UN environment programme

Running on empty

The world is gearing up for climate resilience — without the money to get there

Adaptation Gap Report 2025

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Running on empty

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Adaptation Gap Report 2025

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Glossary

The entries in this glossary are primarily taken or modified from definitions provided by reports published by the Intergovernmental Panel on Climate Change (IPCC) or previous editions of the Adaptation Gap Report.

Adaptation: The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects (IPCC 2022).[1]

Adaptation costs: Costs of planning, preparing for, facilitating and implementing adaptation measures, including transaction costs (IPCC 2007).[2]

Adaptation gap: The difference between actually implemented adaptation and a societally set goal, determined largely by preferences related to tolerated climate change impacts and reflecting resource limitations and competing priorities (UNEP 2014).[3]

Adaptation limits: The point at which an actor's objectives (or system needs) cannot be secured from intolerable risks through adaptive actions (IPCC 2022).[1]

- **Hard adaptation limit:** No adaptive actions are possible to avoid intolerable risks.
- **Soft adaptation limit:** Options are currently not available to avoid intolerable risks through adaptive action.

Adaptive capacity: The ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences (IPCC 2022).[1]

Exposure: The presence of people; livelihoods; species or ecosystems; environmental functions, services and resources; infrastructure; or economic, social or cultural assets, in places and settings that could be adversely affected (IPCC 2022).[1]

Hazard: The potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources (IPCC 2022).[1]

Impacts: The consequences of realized risks on natural and human systems, where risks result from the interactions of climate-related hazards (including extreme weather and climate events), exposure and vulnerability. Impacts generally refer to effects on lives; livelihoods; health and well-being; ecosystems and species; economic, social and cultural assets; services (including ecosystem services); and infrastructure. Impacts may be referred to as consequences or outcomes, and can be adverse or beneficial (IPCC 2022).[1]

Maladaptation: Actions that may lead to increased risk of adverse climate-related outcomes, including via increased vulnerability to climate change, diminished welfare, or increased greenhouse gas emissions, now or in the future. Maladaptation is usually an unintended consequence (IPCC 2022).[1]

Mitigation (of climate change): A human intervention to reduce the sources or enhance the sinks of greenhouse gases (IPCC 2022).[1]

Resilience: The capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure. Resilience is a positive attribute when it maintains capacity for adaptation, learning and/or transformation (IPCC 2022).[1]

Residual risk: The risk related to climate change impacts that remains following adaptation and mitigation efforts. Adaptation actions can redistribute risk and impacts, with increased risk and impacts in some areas or populations, and decreased risk and impacts in others (IPCC 2022).[1]

Risk: The potential for consequences where something of value is at stake and where the outcome is uncertain, recognizing the diversity of values. In the context of climate change impacts, risks result from dynamic interactions between climate-related hazards with the exposure and vulnerability of the affected human or ecological system to the hazards (IPCC 2014; IPCC 2022).[4,1]

Vulnerability: The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm, and the lack of capacity to cope and adapt (IPCC 2022).[1]

1 https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Annex-II.pdf.

2 https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg2-app-1.pdf.

3 https://www.unep.org/resources/adaptation-gap-report-2014.

4 https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-AnnexII_FINAL.pdf.

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In the Dolakha region of Nepal, specially built ponds allow farmers to grow food in the dry seasons.

Photo: © UNEP / Marcus Nield

Foreword

Every nation on this planet is facing climate impacts, be they heatwaves, wildfires, floods or desertification, and the associated costs. As action to cut greenhouse gas emissions continues to lag, these impacts are going to intensify, harming more people – particularly the poor and vulnerable – and causing huge economic damage.

Developed nations know this. They also know they should be financially supporting developing countries, which are least responsible for the climate crisis. This is enshrined in the Paris Agreement. Subsequently, the Glasgow Climate Pact called for developed countries to finance adaptation in developing countries to the tune of US$40 billion per year by 2025, while the new collective quantified goal for climate finance (NCQG) called for at least US$300 billion to finance both mitigation and adaptation per year by 2035.

Yet UNEP's *Adaptation Gap Report 2025: Running on Empty* shows this finance is not coming. The estimated adaptation finance needs of developing countries range from US$310 billion to US$365 billion per year by 2035. Meanwhile, international public adaptation finance flows from developed to developing countries fell from US$28 billion in 2022 to US$26 billion in 2023. While the numbers for 2024 and 2025 are not yet available, one thing is clear: unless trends in adaptation financing turn around, which currently seems unlikely, the Glasgow Climate Pact goal will not be achieved, the NCQG will not be achieved, and many more people will suffer needlessly.

There are signs of hope. Some 172 countries have national adaptation policies, strategies or plans in place. In the first biennial transparency reports submitted under the Paris Agreement, countries reported over 1,600 adaptation actions, mostly on biodiversity, agriculture, water and infrastructure. Support for new projects under the Adaptation Fund, the Global Environment Facility and the Green Climate Fund also grew in 2024. With the Baku to Belém Roadmap, which will be considered at COP 30 in Belém, Brazil, we have the chance to enable the raising of US$1.3 trillion per year by 2035.

But for the Roadmap to work, mitigation must pick up to minimize climate impacts, new finance providers and instruments must come on board, and climate resilience must become an integral part of financial decision-making. The Roadmap must also focus on grants, and concessional and non-debt-creating instruments, to avoid increasing the debt burden of vulnerable nations. The private sector can also do more. The Adaptation Gap Report estimates

the potential for private sector investment in national public adaptation priorities at approximately US$50 billion per year – a big step up from the current financing of roughly US$5 billion.

As nations prepare to meet at COP 30, this report delivers a clear message: we need a global push to increase adaptation finance from both public and private sources. Budgets may be tight. There may be many competing priorities. But the smart choice is to invest in adaptation now – to minimize loss of life, to soften damage to infrastructure and, ultimately, to protect economies from the stronger climate impacts that are approaching over the horizon.

Inger Andersen
Executive Director
United Nations Environment Programme

Executive summary

A global effort is needed to implement ambitious climate action in view of accelerating climate impacts.

Action on adaptation is still inadequate. Although there is clear evidence of accelerating climate impacts, changing geopolitical priorities and increasing fiscal constraints are making it more challenging to mobilize the resources needed for climate mitigation, adaptation, and loss and damage.

The lack of resources, action and global attention will result in higher global long-term temperatures and associated climate impacts and risks. Yet investments in climate action far outweigh the costs of inaction. For instance, every US$1 spent on coastal protection avoids US$14 in damages; urban nature-based solutions reduce ambient temperatures by over 1°C on average, a significant improvement during the summer heat; and health-related capacity-building can further reduce symptoms of heat stress.

The Adaptation Gap Report (AGR) series provides regular updates on what is happening globally in planning, implementation and finance for adaptation to climate change, informing the United Nations Framework Convention on Climate Change (UNFCCC) negotiations ahead of the annual Conference of the Parties to the UNFCCC (COP). This year's report finds that:

- The adaptation finance needs of developing countries by 2035 are at least 12 times as much as current international public adaptation finance flows
- The Glasgow Climate Pact goal of doubling 2019 adaptation finance flows by 2025 to approximately US$40 billion will be missed if current trends continue
- The new collective quantified goal for climate finance (NCQG) is insufficient to meet developing countries' adaptation finance needs in 2035
- There is evidence of improving adaptation planning and implementation, but it is limited

A global collective effort – a "*mutirão global*" as called for by the Brazilian COP 30 Presidency – is needed to bridge the finance gap and accelerate climate action, with both public and private finance having to step up. The AGR 2025 reflects on opportunities for the Baku to Belém Roadmap to 1.3T and the private sector to contribute to this effort.

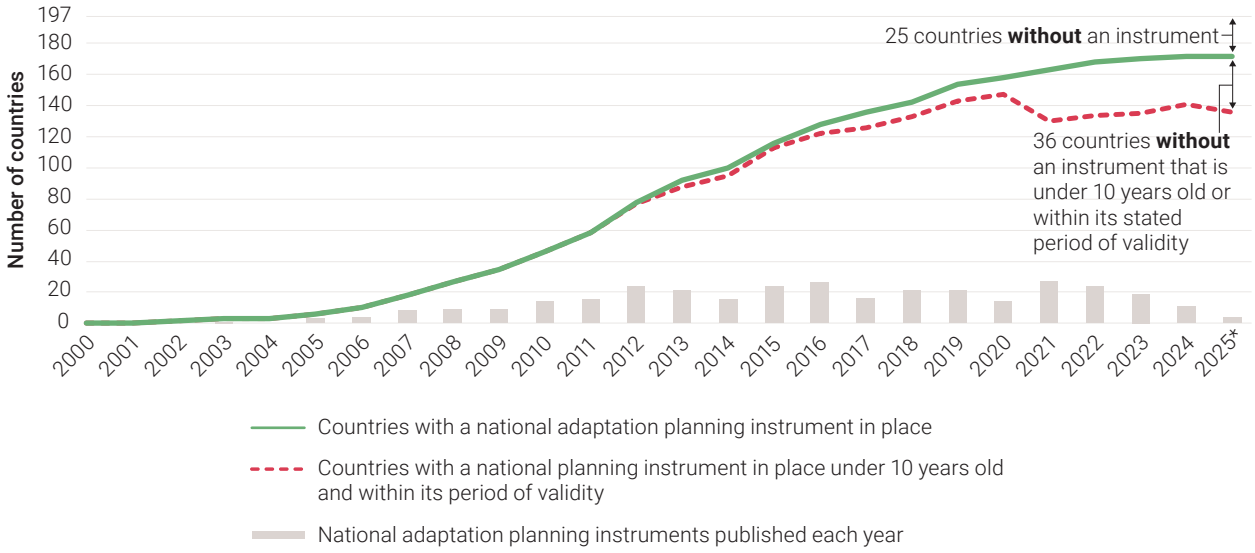
1 Status of adaptation planning and implementation

Progress in adaptation planning is visible but patchy.

Planning is critical to minimize and address current and future climate risks effectively. Having in place national planning instruments is therefore an important indicator of progress towards the global goal on adaptation. A total of 172 out of 197 countries worldwide have a national adaptation plan, strategy or policy in place (figure ES.1). Out of the 25 that do not, only four have not started developing one. However, 36 countries possess plans that are outdated or have not been updated for a decade, which calls into question their relevance and effectiveness under present day or future conditions. This could be an indication that countries encounter difficulties in updating these plans in a timely manner, which should be addressed with urgency to minimize the possibility of maladaptation.

Countries are also showing progress in the mainstreaming of adaptation into relevant plans and strategies, which constitutes the other element of the United Arab Emirates Framework for Global Climate Resilience (UAE FGCR) target on adaptation planning. Most small island developing States (SIDS) have strongly integrated adaptation into their national development plans and strategies, demonstrating that – within these countries – adaptation is deeply embedded within broader development planning processes. Similarly, although evidence of mainstreaming is often weakly reported on in biennial transparency reports (BTRs), and should be strengthened in the reports due in 2026, 59 per cent of countries still report on at least one instance of integrating adaptation into a non-climate plan or strategy, suggesting that progress in adaptation mainstreaming is being made by a wider constituency of countries.

Figure ES.1 Progress towards achieving the UAE FGCR's target of all country Parties having national adaptation planning instruments in place by 2030



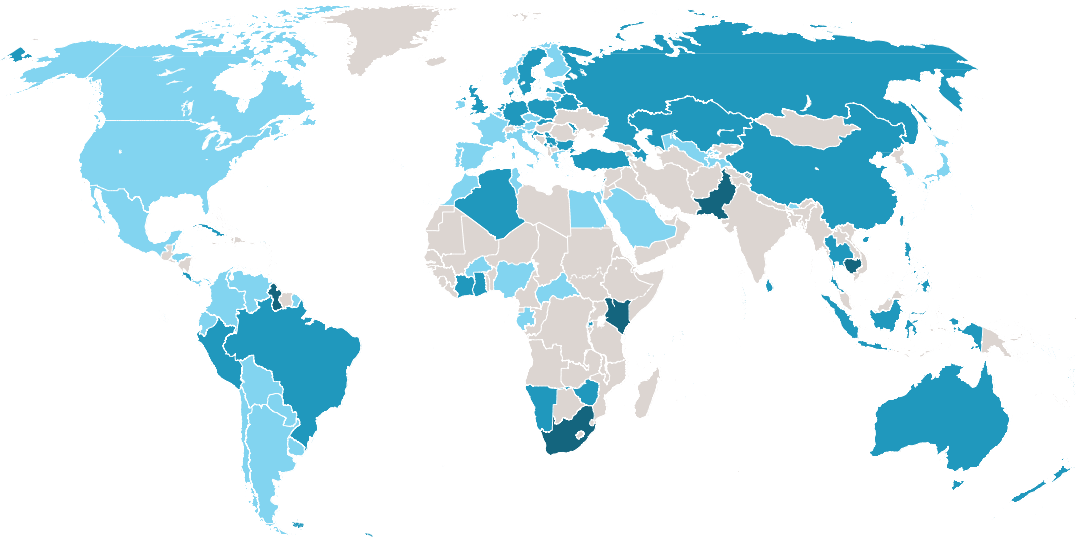
*** Until 31 August 2025**

The funds under the UNFCCC mark record disbursement, and adaptation implementation is progressing, but gaps remain.

While their total volume is small compared with other multilateral and bilateral adaptation finance (see below), the funds under the UNFCCC are important for the COP negotiations. Support to adaptation implementation under the Adaptation Fund, the funds managed by the Global Environment Facility and the Green Climate Fund soared to nearly US$920 million in 2024. This is an increase of 86 per cent compared to the five-year moving average of US$494 million between 2019 and 2023. However, this may not be a trend, with financial constraints likely to rise beyond 2025.

Implementation of national adaptation plans, policies and strategies to reduce the social and economic impacts of relevant climate hazards is one of the UAE FGCR targets. Thus, tracking progress towards this objective is critical to achieving the global goal on adaptation. To meet that end, the UNFCCC-mandated BTRs, which were due at the end of 2024, are the most comprehensive national source of information on adaptation implementation worldwide available. However, while 94 of 105 available BTRs address adaptation, most least developed countries (LDCs) and SIDS, as well as a majority of African countries, have yet to submit one, and the coverage of adaptation varies widely (figure ES.2).

Figure ES.2 Global distribution of countries that have submitted a BTR with detailed information on climate impacts and adaptation, and the number of data points per country



No BTR/BTR without detailed information on climate impacts and adaptation | 1–100 data points | 101–300 data points | >300 data points

Note: As at 31 August 2025; a data point refers to a segment of text (such as a statement or block of text) in a BTR that contains information on any of the topics relevant for assessing climate impacts and adaptation.

Analysis of the more than 1600 adaptation actions reported in the BTRs reveals that 23 per cent target biodiversity and ecosystems, followed by the food and agriculture; water and sanitation; and infrastructure and human settlements thematic areas with 14–18 per cent each. Health and poverty alleviation and livelihoods have markedly lower levels of reporting, while information on adaptation related to cultural heritage is almost entirely absent. This distribution reflects the priority sectors identified in nationally determined contributions (NDCs) and national adaptation plans (NAPs), providing a first indication of alignment between national planning and implementation. Institutional actions, particularly government policies, programmes and research (48 per cent); management of natural resources, most prominently water (25 per cent); and actions addressing behavioural change, like trainings (22 per cent), together make up most of the reported action categories, whereas structural and technological measures are the least reported category (5 per cent).

Nearly three quarters of the information on results of actions refers to direct outputs, such as risk assessments, trainings or establishment of climate information systems. Information on outcomes (16 per cent), such as uptake of adaptation-relevant technologies or access to climate services, and on impacts (12 per cent), describing the resilience effects of adaptation actions including improved biodiversity, water availability or agricultural production, is still not widespread. Greater emphasis on outcomes and impacts of actions in the coming rounds of BTRs is necessary for a better assessment of the effectiveness and adequacy of adaptation implementation. Opportunities that would make the next iteration of BTRs more relevant and would also strengthen the second global stocktake are presented in box ES.1.

Box ES.1 Opportunities to improve adaptation reporting in BTRs

- Strengthen reporting on efforts to mainstream adaptation into broader national development planning
- Demonstrate progress in implementing priorities set out in key planning instruments such as NAPs and NDCs
- Deepen information on adaptation actions and results, in particular on outcomes and impacts
- Provide more information on health, poverty alleviation and livelihoods and cultural heritage to improve understanding of progress in adaptation implementation across all themes of the global goal on adaptation
- Improve linkages between climate hazards, risks and effects with outcomes and impacts of actions to create a coherent narrative, enhance consistency within BTRs, and enable assessment of the effectiveness and adequacy of adaptation actions
- Provide more information on gender equality and social inclusion, especially regarding actions and results
- Enhance information on efforts to develop systems for monitoring, evaluation and learning of adaptation actions and results
- Provide detailed information about barriers to adaptation planning and implementation, including information about effective strategies for overcoming these barriers

2 Status of adaptation finance

The adaptation finance gap is not reducing, and the Glasgow Climate Pact goal will be missed under current trajectories.

In view of the timeline for the NCQG, it is pertinent to reassess the adaptation finance gap and align it with the year 2035. The reanalysis estimates the costs of adaptation to be in a plausible central range of US$310–365 billion per year for developing countries by the year 2035 (in 2023 prices).[1] The range reflects evidence from an updated modelling analysis of adaptation costs, as well as an updated assessment of submitted adaptation finance needs based on NAPs and NDCs, with extrapolation to all developing countries.

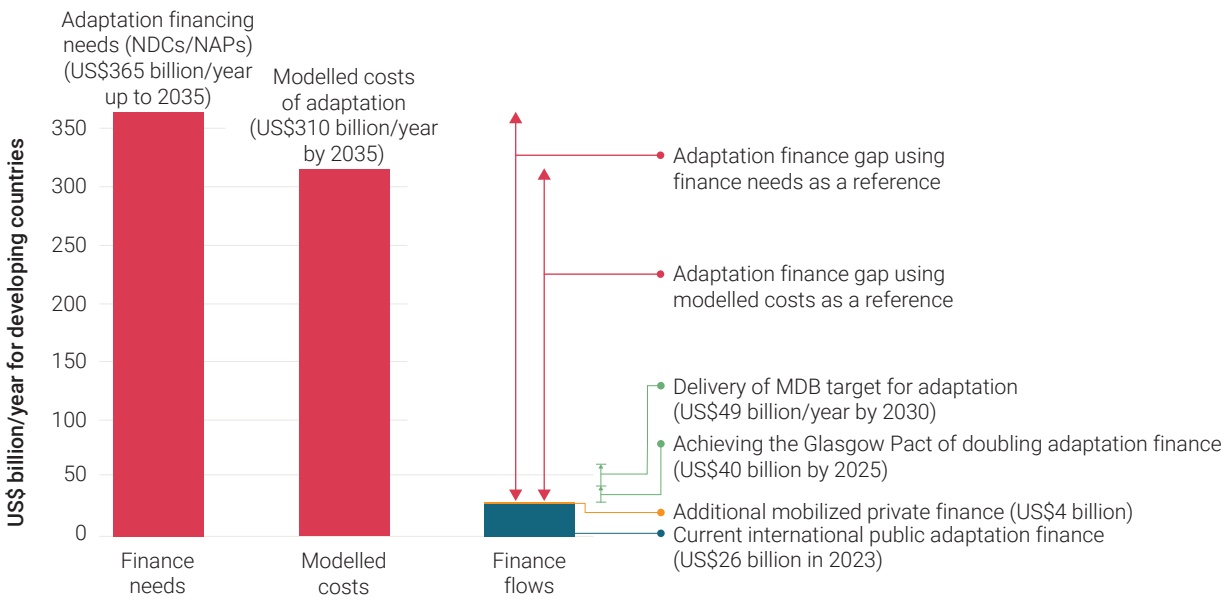
Contrasting this, the latest available international public adaptation finance flows from developed country Parties to developing country Parties were tracked at US$26 billion in 2023 (constant 2023 prices). This is a slight decline compared to 2022, and was due to a drop in funding from the multilateral development banks.[2] This levelling off of finance, and recent policy announcements on the reduction of official development assistance, suggests that the Glasgow Climate Pact goal of doubling international public adaptation finance from 2019 levels to around US$40 billion by 2025 will be missed if current trends continue.

Comparing the estimated adaptation finance needs with the current finance flows shows that the adaptation finance gap is now US$284–339 billion per year until 2035, with needs that are 12–14 times as much as current finance flows (figure ES.3). The more positive news is that the adaptation finance gap is lower for LDCs and SIDS, though the levels still fall far below needs for these most vulnerable countries.

1 The range is significantly smaller than that presented in the AGR 2023 (US$215–387 billion per year until 2030 in constant 2021 prices), which is due to updated and extended modelling analysis and more costed country needs, but little of this is related to the different time frame.

2 This includes only the share corresponding to flows from developed country Parties to developing country Parties. If all finance flows are considered, the volume of international public adaptation finance rises to US$35 billion in 2023, reflecting the important contribution of developing country Parties to adaptation finance – around 30 per cent.

Figure ES.3 Comparison of adaptation financing needs, modelled costs and international public adaptation finance flows in developing countries



Note: In constant 2023 prices. Domestic and private finance flows are excluded.

Debt instruments are growing in prominence and non-concessional loans exceeded concessional loans, raising concerns of long-term affordability and equity.

As well as the volume of finance, the mix of financial instruments is important, especially in terms of the NCQG text which highlights the need for concessional finance. Although 70 per cent of international public adaptation finance was concessional in 2022–2023,[3] it is worrisome that debt instruments continue to dominate these overall flows, comprising 58 per cent on average in 2022–2023. In particular, the increasing proportion of non-concessionary debt instruments raises concerns about long-term affordability, equity, and the risk of an 'adaptation investment trap' where the rising climate disasters increase indebtedness and make it harder for countries to invest in adaptation. This is particularly true for vulnerable countries, especially LDCs and SIDS, which have contributed very little to the climate crisis but suffer the most from its effects. Further, non-concessional loans exceeded concessional ones, albeit so far predominantly to middle-income countries.[4]

The NCQG is insufficient to meet adaptation finance needs.

During COP 29 in Baku, the NCQG set the goal, with developed country Parties taking the lead in mobilizing at least US$300 billion per year by 2035 to developing country Parties for climate action.[5] At first glance, this target appears significantly higher than the previous goal for developed countries to mobilize US$100 billion by 2020 for developing countries. However, this new goal is clearly insufficient to meet adaptation finance needs in 2035 for two reasons. First, the NCQG is not adjusted for inflation, and therefore represents US$300 billion in the year 2035. To compare on an equivalent basis, it is necessary to take account of possible future inflation. For example, adjusting the AGR adaptation finance needs of US$310–365 billion per year (in constant 2023 prices) at a 3 per cent inflation rate (the average rate over the last decade) would increase these needs to US$440–520 billion annually by the year 2035. Second, the NCQG covers both mitigation and adaptation, and so far no adaptation subgoal has been agreed during UNFCCC negotiations. The AGR 2025 has assessed possible scenarios for a minimum and maximum level of adaptation finance in 2035, finding that under both scenarios, the adaptation finance gap cannot be closed with international public finance alone.

3 Either in the form of grants or as concessional loans with very low interest rates and long grace periods/maturity timelines.

4 For LDCs, the distribution was balanced between grants (51 per cent) and debt instruments (49 per cent), with non-concessional debt more limited (10 per cent); for SIDS, the proportions were grants (55 per cent), concessional (17 per cent) and non-concessional (26 per cent) loans, with the higher figure for the latter due to income-based eligibility limits.

5 The US$300 billion goal was embedded within the much larger Baku to Belém Roadmap to 1.3T, a call for action to scale up finance to at least US$1.3 trillion annually in 2035 to developing country Parties.

3 Bridging the adaptation finance gap

Private sector finance can help fill the gap, though its overall contribution is likely to be modest.

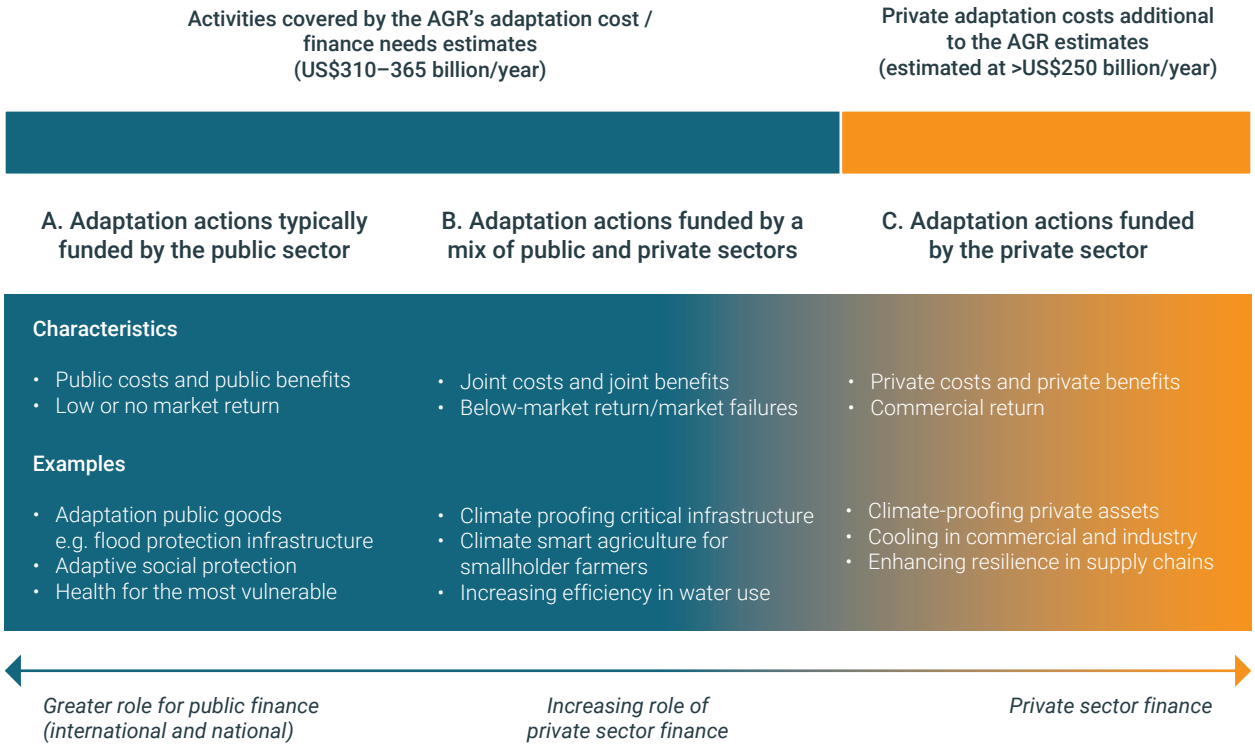
AGR 2025 has looked at the potential for the private sector to play a role in filling the adaptation finance gap. To do this, it has developed a typology to assess the types of adaptation and the associated roles of the public and the private sector (figure ES.4), and used this for a detailed country, sector and activity analysis.

The aggregated results indicate that for the types of national adaptation activities prioritized in NAPs and NDCs (columns A and B of the figure, which relate to the AGR finance needs of US$310–365 billion/year), around three quarters are typically funded by the public sector. These include public goods, such as major flood protection investments or cash transfers (column A), and other investments and services dominated by the public sector today. However, the other quarter involves adaptation activities where there is a role for the private sector, such as climate smart agriculture (column B). Adjusting this down for the realistic potential, the AGR 2025 estimates that the private sector could deliver approximately 15–20 per cent of total national adaptation funding needs (US$50 billion/year of the US$310–365 billion/year by 2035). However, the relative private share will vary strongly between countries and sectors. It will be higher for upper-middle-income countries and likely to be much lower for low-income countries; it will also be predominantly in certain sectors, in particular for agriculture, water and infrastructure.

Moreover, as current private sector flows are low, with tracked levels at ca US$5 billion per year, even reaching this level will require targeted policy action. It is also likely to require blended finance solutions where public finance is used to de-risk and scale up private investment. Due to lower leverage and mobilization ratios for adaptation compared to mitigation, significant volumes of concessionary public finance are likely to be needed to deliver this private sector investment.

Under column C of figure ES.4 there are additional adaptation actions to be funded by the private sector, such as climate-proofing private sector assets. Parties do not ask for financial support for these investments in NAPs or NDCs, and they sit outside the AGR estimates, though they will involve large additional costs for the private sector, estimated indicatively at more than US$250 billion per year.[6]

Figure ES.4 Simplified categorization of adaptation types and opportunities for private sector engagement



6 While this raises total adaptation costs (public and private) in developing countries to over US$500 billion per year, this does not account for the additional residual damages after adaptation, which are likely to increase as climate impacts accelerate with warming.

Innovative models can increase private sector financial investment, but they will not likely bridge the funding gap.

There is growing interest in innovative approaches that might scale up private investment in adaptation. The AGR 2025 has analysed the latest information available on adaptation accelerators, incubators and platforms to identify new private sector adaptation solutions, finance instruments and business models. This revealed many innovative approaches, but reinforces the findings above, in that opportunities are concentrated in the agriculture sector, and most innovation is focused on middle-income countries. Moreover, insufficient attention has been given to the distinction between financing and funding because the majority of innovative approaches transfer the costs of adaptation back to the developing countries or households. Therefore, while they reduce the financing gap (i.e. who provides the money), they do not reduce the funding gap (i.e. who ultimately pays). The AGR 2025 contends that this issue needs to be brought out more transparently in negotiation discussions.[7]

The Baku to Belém Roadmap to 1.3T must guide bridging the adaptation finance gap fairly and without enhancing vulnerabilities of developing nations.

The Baku to Belém Roadmap to scale up finance to US$1.3 trillion was established in 2024 during COP 29 as part of the NCQG, with the intent of enabling more climate action in developing countries in support of low-emissions climate-resilient development pathways. This includes implementing NDCs and NAPs through grants, concessional and non-debt-creating instruments to avoid enhancing vulnerabilities and inequities. The AGR 2025 provides reflections for the forthcoming negotiations to strengthen the Roadmap:

First, by containing the growth of the adaptation finance gap through mitigation and avoided maladaptation. For example, the roadmap could point at the importance of removing fossil fuel subsidies and reducing investments in fossil fuel infrastructure in line with the global stocktake's call to transition away from fossil fuels. It could also provide guidance on avoiding maladaptation, for example by addressing the root causes of vulnerability, such as through fair allocation of finance within countries, enhancing capacities and access to resources, addressing unequal power dynamics, and ensuring adaptation is locally led.

Second, by increasing the volume of adaptation finance with the help of new providers and instruments. This could include expanding the sources and modalities for support beyond grants and loans. Additional climate finance providers could also support bridging the gap. Several countries not listed among the developed countries with the capacity and resources to do so are already supporting developing countries through the provision of adaptation finance. The roadmap could identify possible instruments and ways in which additional actors can voluntarily contribute to closing the adaptation finance gap in transparent and accountable ways.

