlas.

As of January 2024, 241 local governments (47 prefectures, 20 ordinance-designated cities and 174 municipalities) have formulated such plans. 61 local governments have established local climate change adaptation centres to collect, analyse and provide information on regional climate change impacts.[37] At a national level, the Climate Change Adaptation Promotion Council (chaired by the Minister of the Environment and comprising the Cabinet Secretariat and 12 ministries and agencies) coordinates adaptation efforts among ministries and agencies.

Hong Kong: Physical Risk Assessment Platform

The HKMA, in collaboration with advisory firm KPMG China and climate risk data provider XDI, launched a cloud-based Physical Risk Assessment Platform in May 2024 to enhance Hong Kong's banking sector capacity to assess and manage climate-related physical risks.[38] The free cloud-based tool enables all authorised institutions in Hong Kong to evaluate the potential impacts of various climate hazards (e.g., extreme heat, pluvial flooding, fluvial flooding, typhoons) on residential and commercial buildings in Hong Kong under multiple climate scenarios and time horizons. Output metrics from the platform include the Value-at-Risk, risk rating bands and productivity loss. While a first-of-a-kind initiative in the international banking sector, platform access is restricted to banks. This may prevent other real-economy stakeholders from forming a comprehensive view of risks. In addition, the platform is limited to assets in Hong Kong, omitting banks' exposure to offshore assets.

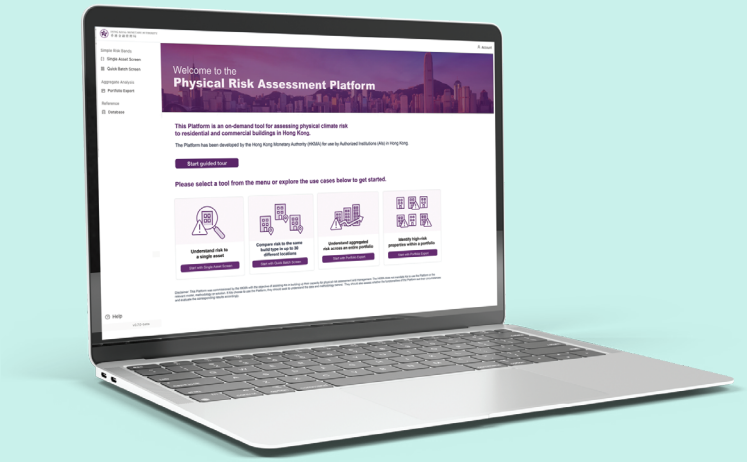


Image source: XDI[39]

37 Government of Japan (2024). Submission on the assessment on the process to formulate and implement National Adaptation Plans (NAPs).
38 HKMA (2024). Physical Risk Assessment Platform.
39 XDI (2024). XDI delivers physical risk assessment platform to banks in Hong Kong.

2. Basing adaptation planning on scenario analysis

Expectation: Governments should consider funding adequate science to produce the data used for reliable physical risk assessments. Governments should also conduct scenario analysis to support climate-proofing strategies across NAPs. For longer-term analysis, for which the timeframe should be disclosed, at least two climate scenarios should be used to ensure that the analysis considers a range of potential climate futures. Governments can work with the private sector to build capacity to quantify climate risk exposure, impact and vulnerability across hazards and sectors.

Finding: All nine markets have assessed the long-term projections of climate variables across scenarios and time horizons. They draw on climate data from their national assessments and the IPCC to inform changes in variables (e.g., projected rainfall intensity, annual mean temperature, mean sea level rise). However, the detailed quantification of impacts and vulnerabilities across sectors (e.g., flood inundation extent and damage, yield/productivity losses, business disruption) remains lacking and is further needed within most markets.

Hong Kong and Singapore (two of nine markets) have yet to quantify and communicate climate impacts or vulnerabilities across specific sectors. However, both cities are unlike the other markets analysed; in these cases, highly granular data (e.g., climate, terrain, land use) may be required.

In contrast, Japan emerges as the only jurisdiction classified as Green in this category, having undertaken and communicated the findings of comprehensive impact assessments through its climate impact assessment report and the A-PLAT platform.

Markets such as Thailand have quantified and communicated vulnerabilities to hazards at provincial and sectoral-levels and identified specific regions at risk. Still, investors may need more information on interpreting vulnerability indices and their suitability for use in decision-making.

3. Identifying and prioritising vulnerable systems, groups and communities

Expectation: While adaptation assessments focus on vulnerable systems exposed to climate hazards, NAP approaches need to identify and prioritise vulnerable groups and communities in affected regions.

Finding: Four of the nine markets (China, India, Japan, Korea) have defined vulnerable groups and communities within their jurisdictions and communicated specific action plans or initiatives to protect them (e.g., early heat exposure warning systems targeted at the elderly). Other markets have identified vulnerable groups or communities but have yet to communicate their plans or specific measures targeted to these communities.

4. Ensuring corporate disclosure of physical risks

Expectation: Investors need to analyse the physical risks to their holdings, which is dependent on climate disclosure data from companies. To enable that, governments should require climate disclosure and ensure that disclosure frameworks present investors with decision-useful information. This should be introduced in a phased approach. Enhanced disclosure of the location of physical assets associated with company operations would be a crucial step to better integrate climate considerations into investment decision-making processes. Disclosures and metrics that cover systemic resilience and availability of production-weighted data would be important to determine adaptive capacity. Engagement with data analytics providers will also be essential to ensure increased accessibility, consistency and transparency of data products.

Finding: Implementation of mandatory climate risk disclosure aligned with international standards remains inconsistent across the region. Japan, Korea and China have announced the implementation of mandatory climate risk disclosure that aligns with the International Sustainability Standards Board (ISSB) standard. However, disclosures are expected to start after 2026. Indonesia has mandated climate risk disclosures but without requiring alignment with international standards. This may omit decision-useful information on physical risk exposures. Hong Kong SAR and Singapore have announced clear implementation timelines for mandatory disclosures that align with the ISSB standard and set examples for the region.

5. Inclusion of interregional effects and international cooperation on adaptation

Expectation: Adaptation plans typically identify climate impacts within defined administrative boundaries. This fails to account for interregional climate risks, including transboundary water use, supply chains, concurrent impacts and risks related to water and migration. As such, regional and international coordination of adaptation planning is important: Integrating interregional aspects into national climate risk assessments and adaptation plans will help direct resources towards reducing interregional risks and building systemic resilience to climate change globally.