Third, by engaging more finance actors in integrating climate resilience into financial decision-making. The roadmap could identify ways for actors such as central banks, commercial banks, credit rating agencies and export credit agencies to consider resilience in decisions on lending and rating more strongly. This would help manage physical risks and increase adaptation. However, there are critical issues of fairness that need to be considered to avoid increasing perceived investment risks and negative biases against the most vulnerable populations and nations.

4 Summary

To achieve the objectives of the global goal on adaptation, public and private actors need to step up financial support in line with the Baku to Belém Roadmap.

While there are signs of mainstreaming adaptation into broader national development planning and implementing adaptation in priority sectors and areas, not enough can be said about the effectiveness and adequacy of adaptation actions. This will be critically important for the assessment of progress towards the global goal on adaptation in the second global stocktake. It can be supported by aligning reporting in the second BTRs with the UAE FGCR, and strengthening their quality by considering the opportunities for improvement as described in this report.

Meanwhile, it is far too evident that the financial resources needed to enable adaptation action in developing countries at the scale necessary to meet the growing challenges of current and future climate risks is woefully inadequate. It will take nothing less than a global collective effort to increase climate finance to the levels articulated in the Baku to Belém Roadmap to 1.3T. This is particularly salient because the potential for private sector finance to contribute is moderate, and needs targeted policy action and blended finance to be accessible.

7 A smaller number of innovation models showed the potential to help fund as well as finance adaptation because their cost recovery models generate new benefit streams which can also help fund adaptation; further analysis of their potential is a priority.

Tropical Cyclone Tino hits Tuvalu, 17 January 2020.

Photo: © Tuvalu Coastal Adaptation Project (TCAP)

1

Chapter 1

The political and scientific context

Lead authors: Alexandre Magnan (Cawthron Institute), Maria del Pilar Bueno Rubial (Consejo Nacional de Investigaciones Científicas y Técnicas, Universidad Nacional de Rosario), Lars Christiansen (UNEP Copenhagen Climate Centre), Henry Neufeldt (UNEP Copenhagen Climate Centre)

Jute farming in rural West Bengal, India. Two men in a flooded area in a boat, harvest jute crops and stack them for drying.

Photo: © Climate Visuals Countdown

1.1 Introductory narrative

The new nationally determined contributions (NDCs) point towards global warming that is far beyond the Paris Agreement temperature goal of stabilized +1.5°C (global mean relative to pre-industrial levels). Climate impacts will accelerate beyond +1.5°C, making it increasingly challenging to manage climate risks (Intergovernmental Panel on Climate Change [IPCC] 2022). Every fraction of a degree of reduced warming we achieve through mitigation will limit adaptation needs. At the same time, the current geopolitical tensions and cuts to overseas development assistance, among other factors, are making it increasingly difficult to mobilize the political will and resources necessary to address mitigation, adaptation, and loss and damage.

This lays the foundation for our shared mission to accelerate and improve investments in adaptation planning, implementation and means of implementation (finance, technology development and transfer, capacity-building), given that investing in adaptation is good value for money. The science conclusively shows that adaptation significantly reduces the costs of climate impacts, enhances resilience and leads to improved development outcomes, from local, to national, to global levels (IPCC 2022; United Nations Environment Programme [UNEP] 2023; Brandon *et al.* 2025). For example, investing in agricultural or coastal resilience leads to manyfold returns in food security or coastal protection over inaction (Sulser *et al.* 2021; UNFCCC 2023), and ambitious adaptation can halve global climate risk under any warming scenario (Magnan *et al.* 2021; Marbaix *et al.* 2025). Adaptation also minimizes the increasing burden on future generations and the most vulnerable (World Bank 2024), such as women and girls pushed into poverty, food insecurity and hunger as a result of climate change (United Nations Programme for Gender Equality and the Empowerment of Women 2024). Financing adaptation should be seen as an investment with important dividends (Brandon *et al.* 2025). Contributing to this debate on current and future adaptation requires regular science-based assessments of global adaptation progress, which the Adaptation Gap Report series aims to contribute to (see box 1.1).

Key discussions of this year's Adaptation Gap Report touch on a diversity of interconnected topics: ambition of the revised NDCs vis-à-vis progress reported in the Biennial Transparency Reports (BTRs); assessment of progress towards the achievement of the targets of the United Arab Emirates-Framework for Global Climate Resilience (UAE FGCR) under the global goal on adaptation (United Nations Framework Convention on Climate Change [UNFCCC] 2024) with a particular focus on mainstreaming; and assessment of progress of climate finance, including the New Collective Quantified Goal on Climate Finance (NCQG) of US$300 billion, and the Baku to Belém Roadmap relative to the adaptation finance gap. All of these are of considerable relevance to the thirtieth session of the Conference of the Parties to the UNFCCC (COP 30) in Belém, where the Brazilian presidency is calling for a *mutirão global*, a global collective effort, to move from negotiations to ambitious climate action (COP 30 Presidency 2025).

Box 1.1 Structure of the Adaptation Gap Report

- Chapter 1 gives a brief overview of the current **scientific and policy landscape** in understanding climate impacts and the value of adaptation, and highlights the connection with the international negotiation landscape under the UNFCCC and the Paris Agreement (figure 1.1).
- Chapter 2 on global progress on **adaptation planning** assesses efforts towards some of the targets of the UAE FGCR related to the iterative adaptation cycle, as well as how these targets contribute to climate-resilient development through mainstreaming into national, subnational and sectoral policy processes.
- Chapter 3 on global progress on **adaptation implementation** assesses efforts in adaptation action, particularly based on an analysis of the BTRs, to inform opportunities for improved reporting in the context of the UAE FGCR and towards the second global stocktake.
- Finally, chapter 4 on the **adaptation finance gap** informs the discussions around finance flows towards the Glasgow Climate Pact's goal of doubling adaptation finance by 2025, the NCQG and the Baku to Belém Roadmap to 1.3T. Chapter 4 also includes suggestions on how to bridge the gap, as well as an assessment of adaptation finance costs/needs and the resulting finance gap in 2035, using the framing of the UAE FGCR.

1.2 Recent scientific advances

It is clear today that global warming and climate-related risk trends are continuing to increase sharply, leading to a continuously rising number and intensity of climate impacts worldwide, and resulting in ever more loss of lives, displacement and migration, accelerating costs, increasing social and gender inequality, disproportionate impacts on certain population groups, emerging conflicts, and a dramatic depletion of biodiversity and ecosystem services (see for example O'Neill *et al.* 2022; Schleussner *et al.* 2024; Fricker *et al.* 2025; Marcos *et al.* 2025; World Meteorological Organization [WMO] 2025). It has been estimated that, overall, climate-related extreme events cost the world US$140 billion per year between 2000–2019, and this figure will rise to between US$1.7 trillion and 3.1 trillion per year by 2050 under varying warming scenarios (Newman and Roy 2023).

Additional warning signals from the scientific literature include:

- Increasing warming negatively affects the effectiveness of climate adaptation to minimize risks. A recent modelling study shows, for example, that the effectiveness of water-related adaptation declines from 90 per cent under <+1.5°C to 69 per cent and 46 per cent at +2°C and +4°C respectively (Lissner *et al.* 2024).
- The transition from adaptation aspiration to actual implementation at the local level remains too slow (IPCC 2022), with numerous constraints and emerging hard limits being reported in the literature (Berrang-Ford *et al.* 2021), especially when it comes to technological and ecosystem-based action (Thomas *et al.* 2021).
- The range of available adaptation options is at risk of shrinking with warming (Haasnoot *et al.* 2021).
- Hasty responses can result in maladaptation, that is, an insidious increase of climate risks over time and/or space (Juhola and Käyhkö 2023; Reckien *et al.* 2023a), with incidence in intensifying inequalities.
- Current interventions often fail to account for cascading and compounding climate risks (Alcántara-Ayala 2025; Duvat forthcoming).
- Engagement of stakeholders in adaptation remains insufficient (Petzold *et al.* 2023).

On a more positive note, recent studies show, for example, that nature-based solutions can help reduce air temperature in urban areas by 1.1°C average across cities and towns (Ferrario *et al.* 2024), and that significant improvements in heat literacy and a reduction in heat-related symptoms are reported in a growing number of publications analysing health-related adaptation interventions (Hamimatunnisa *et al.* 2025). There has also been significant progress on the policy front since the adoption of the Paris Agreement 10 years ago, both in the climate negotiation process and as a result of international cooperation (Leiter 2022; Canales *et al.* 2023). Despite room for improvement at national and local levels (Hurlimann, Moosavi and Browne 2021; Wannewitz *et al.* 2024; Hussein *et al.* 2025), such progress has helped accelerate the support of adaptation planning instruments and improve the capacity of countries to identify adaptation priorities and needs in relation to costs and means of implementation (UNEP 2024).

1.3 Policy progress, with a focus on the UNFCCC arena

Major progress also occurred around further understanding what the global goal on adaptation, established at COP 21 in 2015 under the Paris Agreement, could concretely mean (Canales *et al.* 2023; Magnan 2023; Barkai and Winckler 2025), how to operationalize it, and how to assess adaptation progress at the global level (Garschagen *et al.* 2022; Singh *et al.* 2022; Fisher 2023; Magnan *et al.* 2023; Reckien *et al.* 2023b; Falzon 2024). In particular, the adoption of the UAE FGCR including the development and implementation of national adaptation plans (NAPs), as well as assessing progress through advanced monitoring, evaluation and learning (MEL) systems by 2030, represented a step change towards achieving the global goal on adaptation (figure 1.1). One key outcome has been the agreement on 11 global adaptation targets covering the four dimensions of the iterative adaptation cycle (impact, vulnerability and risk assessment; planning; implementation; and MEL – with a 2030 time-horizon) and seven globally relevant themes (water, food and agriculture, health, ecosystems and biodiversity, infrastructure, poverty alleviation and livelihoods, and cultural heritage; see icons in figure 1.1, panel C). A number of cross-cutting considerations, such as gender, participation, transparency, human rights, intergenerational equity and social justice, Indigenous peoples and local communities, children, youth, and persons with disabilities, have been recognized as key to the implementation of the UAE FGCR. A two-year UAE-Belém work programme to identify or develop indicators to track these targets was established, including a convening of technical experts that has proposed a list of 100 globally relevant indicators (Indicator Expert Group 2025a; Indicator Expert Group 2025b). The list of indicators will be considered for adoption at COP 30.

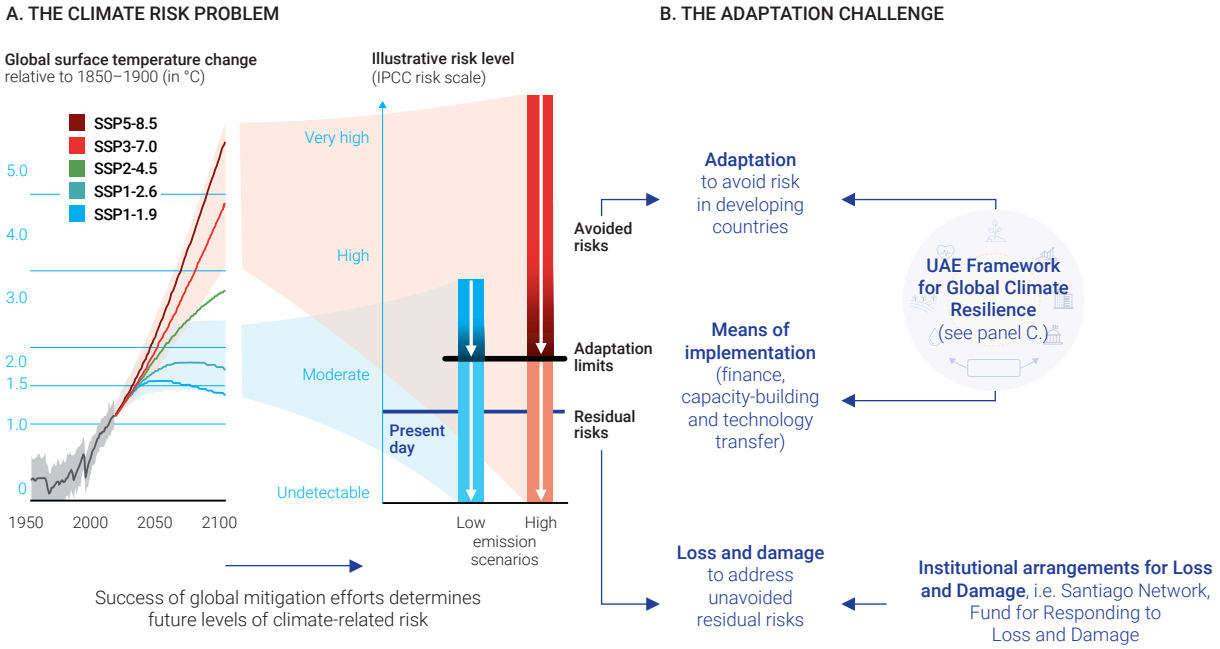
Progress also includes the IPCC developing *Technical Guidelines for Assessing Climate Change Impacts and Adaptation Including Indicators, Metrics and Methodologies* as part of its Seventh Assessment Report (IPCC 2025, pp. 14–15).

Another major advance is the establishment of loss and damage-related institutions, such as the Santiago Network[1] and the Fund for Responding to Loss and Damage (Wyns 2022; Klinsky and Moffett 2025). While this fund addresses residual losses beyond adaptation limits (figure 1.1, panel B), its establishment marks a significant evolution in the broader climate finance landscape.

While adaptation has progressed within the United Nations climate regime, the negotiations landscape has become increasingly complex. This complexity is not a result of a growing number of agenda items, which have remained relatively constant over the last decade.[2] Instead, it stems from the considerable increase in time and negotiation slots allocated to each existing item, reflecting the renewed interest in adaptation and its political significance as a result of the urgency (Allen and Bhandary 2024).[3] Growing complexity, however, also makes it harder for people outside of the international policy circle to understand advances and progress, and therefore ultimately limits the perception of the social impact of climate multilateralism.

COP 30 faces a negotiation agenda with a strong presence of adaptation, including the expected adoption of the indicators of the UAE FGCR, and its link with the NCQG and other adaptation finance considerations. At the same time, the call in the first global stocktake for all countries to have NAPs in place by 2025, laying the groundwork for the start of the second global stocktake of collective progress and its linkage with the enhanced transparency framework, and in particular, with the adaptation documents that allow understanding the progress of the Parties vis-à-vis their plans and the global targets, especially BTRs (see chapter 3).

Figure 1.1 The adaptation-related negotiation agenda items under the UNFCCC, and their connection to the challenge of addressing climate risks

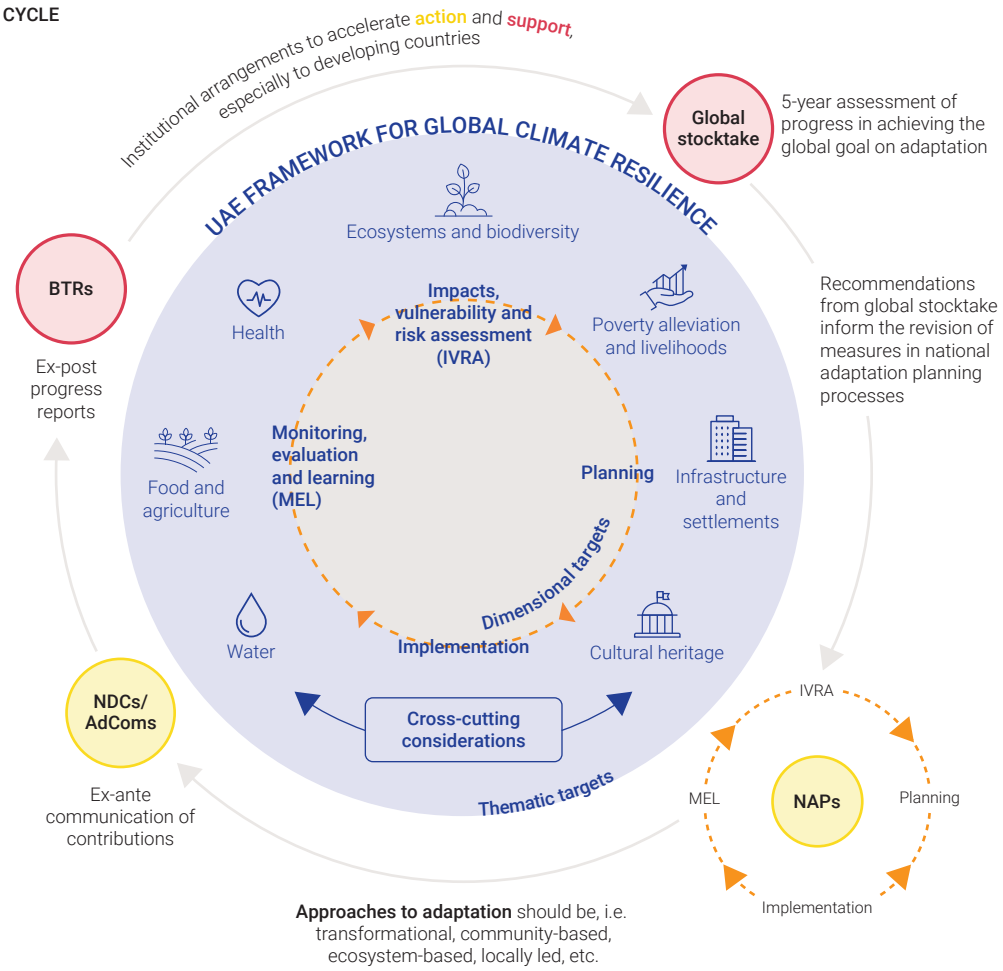


1 The Santiago Network was established at COP 25 as part of the Warsaw International Mechanism, to catalyse technical assistance of relevant organizations, bodies, networks and experts for the implementation of relevant approaches at the local, national and regional levels, in developing countries that are particularly vulnerable to the adverse effects of climate change.

2 At COP 21 in Paris there was one adaptation item under the COP (Ad Hoc Working Group on the Durban Platform for Enhanced Action [ADP]) which was the main workstream for negotiating article 7 of the agreement, and three additional items: the Adaptation Committee annual report (COP, Subsidiary Body for Scientific and Technological Advice [SBSTA], Subsidiary Body for Implementation [SBI]), the Nairobi Work Programme (NWP) (SBSTA) and NAPs (SBI), while at COP 29 matters relating to adaptation included matters on the global goal on adaptation (Conference of the Parties serving as the meeting of the Parties to the Paris Agreement [CMA], SBSTA, SBI), the Adaptation Committee report and review (COP, CMA, SBI, SBSTA), and NAPs (SBI). The item on the NWP was only considered during the Subsidiary Bodies in June 2024.

3 For example, negotiations on the global goal on adaptation now refer not only to the UAE FGCR and its associated indicator programme, but also to communication and reporting instruments such as the adaptation component of BTRs and its associated technical expert review, as well as the strengthening of the national MEL systems to inform collective assessments of progress such as the global stocktake. The global goal on adaptation agenda has also grown to involve the Baku Adaptation Roadmap, "enabling conditions" and "means of implementation", particularly the finance needed to meet the targets; and the urgency of accelerating adaptation both through incremental and transformational adaptation.

C. THE AMBITION CYCLE



Note: The adaptation-related negotiation agenda items under the UNFCCC, and their connection to the challenge of addressing climate risks. Panel A illustrates, for two contrasting global warming scenarios, the benefits to be expected from continuous adaptation in terms of climate risk reduction, as well as adaptation limits that will reveal residual risks. Panel B translates the risk landscape into key adaptation-related challenges that are structuring the international climate negotiations, i.e. regular adaptation to avoid risks (especially in developing countries), means of implementation needed to support continuous adaptation, and the institutional arrangements for Loss and Damage to address residual risks. Panel C presents a detailed overview of the UAE FGCR, depicting its dimensional and thematic targets (inner and outer circles respectively), and the cross-cutting considerations that should be taken into account when implementing adaptation. The panel also illustrates that the framework provided by the UAE FGCR should inform the instruments and processes that make up the ambition cycle. These instruments and processes, represented by the small circles surrounding the UAE FGCR, are designed to accelerate actions and support, especially to developing countries. Instruments primarily associated with accelerating action are in yellow, while instruments and processes primarily associated with accelerating support are in red.

Acronyms used refer to national adaptation plans (NAPs), adaptation communications (AdComs), adaptation components of the nationally determined contributions (NDCs), and the adaptation sections of the biennial transparency reports (BTRs).

Cross-cutting considerations refer to: gender; participatory and fully transparent approaches; human rights approaches; intergenerational equity; social justice; vulnerable ecosystems, groups and communities; children, youth and persons with disabilities; education and empowerment, Indigenous, local and traditional knowledge systems; science-based and guided by best available science; social inclusion; Indigenous Peoples; migrants; and health of children and young people.

2

Chapter 2

Global progress on adaptation planning

Lead authors: Anne Hammill (International Institute for Sustainable Development [IISD]), Keron Niles (University of the West Indies), Thomas Dale (UNEP Copenhagen Climate Centre), Geneva Yang (IISD), Freya Milford (UNEP Copenhagen Climate Centre), Fatemeh Bakhtiari (UNEP Copenhagen Climate Centre)

Contributing authors: Leona Harting (independent), Emily Grünendieck (UNEP Copenhagen Climate Centre)

Hundreds of mangrove seedlings are growing in the small bay of an island south of Fiji's main island, Viti Levu. When replanted, they increase the resilience of coastal communities, enhance fish life around Fiji's shores, clean and filter seawater, and serve as a natural wave barrier in times of storms.

Photo: © Tom Vierus / Climate Visuals

Key messages

- This year's analysis finds that 172 (87 per cent) country Parties to the United Nations Framework Convention on Climate Change have a national adaptation planning instrument in place, representing a marginal increase from last year. This is a continuation of a trend in recent years, as we inch closer to the target of all countries having a national adaptation plan, strategy or policy in place by 2030, as articulated in planning target of the United Arab Emirates Framework for Global Climate Resilience (UAE FGCR). Among the 25 countries still without a national adaptation plan, strategy or policy, 21 have initiated a process of developing one, although half of these processes have been under way for 7–10 years.

- Of the 172 countries with a national adaptation planning instrument in place, 36 (21 per cent) possess instruments that are either expired or have not been updated in at least a decade, calling into question the relevance and effectiveness of these instruments and indicating that countries are having difficulties in updating them in a timely manner.

- Countries without a national adaptation planning instrument in place or with instruments that are dated and/or expired are predominantly developing countries, suggesting that financial, technical and human resource constraints inhibit national adaptation planning. Least developed countries are more likely than small island developing States (SIDS) and other developing countries to have up-to-date instruments, suggesting that support for national adaptation planning has been relatively effective in targeting these countries.

- In addition to developing dedicated national adaptation planning instruments, mainstreaming adaptation into policies, plans and strategies is part of the UAE FGCR target on planning, reflecting its complementary and mutually reinforcing role in institutionalizing risk-informed decision-making.

- An analysis of national development plans and strategies in SIDS reveals a relatively high level of adaptation integration into these flagship development policies, indicating a promising shift towards embedding adaptation within broader development planning. Furthermore, the integration of adaptation into sectors that are not traditionally associated with being climate-sensitive or adaptation-relevant by a number of SIDS demonstrates that they possess an understanding that adaptation is relevant to many aspects of national prosperity.

- A broader analysis of countries' first biennial transparency reports finds that countries are not reporting on mainstreaming efforts systematically, which will severely limit the extent to which global progress can be tracked by processes such as the global stocktake.

2.1 Introduction

With climate impacts accelerating and outpacing many existing risk management efforts, effective planning is one of our strongest lines of defence. This is why the United Nations Framework Convention on Climate Change (UNFCCC) process has increasingly recognized its critical role in climate action over the last 15 years – from establishing the national adaptation plan (NAP) process in 2010 (UNFCCC 2011) to establishing a target on planning under the framework for the global goal on adaptation, also known as the United Arab Emirates Framework for Global Climate Resilience (UAE FGCR). Specifically, this target states that "by 2030 all Parties have in place country-driven, gender-responsive, participatory and fully transparent national adaptation plans, policy instruments, and planning processes and/or strategies, covering, as appropriate, ecosystems, sectors, people and vulnerable communities, and have mainstreamed adaptation in all relevant strategies and plans" (UNFCCC 2024). This policy evolution has been reinforced by dedicated finance, including through the Global Environment Facility for adaptation planning efforts in least developed countries (LDCs) and small island developing States (SIDS), the Green Climate Fund establishing a window of support on adaptation planning in 2016, and various other support initiatives.

As in previous iterations of the Adaptation Gap Report (AGR), this chapter provides a global status of national adaptation planning, tracking the publication of national plans, strategies and policies for adaptation by country Parties to the UNFCCC (henceforth referred to as countries). Since the agreement of the UAE FGCR in 2023, this annual assessment has taken on greater significance, as it speaks directly to the framework's aforementioned target on national adaptation planning.

Following this core analysis, the chapter also provides novel insights into the mainstreaming element of this target, investigating progress made by countries in integrating adaptation into relevant national, sectoral and subnational policy processes. The chapter does this through two complimentary analyses. First, it analyses the national development plans and strategies of SIDS to assess the extent to which these countries are integrating adaptation into their flagship development policy instruments. Second, it analyses biennial transparency reports (BTRs) to evaluate how these reports can be leveraged to track progress in mainstreaming adaptation into policy processes across different levels and sectors.[1]

The cut-off for data collection analysed in this chapter is 31 August 2025. A detailed description of the methodology underlying the analyses presented in this chapter can be found in annex 2.

2.2 Global status of national adaptation planning

As in previous years' AGRs, this chapter provides a global status of national adaptation planning, tracking the publication of national plans, strategies and policies for adaptation (referred to as 'national adaptation planning instruments' – see box 2.1) by countries. In addition to tracking the publication of instruments, this year's analysis also assesses the current status and extent to which countries have been successful in updating these planning instruments in a timely manner. The iterative element of adaptation planning is not captured by the UAE FGCR's target on adaptation planning. However, given the growing severity of scientific projections for future climate impacts anticipated by successive IPCC assessment reports and rapidly changing current national and international socioeconomic contexts, it is crucial that national adaptation planning instruments are regularly reviewed and updated so they can remain relevant and effective (Parson and Karwat 2011; Watkiss, Hunt and Savage 2014; Woodruff 2016; Schinko *et al.* 2017; European Commission 2023; Organisation for Economic Co-operation and Development [OECD] 2024a; UNFCCC Least Developed Countries Expert Group [UNFCCC LEG] 2025).

The methodology underlying this assessment is found in annex 2.A.

Box 2.1 Defining the national adaptation planning instruments and their relationship with NAPs submitted to the UNFCCC

The term national adaptation planning instruments is used as a catch-all term that covers policies, strategies and plans that are designed to guide/drive a country's national adaptation process. These instruments can be exclusively adaptation-focused or jointly address adaptation and mitigation. Furthermore, the function of national planning instruments can vary in scope. Some – often referred to as strategies and policies – perform a strategic function, providing countries with a general framework for coordinating adaptation efforts at the national level (e.g. a vision for adaptation, adaptation objectives, and principles for how adaptation should be implemented). Others – often referred to as plans, action plans and programmes – are more implementation-focused, translating a country's higher-level strategy into concrete activities (OECD 2024a). Finally, some instruments perform both of these functions, which is often the case with NAPs developed through the NAP process as defined and mandated by the UNFCCC (Hammill *et al.* 2021).[2]

Meanwhile, 'NAPs submitted to the UNFCCC' are national adaptation planning instruments that countries have submitted to the UNFCCC, and are subsequently made available on NAP Central – a UNFCCC-hosted database of NAPs. Since their establishment under the UNFCCC in 2010, an increasing number of countries have formulated – or are in the process of formulating – a NAP. As at 31 August 2025, 64 developing and 11 developed countries are submitted NAPs to UNFCCC, while a further 70 developing countries are in the process of formulating a NAP (UNFCCC 2025).

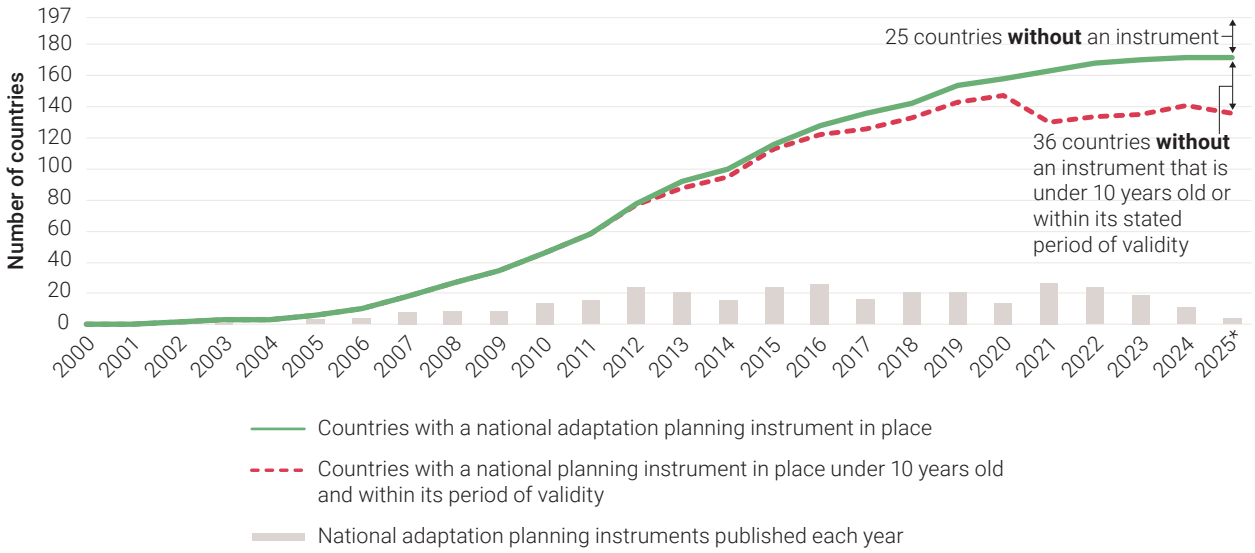
1 This chapter was co-financed by Irish Aid (note that the ideas, opinions and comments therein are entirely the responsibility of its author[s] and do not necessarily represent or reflect the Government of Ireland's policy).

2 To be counted in this analysis, instruments need to have a cross-sectoral purview (i.e. instruments that focus on single or specific groups of sectors will not be counted) and have a medium- to long-term outlook (meaning that national adaptation programmes of actions or similar adaptation programmes/investment plans that are intended to be one-off processes, and are therefore short-term in nature, are not counted).

Progress in preparing national adaptation planning instruments

The first national adaptation policy was published in 2002. Since then, there has been steady acceleration in countries developing national adaptation planning instruments, with a notable acceleration in this effort from 2011 to 2021 (see green line in figure 2.1). Analyses presented in the 2020–2024 editions of the AGR however, have consistently shown that while countries are continuing to prepare new planning instruments (see grey bars in figure 2.1), progress towards all countries having a national adaptation plan, strategy or policy in place has slowed significantly over this period; rising from 159 countries in 2020, to 171 countries in 2024.[3] This year's analysis shows that over the last year there has been no material change in this trend, with the total number of countries with a national adaptation planning instrument in place increasing by one to 172 countries (87 per cent – see green line in figure 2.1).