Finding: Eight of the nine markets are categorised 'Amber', primarily due to the lack of information on the recognition of interregional risks or effects. Six of the nine markets have indicated some form of participation or leadership in regional adaptation platforms or forums within their planning documents. Japan stands out as an advanced leader in this expectation, having considered interregional risks in its adaptation plans and contributed to adaptation across regions (e.g., via contributions to the AP-PLAT and Indonesia's adaptation planning process). Further clarity is particularly needed on interregional risks across markets.

6. Engagement with the private sector and financial institutions

Expectation: As part of the NAP process, governments should identify a point of contact to coordinate with and keep the finance sector informed of discussions and developments in the NAP process. Consultation with the finance sector on the management of stranded assets must be central to the development of NAPs.

Finding: The extent to which private sector and financial institutions are engaged and defining their roles in adaptation planning requires further clarity. Five out of nine markets, including Japan, Malaysia and Thailand, have established consultation platforms and outlined private-sector roles. Across other markets, at least one of these measures is missing from plans or unclear. As a notable example of climate risk-focused collaboration, several agencies in Japan have jointly established a climate risk collaboration network.[40] It works across Japanese industry, government and academia actors to exchange insights, opinions and data on climate risk and scenario analysis (see Box 2).

40 National Institute for Environmental Studies (2024). Climate Change Risk Industry-Government-Academia Collaboration Network.

Box 2: Strengthening finance sector consultation and collaboration

Japan: Climate Change Risk Industry-Government-Academia Collaboration Network

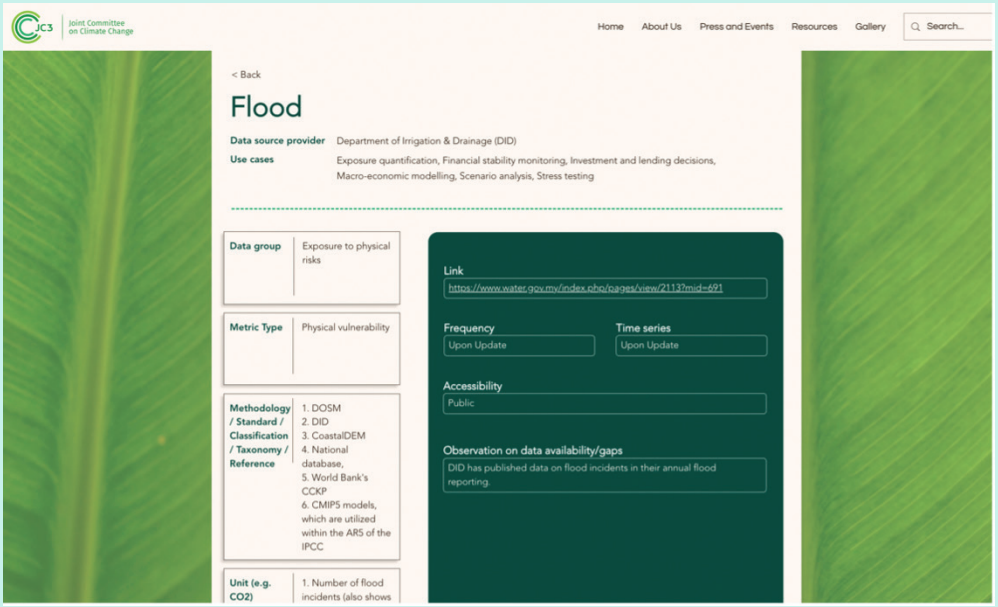
In Japan, the Ministry of the Environment, the Ministry of Education, Culture, Sports, Science and Technology, the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), the Financial Services Agency and the National Institute for Environmental Studies (NIES) have jointly established the Climate Change Risk Industry-Government-Academia Collaboration Network. This forum will collaborate on scenario analysis and risk information with institutions, service providers and consultancies.[41]

Since 2022, the network's engagement and discussion topics include trends in adaptation financing, introductions to climate scenarios and climate projection datasets and efforts to enhance flood risk information and mapping.

Separately, an emerging public-private collaboration platform on Green Infrastructure (GI) project development and MLIT-led[42] financing is an initial example of how a government has begun the holistic work of integrating considerations and needs across physical risk management, nature-positivity and carbon neutrality enhancements and economic value creation through urban development and GI projects. This paves the way to explore joint public-private development of sector-specific adaptation solutions.

Malaysia: Joint Committee on Climate Change

The Joint Committee on Climate Change (JC3),[43] established as a regulator industry platform by Bank Negara Malaysia and the Securities Commission Malaysia in 2019, facilitates the development of climate-related solutions for the capital and financial markets and coordinates the financial sector's response to climate risks. JC3 members comprise senior officials from Bursa Malaysia and 21 financial industry players who exchange insights around best practices and challenges across five steering committees and one targeted focus group. These aspects include Risk Management, Governance and Disclosure, Product and Innovation, Engagement and Capacity Building, Bridging Data Gaps and a Small and Medium-sized Enterprise Focus Group. In 2025, JC3 will focus on building the climate resilience of financial institutions by addressing data challenges, facilitating the transition of SMEs, and designing climate finance solutions with a focus on sectors aligned with the National Energy Transition Roadmap and New Industrial Masterplan. As of January 2025, JC3 also hosts a repository of policy documents and frameworks, training materials and a catalogue of relevant climate data for use cases in the financial sector, including global data sources and links to further analyse physical risk exposures.



Screenshot of JC3 Data Catalogue describing a flood-related dataset from the Department of Irrigation and Drainage from JC3 website.[44]

41 Climate Change Risk Industry-Government-Academia Collaboration Network.
42 MLIT (Secretariat) (2024). Recommendations for Green Infrastructure Projects and Finances.
43 Joint Committee on Climate Change (JC3) Malaysia.
44 Joint Committee on Climate Change (2024). Climate Data Catalogue.

Hong Kong: Green and Sustainable Finance Cross-Agency Steering Group

The Green and Sustainable Finance Cross-Agency Steering Group (CASG)[45] co-chaired by the HKMA and the Securities and Futures Commission (SFA) was established in 2020 to coordinate the management of climate and environmental risks to the financial sector, accelerate the growth of green and sustainable finance in Hong Kong and examine cross-sectoral impacts and support the government's climate strategies. Members include the Financial Services and the Treasury Bureau, the Environment and Ecology Bureau, Hong Kong Exchanges and Clearing Limited, Insurance Authority, the Mandatory Provident Fund Schemes Authority and the Accounting and Financial Reporting Council.