Figure 2.1 Progress towards achieving the UAE FGCR's target of all Parties having national adaptation planning instruments in place by 2030



*** Until 31 August 2025**

This leaves 25 countries without a national adaptation planning instrument in place. Of these, 21 have initiated a process to develop one, while four are yet to initiate any such process.[4] Many of the countries who have started the process of formulating a national adaptation planning instrument have been in this process for a long time. Information about when these processes started is available for 19 of the 21 countries, with the time between the start of the process and the time of writing varying between 2 and 10 years, with the arithmetic mean and median being 6.7 and 7 years respectively.

Progress in updating national adaptation planning instruments

Previous editions of the AGR demonstrated that countries are actively engaged in updating their initial adaptation planning instruments and/or supplementing them with complementary policies, strategies or plans. Last year's report found that 101 countries (51 per cent) had developed a second planning instrument and 29 countries (20 per cent) had developed a third (United Nations Environment Programme 2024). Similarly, as at 31 August 2025, of the 64 developing countries that have submitted their NAPS to the UNFCCC, six have an updated version (NAP Global Network 2025).

While this trend is encouraging, this year's analysis finds that the instruments of over a fifth (21 per cent) of countries with a national adaptation planning instrument in place are either more than 10 years old and/or have expired according to their stated period of validity, which calls into question the relevance and effectiveness of these instruments, and may suggest that countries are having difficulties in updating them in a timely manner (see red line in figure 2.1).[5]

3 The figure for 2024 is until 5 August.

4 Last year's AGR reported that 10 countries had yet to initiate a process to develop a national planning instrument. Since then, new data supplied by the UNFCCC secretariat has indicated that there is evidence that six of these had in fact started the process of developing a national adaptation planning instrument, this information however was not included in national submissions to the UNFCCC for these countries.

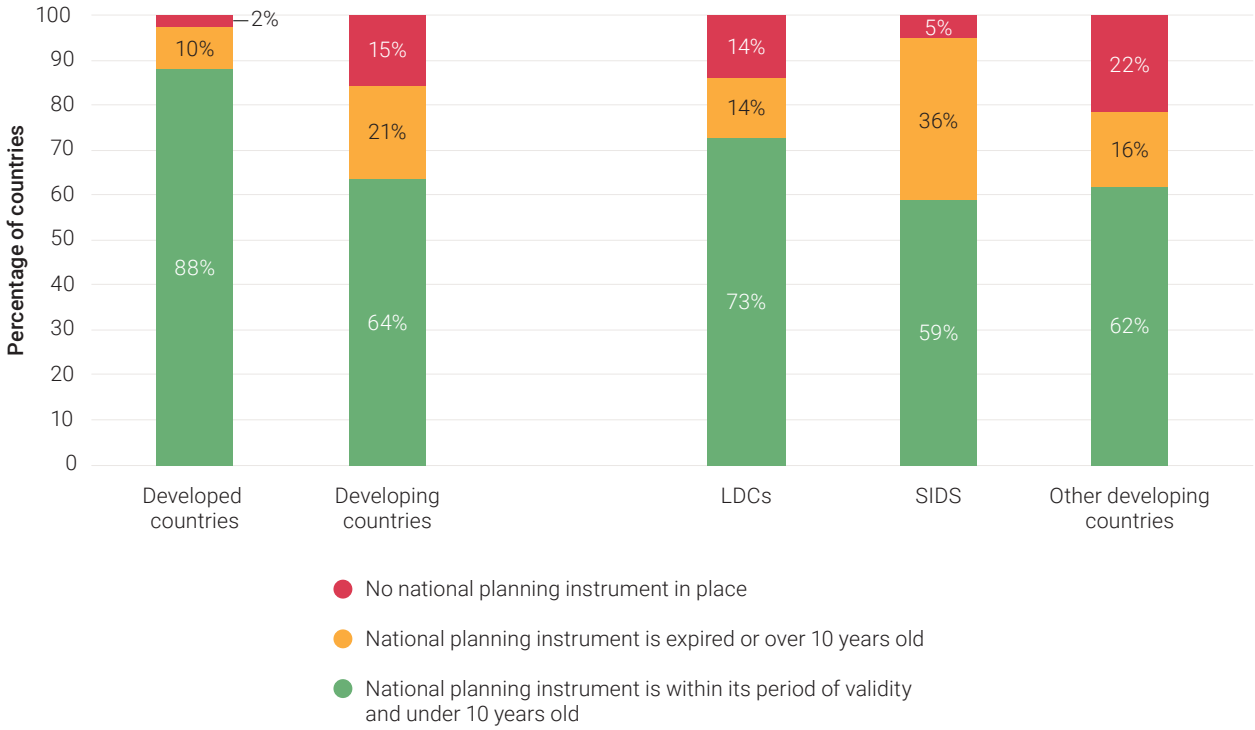
5 A national adaptation planning instrument's period of validity was determined by reviewing the document (see methodology in annex 2.A for the criteria applied). In cases where the document did not provide the information required to determine the instrument's period of validity, it was given a period of validity of 10 years from the date it was published or declared active.

Progress across country classifications

Disaggregation by country classifications commonly used under the Paris Agreement (developed countries, developing countries, SIDS and LDCs) indicates that challenges in developing a first national planning instrument and keeping these instruments up to date are most predominantly felt by developing countries, with only one developed country (2 per cent) having no plan, strategy or policy in place, and four (10 per cent) having a planning instrument in place that is expired or over 10 years old (figure 2.2).[6] These findings support the view that financial, technical and human resource constraints – which are more prevalent within developing countries – are an important factor inhibiting national adaptation planning processes.

It also shows it is not necessarily those with the least capacity (i.e. LDCs) that are more likely to have no or dated and/or expired national adaptation planning instruments in place. Instead, it is SIDS and developing countries that are neither LDCs nor SIDS that score higher across these two indicators. This state of affairs suggests that support for national adaptation planning has been relatively effective in targeting LDCs.

Figure 2.2 Status of national adaptation planning instruments across different country classifications commonly used under the UNFCCC



2.3 Progress in adaptation mainstreaming

Section 2.3 provides insights into progress made by countries in mainstreaming adaptation into relevant policy processes. While featuring in the UAE FGCR's target on adaptation planning, there are presently no studies that provide a global assessment of the progress countries are making in adaptation mainstreaming. The novel analyses presented in sections 2.3.1 and 2.3.2 aim to inform and shine light on how progress in mainstreaming adaptation into relevant plans and strategies can be assessed in future studies. Prior to presenting this analysis, this section provides an introduction to adaptation mainstreaming, examining how the concept is defined and categorized in academic literature.[7]

Framing adaptation mainstreaming

Adaptation mainstreaming is broadly understood to be the integration of adaptation objectives and climate risk considerations into the established functions, policy and practice of government institutions to build climate resilience. It complements and reinforces dedicated adaptation planning in governing adaptation as a policy issue (Rogers, Adams and Byrne 2023).

6 In this analysis, the term developed countries refers to country Parties to the UNFCCC included on the list of Annex I countries in the Kyoto Protocol. The term developing countries refers to all other country Parties to the UNFCCC that are not included on that list.

7 Information presented in this subsection was obtained through a systematic literature. The methodology applied is found in annex 2.B.

While there is broad consensus around this definition, within literature, the precise relationship between dedicated adaptation planning and mainstreaming is not always clearly articulated, with dedicated adaptation planning sometimes being framed as a form of mainstreaming, and other times as being conceptually distinct (Uittenbroek *et al.* 2014; Dewulf, Meijerinkand and Runhaar 2015; Mogelgaard *et al.* 2018; Runhaar *et al.* 2018; Gim and Shin 2023).

Within the context of the UNFCCC, however, the two are conceptually distinct but explicitly interconnected, with the facilitation of adaptation mainstreaming into relevant policy processes being one of the two stated objectives of the NAP process.[8] Under this framing, planning instruments identify the priority risks and actions that should be mainstreamed into national, sectoral and subnational policies, while the planning process clarifies institutional roles, costs, regulatory reforms, capacity needs and desired outcomes of adaptation action, which should be embedded in broader policies and systems.

Mainstreaming is an effective approach for addressing issues – like adaptation – that cut across sectoral boundaries, governance levels and policy areas (Lafferty and Hovden 2003). The main advantages of mainstreaming include:

- Ensuring policy coherence and synergies, where the benefits of adaptation are linked to the pursuit of other development priorities
- Enhancing resource efficiency in terms of budgeting and administration by reducing duplication and allowing decision makers to implement adaptation when 'windows of opportunity' arise because adaptation objectives have already been embedded in strategies and plans
- Avoiding maladaptation since 'departments and agencies are better positioned to consider how actions within their own portfolio might affect climate resilience in other policy domains and segments of society' (Cuevas *et al.* 2016; Henstra 2022, pp. 3–4)

However, mainstreaming is not without risks. For example, the absence of a dedicated framework or institution accountable for adaptation could translate into an absence of dedicated funding or clear legal mandate to implement adaptation, increasing the risk of policy dilution (Russel 2019; Braunschweiger and Putz 2021). Similarly, mainstreaming can lead to adaptation becoming a superficial box-checking exercise where it is deprioritized when competing with other sectoral objectives for resources.

A range of strategies exist to embed adaptation across different levels or domains of governance. Literature arranges these strategies into a six-tier typology (table 2.1).

Table 2.1 Typology of mainstreaming strategies and examples from literature

Mainstreaming strategy	Description
Programmatic	Modifying an entity's work by integrating adaptation considerations into specific projects and programmes.
Managerial	Modifying the management and working structures of an institution, such as adjusting personnel, departmental structure and specific job descriptions to facilitate adaptation.
Intraorganizational	Promoting collaboration within an organization to develop the capacities, skills and knowledge needed for adaptation.
Interorganizational	Promoting collaboration across organizations to develop the capacities, skills and knowledge needed for adaptation.
Regulatory	Modifying the formal or informal policy instruments such as legislation, frameworks, strategies and plans by integrating adaptation.
Directed	Dedicating funding, staff capacity-building, and resources specifically to adaptation, including through financial frameworks and fiscal processes such as budget planning.

Source: Adapted from Wamsler and Pauleit (2016), Runhaar *et al.* (2018), Braunschweiger and Putz (2021), Bleby and Foerster (2023), Segura Ramírez, Zeijl-Rozema and Martens (2023)

8 Objective (b) of the NAP process is "to facilitate the integration of climate change adaptation, in a coherent manner, into relevant new and existing policies, programmes and activities, in particular development planning processes and strategies, within all relevant sectors and at different levels, as appropriate" (UNFCCC 2012, Decision 5/CP.17, para. 1).

Of these strategies, only regulatory mainstreaming is captured by the UAE FGCR's target related to planning.

In addition to there being a range of strategies for mainstreaming, the degree to which adaptation mainstreaming integrates adaptation considerations into an institution's established functions, policies and practices varies widely (Bleby and Foerster 2023; Gim and Shin 2023). Literature identifies three levels of mainstreaming – coordination, harmonization and prioritization – that are defined by the extent to which adaptation is prioritized relative to the institution's pre-existing policy goals (table 2.2).

Table 2.2 Levels of mainstreaming, their associated degree of integration and key features

Level of mainstreaming	Degree of integration	Key features
Coordination	Weak	Adaptation is recognized as a policy goal, but is secondary to existing priorities. This degree of integration would lead to its ad hoc inclusion in project design mainly to avoid conflicts with established policies.
Harmonization	Medium	Adaptation is placed on equal terms with pre-existing policy goals. This degree of integration would lead to the systematic screening of strategies and planned activities to identify opportunities to advance adaptation objectives.
Prioritization	Strong	Adaptation takes precedence over existing policy goals. This degree of integration would require a redesign of policies and decision-making processes through an adaptation-focused lens.

Source: Adapted from Gim and Shin (2023), Bleby and Foerster (2023)

Importantly for future efforts to track progress in adaptation mainstreaming, there is presently no agreement on how to measure and assess the outcomes of mainstreaming. As is common in adaptation more broadly, the literature reports on outputs much more than outcomes and impacts of mainstreaming efforts (Runhaar *et al.* 2018; Pieterse, Du Toit and Van Niekerk 2021; Kim and Shin 2024). In other words, it is easier to measure whether adaptation is a stated objective in a sectoral plan, for example, than whether that sectoral plan which included an adaptation objective led to the reduction of climate risk.

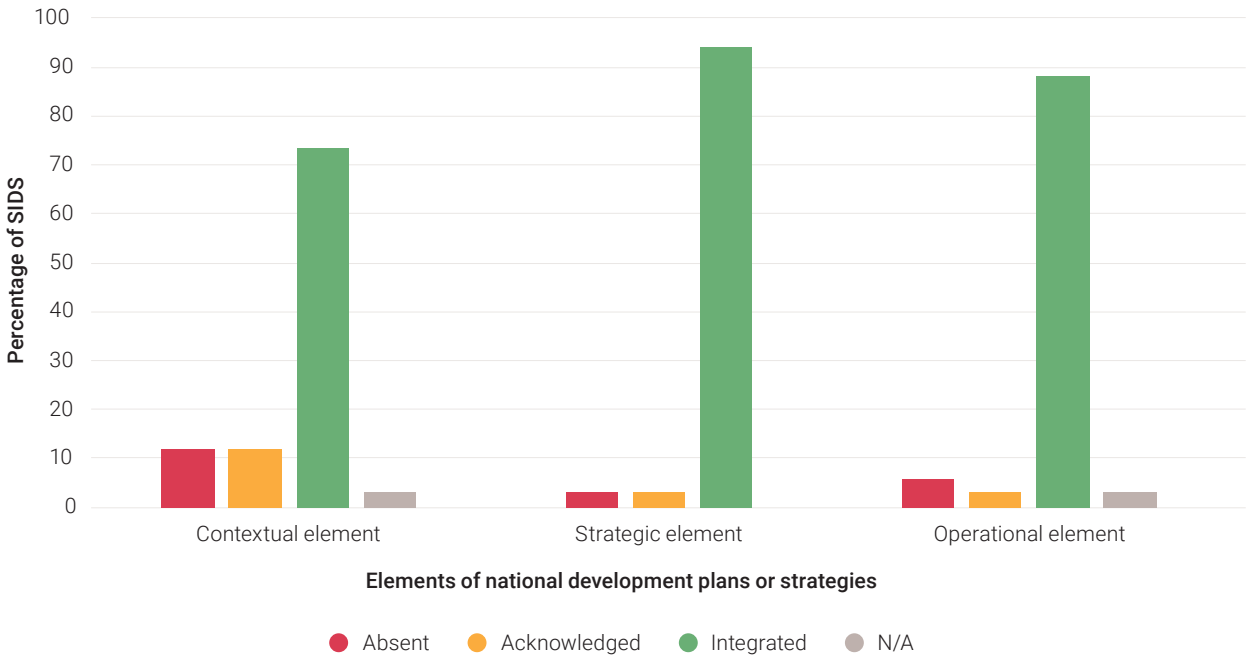
2.3.1 Assessing mainstreaming in the national development plans and strategies of small island developing States

Integrating adaptation into national development plans or strategies is one example of a regulatory strategy for mainstreaming. By embedding climate risks and adaptation needs into its core economic and social planning, a country acknowledges – and commits to act on – the reality that its future prosperity depends on managing climate risks. For many developing countries, core economic and social planning processes are directed through national development plans and strategies (OECD 2012; Chimhowu, Hulme and Munro 2019). Recognizing the acute vulnerability of SIDS to climate impacts, the national development plans and strategies for 34 of the 39 sovereign SIDS were reviewed to assess the extent to which adaptation has been mainstreamed into these flagship development policies.[9] The analysis assesses whether adaptation is absent from, acknowledged in or integrated in the contextual, strategic and operational sections of the documents with the aim of understanding if the impacts of climate change were recognized as a core development challenge for the country, if adaptation was viewed a strategic driver of development, and if this was reflected in the concrete implementation activities and accountability frameworks for turning strategy into action. Details of the methodology are presented in annex 2.C.

Given the different time-horizons, structures, formats and levels of detail for each plan or strategy, opportunities for mainstreaming adaptation similarly differ. Nonetheless, the analysis shows that all SIDS have integrated adaptation into at least one of contextual, strategic or operational sections of their plans. Almost all SIDS (94 per cent) have integrated adaptation into the strategic element of their plans and strategies, such as the vision, guiding principles, goals, cross-cutting issues and high-level objectives that set overall direction (figure 2.3). Cases of adaptation being absent or merely acknowledged tended to be in the contextual or operational parts of a national development plan, and occurred when the overall document itself was relatively short (i.e. less than 40 pages) and less space was given to these elements.

9 Authors were unable to source the national development plans and strategies of the Bahamas, Guinea-Bissau, Guyana, Soa Tome and Principe, and Singapore. As a result, these SIDS were excluded from the analysis.

Figure 2.3 Number of SIDS that have integrated adaptation into different elements of their national development plans or strategies



While the impacts of climate change are positioned as challenging the socioeconomic development of most SIDS, often noting their susceptibility to or recent experience with extreme events, the way in which adaptation frames or appears in their strategic priorities varies. Adaptation considerations were often concentrated in the environment, climate change and/or disaster risk reduction sections of the plans. However, most SIDS refer to adaptation issues or actions in other sectors or thematic areas – most often in infrastructure, housing, health, and productive sectors like agriculture and forestry; some went beyond these traditionally adaptation-relevant sectors to include areas such as information communication technologies, micro-, small and medium-sized enterprises, and children and youth, demonstrating an understanding that adaptation is relevant to many aspects of national prosperity (box 2.2).

While this initial review of SIDS is high-level and not representative of global progress, its results point to a promising trajectory towards embedding adaptation in development planning – a positive signal that can accelerate climate action both nationally and globally (see box 2.3). This analysis can provide a starting point for a broader analysis of mainstreaming that covers all countries, revealing whether adaptation is shaping mandates, budgets and decisions, and thus offering a credible way to assess progress in adaptation planning.

Box 2.2 Examples of mainstreaming adaptation considerations into thematic areas not traditionally associated with adaptation

The following examples serve to illustrate how SIDS have integrated adaptation considerations into sectors and thematic areas not typically viewed as climate-sensitive:

National security and public safety in Maldives: Under the Good Governance sector, the National Security and Public Safety subsector aims to "increase the ability... to provide prompt and speedy first responder services in the event of a disaster and national emergencies". One of the actions is to "review and update National Emergency Operations Plan (NEOP) in collaboration with NDMA [National Disaster Management Authority] to make it comprehensive and to cover all emergencies including health, natural disaster and climate induced events" (Maldives 2019, p. 384).

Micro and small businesses in Dominica: The National Resilience Development Strategy 2030 of Dominica recognizes the importance of micro and small businesses as being key to the social and economic transformation of the country. It goes on to state that the Government's Rural Enterprise business incubation programme will "factor climate resilience elements in its skills training, business

ethics and financial support to groups in rural communities preparing them to launch businesses that are ready to withstand any adverse climatic event" (Dominica 2018, p. 63).

Cultural preservation in Kiribati: Among the key strategies to overcome the challenges listed under the Environment and Resilience key priority area in Kiribati's forthcoming Development Plan 2024–2027 is "protecting and preserving cultural and historical sites and war relics from climate change impacts" (Kiribati 2024, p. 106). It emphasizes the to work with communities from each island to accurately document, preserve and safeguard information related to cultural heritage.

Financial services in Fiji: One of the seven focus areas in Fiji's National Development Plan 2025–2029 and Vision 2050 is "catalysing economic growth and diversifying the economy." Within this, under the subchapter on financial services, sits the strategy "develop affordable and appropriate financial products and services to mitigate shocks and build resilience to adverse impacts of climate change" (Fiji 2024, p. 86).

Box 2.3 Outcomes of integrating adaptation into national development planning in Fiji

During the analysis of the national development plans presented in section 2.3.2, Fiji's National Development Plan 2025–2029 and Vision 2050 (NDP 2025–2029) was identified as demonstrating a strong integration of adaptation, as it plays a significant role in structuring the plan itself. Specifically, adaptation appears as:

- One of five so-called "X-factors", which are seen as "transformational, impactful and reset the nation's development trajectory" (Fiji 2024, p. 14). Specifically, it is in X-factor 4, "Strengthening resilience against the impacts of natural disaster and climate change" (ibid., p. 19).
- One of six principles – "mitigating the impacts of climate change and protecting the environment" (ibid., p. 14).
- One of seven focus areas of the plan "Developing public infrastructure, protecting environment, and addressing climate change" (ibid., p. 14).
- One of the eight cross-cutting priorities, "Mainstreaming climate change: Empower all Fijians to better adapt to the impacts of climate change" (ibid., p. 22).

In addition to this, the impacts of climate change are often mentioned in describing the current status, challenges and opportunities of different sectors of themes, ranging from sugar production and marine resources to tourism and the construction industry. Beyond this contextual recognition, the plan includes specific strategies that address adaptation across six out of seven of its focus areas.

What outcomes has integrating adaptation into recent NDPs achieved?

At the time of writing, the NDP 2025–2029 has only recently come into effect, therefore the potential to observe any outcomes of integrating adaptation into this instrument is limited. The integration of adaptation in previous NDPs, however, established adaptation and resilience as a priority for the Government, making it a priority for all ministries and other national and subnational government entities. The added urgency of establishing adaptation as a national priority is viewed as being critical in enabling recent progress made by ministries and subnational government in developing adaptation policies,[10] mainstreaming adaptation into existing policies, strategies and regulations,[11] and increasing or ringfencing budget allocations for adaptation interventions.

A full case study providing insights into how adaptation was integrated into Fiji's NDP 2025–2029, the factors that enabled this to happen, the outcomes achieved through this process and lessons learned is found in annex 2.D.

10 For example, the development of the Health Adaptation Plan.

11 For example, the integration of climate-smart agriculture into the Ministry of Agriculture and Waterways strategic development, or the updating of Fiji's building codes to include consideration of future climate risks.

2.3.2 Tracking global progress in adaptation mainstreaming through BTRs

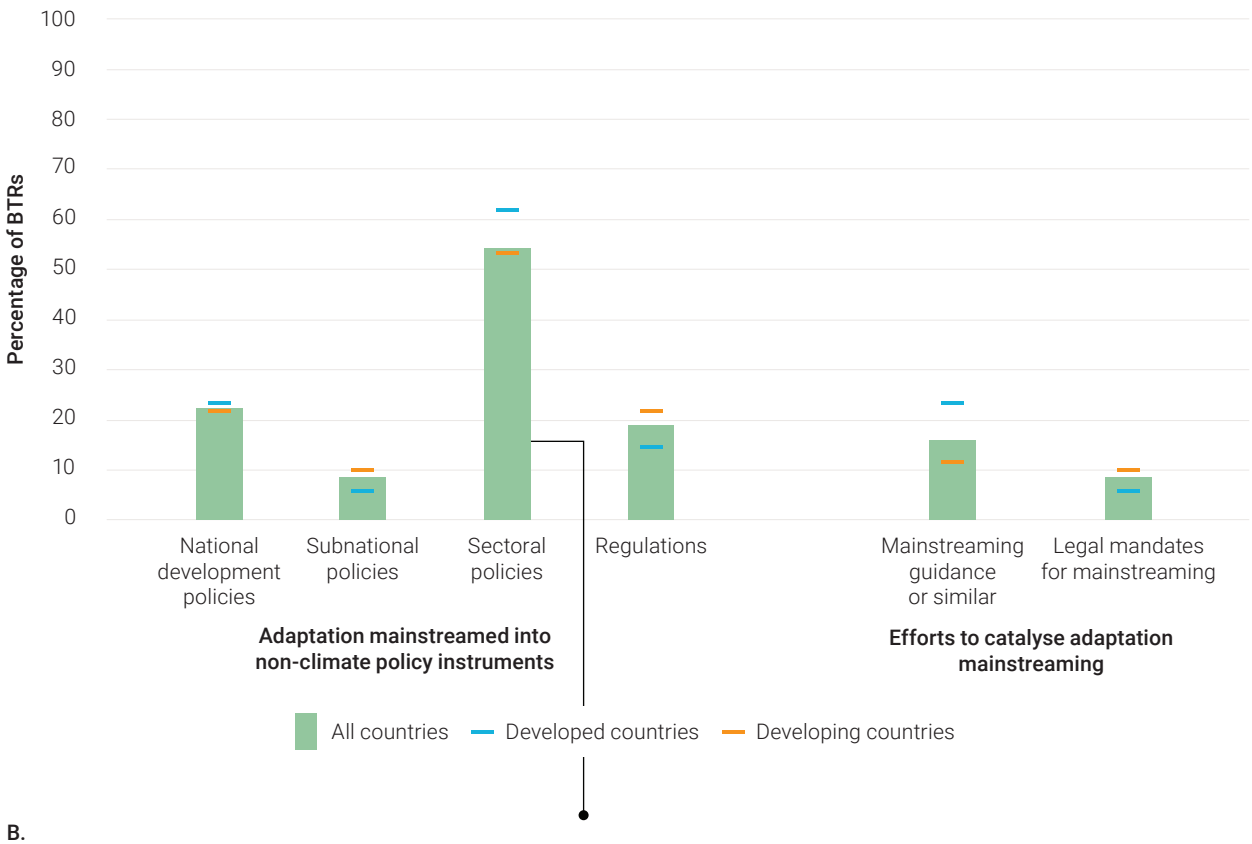
To compliment the targeted analysis presented above, this chapter also evaluates how BTRs can be leveraged to track progress in mainstreaming adaptation into policy processes across different levels and sectors. Going forward, BTRs are the only globally comparable source of data on countries' efforts to adapt to climate change. Consequently, our ability to monitor progress towards the UAE FGCR subgoal on adaptation mainstreaming is dependent on countries including relevant information in their BTRs about how adaptation is being integrated into national strategies and plans.

To evaluate the usefulness of BTRs for tracking global progress in adaptation mainstreaming, the climate change impacts and adaptation chapters of each report submitted by 31 August 2025 were reviewed. At the cut-off date, 105 countries have submitted a BTR, 94 of which contained detailed information on climate impacts and adpatation.[12] The analysis assessed whether countries reported on the mainstreaming of adaptation into policies across different levels of governance, and on initiatives implemented to catalyse mainstreaming.[13]

The methodology underlying this analysis is presented in annex 2.E. Further discussion related to the results of this analysis is presented in annex 2.F.

Figure 2.4 Percentage of countries that reported on mainstreaming adaptation into policies and initiatives aimed at catalysing mainstreaming in their BTRs, disaggregated by developed and developing countries

A.



B.

Percentage of countries reporting integration of adaptation into IPCC-related sectoral policies								
Food, fibre and other ecosystem products	Terrestrial and freshwater ecosystems	Cities, settlements and key infrastructure	Health, well-being and communities	Water, sanitation and hygiene	Livelihoods, poverty and sustainable development	Other	Cross-cutting	Ocean and coastal ecosystems
28%	23%	21%	17%	15%	14%	13%	11%	10%

12 The BTR submitted by the European Union was excluded from this analysis as it is not a nation State.

13 To count as adaptation being mainstreamed into a policy or regulation, the BTR must explicitly state that climate change adaptation and/or climate change risks have been actively integrated into the policy being described. Policies that are reported as being adaptation-relevant, having adaptation benefits or addressing climate impacts, without clear inference that adaptation considerations have influenced the design/contents of these policies/regulations, were not counted as instances of adaptation mainstreaming.

The analysis finds that 59 per cent of countries (55) reported on at least one instance of mainstreaming adaptation into non-climate plans or strategies, while two thirds of countries (62) report on at least one instance of mainstreaming or implementing initiatives designed to facilitate mainstreaming. Figure 2.4 (panel A) illustrates that reporting on mainstreaming into sectoral policies at the national level was by far most common, with 54 per cent of all countries doing this at least once. While no sector stood out as being widely reported, disaggregating by IPCC sectors indicates that countries were more likely to mainstream adaptation into policies related to agriculture and other ecosystem products, terrestrial and freshwater ecosystems, and cities and infrastructure than for other sectors (figure 2.4, panel B).

Mainstreaming into national development policies, subnational policies and initiatives to facilitate adaptation mainstreaming were poorly reported on, scoring between 9 and 22 per cent. Mainstreaming into national development policies was the second-highest scoring indicator, while mainstreaming into subnational policies and the establishment of legal mandates for mainstreaming were the lowest scoring.

Taking these results at face value suggests that while progress is being made at the sectoral level, countries are not meaningfully engaging in mainstreaming adaptation across all levels of governance, as advocated by the UAE FGCR and UNFCCC's NAP process. Similarly, it suggests that there are no clear differences in progress being made by developed and developing countries, with developed countries performing marginally better for some indicators and developing countries for others (figure 2.4, panel A).

As BTRs constitute a secondary data source however, the results of this analysis is strongly influenced by the extent to which BTRs capture the full extent of countries' adaptation mainstreaming efforts. In reality, reporting on adaptation mainstreaming is relatively ad hoc in BTRs, with countries not systematically providing information about whether adaptation has been integrated into key policies across sectors and levels of governance. For example, of the 54 per cent of countries that report on adaptation mainstreaming into sectoral policies, 47 per cent of these only cover two or fewer IPCC sectors, and most do not provide information on progress – or lack thereof – across other sectors. Similarly, only two of the nine BTRs submitted by SIDS in this analysis report on the extent to which adaptation is mainstreamed into national development policies, despite most of these being found to have strongly integrated adaptation into their national development plans and strategies in the analysis presented in section 2.3.1.

In light of the identified information gaps, BTRs – while offering some insights – currently fall short as a reliable data source for tracking global progress in mainstreaming adaptation across all relevant strategies and plans. Thus, the results illustrated in figure 2.4 are likely to underestimate the progress being made by countries. To enable processes such as the global stocktake to accurately track progress against the mainstreaming element of the UAE FGCR's planning target, reporting on adaptation mainstreaming needs to improve significantly in the next iteration of BTRs. To support improved and comparable reporting on adaptation mainstreaming, countries require clear and detailed guidance on how to track and report efforts across all levels of government.

2.4 What factors are inhibiting further progress in national adaptation planning and adaptation mainstreaming?

The above analyses of national adaptation planning and adaptation mainstreaming point to notable progress towards the UAE FGCR's target on adaptation planning. Despite shortcomings, the fact that the vast majority of countries now have a national adaptation planning instrument in place should be viewed positively. Likewise, while not being globally representative, the fact that most SIDS have integrated adaptation into their national development plans and strategies indicates that countries are taking steps to mainstream adaptation into relevant plans and strategies, even if this trend is not reflected in national reporting within BTRs.

However, the analyses presented in this chapter also point to important gaps. This is most clearly illustrated by the 25 countries that are still without a national adaptation plan, strategy or policy, and the 36 countries that possess a plan, strategy or policy that is either over 10 years old or has exceeded its period of validation. Similarly, the fact that a minority of SIDS have not integrated adaptation across all elements of their flagship development policies – despite being acutely vulnerable to the impacts of climate change – illustrates that there is still progress to be made.

Identifying how to address these gaps requires understanding the barriers to national adaptation planning and adaptation mainstreaming that are being experienced by countries. This chapter has not conducted a primary analysis of barriers to these processes; however, available literature indicates that countries are encountering a similar set of barriers to both processes. These can be summarized as:

- **Underdeveloped institutional frameworks.** Fragmented governance of adaptation and weak coordination between government actors impede both national adaptation planning and the mainstreaming of adaptation into relevant policies, causing delays and reducing the effectiveness of these processes (Clar 2019; Biesbroek 2021; UNFCCC LEG 2021; Lee, Paavola and Dessai 2023; Lewis 2024; OECD 2024a; Qi and Beauchamp 2025). Meanwhile, where clear legal mandate for adaptation is absent, government actors can perceive they do not possess the authority to engage in these processes (Kehler and Birchall 2023; Rogers, Adams and Byrne 2023; Rogers, Adams and Byrne 2024).

- **Inadequate information to guide decision-making.** To ensure that adaptation planning and mainstreaming processes are effective, policymakers require robust climate risk data generated by systemic observation systems and climate risk assessments, and information about how successful the previous planning instruments were in achieving adaptation objectives generated through monitoring, evaluation and learning systems. However, many countries – particularly SIDS and LDCs – do not have systems in place that are able to generate this information (Leiter 2021; OECD 2024b; World Meteorological Organization 2024). Where this information is not available or of low quality, policymakers will find it difficult to develop and revise planning instruments in ways that reflect emerging insights into climate risks and integrate lessons learned from previous policy cycles (Dany and Lebel 2020; Ford *et al.* 2021; Garfin *et al.* 2021; OECD 2024b; NAP Global Network 2025).

- **Human and financial resource constraints.** Insufficient financial and human resources can represent a barrier for all countries, regardless of their level of development and economic capacity (Lee, Paavola and Dessai 2023; Mix *et al.* 2024). However, these constraints disproportionately affect developing countries, in particular LDCs and SIDS (UNFCCC LEG 2021; Robinson *et al.* 2022; UNFCCC LEG 2025). For example, cash flow issues can prevent important activities (e.g. workshops, trainings, stakeholder engagement processes) from happening and therefore causing national adaptation planning and adaptation mainstreaming processes to stall (Independent Evaluation Unit [IEU] 2023). Insufficient human resources can have a similar effect. These effects are often exacerbated by frequent staff turnover in government departments, which disrupts continuity as new staff require training and leads to losses in institutional memory (Lee, Paavola and Dessai 2023; Sorgho *et al.* 2023; IEU 2023).

- **The low prioritization of adaptation as a political priority.** Operational realities such as short electoral cycles, short planning cycles, frequent political turnover, low public interest and a lack of influential champions within government can undermine governments' ability to prioritize adaptation (Lee, Paavola and Dessai 2022; Kehler and Birchall 2023; Rogers, Adams and Byrne 2023; OECD 2024a). As a result, government actors may find it difficult to sustain momentum for national adaptation planning and adaptation mainstreaming processes over longer periods of time, leading to delays in the policy process as other priorities become the focus of available resources.

Beyond the above factors, literature also points to difficulties experienced by developing countries in securing international finance to support the preparation of national adaptation planning instruments and implementation of interventions to address the capacity gaps identified above (e.g. strengthening institutional frameworks and building human capacity within relevant government actors [IEU 2023]). LDCs and SIDS have particularly struggled with climate funds' burdensome funding application processes, leading to some countries experiencing significant delays in accessing funding (UNFCCC LEG 2021; IEU 2022; IEU 2023; OECD 2023; Qi and Beauchamp 2025; UNFCCC LEG 2025). Once applications are approved, further delays in activities can be caused by slow disbursement of finance by the climate funds (IEU 2023).

The barriers identified by literature point to a series of broad areas for action and emphasize the continued need for increased finance and capacity-building to support national adaptation planning and adaptation mainstreaming processes, and investments in impact, vulnerability and risk assessments, MEL systems, and institutional development. It also highlights the need to accelerate access to financial support for adaptation planning by removing administrative bottlenecks and strengthening countries' long-term capacity to prepare and submit funding proposals.

In the Philippines, Jesus Seno Cortes has been working in urban agricultural farming since losing his work as a motorized tricycle driver during the COVID-19 pandemic.

Photo: © Mark Linel Padecio

3

Chapter 3

Global progress on adaptation implementation

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Kirangari Primary School students planting strawberry seedling. Kiambu county, Kenya, 27 July 2022.

Photo: © Derrick Milimo

Key messages

- The combined funding volume of new adaptation projects starting implementation under the Adaptation Fund, Green Climate Fund (GCF), and the two funds managed by the Global Environment Facility (GEF) – namely the Least Developed Countries Fund (LDCF) and Special Climate Change Fund (SCCF) – has increased significantly between 2019 and 2023. The five-year moving average across this period has increased by 86 per cent to US$494 million/year, with the total combined funding volume reaching almost US$920 million in 2024. While this data could indicate a new and positive trend, following a stagnation in funding for new adaptation projects since 2018, it is too early to draw a conclusion about implications for longer-term trends.

- Multilateral development banks (MDBs) are a significant provider of multilateral funding for adaptation, accounting for a total of 57 per cent of international public adaptation finance flows to developing countries. Compared to the Adaptation Fund, GCF, LDCF and SCCF, MDBs employ a different mix of financial instruments which in turn leads to differences in sectoral focus and scale in implementation. In particular, it leads to a greater focus on infrastructure. Currently, the available data on MDB-funded adaptation projects lack detail, which hinders in-depth analysis of MDBs' contribution to adaptation implementation and results globally.

- As at 31 August 2025, 94 countries have submitted a biennial transparency report (BTR) to the United Nations Framework Convention on Climate Change (UNFCCC) containing detailed information on climate impacts and adaptation. While this volume of BTRs is promising, a number of gaps exist that undermine their ability to adequately inform global assessments of adaptation:

  - The coverage provided by the BTRs submitted is unequal across different country classifications and regions, with least developed countries (LDCs), small island developing States (SIDS) and African countries particularly underrepresented.

  - Information on adaptation action and the results of adaptation accounts for a small proportion of all information included in BTRs (just over 20 per cent). The majority of the information in these documents relates to climate hazards, systems at risk, climate impacts and adaptation priorities.

  - Compared to the other thematic targets of the United Arab Emirates Framework for Global Climate Resilience (UAE FGCR), there is relatively little information related to the thematic targets of health, poverty alleviation and livelihoods, and cultural heritage.

- The consistency of adaptation reporting within BTRs needs to improve to enable comprehensive assessments of progress towards the UAE FGCR targets. Most countries do not consistently link information on climate hazards, climate impacts and risks with information on adaptation priorities, actions and results. In addition, when reporting on progress in implementation and results, many countries do not provide information about progress made in implementing priorities set out in key planning instruments such as national adaptation plans (NAPs) and the adaptation components of nationally determined contributions (NDCs). This information forms the basis of the UAE FGCR's target on implementation and is therefore required to assess progress towards this target.

3.1 Introduction

While planning and financing are important to enable adaptation, to understand implementation and its effectiveness, assessments of adaptation actions that have been undertaken or completed are needed. This year, this chapter assesses the status of global implementation efforts using two types of publicly available global data sources: data on adaptation projects implemented with financial support from MDBs and the four funds that serve the UNFCCC and the Paris Agreement, and BTRs, in which countries describe their adaptation efforts, which includes providing information about their implementation and results. The first round of BTRs were due by the end of 2024; these have provided an opportunity to assess countries' current implementation progress on adaptation and the quality of their adaptation reporting. The analysis provides practical insights for improving adaptation reporting in the next round of BTRs. These are due by the end of 2026 and will be an important input for the second global stocktake. The analysis also assesses to what extent current reporting on adaptation enables an assessment of progress towards the UAE FGCR, and how global adaptation indicators considered under the UAE-Belém work programme could enhance global adaptation assessments.

Understanding global progress on adaptation implementation requires combining multiple data sources (Garschagen *et al.* 2022). Each year, therefore, this chapter on implementation analyses various data sources with global coverage, as they become available – like the BTRs this year (see annex 3.A). While the stocktake of adaptation projects under the Adaptation Fund, GCF, and the two funds managed by the GEF (the LDCF and SCCF), is updated annually, other sources are reviewed less often (see table 3.A.1 in annex 3.A). This chapter only includes actions that are already under implementation or have been completed. It therefore does not include actions that have only been proposed or approved. The term 'actions' is used as an umbrella term to cover any type of implementation. Annex 3 gives details about the methodologies and data sources used.

3.2 Implemented adaptation under international funding

3.2.1 Implemented adaptation projects funded by the Adaptation Fund, the Green Climate Fund, and the two funds managed by the GEF (the LDCF and SCCF)

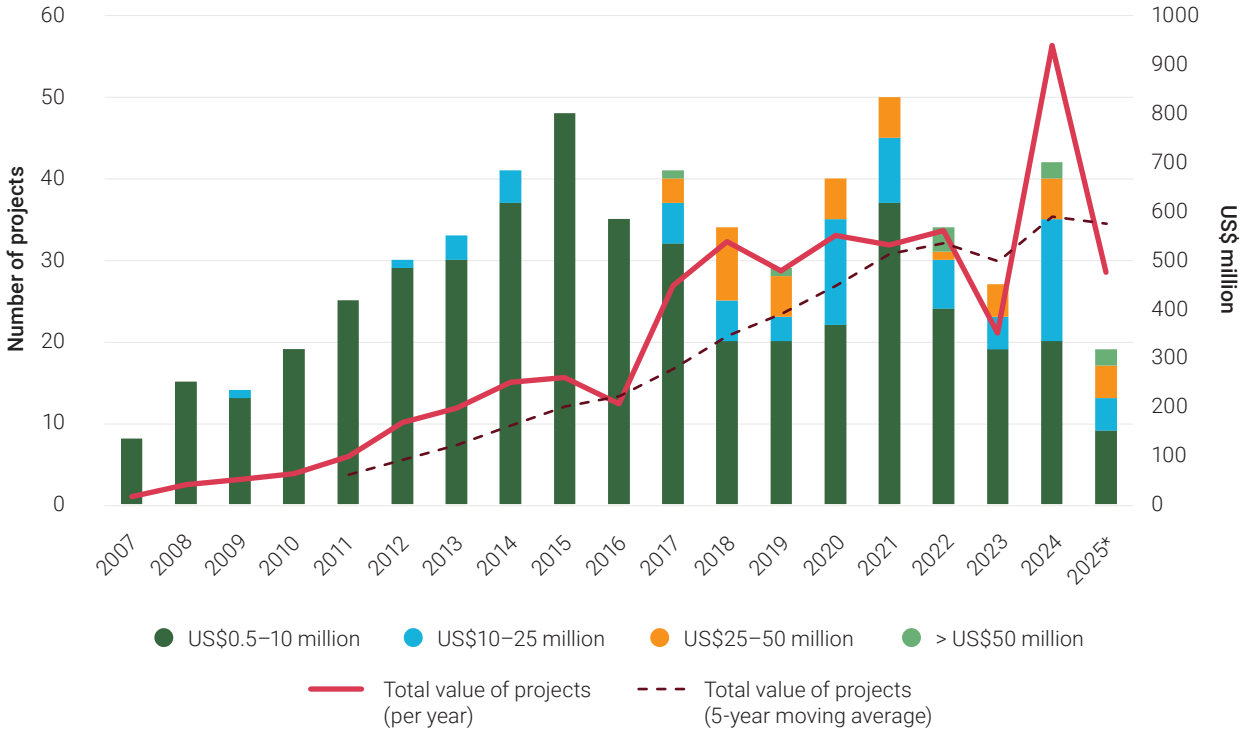
Figure 3.1. presents an updated stocktake of the number of new adaptation projects per year, their size, and combined annual funding volume in grants since 2007 for the four funds that serve the UNFCCC and the Paris Agreement: the Adaptation Fund, GCF, LDCF and SCCF.[1]

Since 2018, funding for new adaptation projects from these funds had stagnated. However, data from 2024 and 2025 show a large spike in 2024, with grants for new adaptation projects under the four funds reaching a total value of almost US$920 million, compared to a moving average of US$494 million/year between 2019 and 2023 (figure 3.1). There are indications that this trend has continued into 2025, though data for the year is still incomplete. While this data could indicate a new and positive trend in the scale of implementation under these funds, it is too early to draw a conclusion about implications for longer-term trends. Indeed, the overall trend in international public climate finance commitments (figure 4.4) does not indicate or explain any abrupt increases in adaptation project finance.

At the same time the trend towards larger funding volumes per project (United Nations Environment Programme [UNEP] 2023; UNEP 2024a) has continued, with projects attracting over US$10 million in grants accounting for 36 per cent of all new adaptation projects beginning implementation since 2017, while 16 per cent of all projects beginning over this period had a grant-value of over US$25 million. For comparison, in 2017, implementation began for almost the same number of adaptation projects as in 2024, but the combined funding value was less than half the total for 2024 (figure 3.1). Despite this positive trend, neither the number nor the size of new adaptation projects, nor the total amount of funding provided through the four funds is adequate given the observed acceleration in climate impacts.

1 Note that the GCF and the SCCF also fund cross-cutting projects that jointly address mitigation and adaptation. These projects are not included in the analysis presented in section 3.2, but they were examined in detail in the 2022 edition of this report (UNEP 2022).

Figure 3.1 Number of new adaptation projects, by start year, size and combined annual funding value (grants only) under the Adaptation Fund, the GCF, and the two funds managed by the GEF (the LDCF and the SCCF), as at 31 August 2025



*** Until 31 August 2025**

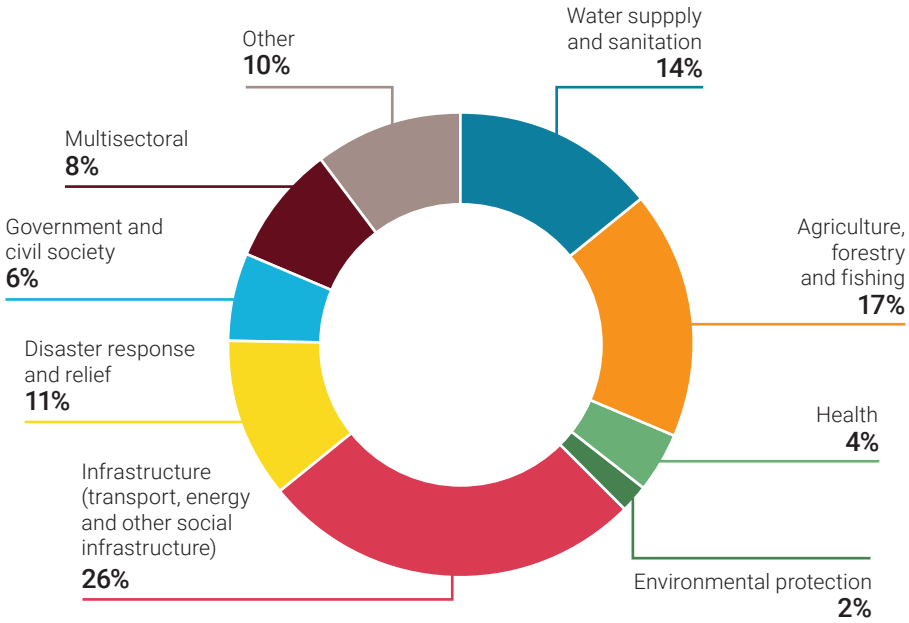
3.2.2 Implemented adaptation funded by MDBs

MDBs are an important source of funding for implementation, accounting for 57 per cent of international public adaptation finance flows to developing countries (see chapter 4). Infrastructure (transport, energy and other social infrastructure) has been the dominant sector in terms of implementation funding, receiving an average of 26 per cent of disbursed MDB adaptation finance over the five-year period 2019–2023. It is followed by agriculture, forestry and fishing, with an average of 17 per cent, and water supply and sanitation, with an average of 14 per cent (see figure 3.2). This sectoral distribution has remained relatively stable since 2019.

The share of implementation funded by MDBs in the agriculture and water sectors is in line with the implementation focus of projects under the Adaptation Fund, GCF, and the two funds managed by the GEF (the LDCF and SCCF), and it reflects the adaptation finance priorities expressed by developing countries (see figure 5.3 in UNEP 2021a and section 4.2.2 in this report). However, while infrastructure receives the greatest share of implementation finance from MDBs, it accounts for less than 5 per cent of all implemented projects under the Adaptation Fund, GCF, LDCF and SCCF (see figure 5.3 in UNEP 2021a). This contrast shows that different types of adaptation actions are being funded by MDBs and by the UNFCCC financial mechanism,[2] and through a different mix of financial instruments. More than half (57 per cent) of MDBs' adaptation commitments are provided through debt instruments, whereas the UNFCCC financial mechanism has so far been predominantly grant-based, albeit typically with project funding sizes of less than US$10 million under the Adaptation Fund, LDCF and SCCF. Accordingly, implementation under the UNFCCC financial mechanism has focused more on capacity-building and on interventions on a smaller scale, although this is changing thanks to the larger funding volumes provided by the GCF, which also increasingly uses other financial instruments (see section 3.2.1).

2 The UNFCCC financial mechanism comprises the funds that officially serve the UNFCCC and the Paris Agreement, namely the Adaptation Fund, GCF, and the two funds managed by the GEF (the LDCF and SCCF).

Figure 3.2 Implemented adaptation funded by MDBs, by sector in the period 2019–2023



To track adaptation finance, MDBs have adopted a joint methodology under which activities have to demonstrate a link to climate risks and projects have to state an explicit intent to reduce vulnerability (European Investment Bank 2022, pp. 58–64). This methodology differentiates among adaptation activities, categorizing them as climate-proofing (i.e. enabling the achievement of intended results despite anticipated climate risks), directly reducing climate risks, or reducing the underlying causes of vulnerability (see annex 3.B). However, MDBs do not disclose how their adaptation finance is distributed among these three categories, and empirical research shows that projects' intended effects on vulnerability often do not materialize or are not sustainable (Eriksen *et al.* 2021; Mills-Novoa 2023; see also the lessons from evaluations of adaptation projects in chapter 3 of UNEP 2024a). This lack of transparency on the proportional financing of different types of adaptation action, and very limited access to detailed information about the projects supported (project titles and documents, amount and type of financing, results) currently prevents deeper analysis of MDBs' contribution to adaptation implementation globally. Ideally, going forward, MDBs would allow third-party access to project-level data, enabling independent analysis and verification of the data currently provided at aggregate level in the annual *Joint Report on Multilateral Development Banks' Climate Finance* (for the 2024 summary report, see African Development Bank *et al.* 2025). To complement project-specific adaptation indicators, MDBs have developed an initial set of 16 indicators that are intended to facilitate common results reporting, but these are yet to be operationalized (African Development Bank *et al.* 2024). Aligning these more closely with the indicators for the UAE FGCR that are scheduled for adoption at the thirtieth Conference of the Parties to the UNFCCC (COP 30) could eventually create synergies and coherence in reporting. Currently, no aggregated reporting on adaptation results from MDBs is available.

3.3 Assessing adaptation in biennial transparency reports

Under the Paris Agreement, countries "should provide information related to climate change impacts and adaptation" every two years via BTRs (article 13.8).[3] While it is not mandatory, the information "should" be provided "in accordance with" a list of topics that cover the whole of the adaptation cycle, including climate risks, planning, implementation and results of adaptation (see figure 1.1, chapter 1). Moreover, it should follow the structure agreed in the modalities, procedures and guidelines for the transparency framework for action and support referred to in article 13 of the Paris Agreement (see annex 3.C, box 3.C.1). Since all countries are obligated to submit BTRs, and should prepare them using the standardized list of topics provided by the modalities, procedures and guidelines, these reports are a key data source for assessing global progress on adaptation.

3 Adaptation reporting under the Paris Agreement is explained in annex 3.C.

Section 3.3 presents an assessment of BTRs submitted by 31 August 2025.[4] The purpose of this assessment is to evaluate the quality of reporting within BTRs, identify what these documents tell us about adaptation efforts and implementation and highlight areas where future BTRs should be strengthened. This analysis is informed by a systematic data-gathering exercise, the methodology for which is found in annex 3.C.

3.3.1 Coverage and level of detail of adaptation reporting

As at 31 August 2025, 105 countries had submitted a BTR, of which 94 include details on adaptation (see figure 3.3, panel A and annex 3.C).[5] The proportion of countries reporting on adaptation through BTRs far surpasses those previously reporting on adaptation via adaptation communications, which are currently only available for 35 countries as stand-alone documents (see UNEP 2023, chapter 3). The fact that the first round of BTRs has much greater coverage across countries means they represent a unique opportunity to analyse countries' adaptation efforts comprehensively and across regions.

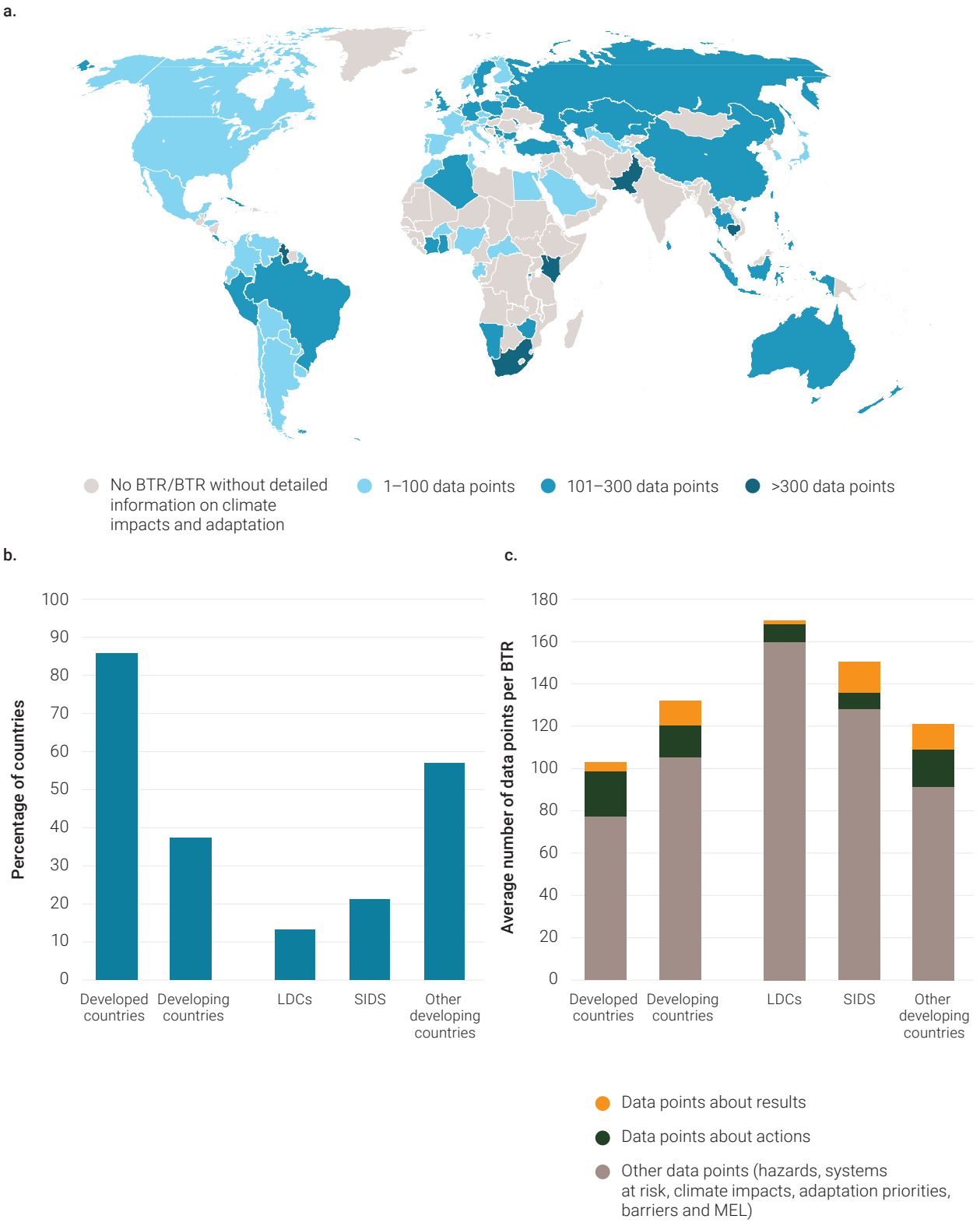
However, the BTRs provide uneven coverage across country classifications and United Nations regional groupings. For example, while 58 of the 94 BTRs have been submitted by developing countries, this only represents 37 per cent of all developing countries (figure 3.3, panel B).[6] Developed countries are much better represented, with 86 per cent having submitted a BTR containing detailed information on climate impacts and adaptation (36 countries). Within the developing countries bracket, only eight SIDS (21 per cent) and six LDCs (14 per cent) have submitted BTRs with detailed information on climate impacts and adaptation, which could indicate that preparing national reports such as BTRs is most burdensome for the countries with the least capacity. The proportion of countries that have submitted BTRs also differs across United Nations regions, with Western Europe and Other States having the highest coverage (85 per cent) and African States the lowest (32 per cent; see figure 3.3, panel A). Imbalances in BTR submission across different country classifications and regions will lead to biases in the data that can be extracted from BTRs and thus needs to be considered when assessing adaptation progress. In the short-term, these imbalances emphasize the need for global assessments of adaptation – for example under the global stocktake – to use a diverse range of data sources. In the longer-term, to enable the BTRs to serve as a representative global evidence base, enhanced financial and capacity-building support for adaptation reporting should be made available to LDCs, SIDS and African countries.

4 The deadline for BTR submission was 31 December 2024. However, due to a significant number of countries submitting BTRs after this deadline, the cut-off date applied in this analysis was extended to 31 August 2025.

5 As at 31 August 2025, 106 Parties to the Paris Agreement had submitted a BTR to the UNFCCC. Although a party to the Paris Agreement, the European Union has been removed from this analysis as it is not a nation State.

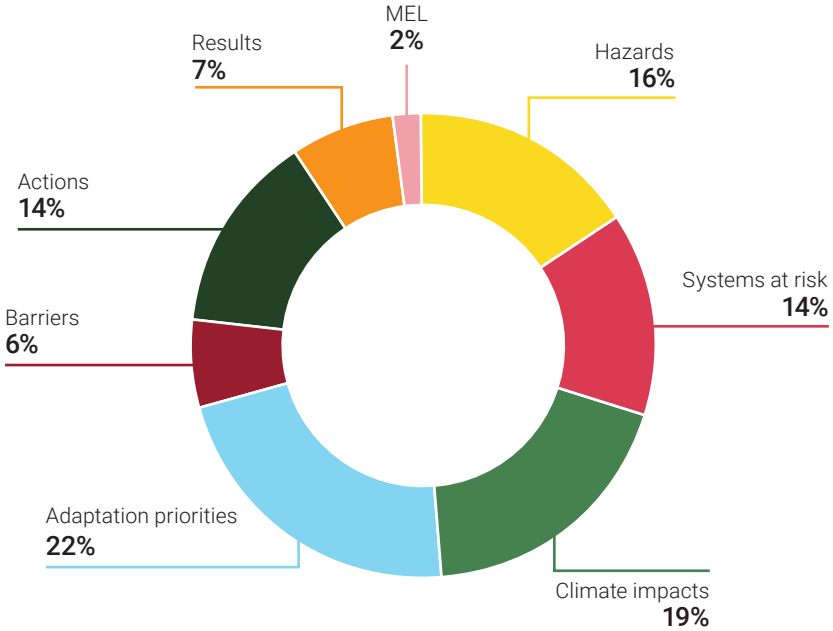
6 In this analysis, the term 'developed countries' refers to country Parties to the UNFCCC included on the list of Annex I countries in the Kyoto Protocol. The term 'developing countries' refers to all other country Parties to the UNFCCC that are not included on that list.

Figure 3.3: **Panel A** Global distribution of countries that have submitted a BTR with detailed information on climate impacts and adaptation as at 31 August 2025, and the number of data points per country. **Panel B** Proportion of countries within different country classifications that have submitted a BTR with detailed information on climate impacts and adaptation. **Panel C** Average number of data points per country on adaptation actions and results, compared to data points on other topics, broken down by country classification



Understanding adaptation progress requires information on adaptation actions, the context in which they are implemented and their results. While many countries have aligned their BTRs with the structure of the modalities, procedures and guidelines (see annex 3.C, box 3.C.1), there are notable differences in the level of detail of BTRs across countries and regions.[7] The level of detail in the BTRs submitted ranges from fewer than 100 to more than 300 data points[8] across key topics, with only a few countries having substantially higher levels of detail (more than 300 data points related to adaptation). Information on implementation and results is key to assessing progress, but countries are disproportionately reporting on climate hazards, systems at risk, climate change impacts and adaptation priorities. These account for 70 per cent of the data points, while data points related to actions and results account for just 14 per cent and 7 per cent, respectively (figure 3.4). This lack of data on actions and results hinders the assessment of progress. It also highlights where reporting in the second round of BTRs, due in 2026, needs to be strengthened.

Figure 3.4 Overview of the distribution of data points related to adaptation topics across all 94 BTRs containing detailed information on climate impacts and adaptation



BTRs also constitute an important source of information for assessing progress towards the targets under the UAE FGCR.[9] Among the 94 BTRs with information on adaptation, the quantity of information on each of the seven themes of the UAE FGCR differs substantially, with most data available for biodiversity and ecosystems (24 per cent of the total number of data points extracted), followed by food and agriculture (17 per cent). Health, and poverty alleviation and livelihoods, have a markedly lower level of reporting, while information related to cultural heritage is almost entirely absent (see figure 3.5, panel A). The low level of data related to cultural heritage may reflect the fact that it has only recently emerged as a prominent theme within adaptation (Sesana *et al.* 2021). Similarly, low levels of data related to poverty alleviation and livelihoods may be due to it being a cross-cutting theme that often features implicitly within the sectoral themes of agriculture, water and ecosystems.

Notable differences also exist across different country classifications (figure 3.5, panel B). For example, food and agriculture is a prominent theme in developing countries (representing 20 per cent of all data points), particularly SIDS and LDCs (24 and 27 per cent respectively) but less so in developed countries (10 per cent of all data points). Similarly, data related to biodiversity and ecosystems features prominently in all country classifications except the LDCs.