In 2025, the Steering Group will support the implementation of the ISSB standards in Hong Kong, engage industry members to expand the Hong Kong Taxonomy for Sustainable Finance to incorporate adaptation activities, and facilitate greater access to sustainability data and information. The CASG data portal hosts a database of government links that are useful for assessing physical risks, including historical data on catastrophe damages, district-level micro-climate conditions and future climate projections of Hong Kong.

45 Hong Kong Green and Sustainable Finance Cross-Agency (GSF) Steering Group.

7. Inclusion of implementation and financing strategies

Expectation: Governments should put in place adaptation implementation and financing strategies. To enable more investors to allocate capital to adaptation, governments should:

a. Clearly lay out the NAP process from a financing perspective from the development phase to the implementation phase. Financing strategies for adaptation plans should:
   a. identify the finance gaps
   b. determine financing options
   c. identify operational next steps
   d. recognise and develop investment strategies across different asset classes.
b. Clearly articulate the role of and engagement strategies for institutional investors across the various stages of the NAP process including planning, implementation, reporting, monitoring and evaluation.
c. Establish a standing advisory group with relevant government representatives, multilateral development banks, philanthropic funders and the private sector, with a core mandate to develop and drive a range of financial products, mandates and opportunities to co-fund resilience and adaptation. The role of public funding in de-risking and attracting private investments in adaptation projects is critical. A platform that provides essential details of a pipeline of ready-to-be-funded adaptation projects in each country would be an essential tool that such an advisory group can use to structure discussions.
d. Ensure transparent and open processes for effective stakeholder participation, dispute resolution and effective implementation of NAPs, as adaptation assessment and implementation measures may have social, political and economic implications, potentially becoming a cause for conflict.

Finding: Most markets have yet to establish or outline detailed action-oriented financing pathways and mechanisms to mobilise private capital in adaptation planning. There is a general lack of visibility of the NAP process from a financing perspective and the roles of investors along various stages from development to implementation.

While there is growing recognition of the need for public–private partnerships that unlock financing for climate adaptation projects, only a fraction of markets, such as Indonesia and China, have begun to outline action plans and implemented pilot initiatives to do so (see Box 3).

- China has commenced city-level climate finance pilots across the country, establishing climate investment and financing project databases that enable public and private institutions to list adaptation project information and financing needs.
- Indonesia's Fiscal Policy Agency under the Ministry of Finance has outlined actions to enhance regulatory frameworks to facilitate private-sector engagement and finance in adaptation planning and implementation.
- The National Institute of Urban Affairs in India and the World Resources Institute have entered into a Memorandum of Understanding to establish a Project Preparation Facility to provide technical assistance to cities in developing and implementing A & R projects – including climate risk assessments and feasibility studies and the development of bankable project concepts. The collaboration will also engage across funding sources to secure investments for such projects.

However, detailed financing mechanisms, investable project opportunity pipelines and roadmaps articulating the roles of and strategies to collaborate with financiers or investors across stages have yet to be adequately communicated across these markets.

Box 3: Implementation and financing strategy examples

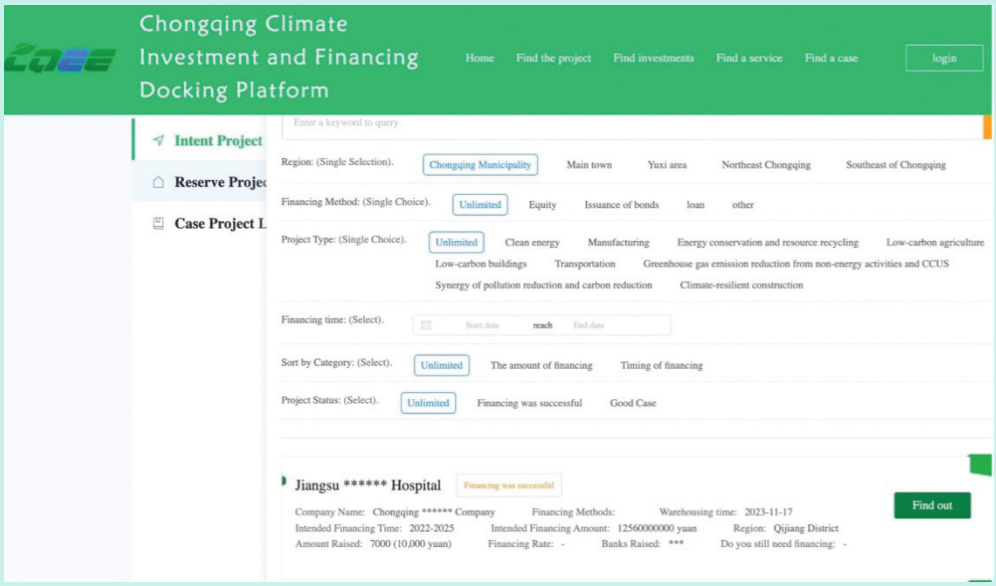
China: Implementation of Climate Finance Pilots and Project Databases

Following the release of the National Climate Change Adaptation Strategy 2035, the Chinese Ministry of Ecology and Environment (MEE), along with eight ministries, announced a list of 23 jurisdictions that will implement climate finance pilots in August 2022. The pilots, which aim to channel funds into climate mitigation and adaptation projects at the local level through an investment and financing matching database, have been established in several cities to varying degrees. Examples include:

- Shenzhen: 299 projects (seven on adaptation) in three batches.[46] In June 2024, the Shenzhen Municipal Bureau of Ecology and Environment also issued China's first local standards for climate investment and financing[47] and the country's first municipal-level medium and long-term plan for adaptation to climate change (2023–2035).[48]
- Beijing (Tongzhou district): 146 projects (51 mitigation, 95 adaptation), with a total finance requirement of RMB 160b.[49]

According to the reference standards and guidelines[50] formulated by the MEE to guide the development of local climate financing project databases in pilot jurisdictions in November 2022, qualifying adaptation projects should advance early warning capabilities, ecosystem protection, or economic/social systems adaptation.

Platforms like the Chongqing Climate Investment and Financing Matching Platform[51] enable companies and institutions to apply to the respective local Ecology and Environment Bureau for a project to be listed on the matching database. Basic information required includes funding raised, payback period, investment need and target financing mechanisms (e.g., loans, equity, bonds, others).



Screenshot of the Chongqing Climate Investment and Financing Matching Platform (translated).