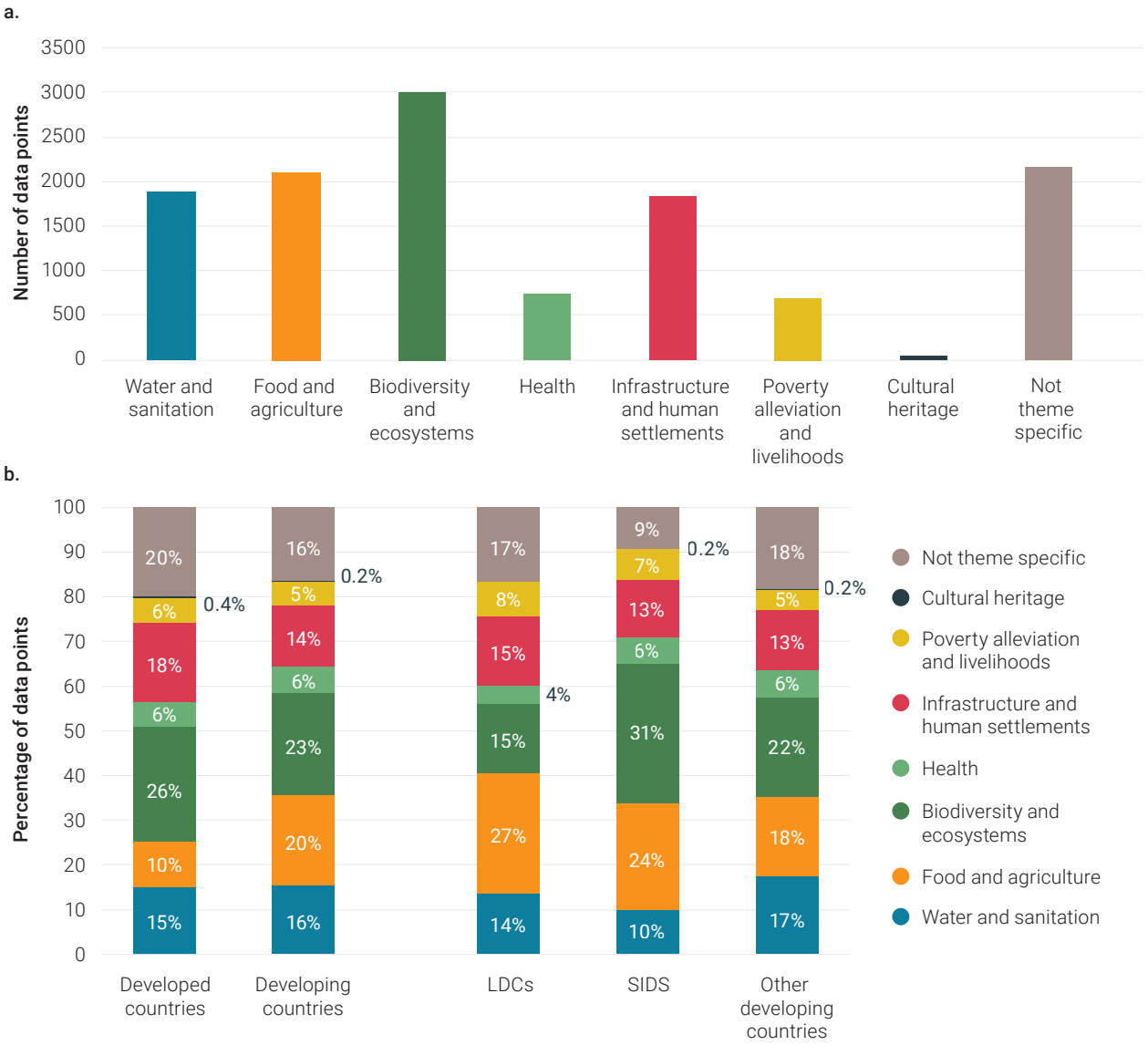
7 The level of detail is expressed by the number of adaptation-relevant data points that were extracted from each BTR based on the data extraction protocol (see annex 3.C).

8 A data point refers to a segment of text (such as a statement or block of text) in a BTR that contains information on any of the topics relevant for assessing climate impacts and adaptation. During data extraction, these text segments were copied into an Excel database, where they were tagged and analysed in line with the protocol described in annex 3.C.

9 As confirmed in Decision 2/CMA.5, para 15 (UNFCCC 2024) and in Decision 3/CMA.6, para 34 (UNFCCC 2025).

The distribution of themes is likely to reflect the relative importance of certain sectors across country classifications and regions. However, uneven coverage of the themes will hinder the comprehensive assessment of progress towards the targets of the UAE FGCR.

Figure 3.5: **Panel A** Number of data points per theme of the UAE FGCR. **Panel B** Distribution of data points across UAE FGCR themes disaggregated by different country classifications groups



3.3.2 Adaptation actions reported in biennial transparency reports

While NAPs and NDCs reflect intentions and priorities, reporting instruments such as BTRs can provide evidence of implementation, which is essential to track adaptation progress. Of the 94 BTRs with information on adaptation, 68 BTRs (72 per cent) include detailed information on adaptation actions. The remaining BTRs offer general descriptions, for example, listing projects or programmes without providing sufficient detail on the type and extent of actions. In other cases, countries note that their adaptation actions are set out in other documents (for example, NAPs, national adaptation strategies or national communications). Developed and developing countries that are neither LDCs nor SIDS typically provide more data about adaptation actions (20.9 and 15.4 data points per BTR respectively) than their LDC and SIDS counterparts (7.5 and 8.1 respectively; see figure 3.3, panel C).

In total, 1,640 adaptation actions were identified in 68 BTRs. Unlike in NAP progress reports, where countries assess the implementation status of NAP actions (UNEP 2024a, chapter 3), information on each action's stage of implementation is often not provided in BTRs. By showing how reported actions are contributing to the implementation of NAPs and of adaptation components of NDCs, the

second round of BTRs can enable better assessment of progress towards the priorities communicated through these documents (Dale and Bakhtiari 2025).

Mapping the 1,640 adaptation actions against the thematic targets of the UAE FGCR reveals a distribution similar to that found for all information reported in the BTRs (figure 3.4) There are a relatively large number of actions reported in areas such as biodiversity and ecosystems (23 per cent), infrastructure and human settlements (18 per cent), water and sanitation (16 per cent), and food and agriculture (14 per cent). In contrast, actions targeting health and poverty alleviation and livelihoods are reported far less frequently (each accounting for 5 per cent), while those addressing cultural heritage are nearly absent, accounting for less than 1 per cent of all actions reported.[10]

The adaptation actions reported were analysed using a typology developed by Berrang-Ford *et al.* (2021). This analysis shows that almost half of the actions reported in BTRs are institutional in nature, with government policies, programmes and research being particularly prominent (48 per cent). The second category is natural resource-based approaches (25 per cent), within which water management is especially prominent. The third biggest category of actions relate to efforts to reduce climate risk by adjusting behaviour/organizational cultures (22 per cent). Finally, structural/technological actions are the least reported category in the BTRs (5 per cent). This distribution of adaptation actions across these action types contrasts with evidence of implementation reported in peer-reviewed literature, which highlights a dominance of behavioural and structural/technological actions (Berrang-Ford *et al.* 2021). The difference may stem from national reports emphasizing government-endorsed actions, while peer-reviewed studies often document local initiatives by communities, households and individuals. This demonstrates that BTRs are unlikely to capture the whole range of adaptation action under way in a country. It suggests, moreover, that global assessments of progress in adaptation implementation should draw upon additional data sources beyond BTRs and other government-led reports in order to obtain a comprehensive understanding of progress being made.

3.3.3 Adaptation results reported in biennial transparency reports

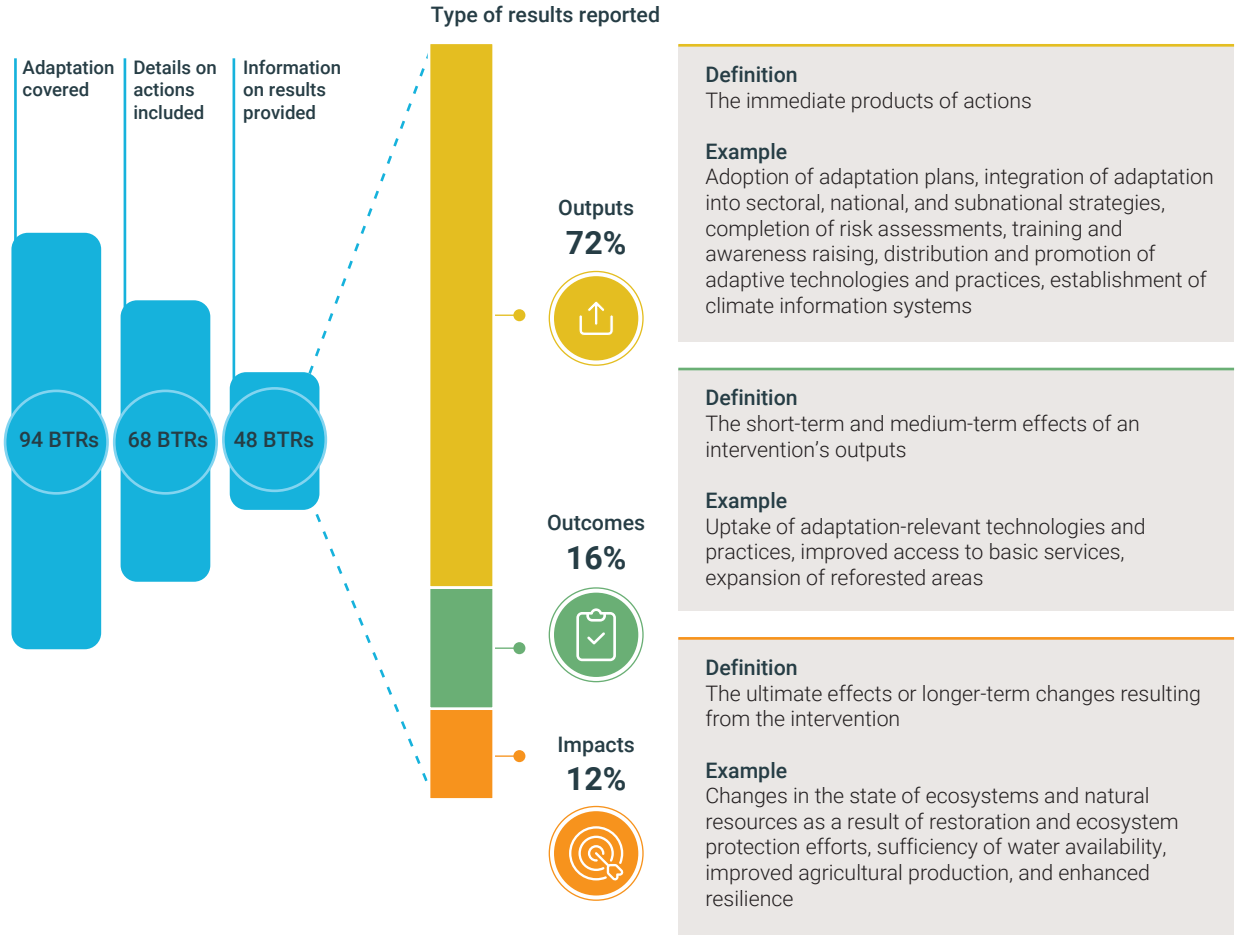
Just half of the countries that provide details on adaptation in their BTRs also report information on the results of their adaptation efforts. Nearly three-quarters of reported results are outputs (the immediate products of interventions), while outcomes (intermediate changes) and impacts (ultimate or long-term effects) account for 16 per cent and 12 per cent, respectively (see figure 3.6). The majority of countries describe the results of adaptation initiatives, e.g. of concrete projects or programmes. This information is typically generated by the monitoring, evaluation, and learning (MEL) systems of the adaptation initiatives being reported on or by monitoring undertaken by subnational authorities (see Cran 2023; UNEP 2024a), and not national-level adaptation MEL systems – except where subnational MEL systems feed into the national MEL system (Leiter 2015). This explains why the number of countries able to provide information on results (48) was greater than the number of countries reporting the existence of national adaptation MEL systems (36) (see section 3.3.4).

Beyond reporting on the results of adaptation initiatives, some countries also report implementation progress relative to targets, baselines or completion levels (e.g. Algeria, Chile and Nepal), while others refer to progress made towards priorities set out in their NDCs (e.g. Kenya). More consistent reporting on progress towards implementing NAPs, NDCs and other national adaptation planning instruments, or progress towards achieving targets contained within these instruments would support a more systematic assessment of the implementation of adaptation plans and priorities (Dale and Bakhtiari 2025) and provide a better basis for assessing progress towards the UAE FGCR implementation target.[11]

10 In total, 19 per cent of the 1,640 actions reported on were not specific to a thematic target. In most cases, these actions were cross-cutting. For example, developing a NAP or conducting national impact, vulnerability and risk assessments.

11 The UAE FGCR's target on implementation states that "by 2030 all Parties have progressed in implementing their national adaptation plans, policies and strategies and, as a result, have reduced the social and economic impacts of the key climate hazards identified in the assessments referred to in paragraph 10(a) above" (Decision 2/CMA.5 [UNFCCC 2024, p. 24]).

Figure 3.6 Frequency and types of adaptation results reported in BTRs



Source: Definitions adapted from OECD (2023)

To assess whether adaptation actions are reducing vulnerability and enhancing adaptive capacities and climate resilience, information on results beyond immediate outputs is needed (see definitions in figure 3.6). Assessments of adaptation outcomes face various challenges, which are compounded at the national and global level (UNEP 2017; Leiter and Pringle 2018; Garschagen *et al.* 2022; Singh *et al.* 2022; Goodwin and Olazabal 2025). Just five countries have assessed how well their NAPs enable responses to observed and projected climate risks, and all five concluded that "NAP implementation is inadequate and ineffective relative to the extent of climatic risks" (UNEP 2024a, p. 35). The difficulties of assessing adaptation outcomes therefore constitute the first hurdle to increased results reporting. The second hurdle is limited capacities and resources to develop and implement adaptation MEL systems.

While many BTRs report on how adaptation processes take into account gender and social inclusion (GESI) (box 3.1), only 4 per cent of the results reported through BTRs are directly related to GESI, and they come from just seven countries. GESI-related results include statements on the inclusion of gender and intersectional approaches in vulnerability and risk assessment and planning (Chile, Nepal), disaggregating data on the reach and beneficiaries of interventions by gender (Kenya, Nepal, Peru), empowering women by supporting their uptake of adaptive practices and participation in decision-making (Ghana) and promoting gender-responsive budgeting across all ministries (Nepal).

It is also essential to recognize the challenges and constraints that impede the translation of adaptation priorities into actions, as well as the gaps between actions and their intended results. Countries highlight a wide range of barriers across the adaptation cycle that constrain their ability to plan, implement and assess adaptation. Informational, financial and institutional barriers are the challenges most frequently cited, in line with findings from NAP progress reports, adaptation communications and literature reviews (UNEP 2023, chapter 3; UNEP 2024a). These barriers are often interconnected, as financial constraints limit investments in capacity development and institutional strengthening, thereby reinforcing challenges across the adaptation cycle. Countries should strive to provide detailed information in their BTRs about contextual linkages between adaptation barriers and how barriers

have been overcome (Eisenack *et al.* 2014; Lee, Paavola and Dessai 2022; Dale and Bakhtiari 2025).

3.3.4 Information on the monitoring, evaluation and learning system

Out of the 94 countries with information on adaptation in their BTRs, 36 report on MEL systems that aim to track the implementation of adaptation actions. They explain, for instance, how the MEL system functions, how data is gathered and shared, and how domestic reporting is done. In some of the 36 countries, the national adaptation MEL system is still under development. Given that a global stocktake of NAP MEL systems in 2021 found that more than 50 countries were in the process of developing a national adaptation MEL system and 22 countries had active reporting on NAP implementation (Leiter 2021), the coverage on adaptation MEL systems in BTRs is lower than expected. In line with the UAE FGCR target under which every country commits to establishing and operationalizing a MEL system for their national adaptation efforts (Decision 2/CMA.5, para. 10d [UNFCCC 2024]), the second round of BTRs needs to provide more information on efforts to develop and undertake MEL of adaptation actions and results.

It is noteworthy that only 12 countries list adaptation indicators in their BTRs. This contrasts with the 48 countries that provide information on results (see figure 3.8) and with the 43 countries whose NAPs include indicators (NAP Global Network 2025). The gap can be partly explained by countries referring to their domestic NAP implementation reports, which were analysed in the 2024 Adaptation Gap Report, rather than restating all available details in their BTR. In other cases, countries with indicators in their NAPs have not yet operationalized a MEL system that enables data gathering and reporting. To support a coherent assessment of progress towards the second global stocktake, countries need to increase transparency around how information on implementation and results is being generated.

In total, 229 indicators were identified across these 12 BTRs. Concerningly, just over one-third have a clear and direct link to adaptation, while a further one-fifth have at least a potential link to it. Almost one-third of the 229 indicators have no connection to adaptation or their wording on the matter is unclear. This finding highlights the need for better quality adaptation MEL systems and for further capacity-building, as stipulated by a UAE FGCR target.[12] Reporting on a global set of adaptation indicators, such as the list of 100 indicators proposed by a mandated expert group (Indicator Expert Group 2025a; Indicator Expert Group 2025b) requires countries to have operational MEL systems, including indicators. In the next round of BTRs, countries could provide more information on their adaptation MEL systems and the further efforts required to operationalize them. They could also reflect on the level of alignment between the indicators in use and indicators under the UAE FGCR and describe the support they need to report against global adaptation indicators.

In future rounds of the global stocktake, the global list of indicators under the UAE FGCR will be crucial for establishing a common reference point for assessing adaptation results and progress. To ensure meaningful reporting, however, countries require targeted support to develop and strengthen MEL systems, including indicators, that can effectively feed data into the global indicators for the UAE FGCR.

3.3.5 Consistency of information within biennial transparency reports

The quality of adaptation reporting is not only determined by the scope, relevance and detail of the information provided, but also by the extent to which it enables links to be consistently drawn between climate hazards, systems at risk, climate impacts, adaptation priorities, actions and their results (Nowak *et al.* 2024; Reckien *et al.* 2025). To assess consistency within BTRs, the coverage of systems at risk and climate impacts was compared to that of actions and results (see annex 3.C). The resulting consistency score shows how closely information provided about actions matches information provided about climate-related risks and climate impacts: values approaching 1 reflect strong alignment, while values closer to 0 indicate a mismatch, signalling inconsistency.

A consistency score of zero means that the BTR lacks information to enable a comparison. This score was allocated to 29 countries, primarily because their BTRs contained insufficient information on actions and results to enable comparison. The consistency score of the remaining countries ranges between 0.151 and 0.914. On average, SIDS have the lowest average consistency scores (0.28) due to limited reporting on actions and results (see figure 3.3, panel C) while developed countries have the highest average consistency score (0.517).

These scores imply that many countries need to increase the quality of their reporting by more clearly linking information provided on climate hazards, risks and impacts to adaptation actions and their results to enable an assessment of adequacy and effectiveness. Countries can establish this link in their reporting by ensuring that descriptions of actions include their adaptation rationale

12 The UAE FGCR target on monitoring, evaluation and learning states that "by 2030 all Parties have designed, established and operationalized a system for monitoring, evaluation and learning for their national adaptation efforts and have built the required institutional capacity to fully implement the system" (Decision 2/CMA.5, para 10d [UNFCCC 2024, p.24]).

and descriptions of outcomes and impacts clearly articulate their relevance to present and projected climate risks.

Using South Africa's BTR as an example, figure 3.7 provides an illustration of what consistent reporting looks like in practice.

Figure 3.7 Illustrating strong linkages between information provided within the climate impact and adaptation chapter of South Africa's BTR

How did South Africa use its BTR to showcase the results of implemented adaptation actions?	Example 1: Agriculture	Example 2: Water
1 Provided information about observed and projected **climate hazards**	**Hazards** • Heat stress and heat waves • Drought	**Hazards** • Increased drought conditions • Changing rainfall patterns
2 Identified **key vulnerabilities** of sectors deemed to be at high risk to climate change	**Key vulnerabilities** • High dependence on rainfed agriculture • Limited irrigation infrastructure • Soil erosion and land degradation • Limited access to resilient agricultural practices	**Key vulnerabilities** • Water sector strongly sensitive to extreme weather events • Overpopulation and urbanization increase imbalance in water supply
3 Described observed and expected **impacts of hazards** upon sectors	**Climate impacts** • Decline in crop yield, suitability and quality due to heat waves, heat stress and drought • Loss of livelihood and market opportunities	**Climate impacts** • Decline in water availability and supply
4 Using information about climate impacts, provided an overview of planned **adaptation actions** intended to reduce the risks and vulnerabilities	**Adaptation actions** • Sustainable natural resource management • Capacity building and education • Guidelines for implementation of climate smart agriculture	**Adaptation actions** • Investing in monitoring systems for rainfall, river flows, and groundwater data collection • Promoting sustainable water management • Implementing awareness campaigns
5 Provided information on **progress in implementing** planned adaptation actions (i.e. outputs)	**Outputs** • Under the action "sustainable natural resource management", sustainable agriculture initiatives, such as monitoring conservation agriculture practices, are ongoing	**Outputs** • Under the action "Integrated Water Resource Management", monitoring water use is in operation and educational initiatives promoting efficient water use are ongoing
6 Described the **outcomes and impacts** of the implemented actions	**Outcomes and impacts** • Improved soil quality • Increased agricultural productivity • Greater sustainability leading to increased resilience of farmers against climate change	**Outcomes and impacts** • More sustainable water consumption • Increased water availability • Improved water security

While detailed BTRs with many data points tend to get higher consistency scores, the relatively short climate impact and adaptation chapters of Gabon and Egypt's BTRs – scoring 0.831 and 0.912, respectively – illustrate that consistency does not rely on a large number of data points. Even relatively short adaptation chapters can achieve high consistency scores if the information on climate risk is clearly linked to actions and results. For instance, while Egypt's BTR contains 57 data points, it still achieves a strong alignment across multiple sectors

by presenting information on both systems at risk and impacts alongside actions in the same sectors. This shows that consistency depends as much on the balanced coverage and structuring of information as on the sheer number of data points.

Recent studies employing a similar methodology have found substantial gaps in consistency. Only 40 per cent and 9 per cent of African NAPs and NDCs, respectively, provide consistent links between climate risks, priorities, and implementation plans (Nowak *et al.* 2024). Seventy per cent of adaptation plans in European cities show inconsistency in at least one connection along the chain from hazards to results (Reckien *et al.* 2025). These findings are confirmed by the analysis of BTRs, which found an average consistency score of 0.44 across all countries, and 0.63 when excluding the 29 countries whose BTRs were missing information on actions and results. The analysis further shows that African countries with high consistency scores in NAPs and NDCs (based on Nowak *et al.* 2024) also tend to have high consistency scores in their BTRs, suggesting that improving consistency in reporting instruments should begin with strengthening planning instruments (see chapter 2). This would facilitate the integration of this information into BTRs.

Box 3.1 GESI in BTRs

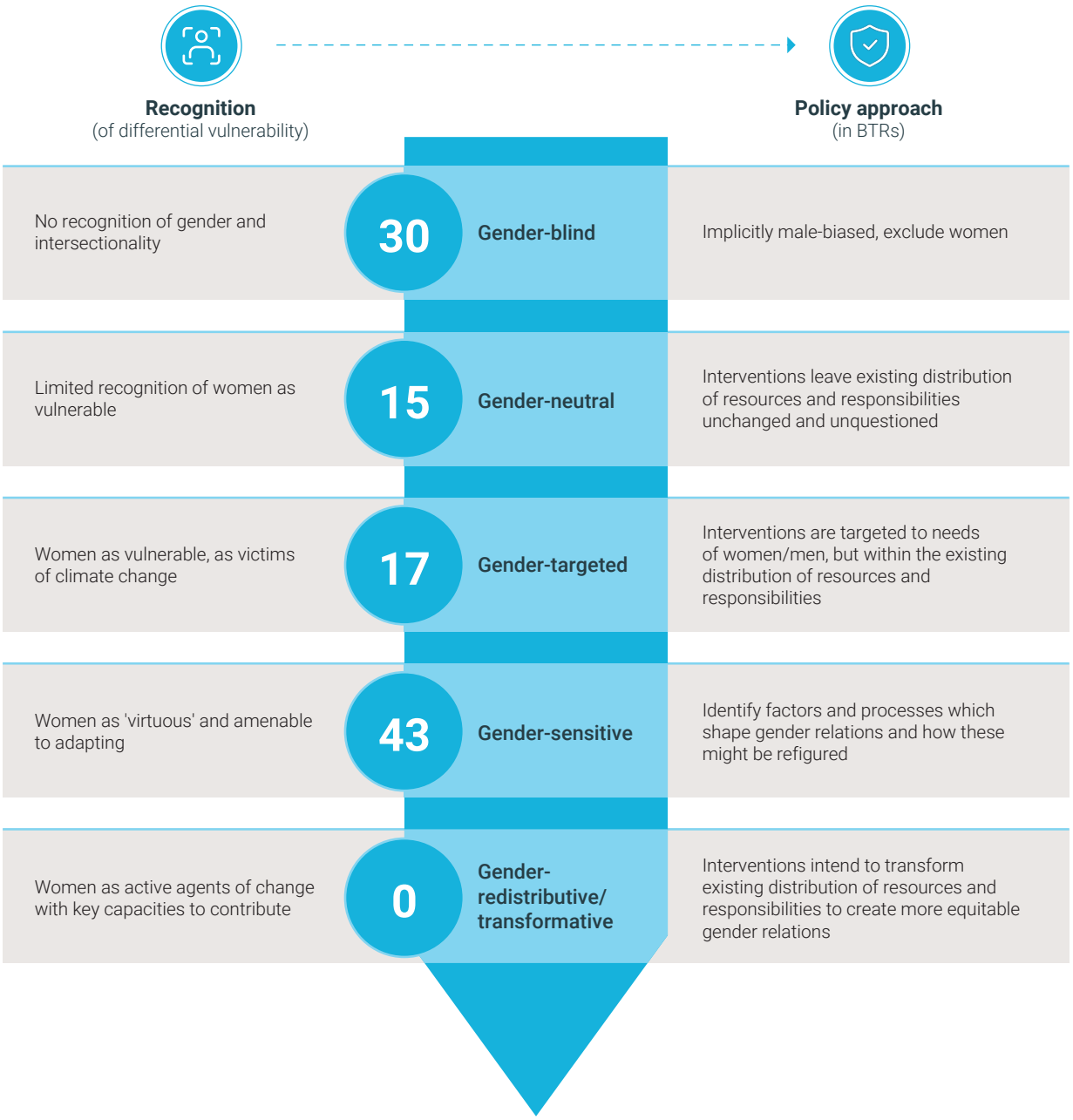
Overall, reporting in BTRs demonstrates that countries' adaptation processes are increasingly mainstreaming GESI considerations, albeit with significant variation. Out of the 105 BTRs submitted by countries by 31 August 2025,[13] over a quarter (30 countries) are gender-blind, i.e. they do not explicitly acknowledge gender when reporting climate impacts, adaptation priorities, actions implementation, and results. Of the 75 countries that mention gender in relation to adaptation, there is considerable variation in how gender is acknowledged and operationalized, with approaches ranging from gender-neutral to gender-sensitive (see figure 3.8). No country demonstrates a truly gender-transformative approach. This could either be because examples of gender-transformative actions may sit elsewhere institutionally (in the national legislature, in other ministries and departments) and are not reported in BTRs or because gender-transformative action around adaptation is not prioritized or even envisioned.

Gender-sensitive approaches are the most common (43 countries). They typically include mainstreaming approaches that implement actions to improve women's adaptive capacities; establish dedicated national gender equality policies/plans; enable inclusive adaptation (e.g. through supportive financing or women's leadership); and put in place gender-sensitive MEL systems to track gender and equity outcomes. Notably, the Lima Work Programme on Gender is cited by a number of BTRs categorized as gender-sensitive, highlighting the importance of dedicated training and awareness. Gender-targeted approaches (17 countries) involve actions such as collecting gender-disaggregated data or conducting sectoral impact assessments that examine gendered vulnerability. Gender-neutral approaches (15 countries) acknowledge gender in passing, typically in the introduction to the BTR, but do not discuss it meaningfully as an adaptation priority or mainstream it in planned and implemented adaptation actions.

All BTRs include information on social inclusion, either through gender (as described in figure 3.8) and/or through a focus on Indigenous communities, youth and children, and/or marginalized and vulnerable social groups. The main way GESI is implemented through adaptation is through national policies and laws on inclusion, universal rights and the targeting of marginalized groups (see also Dazé and Hunter 2022). In general, gender is equated with women and with common representations of women as vulnerable to or victims of climate change without explicit coverage of intersectional identities of all genders shaping climate vulnerability and capacity to act. Brazil and Chile are notable outliers, with detailed sections on how gender intersects with race and ethnicity, respectively. Over half of the 75 BTRs that mention gender acknowledge the importance of supporting and leveraging Indigenous and Local Knowledge (42 countries), and these tend to be countries that have large Indigenous populations and national priorities that mainstream Indigenous values (e.g. in Bolivia [Plurinational State of], Canada, Chile, Indonesia, New Zealand, South Africa and Vanuatu). The most common approach for mainstreaming is to use diverse knowledge systems in adaptation planning and implementation.

13 As information about GESI considerations and how they relate to climate impacts and adaptation was sometimes found outside the climate impact and adaptation chapter of the BTRs, the analysis presented in box 3.1 assessed all 105 BTRs submitted by 31 August 2025. The BTR of the European Union was excluded from this analysis as it is not a nation State.

Figure 3.8 Gender recognition and approaches in relation to adaptation in BTRs



3.3.6 Recommendations for enhancing the second round of biennial transparency reports

Although the first round of BTRs demonstrates promising global coverage, the analysis in section 3.3 reveals several significant information gaps. These gaps hinder the provision of crucial insights into current adaptation efforts by countries and limit the extent to which BTRs can adequately inform assessments of progress towards the targets outlined by the UAE FGCR. Based on these findings, the following recommendations for improving adaptation reporting within BTRs are made:

- Provide more information related to the UAE FGCR's thematic targets on health, poverty alleviation and livelihoods, and cultural heritage to improve understanding of progress being made in these thematic areas (3.3.1).
- Provide more information on adaptation actions and results, in particular on outcomes and impacts of adaptation. It is also important to demonstrate progress in implementing priorities set out in key planning instruments such as NAPs and NDCs (3.3.3).

- Provide detailed information about barriers to adaptation planning and implementation, as well as information about effective strategies for overcoming these barriers (3.3.3).
- Enhance information on efforts to develop systems for MEL of adaptation actions and results (3.3.4).
- Improve links between information on climate hazards, risks and impacts and information on actions and results to enhance consistency within BTRs and to enable assessments of the effectiveness and adequacy of adaptation actions (3.3.5).
- Provide more information on GESI, especially how it is promoted through actions and the results achieved (box 3.1).

In the Fulani village of Hore Mondji, located in southern Mauritania on the banks of the Senegal River, a women's cooperative uses solar energy to operate the borehole that supplies water to the market garden.

Photo: © Raphael Pouget / Climate Visuals Countdown

4

Chapter 4

Adaptation finance gap

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People take refuge on the roofs of buildings following flooding caused by Cyclone Idai in Mozambique.

Photo: © World Vision

Key messages

- Based on a comprehensive update, the costs of adaptation are estimated to be in a plausible central range of US$310–365 billion/year for developing countries by the year 2035 (in constant 2023 prices, not inflation-adjusted). This is based on two lines of evidence:
  - An updated modelling analysis estimates adaptation costs at US$310 billion/year for developing countries by 2035. This is an increase from the previous Adaptation Gap Report (AGR).
  - An updated assessment of submitted national adaptation plans (NAPs) and nationally determined contributions (NDCs), with extrapolation to all developing countries, estimates adaptation finance needs at US$365 billion/year for the period 2023–2035.
- International public adaptation finance flows to developing countries were tracked at US$26 billion in 2023 (in constant 2023 prices), a slight decline compared to 2022. Annual growth in these finance flows has averaged around 7 per cent per year (2019–2023), which is below the 12 per cent annual increase needed to meet the Glasgow Climate Pact of a doubling by 2025, and recent announcements increase the likelihood that this goal may not be achieved.
- Concessional finance accounted for 70 per cent of international public adaptation finance. However, non-concessional loans continue to increase, particularly towards middle-income countries, and exceeded the amount of concessional loans in 2023.
- This update shows that the adaptation finance gap is not reducing. The estimated future costs/needs are approximately 12–14 times as much as international public flows. More positively, a higher relative proportion of finance is flowing to the more vulnerable countries, including least developed countries (LDCs) and small island developing States (SIDS).
- An updated analysis indicates that since the last AGR assessment, there has been progress in incorporating gender equality and social inclusion considerations into costings in NDCs and NAPs, though this remains uneven.
- AGR 2025 has assessed the potential for the private sector to help bridge the finance gap, and estimates it could deliver 15–20 per cent of priority national adaptation needs in developing countries by 2035, primarily in market sectors and middle-income countries. It could be possible to deliver higher private sector investment, but only by passing costs back to developing countries.
- This also raises a new issue of the difference between the adaptation financing gap and the funding gap – this is critical for the negotiation discussions on sources of finance.
- Inflation needs to be taken into account when comparing the new AGR estimates of adaptation cost/financing needs (US$310–365 billion/year) to the new collective quantified goal (NCQG) of at least US$300 billion/year by 2035 (in total) for mitigation and adaptation. Including inflation would increase the AGR values (above) to US$440–520 billion/year by the year 2035.
- Based on scenario analysis, AGR estimates that the adaptation finance gap cannot be closed with international public finance alone. However, the finance gaps for LDCs and SIDS could theoretically be closed with international public finance, depending on the level of prioritization of finance flows towards these countries.

- The evidence from AGR 2025 provides insights and recommendations for the forthcoming negotiations and the Baku to Belém Roadmap to 1.3T. These include:
  - Containing the growth of the adaptation finance gap by providing guidance on transitioning away from fossil fuel, and avoiding expensive maladaptation
  - Supplementing adaptation finance from Annex II countries with the voluntary support of new climate finance providers in a more transparent and accountable way
  - Engaging more financial system actors and integrating resilience in investment decisions and engage relevant financial actors, while addressing potential negative consequences for the most vulnerable populations

4.1 Introduction and context

Finance is a key enabling factor for adaptation (Beauchamp *et al.* 2024), and financing constraints are a key determinant of the soft limits to adaptation, particularly in low-to-middle-income countries (O'Neill *et al.* 2022). Finance is therefore a key part of the United Nations Framework Convention on Climate Change (UNFCCC) negotiations. The Adaptation Gap Report (AGR) assesses progress on this through an analysis of the adaptation finance gap (United Nations Environment Programme [UNEP] 2014), as set out in box 4.1.

Box 4.1 The adaptation finance gap

AGR estimates the plausible adaptation finance gap for developing countries[1] using several lines of evidence:

1. The estimated adaptation needs in US$. This is expressed as a range, based on two methods:[2]
   - A modelled estimate of the additional costs of adaptation for all developing countries, based on global sectoral models with national-level resolution
   - An analysis of adaptation finance needs reported in developing countries' national adaptation plans (NAPs) and nationally determined contributions (NDCs), extrapolating these data to all developing countries
2. An analysis of international public adaptation finance flows in US$ to developing countries, aggregated from country-level data.

The range from the modelled costs/finance needs (1) are compared to the current adaptation finance flows (2) to estimate the adaptation finance gap for developing countries. Note that in practice, quantifying this gap is challenging, both conceptually and analytically, and results can only be considered indicative.

This focus on international public finance was in line with the goal for developed countries to mobilize US$100 billion of climate finance per year by 2020 to address the needs of developing countries (UNFCCC 2009), and the Glasgow Climate Pact, which urged developed country Parties to at least double their collective provision of climate finance for adaptation to developing country Parties from 2019 levels by 2025 (UNFCCC 2022). Domestic finance of developing countries and private sector flows were not included.

1 Defined here as the non-Annex I countries under the UNFCCC. See https://unfccc.int/process/parties-non-party-stakeholders/parties-convention-and-observer-states.

2 While both methods estimate the costs of adaptation in US$, they involve different methods and definitions, and consider different adaptation activities and additionality, as well as considering different risks. See the AGR 2023 (UNEP 2023b) for further details.

AGR 2025 has updated the adaptation finance gap.[3] This is relevant for the new collective quantified goal (NCQG) on climate finance (UNFCCC 2024a), with developed country Parties taking the lead of at least US$300 billion per year by 2035, for developing country Parties for climate action.[4] The NCQG text states that this finance can come from a wide variety of sources, including public, private and alternative sources. AGR 2025 has therefore undertaken a deep dive on the potential role of the private sector.

The NCQG text also highlights the need to achieve a balance between adaptation and mitigation, and take account of needs and priorities, especially those of the least developed countries (LDCs) and small island developing States (SIDS); hence, these are considered separately. Finally, the US$300 billion goal was embedded within a larger call for action to scale up finance to at least US$1.3 trillion annually to developing country Parties by 2035, and the announced Baku to Belém Roadmap to 1.3T. This chapter discusses initiatives that might help close the finance gap, and provides insights and suggestions for the Baku to Belém Roadmap.

4.2 The costs of adaptation in developing countries

The first step in estimating the adaptation finance gap is to estimate the costs of adaptation. In simple terms, this can be assessed by estimating the current and future economic impacts of climate change, then assessing the costs of reducing these impacts (the reduction being the benefit of adaptation) (UNEP 2016). However, there is a trade-off involved over how much adaptation to undertake, and on the level of residual damage costs after adaptation. This reflects the fact that adaptation is rarely completely effective (for example, see Rexer and Siddharth [2024]). and that it usually becomes more costly (and less cost-effective) to deliver higher levels of risk reduction (UNEP 2023a). This residual damage (after adaptation) closely relates to the concept of loss and damage. As well as economics, the balance between adaptation costs and residual damage involves ethical and political considerations, and different actors will have varying views on the objectives, ambition and trade-offs involved.

In practice, estimating the costs of adaptation is extremely challenging and there is no single definitive estimate, because costs depend on the objectives chosen, future warming levels and uncertainty, as well as on the definitions and methods used (UNEP 2023b). Further, adaptation should not be seen as a one-off decision (or cost) but an ongoing response to dynamically changing risks over time, i.e. as part of a continuous adaptive management process (Intergovernmental Panel on Climate Change [IPCC] 2022). Further discussion of why estimates of the adaptation costs can vary was presented in the adaptation finance gap update (UNEP 2023b). Noting these challenges, the AGR has provided updated estimates.

4.2.1 The modelled costs of adaptation

The AGR uses a set of established, peer-reviewed sectoral models to estimate the additional costs of adaptation for developing countries – the incremental adaptation costs to address climate change – expressing these as annual undiscounted adaptation costs. The approach is documented in the adaptation finance update (UNEP 2023b) and summarized in annex 4.A. AGR 2025 has updated these costs. It has extended the estimates to the year 2035, in line with the target year of the NCQG. It has also re-run the models using the newer Coupled Model Intercomparison Project (CMIP6) projections (for multiple representative concentration pathways [RCPs]) and with updated models, notably for agriculture (Assessing Climate Change Risk in Europe [ACCREU]) and health (based on new costs of inaction analysis in World Bank [2024]).[5]

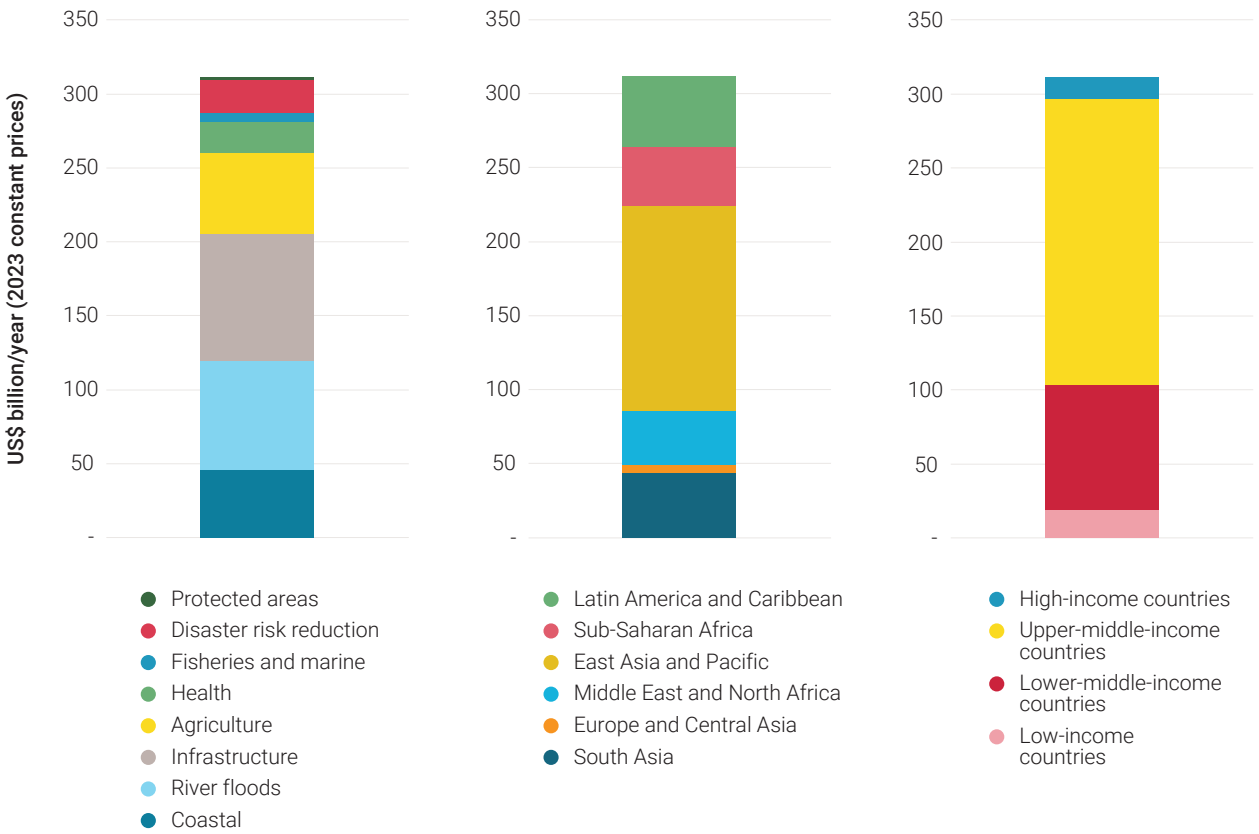
The results of this modelling analysis are shown in figure 4.1 below. The new estimates of the costs of adaptation in the year 2035 are approximately US$310 billion/year (constant 2023 prices, not inflation-adjusted, central estimate) for all developing countries, for an RCP4.5 scenario, though there is a large range around this value (see discussion in annex 4.A). Of this total, the costs for LDCs and SIDS are US$36.7 billion/year (LDCs are US$33.5 billion/year and SIDS are US$4.2 billion/year, noting some LDCs are also SIDS).

3 This chapter was co-financed by: i) the ECONOGENESIS project funded by United Kingdom aid from the United Kingdom Government and by the International Development Research Centre (IDRC), Ottawa, Canada as part of the Climate Adaptation and Resilience (CLARE) research programme (note that the views expressed herein do not necessarily represent those of the United Kingdom Government, IDRC or its Board of Governors); ii) the Assessing Climate Change Risk in Europe project (ACCREU), funded by the European Union through the Horizon Europe Research and Innovation Action (RIA) under grant agreement 101081358 and by UK Research and Innovation (UKRI) under the United Kingdom Government's Horizon Europe Guarantee (reference number: 10073932) (note that the views and opinions expressed are, however, those of the author[s] only, and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them); iii) the research on the role of the private sector in adaptation finance has been supported by the Zurich Climate Resilience Alliance, and funded by the Zurich Foundation. The views expressed in this publication do not necessarily reflect the official position of the Alliance, Foundation or the Zurich company; and iv) support from core funding to the Stockholm Environment Institute (SEI) from the Swedish International Development Cooperation Agency (Sida).

4 All figures are reported in constant US$ 2023 prices; however, the NCQG is set for the year 2035, and there is a need to ensure values can be compared to this in equivalent price years. AGR 2025 thus considers the potential effects of inflation.

5 AGR 2025 acknowledges and thanks the World Bank for providing the updated health impacts, and the team of Tamer Samah Rabie, Lorie Rufo, Benoit Laplante, Steven Ceglia Smith and David Alexander Clary. We stress that the views and opinions expressed in this report are those of the author(s) only, and do not reflect those of the World Bank.

Figure 4.1 Estimated costs of adaptation by region, income and sector (indicative central value) for developing countries in 2035



These updated results show a significant increase from the previous AGR 2023 estimates of US$215 billion/year (in 2021 prices).[6] The new estimate above can be compared to other values in the literature, including the Independent High-Level Expert Group on Climate Finance (IHLEG) (Bhattacharya *et al.* 2024). The IHLEG uses the AGR costs, but has a different selection of countries focusing on emerging market and developing economies; this list is different to the UNFCCC non-Annex I list used in the AGR. Using the IHLEG grouping, the costs of adaptation for emerging market and developing economies are estimated at approximately US$235 billion/year in 2035 (constant 2023 prices).

The analysis has also looked at the potential difference in adaptation costs for different warming scenarios (RCPs). This finds that the differences between most RCPs (2.5, 4.5, 6.0) in the period 2030–2035 are relatively small (typically <10 per cent), as this near-term climate change is mostly locked in already (Arias *et al.* 2021). However, it does find higher adaptation costs for the more extreme warming scenarios (RCP8.5). Much larger differences in adaptation costs arise (in 2035) from the objectives set (for example, due to the differences in adaptation costs but also residual damages between the economic optimal, maintaining current standards, or reducing all damages), the specific climate model (and if hotter, cooler, wetter or drier), and the impact model used and the representation of adaptation. The full range around the values above is therefore very large (see discussion in annex 4.A). The analysis also shows a greater divergence in adaptation costs between warming scenarios after 2040 – this highlights the need to achieve the Paris Agreement goals to reduce adaptation costs (and residual damage).

There are several additional issues to highlight with these estimates. First, there are additional costs of residual damage (after adaptation) on top of these adaptation costs, which are significant and are critical to consider when looking at costs and benefits overall (including analysis of losses and damages). Second, the values cover a limited number of risks, and thus reflect a partial analysis, and likely underestimate, of total adaptation costs (see box 4.2).

6 This increase can be explained as follows. The move from 2021 to constant 2023 prices increases the estimate to US$239 billion/year. The move from the year 2030 to the year 2035 – and the associated higher adaptation costs to address larger impacts – increases the previous values to US$248 billion/year. Finally, the updated analysis to new climate projections (CMIP6) and the updating modelling increases the year 2035 values to US$310/year. While this includes increased costs for river flood protection (ACCREU 2024), the increase is driven by an update of agricultural adaptation costs (ACCREU 2025), updated health sector impacts (World Bank 2024) and associated adaptation costs based (based on UNEP 2023b), and from the increased infrastructure investment and climate-proofing needs (from updates to previous estimates from Rozenberg and Fay 2019). Further details are presented in annex 4.A.

Box 4.2 Gaps in the AGR estimates

The AGR is progressively including more risks, but it still has a partial representation of climate risks. The following key omissions are highlighted. Further work to extend to these is a priority.

- There are additional adaptation costs to address overheating in the built environment, including for residential households. Emerging evidence (ACCREU 2025; De Cian *et al.* 2025) indicates these could be very large, at over US$50 billion/year in developing countries by 2035 if met through air conditioning (AC), though there is a question if these should be considered an impact or an adaptation. We note that developing countries do not include these AC costs in their NAP/NDC submissions. There are alternative planned adaptation actions to AC (see UNEP Cool Coalition), including passive ventilation, urban planning and green infrastructure, but aggregate adaptation costs do not exist (though these would involve significant costs and some public actions and funding, for example green space).

- The values do not take account of all windstorm risks (coastal storm surge is included, but not wind damage), and do not consider wildfire risks. They exclude adaptation costs for the education sector, which could be high (Aggarwal *et al.* 2024), and the costs of adaptation for ecosystem services outside of protected areas (costs above are for protected areas only, based on Waldron *et al.* 2020). The infrastructure costs are for climate-proofing new investment only – there are additional costs associated with retrofitting existing infrastructure stock.

- The values do not include all household expenditures on adaptation. There is some evidence that these are already significant in highly vulnerable countries (Eskander *et al.* 2022), although these often arise because of the lack of public adaptation investment.

- The values exclude the costs of adapting to cascading and compounding risks (IPCC 2022) or to major tipping points (Lenton *et al.* 2023), though many of the latter are beyond the limits of adaptation.

- The values above do not include the cost of financing (cost of capital) of adaptation.

- The values above do not include the private sector adaptation costs for developing countries. These are likely to be large, and an initial indicative value is presented in section 4.6.

4.2.2 Adaptation finance needs

AGR 2025 has undertaken a comprehensive assessment and new analysis of the finance needs for adaptation priorities in developing countries, as submitted to UNFCCC in NDCs and NAPs. These submissions include finance needs and contributions from both international climate finance and domestic sources (UNEP 2023a).

The country-driven, bottom-up and dynamic nature of the information in NDCs and NAPs makes these an important source of evidence. These documents typically begin by identifying adaptation actions, then estimating the costs of implementation. The information provided is highly heterogeneous.[7] However, not all adaptation needs identified in the countries' plans have been costed, potentially leading to an underestimation (UNFCCC Standing Committee on Finance 2024). Further support to countries for costing adaptation needs remains a priority.

As at 31 July 2025, 97 developing countries have submitted adaptation finance needs in either their NDC or NAP (UNFCCC 2025a; UNFCCC 2025b). More recent submissions reflect methodological improvements and broader coverage, and are more comprehensive and more realistic (Isah *et al.* 2025). For this analysis, we adopt a 'latest information first' approach, using the most recent submitted estimates from each country, and only reports submitted after 2020.

Reported adaptation finance needs. The adaptation finance needs reported vary widely due to factors such as country size, economic structure, climate change impacts and vulnerability, as well as methodological approach. In relative terms, low-income countries report the highest adaptation finance needs, averaging 3.6 per cent of gross domestic product (GDP), followed by lower-middle-income countries at 2.4 per cent, upper-middle-income countries at 2.1 per cent, and high-income countries with lowest at 1.7 per cent. In contrast, per capita needs exhibit an inverse trend: countries with higher income levels report greater needs in absolute dollar terms. Low-income countries report an average of US$31 per capita, lower-middle-income countries US$62, upper-middle-income countries US$158, and high-income countries the highest at US$273. This suggests that lower-income countries have higher needs relative to the size of their economies. LDCs and SIDS report

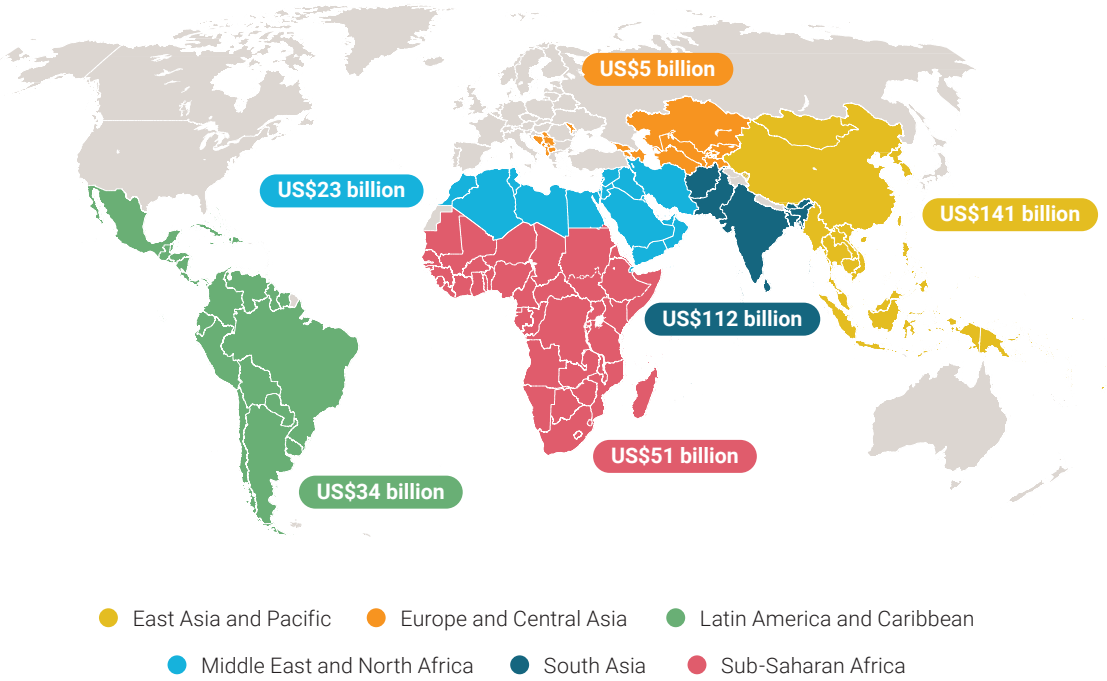
7 Approaches differ in terms of their adaptation ambition, consideration of future climate and socioeconomic scenarios, methods employed to identify and prioritize adaptation options, costing methodologies, sectoral coverage, and implementation time frame.

disproportionately high costs on a per capita basis (LDCs 3.5 per cent and SIDS 3.6 per cent of GDP).

Sources of finance. The conditionality or sources of finance, as defined by the UNFCCC process, are specified for only half of the adaptation finance needs reported by developing countries. Of the total reported needs, only about 5 per cent are marked as unconditional, i.e. they are expected to be met through domestic resources. Around 45 per cent are conditional, meaning they are contingent upon receiving international support. The remaining 50 per cent do not specify conditionality status. For LDCs and SIDS, conditionality is specified for 73 per cent of their total reported adaptation finance needs, of which 18 per cent are unconditional and 55 per cent are conditional. The remaining 27 per cent lack any indication of conditionality.

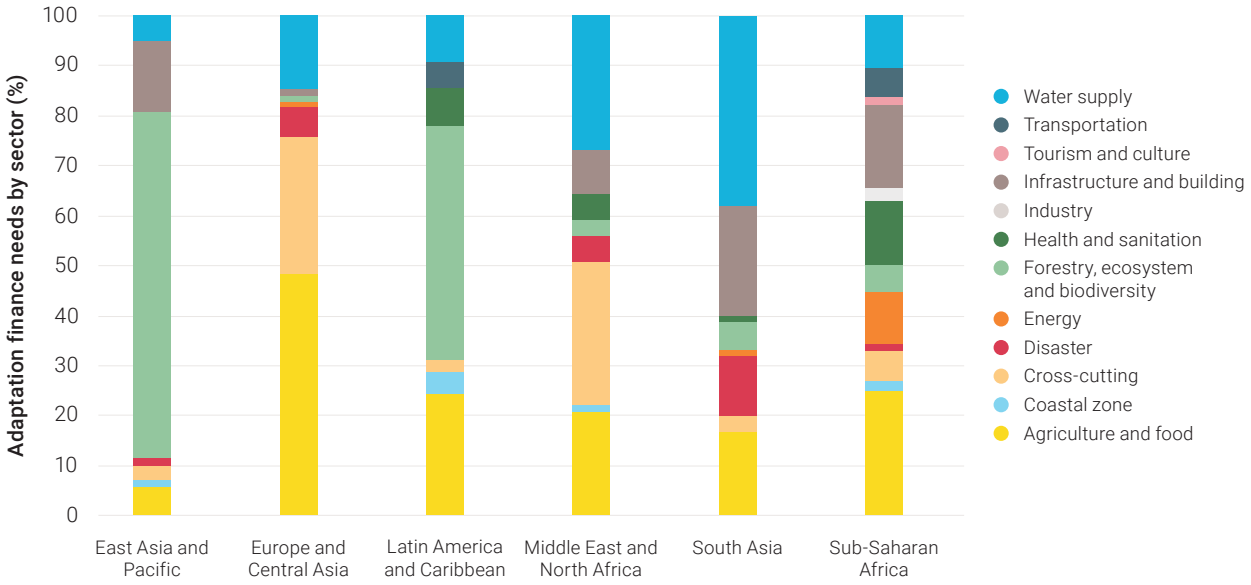
Global adaptation finance needs. To estimate global adaptation finance needs, reported annual finance needs from the 97 submitted documents were extrapolated to all 155 developing countries using a multivariate regression approach. This leads to an estimate of total adaptation finance needs of US$365 billion per year, with a range of US$144 billion–1,032 billion. The estimated annual adaptation finance needs for developing countries vary substantially across regions (see figure 4.2). LDCs and SIDS have estimated adaptation finance needs of US$50 billion/year, with a range of US$28 billion–90 billion per year.

Figure 4.2 Adaptation finance needs in developing countries by region (US$ billion, 2023 prices). Only non-Annex I countries are shown by region.



Sectoral trends in adaptation finance needs by region. A total of 55 countries provide detailed sectoral information on adaptation finance needs. The breakdowns are shown below by region (figure 4.3). Overall, the agriculture and food sector, and water supply, are common priorities across all regions, though they vary in terms of their relative importance.

Figure 4.3 Sectoral distribution of adaptation finance needs by region. Shown as a percentage of total reported adaptation finance needs for each respective region



Adaptation finance needs also differ by income level. Low-income countries tend to focus heavily on agriculture and food, alongside energy and transportation. Lower-middle-income countries prioritize infrastructure, water supply, and agriculture and food, with health and sanitation gaining importance. In upper-middle-income countries, agriculture remains dominant, but forestry, ecosystem and biodiversity, and water supply, also receive significant attention. This may indicate that adaptation priorities evolve as countries develop.

4.3 International public adaptation finance flows

The AGR 2025 updates the analysis of international public climate finance flows, from Annex II to non-Annex I UNFCCC Parties, covering the most recent five-year available period (2019–2023), based on data from the Organisation for Economic Co-operation and Development (OECD). For further details, see annex 4.B. International public flows remain the most consistent and well-tracked source of information for adaptation finance. There are additional domestic public and private flows, though data on these are more limited (UNEP 2024; Mizuno 2025) but improving (Connolly *et al.* 2024; Naran *et al.* 2025). However, domestic public sources of finance are excluded in this analysis, because the finance gap focuses on developed to developing countries' flows, reflecting the mandate in the UNFCCC text (United Nations 1992). Private sector flows are discussed in section 4.5.2.

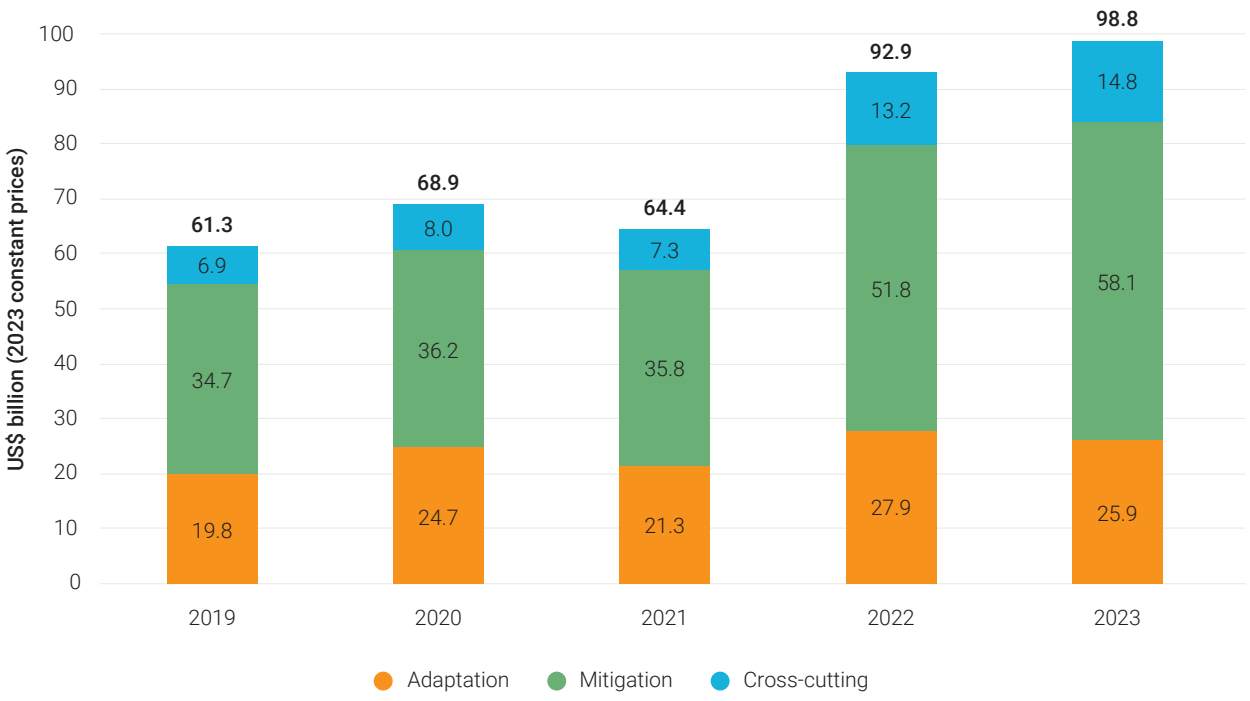
4.3.1 International public climate finance

According to the OECD, commitment flows at face value[8] from developed country shares of multilateral providers to developing countries reached a new historical high of US$99 billion (in constant 2023 prices) (figure 4.4). This estimate excludes mobilized private finance[9] and export credits – when these are included, the flows exceed US$100 billion. Of this total, the largest share was for mitigation at 57 per cent, with only 28 per cent allocated to adaptation, and the remainder directed to cross-cutting initiatives (based on the 2022–2023 average).

8 A commitment is a financial obligation, offered in writing and backed by funds from a provider to a recipient country (OECD 2008). A grant equivalent is calculated for the debt instrument (e.g. loans), by multiplying the annual disbursements by the loan's grant element at the time of the commitment (Kiernan *et al.* 2024). Calculations of total climate finance based on grant equivalent estimates are significantly lower than the data reported by the OECD, with estimates at only US$35 billion in 2022 (Kowalzig *et al.* 2024).

9 Mobilized private finance for adaptation was provisionally estimated at US$3.9 billion in 2023 (constant 2023 prices) (OECD 2025a).