46 Shenzhen Municipal Bureau of Ecology and Environment (2024). Publicizing the List of the Third Batch of Projects to be Included in the National (Shenzhen) Climate Investment and Financing Project Library.
47 Shenzhen Municipal Bureau of Ecology and Environment (2024). Release of the Country's First Local Standard for Climate Investment and Financing.
48 Shenzhen Municipal Bureau of Ecology and Environment (2024). Shenzhen Released the Country's First Municipal-Level Medium- and Long-Term Plan For Adaptation to Climate Change.
49 People's Government of Tongzhou District, Beijing (2024). 146 Projects in the Climate Investment and Financing Project Database of Beijing's Sub-Centre.
50 MEE, China (2022). Notice on the Issuance of Reference Standards for the Database of Climate Investment and Financing Projects in Pilot Areas.
51 Chongqing Climate Investment and Financing Matching Platform.

Japan: Issuance of Municipal Green Bonds for Adaptation

Local and municipal governments in Japan have issued green bonds to fund projects around renewable energy, energy-efficient infrastructure, sustainable water management and disaster resilience.

In its sixth issuance (FY 2022), the Tokyo Metropolitan Government allocated 40% of proceeds out of a total of JPY40 billion to adaptation projects, such as the development of tide embankments for protection against rising sea levels and typhoons and the construction of rainwater retention and pumping facilities.[52]

In November 2023, multiple local governments across Japan also pooled projects and issued the first Joint Local Government Green Bond,[53] raising JPY50 billion for climate change mitigation and adaptation projects. A list of major issuances is available on the Ministry of Environment's Green Finance Portal.[54]

By aligning with international green bond principles set by the International Capital Market Association and ensuring transparency in the use of proceeds, Japan's green bond issuances serve as a reference in catalysing finance to drive adaptation and resilience efforts.

52 Tokyo Metropolitan Government Bureau of Finance (2023). Tokyo Green Bond.
53 Japan Credit Rating Agency (2023). Joint Green Bond Issuers (Local Government).
54 Ministry of Environment Japan (2023). Green Bonds Issuance List (Domestic).

5. The road ahead

At COP29 in Baku, parties agreed on a New Collective Quantified Goal on Climate Finance,[55] setting a target of at least USD 300 billion annually by 2035 to support developing countries in their climate adaptation and mitigation efforts. This, however, remains well short of an estimated USD 1.3 trillion needed annually by 2030.

A pivotal outcome was the adoption of the Baku Adaptation Roadmap, designed to advance the Global Goal on Adaptation, as outlined in Article 7 of the 2015 Paris Agreement. This roadmap paves the way for further work among parties to integrate adaptation into national planning and for parties to maintain adaptation as a high-level focus in future COPs. State leaders also stressed the growing urgency of climate adaptation at a High-Level Dialogue on National Adaptation Plans, with a strong call to action to expedite the development and implementation of NAPs through innovative financing mechanisms and collaboration with financial sector participants.[56]

A stronger emphasis on designing NAP processes for transformational adaptation is now expected.[57] Crucially, designing NAPs for a range of financing by financial institutions and leveraging NAPs as the main vehicle for resilience-building requires new levels of coordination and transparency on multiple fronts, including:

- scientific innovation and technology deployment
- multisectoral and multilevel partnerships
- inclusion and equity
- scaling adaptation financing.

This calls for new initiatives to:

- enhance access to science-informed data and metrics
- implement clear avenues for private-sector consultation in the development of NAPs
- strengthen collaboration across sectors and geographical boundaries
- engage financial institutions in the design of innovative financing mechanisms or solutions.

The next major deadline of 2025 for the update or submission of NAPs[58] presents new and timely opportunities for engagement between policymakers and financial institutions around adaptation financing needs and strategies and complementarities with existing national development financing plans.[59]

Stronger multisectoral collaboration to enhance adaptation and resilience is increasingly urgent by the day to deliver the scale of transformations and adaptation financing required.

Recommendations for policymakers and investors

Building upon our investor expectations and findings, we recommend that policymakers and investors across all markets undertake the following near-term actions:

For policymakers

1. **Enhance accessibility and clarity of NAP documentation, planning and implementation processes**
   Make all adaptation-relevant policies/plans, NAPs and impact assessments/risk information sources publicly and readily accessible on a central platform. This should include:
   - details of the policy and planning framework, planning and consultation processes
   - the roles of respective participants, including those of government agencies and consultants
   - progress updates on implementation towards targets.

   This would provide the private sector and financial institutions with greater clarity of the planning process and implementation progress.
2. **Engage early with investors and integrate investor roles in NAP development and planning**
   - Establish regular consultation and communication forums on climate risk management with the industry to discuss achievements, challenges and barriers and provide opportunities for policy co-creation and design, while designating a point of contact for consultations and coordination with the finance sector.
   - Provide an outline of investor and private-sector roles across the NAP process, such as participation in climate scenario analysis, funding pipelines, developing sector-specific financing solutions and adaptation project implementation by the private sector (e.g., the deployment of GI in real estate).
3. **Develop a visible pipeline of adaptation projects and establish policy mechanisms and instruments to mobilise private investment**
   - Consult with investors and industry actors on the barriers and opportunities around the viability and bankability of adaptation projects.

55 UNFCCC (2024). COP29 UN Climate Conference Agrees to Triple Finance to Developing Countries, Protecting Lives and Livelihoods.
56 UNFCCC (2024). National Adaptation Plans: Key to Unleashing the Transformative Power of Resilience and Protecting Communities and Economies.
57 UNFCCC (2024). Principles for Achieving Transformational Adaptation Through NAPs.
58 The first Global Stocktake calls on Parties to have a national adaptation policy instrument in place by 2025. Countries are expected to review and update their NAPs approximately every five years, adapting to any contextual changes and integrating updated climate risk information. This typically aligns with the NDC submissions.
59 Murphy, R. (2024). Alignment: A Key Element of Successful Financing Strategies for Climate Change Adaptation.

- Establish initial mechanisms for investors to co-design policy frameworks that enable financing instruments such as resilience bonds or blended finance structures.
- Establish digital platforms that enable companies to list adaptation projects with details on financing needs, expected returns and co-benefits.

Governments and central banks can leverage frameworks like the Organisation for Economic Co-operation and Development (OECD)'s Climate Adaptation Investment Framework,[60] which identifies the domestic policies required to a) ensure that benefits of resilience measures are reflected in resource allocation and b) integrate adaptation into sustainable finance taxonomies so that financial institutions properly recognise resilience activities.[61]

4. **Expand and communicate climate scenario and risk analysis**
   - Consolidate existing physical risk data into a nationally consistent and publicly accessible risk database to support risk assessment among financial institutions
   - Invest in additional scientific and geospatial capability and partner with private-sector risk analytics providers to quantify and communicate at a granular level
     i. the vulnerabilities to and cascading risks of acute and chronic hazards across sectors and time (e.g., how heat stress affects business operations or the impact of water stress and floods on power grid resilience and stability)
     ii. the impact of acute and chronic risks across boundaries (e.g., inundation at major trading nodes/ports on business operations and disruption)
     iii. the resilience benefits and costs of adaptation measures.

   These measures can enhance the granularity and usability of corporate physical risk disclosures and allow them to align with the ISSB disclosure standard. They would also, reinforce the private sector's ability to conduct scenario analysis through resources such as the NGFS Scenarios.

   Further, leveraging intergovernmental platforms or partnership networks such as the Association of Southeast Asian Nations (ASEAN) to create interregional climate risk models and ensure comparability of metrics can help countries attain a clearer view of regional and transboundary risks and develop more effective adaptation responses.

For asset managers and owners

1. **Advocate for regulatory frameworks and tools to enable investment in resilience:**
   - Advocate for stronger regulatory and mandatory corporate disclosure frameworks on physical risks and a clearer view of climate risk information at a national level.
   - Engage with governments in assessing the impacts of climate risks on sectors by establishing a consistent and accessible database of climate risk information.
   - Collaborate with governments to co-develop clear financing policies that reduce the barriers to investment into adaptation projects and that generate financially bankable projects.
   - Participate in consultation platforms offered by networks such as the NGFS and climate-focused coalitions, such as the AIGCC, to exchange best practices and drive collective action.
2. **Build capacity on adaptation and resilience and integrate physical risk into portfolio strategies:**
   - Build internal capacity to assess and disclose portfolio and asset exposure to physical climate risks and to quantify the benefits of adaptation and resilience measures, integrating climate modelling and scenario analysis capabilities.
   - Engage with investee companies on their physical risk assessments and understand value chain risks and opportunities while building capacity to evaluate and act on adaptation opportunities and taxonomies. This includes leveraging tools like the Climate Bonds Resilience Taxonomy.
   - Adaptation objectives and criteria beyond mitigation should be systematically considered and integrated within transition plans and investment decision-making.

Collectively, concerted and collaborative efforts by policymakers and investors alongside innovations within financial markets and public policy are key to unlocking the financing required for adaptation and resilience projects. These represent new paradigms that view adaptation through a lens of value creation and present opportunities for both policymakers and financiers to shape strategies to achieve transformational adaptation at speed and scale.

60 The OECD's Climate Adaptation Investment Framework identifies six key policy areas to support adaptation finance: strategic planning and policy coherence, regulatory alignment, insurance and risk transfer, public finance and investment, sustainable finance and support and incentives for private investment.

61 See also the NGFS' Conceptual Note On Adaptation For Central Banks And Supervisors.

6. Annexes

Annex A: Overview of the NAP process and planning cycle

The NAP process, established under the UNFCCC in 2010, serves as a strategic framework enabling countries to identify and address their medium- and long-term adaptation needs to climate change. Its primary objectives are to reduce vulnerability to climate impacts by enhancing adaptive capacity and resilience and to integrate climate change adaptation systematically into existing and new policies, programs and development planning across various sectors and governance levels.

The NAP process is designed to be flexible and non-prescriptive, allowing countries to undertake steps within their specific circumstances and levels of progress in adaptation planning. It emphasises the importance of integrating adaptation into broader sustainable development planning.

This approach facilitates country-owned and country-driven actions, ensuring that adaptation measures are effectively mainstreamed into national development agendas.

Financing plays a crucial role across multiple stages of the iterative NAP process. Financing requirements will evolve as countries progress through the planning and implementation phases, owing to factors such as the emergence of new risks, with the learnings from earlier implementation or with scaling of projects. A dedicated NAP financing strategy can help countries to align their needs for the NAP process with potential sources of finance. Likewise, continuous consultation and engagement with stakeholders will be needed by governments throughout the NAP process.