Figure 4.4 International public climate finance commitments from developed countries towards developing countries per year for the period 2019–2023, disaggregated into adaptation, mitigation and cross-cutting finance (US$ billions, constant 2023 prices)



Note: These values do not include the private flows mobilized from international public finance or export credits

4.3.2 Progress in delivering the Glasgow Pact on Adaptation Finance

Considering only developed to developing countries' flows, international public adaptation finance declined slightly in 2023 to US$25.9 billion (constant 2023 prices) compared to 2022 levels (figure 4.4). This decline corresponds with a decrease in the multilateral development bank (MDB)[10] flows attributable to developed countries, while bilateral finance held steady at US$9 billion–10 billion annually. As MDBs provide most (57 per cent) of the international public adaptation finance, their reduced contributions largely explain the overall decline.

These flows are relevant for the Glasgow Climate Pact, and its aim to double the collective provision of climate finance for adaptation from developed to developing country Parties (from 2019 levels), which would be approximately US$40 billion by 2025.[11] Over the period 2019–2023, international public adaptation finance grew at a compound annual growth rate of 7 per cent, exceeding the 6 per cent average annual growth in overall official development assistance (ODA) (Sabow *et al.* 2025), but falling short of the 12 per cent annual average increase required to meet the Glasgow Pact.

However, further progress towards the Glasgow goal will be affected by the drop in ODA since 2023. ODA fell by 9 per cent in 2024 (relative to 2023) and further reductions have been announced for 2025, which are likely to lead to a further 9–17 per cent fall (OECD 2025b). The impact on climate finance will be different, and will depend on how ODA is allocated. This means future predictions are challenging because flows are sensitive to financial providers' priorities and shifting contexts (Nor and Mohamed 2024). Nevertheless, ODA falls after 2023 are likely to affect the achievability of the Glasgow Pact, and increase the likelihood that this may not be achieved.

One key addition for AGR 2025 is the additional calculation of developing countries' contributions as financial providers.

10 The MDB joint report declares US$23 billion in own resources for adaptation finance to low- and middle-income countries in 2023 (European Investment Bank 2024), which represents an increase relative to 2022. This amount includes non-flow financial instruments (e.g. guarantees) that are not included in the OECD Climate-Related Development Finance database. After applying coefficients to represent the share attributable to developed countries, the MDB adaptation finance in 2023 for the AGR amounted to US$14 billion, a reduction from the calculated US$17 billion in 2022 (see more details in annex 4.B).

11 In the 2022 Climate Finance Delivery Plan Progress Report, and in a joint letter published in 2023, developed countries confirmed their understanding that doubling adaptation finance implies an increase by contributors from the approximately US$20 billion provided and mobilized in 2019, to US$40 billion by 2025. Note that the doubling does not take inflation into account – see section 4.7.1.

This is relevant in the context of the NCQG, which encourages contributions from developing countries, on a voluntary basis, towards the US$300 billion and US$1.3 trillion goals. If both developed and developing country flows (to developing countries) are included, international public adaptation finance rises by US$8 billion to US$35 billion in 2022–2023 (constant 2023 prices). This reflects an important contribution from developing countries of about 29 per cent, mainly through MDBs (see table 4.1).

Table 4.1 International public adaptation finance considering developed and developing countries' contributions (average 2022–2023, in US$ billion, constant 2023 prices)

	US$ billion (average 2022–2023)		
	Developed countries	Developing countries	Total
Annex II	9.4		9.4
Non-Annex I		0.5	0.5
Annex I economies in transition		0.0	0.0
MDBs	15.4	7.2	22.5
Climate funds	1.5	0.0	1.5
Other multilateral	0.7	0.2	0.94
Total sources	**26.9**	**7.9**	**34.8**

Note: Small errors may occur due to rounding.

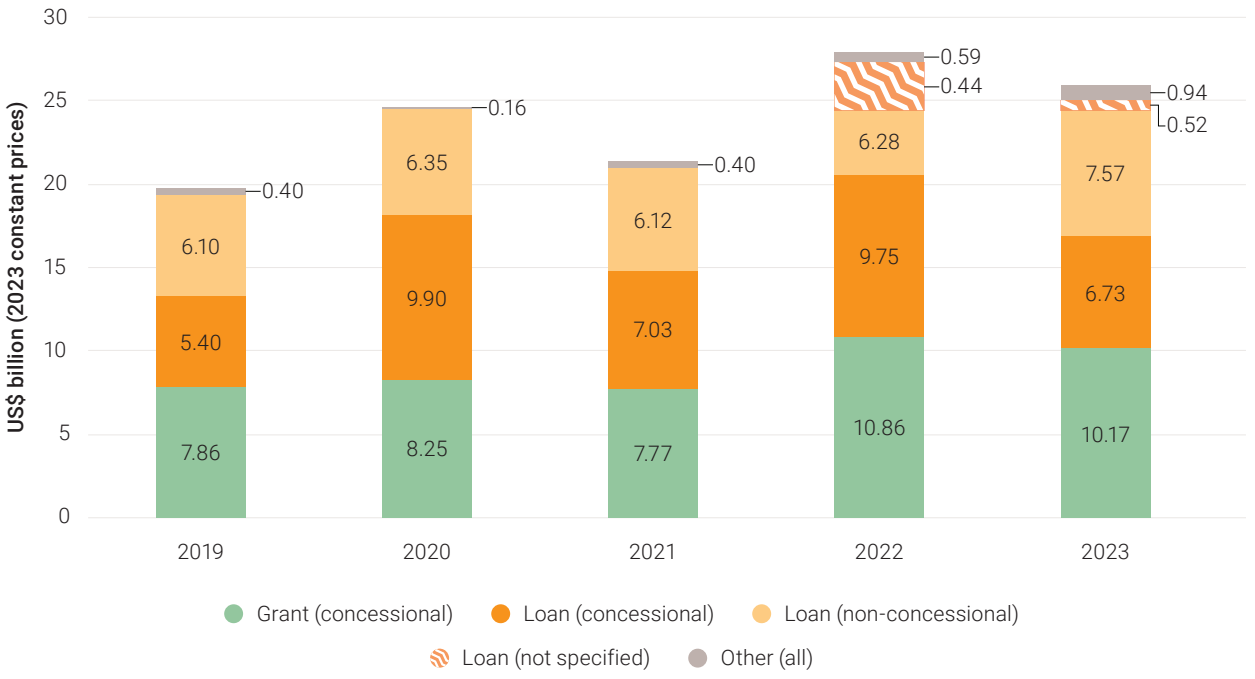
4.3.3 Financial instruments and distribution of flows

Breakdown by financial instrument. International concessional finance is critical for adaptation, particularly where domestic resources and policies are insufficient (Bolton *et al.* 2022; Naran *et al.* 2024). This primarily includes grants and concessional lending. The latter offers much better terms compared to the market: concessional loans in 2022 had an average interest rate of 1.89 per cent and an average maturity of 24 years (Kiernan *et al.* 2024). In 2022–2023, 70 per cent of international public adaptation finance was concessional – grants and concessional loans – more than double the volume of non-concessional instruments (see figure 4.5). Grants averaged 39 per cent of international public adaptation finance in 2022–2023, and have increased at a 7 per cent compound annual growth rate since 2019. As non-debt concessional instruments, grants allow countries to address climate impacts without exacerbating debt, while supporting non-market-driven adaptation investments (Khan *et al.* 2020).

However, non-concessional finance has also grown at a compound annual growth rate of 7 per cent from 2019 to 2023. In 2023, non-concessional loans exceeded concessional ones for the first time since 2019. This non-concessional funding was allocated mainly (89 per cent) to middle-income countries in 2022–2023, with only 2 per cent to low-income countries (including LDCs). The greater use of non-concessional finance is important in the context of the NCQG, which states the need for finance to "implement the nationally determined contributions and national adaptation plans including through grants, concessional and non-debt creating instruments, and measures to create fiscal space" (UNFCCC 2024a).

Overall, debt instruments dominate adaptation finance flows, comprising 58 per cent on average, and are provided mainly by MDBs. This high reliance on debt has raised concerns about affordability and equity (Venner, García-Lamarca and Olazabal 2024), and the risk of an "adaptation investment trap" that could limit future adaptation capacity while increasing vulnerability and debt (Bernhofen *et al.* 2024; Verschuur, Ranger and Hall 2025). In addition, given the nature of their business model, MDBs tend to prioritize financially viable projects. This underscores the need for complementary concessional financing to support high-development-impact, low-financial-return adaptation initiatives. However, achieving such complementarity can be complex, as MDBs influence the perceived viability of development investments (Bazbauers 2022; Bazbauers 2025).

Figure 4.5 International public adaptation finance from developed to developing countries (Annex II to non-Annex I UNFCCC Parties), by concessionality level and instrument, 2019–2023



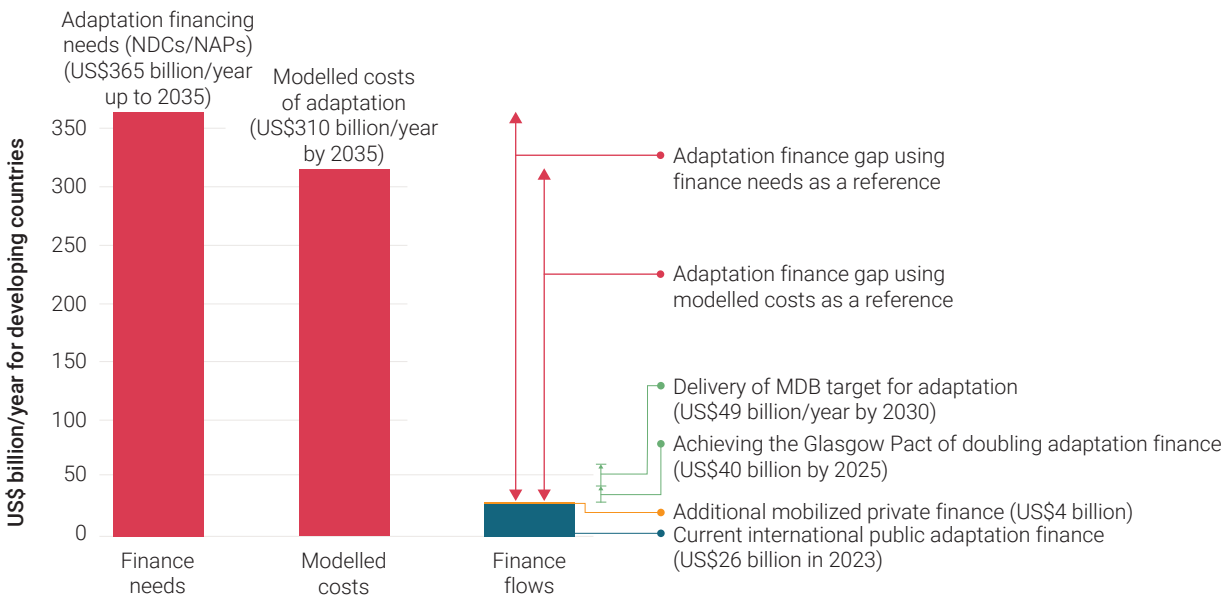
Note: Other instruments include equity and mezzanine finance. Values are rounded; minor differences may be present.

International public adaptation finance commitments in vulnerable country groups. The Paris Agreement and the NCQG recognize LDCs' and SIDS' specific vulnerability, and in response international public adaptation finance has prioritized these groups. Of the total, an average of US$10.4 billion (36 per cent of the total) in 2022–2023 was allocated to LDCs. MDBs were the main providers for these flows at 62 per cent, with 51 per cent grants and 49 per cent debt instruments. Non-concessional debt was limited (10 per cent), but any reliance on international debt instruments for LDCs raises concerns over fiscal space (United Nations Conference on Trade and Development [UNCTAD] 2024). SIDS were allocated an average of US$1.2 billion in 2022–2023, 57 per cent from MDBs. Most finance came through grants (55 per cent), while non-concessional loans (26 per cent) exceeded concessional ones (17 per cent) due to income-based eligibility limits. In light of this, SIDS have called for concessional finance eligibility criteria to reflect climate vulnerability (Akiwumi 2022). This does show that a higher relative share of international public adaptation finance is being directed towards the most vulnerable countries. Nonetheless, the flows are still modest relative to needs: per capita adaptation finance in 2022–2023 was US$9 in LDCs and US$20 in SIDS, both lower than in previous years.

4.4 The updated adaptation finance gap

The three lines of evidence from the sections above are brought together to provide an updated estimate of the adaptation finance gap. Based on modelled costs of adaptation and the submitted/extrapolated adaptation finance needs (sections 4.2.1 and 4.2.2), the updated plausible central range for the adaptation costs/financing needs is approximately US$310 billion/year–US$365 billion/year for developing countries for 2035 (constant 2023 prices). This is shown in figure 4.6 (red bars). This equates to 0.7 to 0.8 per cent of current GDP for all developing countries. Of this total, adaptation costs/finance needs for LDCs and SIDS together are US$35 billion/year (modelled) and US$50 billion/year (finance needs-based extrapolation). These ranges have narrowed since AGR 2023, as the modelled cost estimates have increased while extrapolated estimated costs from NDCs and NAPs have slightly decreased. These values can be compared to current international public adaptation finance flows to developing countries (section 4.3), which were tracked at US$26 billion in 2023 (constant 2023 prices), a slight decline compared to 2022 (see figure 4.6, solid blue bar).

Figure 4.6 Comparison of adaptation financing needs, modelled costs and international public adaptation finance flows in developing countries (constant 2023 prices)



Note: Domestic and private finance flows are excluded. Note values are in constant 2023 prices and not inflation-adjusted to 2035.

The estimated (future, year 2035) modelled costs/finance needs of adaptation are now approximately 12–14 times as much as current international public adaptation finance flows.[12] It is difficult to map the trends in the adaptation finance gap over time, because of changing methods – UNEP (2016) estimated the gap at 7–13 times, UNEP (2023) at 10–18 times – but a clear finding is that the gap is not reducing.

The gap will decline if the Glasgow Pact is achieved, but as shown in figure 4.6, even achieving this goal (US$40 billion by 2025) would only close the goal slightly. The gap will also be closed by the delivery of the MDB pledge[13] on adaptation finance (of US$49 billion/year by 2030), which would be in addition to bilateral and multilateral climate funds. But again, even if this is achieved, and assuming bilateral commitments remain stable, a large adaptation finance gap still exists.

The size of the adaptation finance gap raises concerns over the burden on developing countries, and the UNFCCC (1992) principle of common but differentiated responsibilities and respective capabilities (CBDR-RC) which has underpinned UNFCCC negotiations is referenced in the Paris Agreement and the NCQG.

More positively, the data does show that the relative gap is lower for the most vulnerable countries, as shown in table 4.2 below, though the levels still fall far below needs and a large finance gap remains for these countries.

Table 4.2 Comparison of adaptation financing needs, modelled costs and international public adaptation finance flows for all developing countries, LCDs and SIDS (constant 2023 prices, not inflation-adjusted to 2035).

Region	Annual finance needs/ adaptation costs (2035)	Current finance flows (average 2022–2023)	Annual adaptation finance gap
All developing countries	US$310 billion–365 billion	US$26 billion	US$284–339 billion
LDCs	US$33.5 billion–46 billion	US10.4 billion	US$23.1–35.6 billion
SIDS	US$4.2 billion–6 billion	US$1.2 billion	US$3.0–4.8 billion

12 Note that the gap would fall to 10–12 times as much if mobilized private adaptation sector flows from international public finance were included.

13 "By 2030, our annual collective climate financing for low- and middle-income countries will reach USD 120 billion, including USD 42 billion for adaptation, and we aim to mobilize USD 65 billion from the private sector. For high-income countries, this annual collective climate financing is projected to reach USD 50 billion, including USD 7 billion for adaptation, and we aim to mobilize USD 65 billion from the private sector" (African Development Bank *et al.* 2024).

4.5 Gender equality and social inclusion in adaptation finance

Climate change is projected to affect the poorest and most vulnerable people the most in relative terms, because these groups have fewer resources, higher vulnerability and lower adaptive capacity (UNEP 2023b). It is also likely to exacerbate inequality across multiple dimensions of social identity, including gender (Roy *et al.* 2022). It is therefore critical to ensure that adaptation finance reaches those who need it most, and that financing and funding is inclusive, equitable and responsive to differential vulnerabilities. However, AGR 2023 (UNEP 2023a) identified that less than 17 per cent of international public adaptation finance commitments were dedicated to projects with a specific focus on local communities, and that gender was only weakly included in international public adaptation finance flows.

An updated review of recent NAPs and NDC3.0s has been undertaken in AGR 2025 to assess the progress on costed programming of gender and social inclusion. This used a version of the gender equality and social inclusion (GESI) continuum.[14] The analysis reviewed the 97 NAPs/NDCs that include costed adaptation and found that of all these, only 20 included dedicated finance needs for GESI interventions. The analysis examined the extent to which GESI were considered during the development process of adaptation policies, the nature of the specific GESI commitment/actions proposed, and the resources that were allocated for these GESI commitments. The results from a selection of NAPs and NDCs are presented in table 4.3.

Table 4.3 NAPs and NDCs that include costed GESI-related finance and GESI rating

Country	Total adaptation finance needs (US$ million)	GESI-related finance needs (US$ million)	% GESI share of finance needs	GESI rating
Bangladesh[NAP]	230,012	27,632.83	12.01%	Integrative
Benin[NAP]	4,240	75.00	1.77%	Integrative
Benin[NDC]	230	0.13	0.06%	Integrative
Burkina Faso[NDC]	2,789	1.38	0.05%	Integrative
Cambodia[NDC]	2,040	9.27	0.45%	Integrative
Cameroon[NAP]	115.02	2.13	1.85%	Integrative
Cameroon[NDC]	31,856	80.80	0.25%	Specific
Congo[NDC]	3,795	15.00	0.29%	Specific
Democratic Republic of the Congo[NDC]	23,080	810.00	3.51%	Specific
Ghana[NDC]	3,300	2.20	0.07%	Specific
Kenya[NAP]	38,704	274.65	0.71%	Specific
Malawi[NDC]	4,547	70	1.54%	Integrative
Mauritania[NDC]	10,626	1,062.60	10%	Integrative
Mozambique[NAP]	7,237	60.36	0.83%	Integrative
Nepal[NAP]	47,440	700.00	1.48%	Specific
Niue[NDC3.0]	248	3.85	1.56%	Integrative
Palestine[NAP]	3,544	11.6	0.33%	Specific
Republic of Moldova[NDC]	1,707.46	0.2	0.01%	Integrative
Sierra Leone[NDC]	1,064	12	1.13%	Integrative
Vanuatu[NDC]	721	60.86	8.44%	Responsive
Average			2.32%	

14 This rates (adaptation) actions from GESI-blind (where no reference or consideration is made) to GESI-specific (which specifically targets marginalized groups), GESI-integrative (where opportunities are provided for participation and benefit on the basis of gender and social group), and finally GESI-responsive (which aims to change policy and structures to address inequality).

The analysis finds:

- Compared with a similar analysis in 2023, GESI considerations are being incorporated into more NAPs/NDCs, with more examples of detailed, gender-integrative targets and gender-specific projects. However, this remains uneven across regions and sectors.
- There are different approaches to GESI considerations in NAPs/NDCs, and the methodologies for defining and financing are often opaque. Most interventions focus on gender equality rather than other aspects of social inclusion (Indigeneity, age or disability).
- The levels of detail and specificity also vary across the documents, even when they fall into the same GESI category. For example, GESI-integrative NAPs/NDCs may acknowledge GESI differences and ensure that targeting provides opportunities for inclusion, yet differ significantly in how these commitments are articulated. For example, the Republic of Moldova's NDC outlines a five-year gender-sensitive communication strategy to increase awareness, while Bangladesh's NAP includes operationalized interventions. These also lead to larger differences in GESI funding allocations.
- Dedicated budgets for GESI commitments vary, from as little as 0.01 per cent to as much as 12 per cent of total adaptation finance needs.

Positively, an increasing number of countries report the alignment between their adaptation policies and national gender equality strategies. Some countries have also integrated gender into public financial systems, suggesting they are further along in financing GESI in adaptation. In the long term, mainstreaming GESI into existing systems is likely to improve equity, but at the current time, dedicated and ring-fenced budgets may be a stronger indication of GESI commitment.

This issue is linked to the NCQG, which urges the inclusion and extension of climate finance to vulnerable communities and groups, including women and girls, and other marginalized groups. However, without specific minimum allocation targets, or shares of funding dedicated to GESI-related actions, there is no guarantee that this will happen. This could be addressed with concrete tracking, guidance, mechanisms and even targets for GESI integration – even if done as an intermediate step, as part of a move to a GESI responsive system. Finally, a broader set of initiatives could be introduced to support GESI-targeted as well as locally led components and activities. These could include tailored support for smaller organizations, as well as concerning the choice of financial instruments, to reduce biases that can perpetuate existing inequalities.

4.6 The private sector and the adaptation finance gap

Given the size of the adaptation finance gap, and the likely limits to international public finance, there is growing interest if the private sector can help fill the gap (e.g. OECD 2023; Gautam *et al.* 2024; World Bank 2025a). There is also a growing grey literature that identifies large future markets for adaptation goods and services (e.g. Collins *et al.* 2024; Oehling *et al.* 2025; Wong and Kim 2025). To investigate these issues, AGR 2025 has undertaken a quantitative analysis of private sector adaptation potential using the AGR modelled cost data set (see section 4.2.1). It is stressed that such an analysis is challenging, and that input data and methodological assumptions significantly affect the results (noting that different actors will have differing views on assumptions). The analysis presented below should therefore be treated as an indicative analysis. The full analysis is presented in a supplementary paper (Watkiss and England 2025).

4.6.1 Framing the private sector role for adaptation

There are existing activities that are typically provided by the public sector, as well as existing markets for private goods and services: adaptation can be mapped onto these.[15] These are linked to the financial returns of adaptation (OECD 2023). Some adaptation actions generate low or no returns, and are likely to be provided by the public sector, while other actions are commercially viable and will be provided by the private sector. Between these are adaptation actions that may provide below-market returns and/or where there are market failures, and where there may be roles for both the public and private sectors. These aspects have been used to build a typology for adaptation (shown in figure 4.7) that includes three categories:

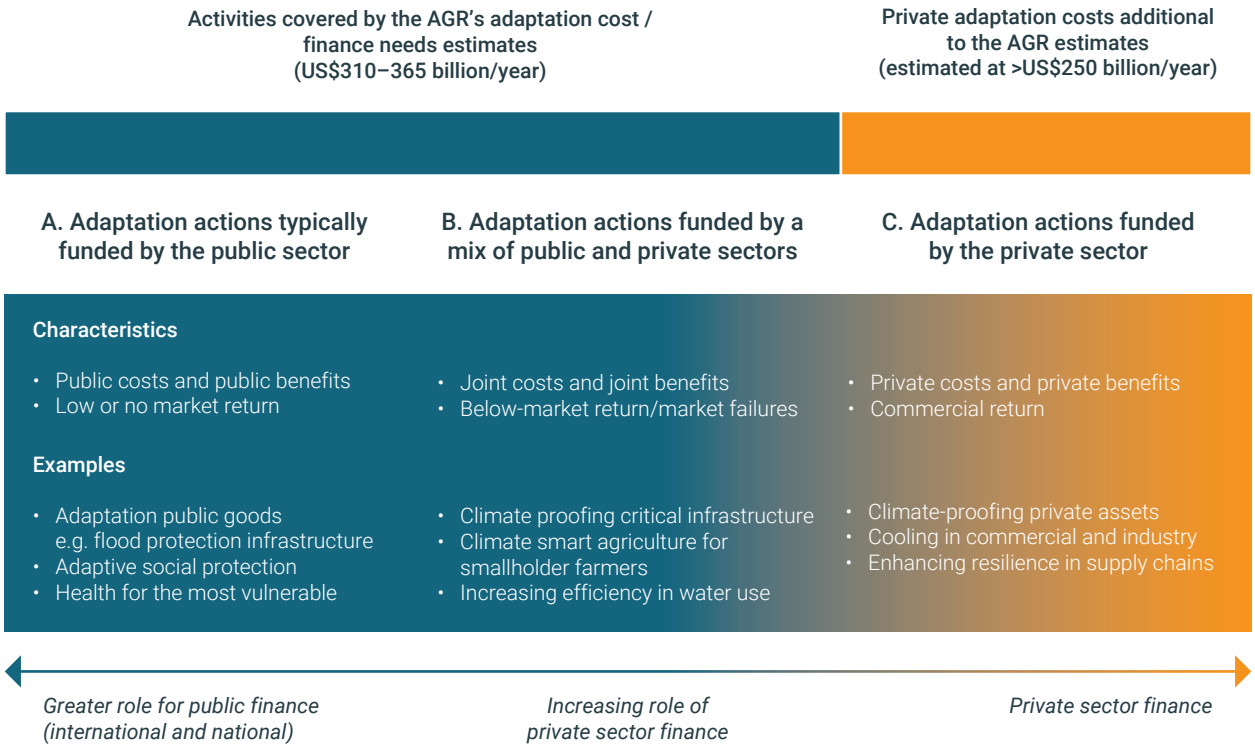
A. Adaptation activities which the public sector typically delivers, such as public goods or in non-market sectors, e.g. major flood protection projects. These involve public costs and provide public benefits, including for the private sector.

B. Mixed areas where government may act to address market failures to deliver more positive welfare outcomes, e.g. for climate-smart agriculture due to its positive environmental benefits, and/or where public action can help make adaptation commercially viable.

15 The role of government is set out in economic public policy theory (e.g. United Kingdom, HM Treasury 2022). This is based on the societal case to act (intervention), considering social and environmental costs and benefits, not just market costs and benefits. In contrast, the private sector will primarily act where there are profitable opportunities, though also to manage risks.

C. Adaptation within existing well-functioning markets that already provide commercial returns, where governments do not normally intervene, e.g. AC in factories. These purely private actions will, in turn, have fiscal benefits for public finances.

Figure 4.7 Simplified spectrum of adaptation actions and public and private roles



The AGR 2025 cost estimates presented earlier – of US$310 to 365 billion/year – are primarily activities that involve direct public or mixed actions, i.e. categories A and B in figure 4.7. These are the focus of this analysis, i.e. we look at the potential role of the private sector for these NAP and NDC priorities. It is stressed that these AGR estimates do not include the costs of pure private activities, i.e. category C above. For example, NAPs do not include the costs of fitting new AC in households or climate-proofing private assets. This means that there are additional adaptation costs for the private sector in developing countries, on top of the AGR estimates. These additional private adaptation costs are estimated very indicatively to be at least US$250 billion/year for developing countries by 2035 (see box 4.3). However, we assume that these pure private sector adaptation costs will be financed entirely by the private sector.[16]

16 This is a simplification, and there are some important issues to note. First, governments may seek to create the enabling environment for the private sector to act in these areas – this is already being advanced with disclosure and transition planning. It may also act if these private actions create external costs, e.g. AC greenhouse gas emissions. Second, the additional costs of private adaptation will be likely to be passed on in the price of goods and services, and/or may also alter the comparative advantage of the private sector of developing countries. There are therefore some complex issues around whether this is equitable.

Box 4.3 What are the additional adaptation costs/finance needs for the private sector?

The estimate of pure private sector adaptation costs (category C in figure 4.7) have not previously been included in the AGR, because they fall outside of the needs identified by developing country Parties. However, these costs are critical, and many recent studies include them when looking at private sector finance flows (Naran *et al.* 2025). There is some evidence emerging on these. There will be large adaptation costs for climate-proofing and retrofitting private sector assets, for example, factories, privately owned infrastructure, etc. The International Monetary Fund (IMF) (Aligishiev, Bellon and Massetti 2022) estimates these costs could total 0.4–0.6 per cent of GDP annually. Using the factors from the IMF report, and focusing on climate-proofing of new private infrastructure only, AGR provisionally estimates adaptation costs at US$150 billion/year for developing countries by 2035. A further large cost will be associated with adapting to the impacts of heat on the labour force (on labour supply and reduced working time, as well as labour productivity and reduced output). While there are some public actions, such as public heat alerts, the majority of adaptation will be delivered by the private sector itself, e.g. with AC for indoor work, shifting labour activities, and protective measures or mechanization for outdoor work. Indicative analysis (ACCREU 2025) indicates that these adaptation costs could be large, with additional indoor cooling alone costs potentially in excess of US$100 billion/year for developing countries by 2035.

For this analysis, it is important to identify the private sector roles in adaptation. These include:

- **Financing:** The private financial sector and private investors can play a key role in financing public adaptation, e.g. for sovereign green bonds, and they also play a similar role for financing private adaptation. There are also opportunities for financial services companies and intermediaries, from both developed and developing countries. These actors also have a role in disclosure and transition planning, and can help other private actors to adapt.
- **Delivering adaptation goods and services:** Adaptation provides the private sector with new market opportunities for adaptation goods and services, for both the public and private sectors (e.g. increased government procurement contracts, providing AC for factories). This can involve large multinational companies through to small and medium-sized enterprises in developing countries.
- **Addressing their own needs:** Private sector companies will address their own adaptation needs, by investing in their own assets and supply chains to manage risks.

It is also important (Fay *et al.* 2021; UNEP 2024) to differentiate between:

Who finances adaptation? (i.e. where does the money come from?) This relates to the source of finance and the financing model for adaptation, i.e. how the upfront costs of investment are met, and the financial instruments involved. This focuses on the role of the public and/or private actors in providing the money to implement adaptation, through relevant financial instruments with associated terms (including financing costs such as interest, i.e. the cost of capital).

Who funds adaptation? (i.e. who pays for adaptation?) Alongside the issue of financing, there is a separate question regarding the funding of adaptation, i.e. how to pay for adaptation over the lifetime of the investment and how these costs (including the financing costs and the cost of capital) will be paid for. This relates to the cost recovery mechanism and requires consideration of whether the funding is from the public budget, from user charges, etc.

This introduces a new set of terms to AGR, and highlights a key difference between the adaptation *finance* gap and the adaptation *funding* gap. It also means that scaling up private sector finance for delivering categories A and B runs the risk of simply passing costs back to developing countries, helping the financing but not the funding gap.[17] This would not align to the UNFCCC CBDR-CR principles or the NCQG text on the Baku to Belém Roadmap.

4.6.2 Analysis of current and potential future private flows

Baseline. The analysis has started by looking at current private adaptation finance flows. This is based on two data sets, for different types of private flows. First, the OECD tracks private adaptation finance mobilized from international

17 As an example, private capital markets can invest in sovereign green bonds that provide the finance for public adaptation, such as flood protection, but it is the developing country government that provides the funding for these investments (i.e. that pays). Similarly, a private utility water company could finance adaptation infrastructure (e.g. building new reservoirs), but it will be the utility customers in the developing country that pay for this through increased user charges. Finally, new adaptation goods and services provided by the private sector (e.g. new technologies for farmers) will be paid for by local farmers; while this provides benefits in reducing climate impacts, unless these actions generate net financial benefits, there is an additional cost (relative to the counterfactual without climate change).

public adaptation finance. This was tracked at US$3.5 billion in 2022 (OECD 2024) and provisionally[18] at US$3.9 billion in 2023 (constant 2023 prices). These mobilized flows are an important contribution to international adaptation finance (e.g. 11 per cent of US$32.4 billion in 2023), but they are only approximately 1 per cent of the estimated adaptation cost/finance needs for 2035 (of US$310–365 billion/year).