Components of the NAP process

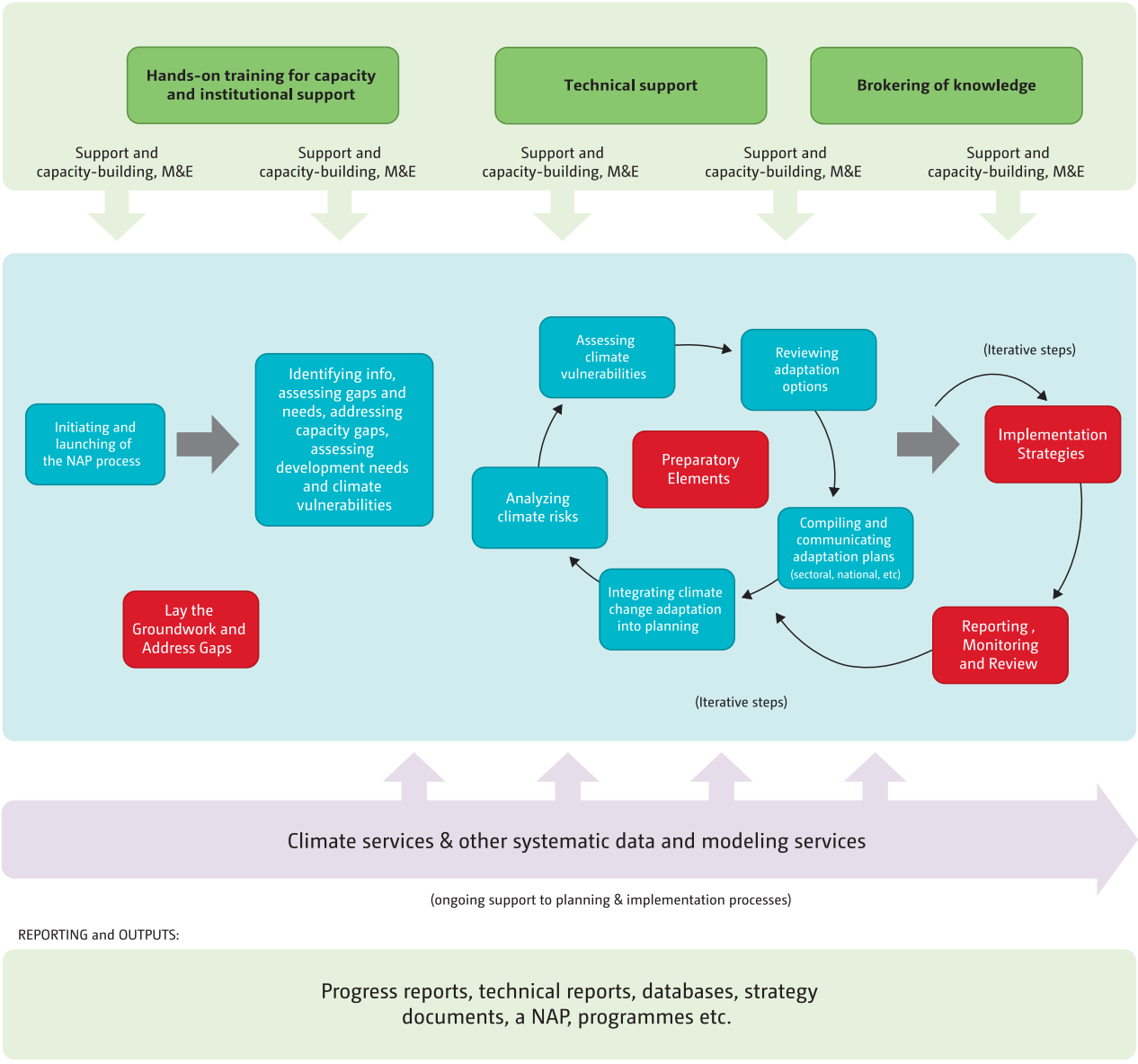
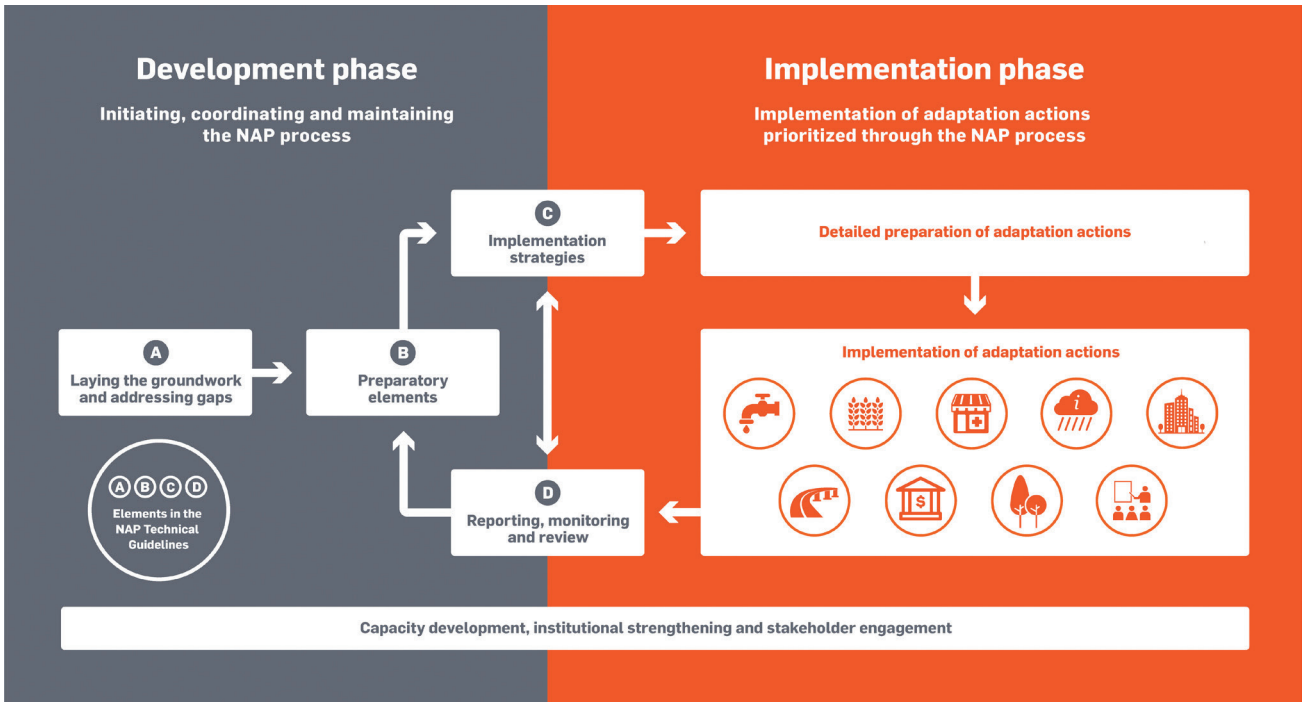
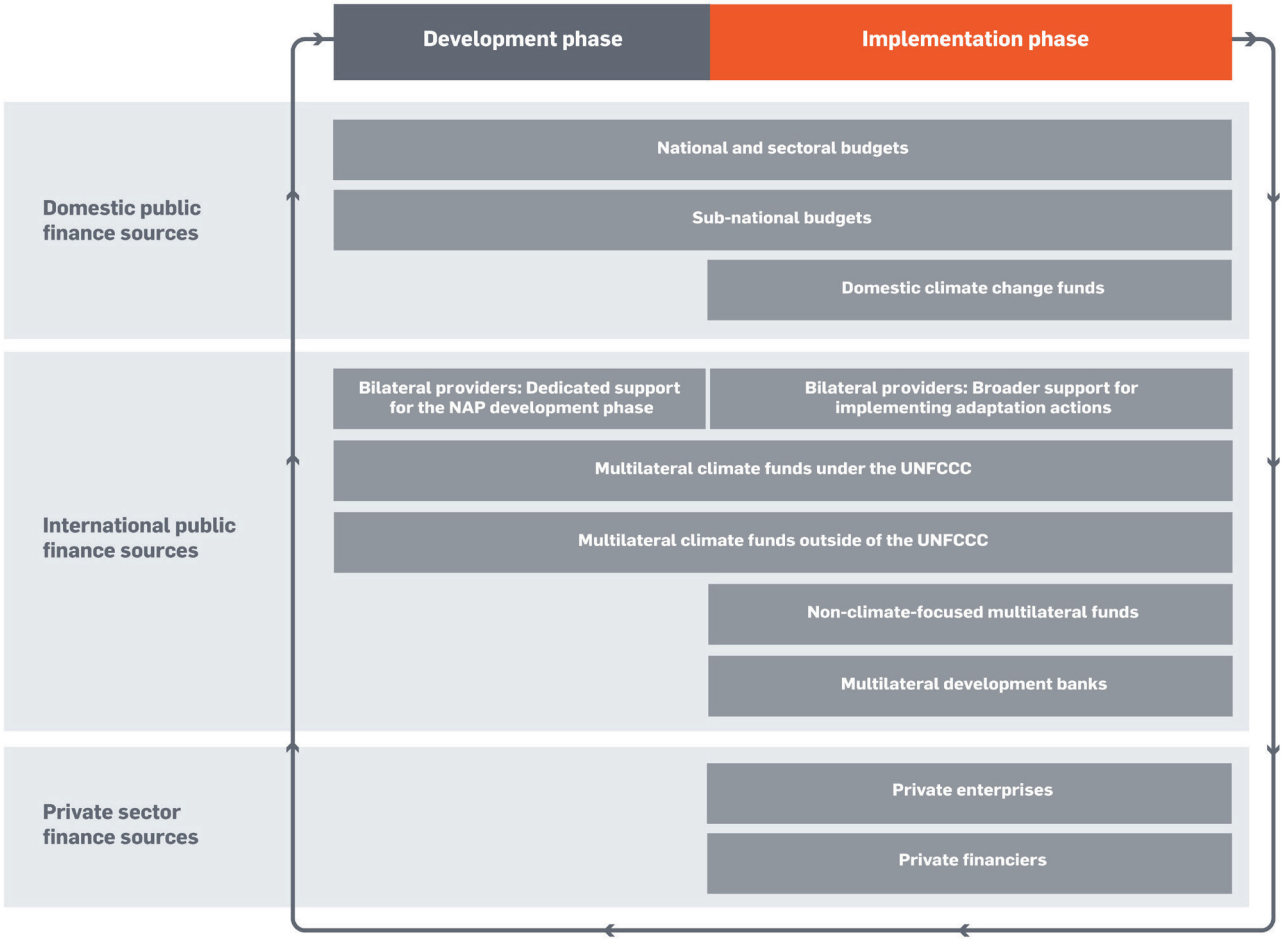


Illustration of the National Adaptation Plan Process and its component elements (Image source: UNFCCC).[62]

62 UNFCCC (2012). The National Adaptation Plan Process.





Potential sources of finance for the NAP process (Image source: NAP global network)[63]

63 NAP Global Network (2017). Potential Sources of Finance for the NAP Process.

Annex B: Australia's progress on making adaptation investable

Despite not yet having submitted a NAP to the UN COP process, Australia has made some progress that will help public and private capital flow towards adaptation. As with all the markets analysed in this report, much more progress is necessary.

As of January 2025, Australia's National Adaptation Plan was still in development, with release hoped for in the first quarter of the year. It will supersede the 2021–2025 Climate Resilience and Adaptation Strategy[64] and will complement the Second National Action Plan, which focuses on emergency management in response to climate-related events.[65]

The country's first pass on a national climate risk assessment was released in March 2024. It identified 56 nationally significant climate risks facing Australia and a subset of 11 priority risks for analysis in the second pass risk assessment, which is also hoped for in early 2025.

The national government has been engaged and responsive to investor consultation over several years: The first pass risk assessment included financial stability as a priority risk to manage, and the responsible department has been engaging with investors via IGCC and other networks during the development of the NAP. This has included a series of roundtables with investors, the insurance sector and banks.

Australia's NAP Alignment to AIGCC's Investor Expectations

This high-level summary and commentary of Australia's national adaptation plan and progress has been developed in parallel to the in-depth assessment of Asian NAPs found in the body of this report. Because the methodology is different, readers should not directly compare this summary with the detailed assessments above. However, we believe it could provide a useful point of comparison for investors as they engage with governments across the Asia–Pacific region.

1. **Outlining a consistent, national view of physical climate risk**
   Australia has released its first pass National Climate Risk Assessment, although it is does not unambiguously meet some of investors' sub-expectations.
   a. **Development of a physical risk data platform**
      The Australian Climate Service (ACS) provides data, intelligence and expert advice on climate risks and impacts to support and inform decision-making. However, improvements are needed to ensure the data is suitable for use in the private sector.
   b. **Hazard or vulnerability assessment conducted**
      The government has developed some hazard and vulnerability assessments; however, investors have called for further granularity and updated underlying science.
   c. **Coordination of adaptation planning by an interministerial body**
      Australia's National Adaptation Policy Office coordinates climate adaptation work across all governments. It is a central point of contact and information for businesses and communities.
2. **Basing national adaptation plans on scenario analysis**
   Australia's ACS and risk assessment is based on scenario analysis, and we expect the forthcoming National Adaptation Plan to use the same scenarios, which extend beyond 2050. However, quantification is limited.
3. **Identifying and prioritising vulnerable systems, groups and communities**
   The National Climate Risk Assessment identified vulnerable groups and communities[66] as well as systems.[67] IGCC expects that assessment to be reflected in priorities of the National Adaptation Plan.
4. **Ensuring corporate disclosure of physical risks**
   a. **Implementation of mandatory disclosure before 2026**
      Australia's mandatory climate disclosure regime, including scenario analysis, was legislated in 2024 and came into force for the economy's largest entities in 2025. It will progressively roll out to medium-sized companies over three years.
   b. **Alignment to international standards**
      The Australian requirements use the global ISSB as a baseline.
5. **Inclusion of interregional effects and international cooperation on adaptation**
   The climate risk assessment, which we expect the NAP will respond to, does mention international impacts with respect to defence and trade, however, they are not foregrounded. In addition, physical risks that occur overseas, but impact Australia (e.g., through trade, migration), were out of scope.
6. **Engagement with the private sector and financial institutions**
   a. **Presence of consultation and communication platforms with financial institutions and private enterprises**
      The responsible government department has been reasonably consultative in developing the National Adaptation Plan and resilience policy more broadly.

64 Australian Government – DCCEEW (2021). National Climate Resilience and Adaptation Strategy 2021–2025.
65 Australian Government – National Emergency Management Authority (2024) Second National Action Plan.
66 Australian Government – DCCEEW (2024). National Climate Risk Assessment Appendix (p. 10).
67 Australian Government – DCCEEW (2024). National Climate Risk Assessment First Pass Assessment Report.

b. **Roles of private-sector enterprises in providing adaptation solutions or services outlined**
Given the level of consultation and the presence of financial stability in the risk assessment, we expect the private sector to have an identified role in the government's adaptation plan. This will likely build on the roles agreed by the state and Commonwealth governments in 2012.[68]

7. **Inclusion of action-oriented points on implementation and financing strategies**
As the NAP has not yet been published, this cannot be assessed.

IGCC and its members have been engaging with the Australian Government and responsible departments throughout the development of the National Climate Risk Assessment and the National Adaptation Plan and intend to keep doing so for the current edition and future updates.

68 Council of Australian Governments (2012). Roles and Responsibilities for Climate Change Adaptation in Australia.

Annex C: Engagements and resources by AIGCC physical risk and resilience working group

Roundtables and Discussions on Adaptation and Resilience

1. Incheon, Korea – August 2023 (in-person, at the 8th Asia-Pacific Climate Change Adaptation Forum in Incheon, Korea)
2. Singapore – April 2024 (in-person, in conjunction with Ecosperity Week, co-hosted with Manulife Investment Management)
3. Kuala Lumpur, Malaysia – May 2024 (in-person, co-hosted with Capital Markets Malaysia)
4. Singapore – August 2024 (in-person, co-hosted with Climate Bonds Initiative)
5. Hong Kong SAR – November 2024 (online)
6. China – December 2024 (in-person, in conjunction with China Sustainable Investment Forum)

Publications and Guidance

1. October 2021: Riding the Wave of Physical Risk: A Compendium of Tools and Service Providers for Investors in Asia
2. April 2022: PCRAM – Guidelines for Integrating Physical Climate Risk in Infrastructure Investment Appraisal
3. February 2025: Assessment of National Adaptation Plans in Asia using an Investor Lens (Dashboard)

Policy Submissions and Statements

1. November 2022: Investor Expectations of National Adaptation Plans in Asia – articulated seven overarching investor expectations from governments on elements of the National Adaptation Plan process
2. August 2023: Joint Letter with China Water Risk to Banks on Enhancements to Stress Testing
3. February 2024: Key Insights from Asia's Institutional Investors – Memorandum of peer-to-peer discussions that includes investor perspectives on climate-scenario analysis
4. August 2024: Submission to Hong Kong SAR 2024 Policy Address Public Consultation – highlighted the need for systemic response and coordination across stakeholders in understanding and managing physical risks

Annex D: Relevant resources on adaptation and resilience

Adaptation and Resilience Investment Opportunities

- **Climate Bonds Resilience Taxonomy** (Climate Bonds Initiative, September 2024): Provides a taxonomy and criteria for adapted and enabling adaptation and resilience (A&R) measures and activities and a list of 1,443 A&R investment opportunities
- **Guide to Adaptation and Resilience Finance** (UNDRR, Standard Chartered, KPMG, April 2024): A roadmap for financing and over 100 investable activities, with indicators to assess the A&R impact of a specific investment
- **The Unavoidable Opportunity: Investing in the Growing Market for Climate Resilience Solutions** (GARI, March 2024): A toolkit for investors providing definitions of climate resilience solutions and companies in the business of resilience

Methodologies and Guidance for Integrating Physical Risk Assessment for Investors

- **Mobilising Adaptation Finance to Build Resilience** (Climate Financial Risk Forum Adaptation Working Group, October 2024): Guides investors with a proposed Aim-Build-Contingency approach as a basis for physical risk assessment, scenario planning and engagement with investee companies and recommendations to accelerate action across stakeholder groups.
- **Physical Climate Risk Assessment Methodology (PCRAM) in Practice** and **Physical Climate Risk Divergence: PCRAM for investors** (IIGCC, November 2024): Provides a methodology and guidance for integrating physical climate risk into investment decision-making and processes for infrastructure and real estate assets.
- **Physical Climate Risk Assessment and Management** (UNEP FI Adaptation and Resilience Investors Collaborative, October 2024): A step-by-step approach for investors to integrate the identification, assessment and management of physical climate risks in the investment process and focuses on how to identify A&R opportunities.
- **Investing in Tomorrow: A Guide to Building Climate-Resilient Investment Portfolios** (University of Cambridge Institute for Sustainability Leadership, January 2025): A comprehensive five-stage framework to integrate climate A&R into investment processes focusing on listed equities and debt portfolios. 2025): A comprehensive five-stage framework to integrate climate A&R into investment processes focusing on listed equities and debt portfolios.

Guidance for Policy Frameworks on Adaptation and Resilience Finance for Governments

- **Climate Adaptation Investment Framework** (OECD, November 2024): A framework targeted at governments to unlock increased investment in adaptation by strengthening their domestic policies.
- **Activating Private Investment in Adaptation** (IGCC, November 2024): Provides recommendations for governments and investors based in Australia and New Zealand to prevent capital flight from high physical risk areas and industries, outlining barriers and investment opportunities.
- **Conceptual Note on Adaptation** (NGFS, November 2024): Articulates the case for integrating adaptation in risk management practices and four areas of further work for central banks and financial supervisors.

Data and Tools for Physical Risk Assessment

- **Climate Risk Dashboard** (UNEP FI, September 2024): Provides a dashboard and comparison of climate risk assessment tools and data providers in the market.
- **Climate Hazard Open Sources** (Environmental Change Institute, University of Oxford, June 2024): Climate Data 111+ is a comprehensive database of open-access climate hazard data sources for risk assessments.

ABOUT THE PHYSICAL CLIMATE RISKS AND RESILIENCE WORKING GROUP

AIGCC facilitates a Physical Climate Risks and Resilience Working Group for members and is chaired by an investor member. The Working Group focuses on the development of solutions to enable investors to integrate physical risk and resilience considerations into portfolio management and drive more investment into adaptation solutions.

AIGCC investor members are committed to working closely with governments to scale ambition on NDCs and achieving set targets. With many countries already experiencing the physical impacts of climate change, adaptation goals, objectives and priorities have been included in their NDCs as well.

The NAP process initiated by several countries complements and reinforces countries' adaptation strategies by providing a concrete means for successful achievement of these initiatives.

ABOUT AIGCC

The Asia Investor Group on Climate Change (AIGCC is an initiative to create awareness and encourage action among Asia's asset owners and financial institutions about the risks and opportunities associated with climate change and low carbon investing. AIGCC provides capacity and a trusted forum for investors active in Asia to share best practice and to collaborate on investment activity, credit analysis, risk management, engagement and policy related to climate change. With a strong international profile, the AIGCC network also engages with government pension and sovereign wealth funds, family offices and endowments, AIGCC represents the Asian investor perspective in the evolving global discussions on climate change and the transition to a net zero emissions economy.

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