Second, the Climate Policy Initiative (CPI) has developed an approach to assess additional private sector adaptation finance flows (Connolly *et al*. 2024) and estimates that globally, over the period 2019–2022, these were US$4.7 billion/year. The recent 2025 update (Naran *et al.* 2025) reports that tracked private adaptation finance flows amounted to US$5.74 billion globally for 2023; excluding North America and Europe, the figure is US$4.4 billion. This represents approximately 1.5 per cent of the estimated adaptation cost/finance needs for 2035. It is noted that these private flows are likely to be a significant underestimate as tracking these flows is difficult, but also that the majority of these flows are likely to be category C adaptation (see figure 4.7).[19]

With the best information currently available, and noting the caveats, the combination of OECD mobilized private investment and the CPI private finance flows indicate total flows of between US$4 billion and 9 billion/year, which is equivalent to 1–3 per cent of total adaptation finance needs by 2035. The tracked amount that is flowing to publicly identified national priorities (see figure 4.7) is likely to be less than this, and can very indicatively be estimated here as US$5 billion. This indicates that current (tracked) private flows have not yet had a large impact on reducing the adaptation finance gap.

Private sector potential. AGR 2025 has looked at the potential for scaling up private sector investment in delivering categories A (public) and B (mixed adaptation) in developing countries, i.e. the publicly identified priorities. This analysis has used the modelled costs of adaptation (section 4.2.1), as this contains disaggregated adaptation cost data by activity and by sector for each individual developing country. The analysis assessed the potential financial returns for each adaptation option, using the typology developed by OECD (2023), as well as analysis of current public and private splits for each action for different country income groupings. This level of resolution is needed because the split of public/private potential varies with the sector, the specific adaptation activity, and for each activity, by individual country. The full analysis is presented in the supplementary paper by Watkiss and England (2025). It is stressed that this initial analysis excludes the role of the private sector in financing national public adaptation through sovereign debt.

The results provide some key insights. A large proportion (approximately 40 per cent) of publicly identified priority adaptation investments are public goods.[20] A further 35 per cent are in areas that are typically provided by the public sector, as they involve quasi-public goods (e.g. climate-proofing new roads) or because they are essential public services (e.g. addressing climate-sensitive disease in low-income households in low-income countries). This means that approximately three quarters (75 per cent) would conventionally be provided (and funded) by the public sector. It is noted that these adaptation actions have high economic (societal) returns, but lower financial returns, because of no or low revenue generation. The remaining 25 per cent involves actions where there is the *theoretical* potential for private sector involvement, with returns that may be mixed or commercial. These are primarily in agriculture, some aspects of water (use), and infrastructure. However, the *realistic* potential for the private sector is lower than this, reflecting current levels of public and private investment in each sector, and lower commercial viability in less developed countries.

When aggregated up, the analysis indicates that the realistic potential for the private sector for public adaptation priorities is between 15 and 20 per cent by 2035 (approximately US$55 billion per year of the total cost of US$310 billion/year), as an average for all developing countries. This low value is not surprising, given the focus on public priorities for adaptation. The values are broadly in line with other recent estimates, e.g. from the Asian Development Bank climate adaptation investment plan studies.[21]

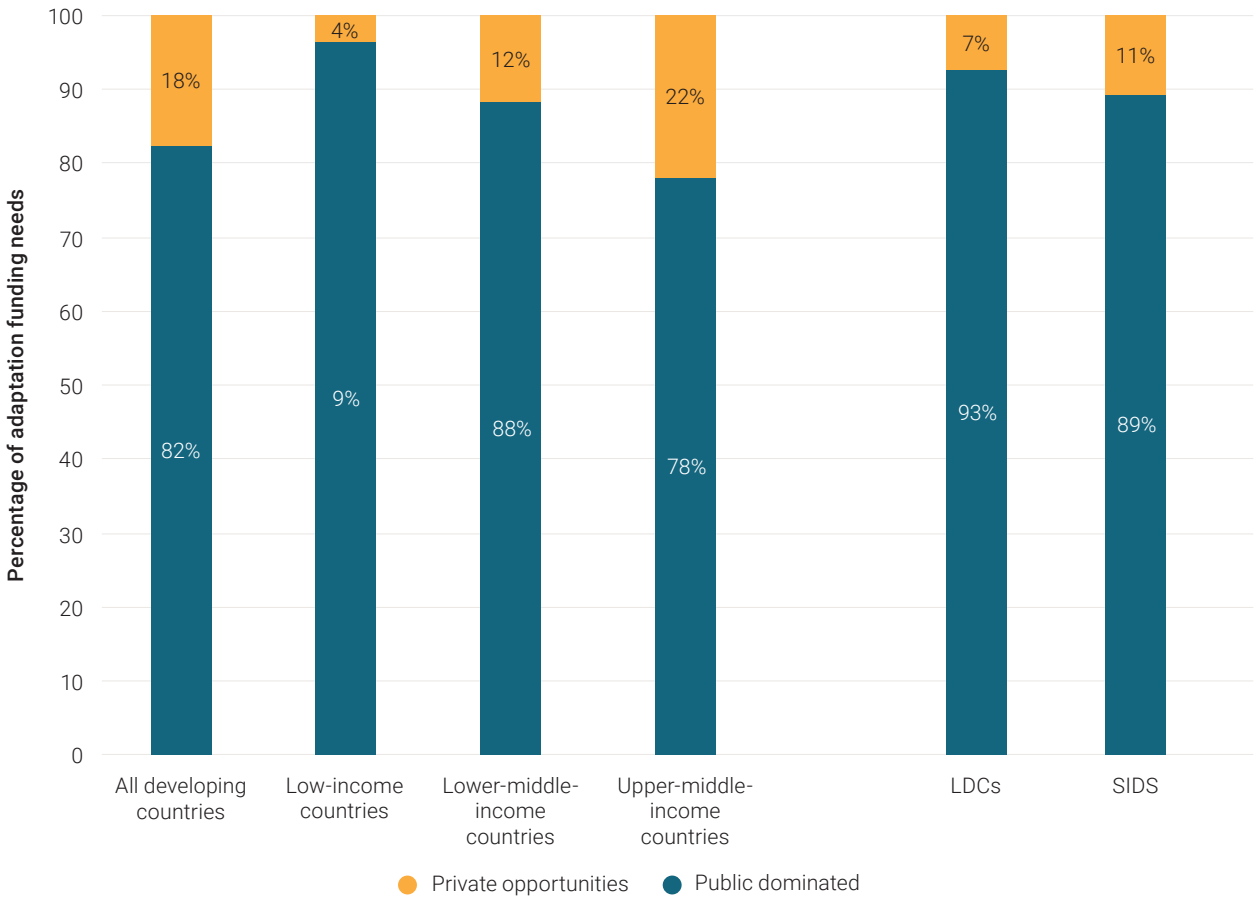
18 This estimate includes MDBs' mobilization in full, without discounting for the significant marker.

19 Total private flows are likely to be higher than the values above, and the numbers exclude flows associated with households. However, tracked private flows are dominated by commercial financial institutions (53 per cent) and are likely to be finance not funding, and they are heavily weighted to company activities that are pure private sector adaptation flows (category C), which are outside the scope of this analysis. Further research and refinement on this issue is needed.

20 Public goods are goods or services that are beneficial to society, i.e. that are available to all (non-excludable) and that can be enjoyed by anyone without diminishing the benefits they deliver to others (non-rivalrous). Public goods are usually funded by governments because, due to their characteristics, they will not be supplied – or will be undersupplied – by the private sector.

21 A more difficult question to answer is whether this private sector investment specifically reduces the adaptation funding gap, as well as the financing gap. There is literature on the positive economic returns of adaptation (Global Commission on Adaptation 2018; Brandon *et al.* 2025), but much less evidence on the financial returns of adaptation, There are some private activities that have revenue models that can generate positive financial returns that fund adaptation, notably those that deliver yield improvements for agriculture or cost savings for water use (Oehling *et al.* 2025). However, financial returns are typically lower than economic returns even in sectors such as agriculture (World Bank 2019; World Bank 2021).

Figure 4.8 The indicative level of potential private funding for adaptation in developing countries by 2035 (based on the incremental modelled costs of adaptation)



The exact value varies by sector and country. There are higher estimated private shares for middle-income countries (figure 4.8) and for some sectors (e.g. agriculture). Conversely there are higher public shares (over 90 per cent) needed for LDCs. This reflects the nature of their adaptation needs, e.g. high public health and social cash transfers, their current high reliance on ODA for external financing (OECD 2025c), and their smaller and less developed private sectors. A high level of public finance is also estimated for SIDS (90 per cent) because of their high coastal protection needs, which traditionally have been publicly funded.

While these levels for the private sector may seem modest, they still involve a major scale-up, and a shift from the current levels of 2–3 per cent (see above) to 15–20 per cent. This is possible, but will require concerted policy action and enabling factors. A number of initiatives are already under way and offer the potential for this private sector scale-up. These include adaptation investment planning, country platforms and adaptation taxonomies, as well as encouraging greater private sector participation in NAPs and NDCs.

Reaching this level is also likely to require international public finance, to catalyse and de-risk private investment, including blended finance. The potential for this has been assessed in detail by Watkiss and England (2025) and is summarized in box 4.4. This indicates that while blended finance has an important strategic role, especially in the agriculture, water and infrastructure sections, the current evidence strongly suggests that it is unlikely to be effective in for scaling up adaptation across other areas – particularly public-focused priorities. It will also require significant volumes of public finance (international public finance) to deliver the anticipated private sector flows.

Box 4.4 The potential for blended finance for adaptation

Many recent studies (e.g. OECD 2023; Network for Greening the Financial System 2025; Ranger *et al.* 2025) identify the opportunity for blended finance, which is where public enabling actions or public sector finance is used to de-risk and unlock private sector investment. To investigate this, AGR 2025 was granted access to and reviewed the Convergence database[22] (Convergence Blended Finance 2024). This includes 102 pure adaptation deals between 2006 and 2024, with a total deal volume of US$10.6 billion. The volume and number of deals was dominated by agriculture (43 per cent of transactions and 60 per cent of finance), followed by biodiversity and ecosystems (14 per cent and 10 per cent), infrastructure (14 per cent and 9 per cent) and water (9 per cent and 13 per cent). There were no identifiable deals relating to coastal, river floods or early warning systems, likely due to their strong public good characteristics.

The data also provides information on the amount of finance mobilized. This is usually measured with the leverage ratio – the ratio of concessional capital relative to all capital in a transaction (Convergence Blended Finance 2024). The average leverage ratios for adaptation, at 2:1, are much lower than mitigation (3.6:1) and sustainable development more broadly (4:1) (Apampa 2023; Convergence Blended Finance 2024). For this analysis, however, we are more interested in the amount of private sector finance mobilized. Traditional mobilization ratios assess the total private capital from a dollar of concessional capital, whether public or private. These ratios are circa 2:1 for climate, including mitigation (Convergence Blended Finance 2024) but likely to be lower for adaptation. However, the private finance mobilized from total public (concessional and non-concessional) is most relevant here (and in terms of the NCQG). Analysis of the data finds that this ratio is only 0.5:1, meaning that, for every US$1 of public finance (concessional and non-concessional), only ca US$0.5 of private finance is mobilized. Again, these lower ratios reflect the characteristics of adaptation. But it does mean that more public finance will be needed than for other applications of blended finance. These findings are in line with other studies (Mazzucato and Vieira de Sá 2025; Pontifical Academy of Social Sciences 2025), and also identify the greater challenge for blended finance in low-income countries, though blended adaptation deals are relatively new, there could be scope to improve private mobilization. Further details on the analysis are presented in Watkiss and England (2025).

22 AGR 2025 acknowledges and thanks Convergence for access to their database. Convergence is the global network for blended finance. It is a not-for-profit organization, funded by governments, philanthropies and members' subscriptions. We stress that the views and opinions expressed in this section are those of the author(s) only, and do not reflect those of Convergence.

4.6.3 What might be possible with more innovative approaches?

There are numerous studies that recommend new financing solutions or arrangements (Stoll *et al.* 2021; Gouett, Murphy and Parry 2023), including new business models that align risk ownership and/or adaptation costs with adaptation benefits and co-benefits (Richmond *et al.* 2021; Wise *et al.* 2022; England *et al.* 2023). This raises an interesting question of whether these innovative approaches could unlock more private sector financing and funding, beyond the estimated 15–20 per cent presented above. AGR 2025 has explored a number of lines of evidence to look at these innovative approaches and assess their potential. This has also considered whether these new approaches reduce the adaptation financing or funding gap, by looking at their cost recovery models, using an extension of an existing taxonomy developed by the World Bank (2025a). Further details are provided in the supplementary analysis (Watkiss and England 2025).

Accelerators and facilities. A first line of evidence was to explore the innovation in the private sector by looking at adaptation accelerators and facilities. These provide support for new private sector adaptation ideas, including adaptation goods and services, as well as business models and financial instruments (noting these include existing ideas or financing models from other areas that are applied to adaptation, as well as more innovative adaptation specific models). They typically include a central facility to provide early-stage support, for example with technical assistance and sometimes innovation grants, alongside offers of concessional lending, guarantees or equity to de-risk investment. These are being complemented with adaptation platforms that help connect developers and potential investors. AGR 2025 investigates a database of projects funded by five of the global adaptation accelerator programmes,[23] which includes 107 projects. An analysis of these found that they are very focused on the agriculture sector (52 per cent of all projects), followed by biodiversity and ecosystems, and infrastructure, but with fewer viable private models in more public areas (e.g. social protection, river flood protection and health). The analysis also found that more projects were targeted at middle-income countries (72) than for LDCs (35). The approach to cost recovery in these project models varies widely. There are examples that generate net financial benefits (yield improvements, carbon credit revenues), but many are based on local charges, or on goods and services that primarily reduce risks. This reinforces the findings that there is high potential to boost private sector financing and funding of adaptation in some, but not all, sectors and localities.

Case studies. A second line of evidence was to review emerging case study applications, including from developed countries. AGR 2025 undertook a literature review and built up a series of sector assessments, populated by case studies, to identify additional innovation. This found that there is the potential to deliver a higher level of private sector investment than the 15–20 per cent value presented above, even in more public-focused sectors (e.g. flood protection). However, while these models provided a way of financing adaptation, most of the revenue and cost recovery models involved payment by governments or user charges to households. They therefore transfer the costs of adaptation back to the developing country itself, reducing the financing gap, but not the funding gap. Further, many of the models in more public sectors required broader reforms, for example, moving to water privatization or passing all agriculture research and development to the private sector. These reforms will not be easy to implement politically, and could also have potentially negative distributional impacts on the poorest and most vulnerable. More positively, a smaller number of case studies showed the potential to help fund as well as finance adaptation, due to their more innovative cost recovery models. Examples included land value capture, mitigation co-benefit models, market-based ecosystem approaches, and supply chain finance. These capture new benefit streams which can help fund adaptation, and offer the greatest potential for bridging the adaptation funding gap. Further analysis of their potential is a priority, including their potential in different contexts, and if there are risks of maladaptation. It is extremely difficult to know what these more positive funding models could achieve, though it is the judgment of the authors that their contribution is likely to be modest, and that these innovative models often still require some public finance for delivery.

Technology and digital. There is further innovation potential from technological advances, digital and artificial intelligence (AI), which could reduce down the costs of adaptation as well as providing more innovative financing solutions. Learning and economies of scale has dramatically reduced the costs of some renewables, some of which can be relevant for adaptation (e.g. solar irrigation). There is also the potential for cost savings for mature adaptation solutions (e.g. climate-proofing of roads), where new digital solutions help optimize targeting of action to reduce costs (Mazarine Climate 2025). There is also growing interest in the use of AI for providing local risk information and supporting adaptation decisions (e.g. with precision farming) that can lead to improved information as well as cost-saving. At the current time, there is insufficient evidence on how these could affect adaptation costs, but further investigation is a priority.

23 The database was created for AGR 2024 (England *et al.* 2023; UNEP 2024) and updated here to include 26 new projects funded from the accelerators. It includes adaptation projects from the Global Innovation Lab for Climate Finance, Global Environment Facility Challenge Program for Adaptation Innovation, Global Innovation Fund Innovating for Climate Resilience Fund, Promoting Entrepreneurship for Sustainable Development (SEED) and GSMA Innovation Fund for Climate Resilience and Adaptation.

4.6.4 Private sector summary

Overall, the AGR 2025 analysis suggests that for the publicly identified adaptation priorities that are the focus of NAPs and NDCs, and noting these values are indicative only, the private sector could potentially meet 15–20 per cent of adaptation needs by 2035. Achieving this level would involve a significant scale up from today from approximately US$5 billion to over US$50 billion per annum. This level is more modest than many recent assessments assume, and it indicates that while it has a role, the private sector alone cannot fill the adaptation finance gap. The potential for the private sector potential will also vary, and will be higher in certain sectors and in middle-income countries.

Achieving this private share will require concerted policy action. It also likely to need international public finance, to catalyse and de-risk private investment. This creates tension due to the dual role for international public finance, both in supporting public adaptation directly, as well as in scaling up private sector investment.

Finally, a higher private sector level of financing might be possible, but only by passing most of the costs of adaptation back to developing countries. The analysis here also reveals that insufficient attention has been given to the distinction between financing and funding. AGR 2025 highlights that this issue needs to be brought out more transparently in negotiation discussions.

4.6.5 Domestic finance and the adaptation finance gap

The other main source of potential finance for bridging the gap is domestic public finance. The analysis of adaptation finance needs (in section 4.2.2) provides some relevant information here, as some countries have documented their unconditional flows, which would be primarily met from domestic public finance. However, for those countries that have specified unconditional finance, these are only around 5 per cent of needs. Looking forward, it is likely that domestic public finance will become a more important flow, especially in the context of changing international public adaptation, and we highlight this as a topic that requires more detailed assessment in the coming years.

4.7 Closing the gap and the Baku to Belém Roadmap

After four years of negotiations, the NCQG was agreed at the twenty-ninth Conference of the Parties to the UNFCCC (COP 29), with developed countries taking the lead in mobilizing at least US$300 billion per year by 2035 for developing countries. However, the NCQG left open the shares of public and private finance; the share of grant financing; the trajectory of increasing climate finance towards 2035; and how finance is balanced between mitigation and adaptation. As highlighted in section 4.2.3, it is likely that there will be less ODA and, by implication, less international public adaptation finance available than previously anticipated. A steep increase will therefore be necessary to mobilize the NCQG goal of US$300 billion per year by 2035.

4.7.1 Climate finance and inflation

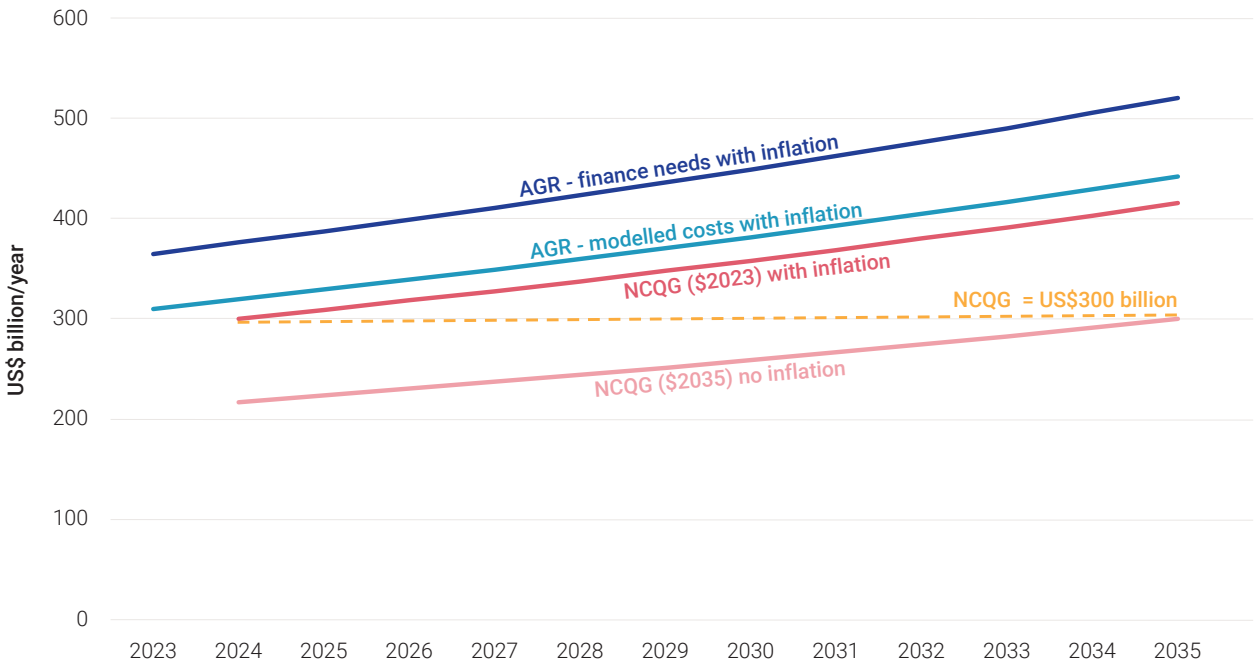
In order to compare the new AGR 2025 estimates of adaptation costs to the climate finance goal of the NCQG, it is critical to do so on a like-for-like basis. The NCQG is highly sensitive to the price year and would be much higher (by 2035) if it was inflation-adjusted (Gabbatiss 2024). However, the NCQG text does not specify the goal will be increased with inflation (the previous US$100 billion goal was not), and we assume it represents US$300 billion of finance in the year 2035.

While future inflation levels are extremely hard to predict, historical rates provide some indications of possible levels.[24] For example, over the past decade, global inflation has varied between 2.5 per cent in 2020 to a high of 8 per cent in 2022. As an illustration, we have applied a 3 per cent fixed annual level of inflation, which is close to the 10-year historical average inflation rate, and is approximately in line with near-term projections over the next couple of years (e.g. World Bank 2025b). A breakdown of alternative rates is included in annex 4.A.

A fixed 3 per cent annual inflation rate would imply that the NCQG goal of US$300 billion in 2035 would only equate to approximately US$210 billion in constant 2023 prices (see figure 4.9). This allows for a direct comparison to the updated AGR estimates of US$310–365 billion/year in constant 2023 prices. Alternatively, the future NCQG value of US$300 billion of climate finance in 2035 can be compared to an inflation-adjusted AGR value; in this case the AGR estimates (US$310–365 billion/year) would be equivalent to US$440–520 billion in 2035 (see figure 4.9). Either way, this highlights that the NCQG will be insufficient to even meet adaptation needs – noting further that the NCQG goal is for mitigation and adaptation finance, and does not include the additional costs of the residual damage after adaptation. This issue of inflation is also relevant for the Glasgow Pact (see box 4.5).

24 There are different metrics for assessing inflation. This analysis draws on GDP deflators, as these are considered more representative of the types of expenditure needed for adaptation than consumer price indices.

Figure 4.9 Illustration of the effect of future inflation (illustrated with 3 per cent fixed) on the AGR estimates (in blue) and the US$300 billion NCQG goal (in red)



Box 4.5 Inflation and the Glasgow Pact

Inflation is also important for the Glasgow Climate Pact (UNFCCC 2022), which urged developed nations to at least double their collective provision of adaptation finance from 2019 levels by 2025 (US$40 billion, see section 4.3.2). This doubling target does not take account of inflation. However, including inflation would make a significant difference, and the 2019 volume of finance flows (US$20 billion) would be approximately US$23.5 billion in current prices – a doubling would indicate US$47 billion by 2025, rather than US$40 billion. The issue of inflation is also extremely important for the emerging discussion on a follow-up goal to the Glasgow Pact. This discussion would benefit from including analysis of inflation explicitly. It is also relevant for the statement issued by the MDBs at COP 29 (see above), which set a goal of US$49 billion for adaptation by 2030.

4.7.2 Closing the adaptation finance gap by 2035

Assuming that the US$300 billion (in 2035 prices) NCQG is reached by 2035, AGR 2025 has developed two illustrative scenarios to better understand the amount of international adaptation finance this could translate into for developing countries. These scenarios are not necessarily realistic – their purpose is to explore the potential of the NCQG for bridging the adaptation finance gap.

In the minimum adaptation scenario, it is assumed that the share of adaptation finance in 2035 will resemble the historical, cumulative share of international public adaptation finance for developing countries from the period 2010-2020, which was 26 per cent of all international climate finance. This would amount to US$78 billion in international adaptation finance (i.e. 26 per cent of the US$300 billion) in 2035. Based on historical allocations, this would result in US$3 billion for SIDS and US$25 billion for LDCs.

In the maximum adaptation scenario, it is assumed that the Glasgow Pact pledge is achieved (US$40 billion by 2025; see section 4.3.2 and box 4.5), and that this amount is tripled by 2030, in line with a proposal by the LDCs for the Baku to Belém Roadmap (LDC Group on Climate Change 2025).[25] This would lead to ca US$120 billion in adaptation finance by 2030. Assuming that the growth rate of 7 per cent per

25 This proposal is not shared by all countries and mentioning it here should not be interpreted as a sign that the authors or UNEP supports this proposal – it serves for the scenarios only.

year in international public adaptation finance achieved in the last five years continues after this time, this would increase to US$166 billion by 2035, slightly more than half of the NCGQ finance goal of US$300 billion. When assuming 2019 allocations as a base, this would result in US$6 billion for SIDS and US$55 billion for LDCs in 2035.

Two important conclusions can be drawn based on this indicative quantification of financial flows (see table 4.4).

First, even if the NCQG is achieved, a significant adaptation finance gap is likely to remain in 2035, regardless of the share of international public climate finance that will flow towards adaptation.[26]

Table 4.4 Potential amounts of international adaptation finance in 2035, assuming the NCQG is met, for minimum and maximum adaptation scenarios

	Amount of international adaptation finance (of the NCQG) in 2035*	Modelled costs (see section 4.2.1)	Finance needs (see section 4.2.2)	Modelled costs of LDCs and SIDS	Finance needs (NAPs/NDCs) of LDCs and SIDS
Minimum scenario	US$78 billion	US$310 billion (constant 2023 prices) With inflation, could be US$440 billion/year by 2035 (see figure 4.9)	US$365 billion (constant 2023 prices) With inflation, could be US$520 billion/year by 2035 (see figure 4.9)	LDCs: US$34 billion/year SIDS US$4 billion/year SIDS and LDCs (without overlap): US$37 billion/year With inflation, SIDS and LDCs could be US$53 billion/year by 2035	LDCs: US$46 billion/year SIDS: US$6 billion/year LDCs and SIDS (without overlap): US$50 billion/year With inflation, could be US$71 billion/year in 2035
Maximum scenario	US$166 billion				

Note: * It is assumed that the goal to mobilize US$300 billion (in 2035 prices) is reached by 2035. See text for explanations of assumptions.

Second, international adaptation finance flows under both the minimum and the maximum scenario would be enough to close the adaptation finance gap in 2035 for all LDCs and all SIDS (see table 4.4), noting the Paris Agreement and NCQG allow for prioritization of these vulnerable countries.

Under the minimum scenario, however, this would require an allocation of 47–64 per cent of all available international adaptation finance (even assuming the NCQG was met). This would leave only US$28 billion–33 billion in total for all other developing countries, and far less when taking inflation into account. Furthermore, LDCs' and SIDS' need for grant-based and highly concessional finance was acknowledged in the NCQG, implying that other developing countries would get a higher share of loans, especially non-concessional loans (UNFCCC 2024a, paragraph 14). The maximum scenario would require an allocation of 22–30 per cent of all international adaptation finance to LDCs and SIDS. This seems more equitable, but the likelihood of achieving the NCQG and delivering this level of adaptation finance (over 50 per cent of the NCQG) is low.

Finally, an issue that was not mentioned in the Paris Agreement but that features in the NCQG are the unsustainable debt levels faced by many developing countries. Public expenditure of developing countries (excluding China) on interest on debt outweighs climate investments as a percentage of GDP (UNCTAD 2024). Between 2016 and 2020, SIDS spent almost 18 times more in debt repayments than they received in climate finance (Fresnillo and Crotti 2022). These existing high debts, increasing climate change impacts and a lack of adaptation finance together increase the risk of an 'adaptation investment trap', where the rising costs of climate disasters increase indebtedness and make it much harder for countries to invest in adaptation and resilience, in turn putting them at even higher risk (Ameli *et al.* 2021).

26 It is stressed that from an economic point of view, it should not be the role of the public sector to cover the full costs of adaptation (UNEP 2023). The existence of an adaptation finance gap – even under the maximum scenario – does imply that it is important to use adaptation finance effectively and to prioritize the allocation of international public finance, taking into account that private finance will gravitate towards profitable opportunities (see section 4.5.1), and that some countries are particularly vulnerable to climate change, among other factors.

4.7.3 Baku to Belém Roadmap to 1.3T

The Baku to Belém Roadmap to 1.3T aims at scaling up climate finance to developing countries to support reducing greenhouse gas emissions and climate-resilient development pathways, and implementing NDCs and NAPs, "including through grants, concessional and non-debt-creating instruments, and measures to create fiscal space, taking into account relevant multilateral initiatives as appropriate." As the characteristics of the decision in Baku on the US$300 billion essentially mirror the decision in Copenhagen in 2009 (Pauw 2025), the need is high for the Baku to Belém Roadmap to 1.3T to think more outside of the box. AGR 2025 recommends that progress can be made on three key issues:

1. **Contain the growth of the gap.** Mobilizing more adaptation finance will only be helpful to close the adaptation finance gap, if that gap stops growing. This could be advanced in two ways:

    - Climate change mitigation needs to scale up by rapidly decreasing investments in fossil fuel assets (UNEP 2023c). The Baku to Belém Roadmap to 1.3T could provide guidance on how to implement the UNFCCC global stocktake's call to transition away from fossil fuels in energy systems, and phase out inefficient fossil fuel subsidies (alongside other recommendations in the global stocktake's article 28). It could call on all Parties to, for example, reduce investments in fossil fuel infrastructure, and enact ambitious carbon pricing.

    - The Roadmap could provide guidance on avoiding maladaptation. Built on imperfect information, many adaptation strategies fail, and can even create conditions that worsen the situation (Schipper 2020). In order to contain the growth of the adaptation finance gap, adaptation finance should not be wasted through maladaptation. The Roadmap could emphasize that successful adaptation should address the root causes of vulnerability, for example through fair allocation of finance within countries, enhancing access to resources, enhancing capabilities and opportunities, and addressing unequal power dynamics (Shawoo *et al.* 2025). It could also encourage locally led and GESI-integrative programming (see section 4.5) with concrete tracking, guidance and mechanisms, and even minimum allocation targets.

2. **Increase the volume of adaptation finance with the help of new climate finance providers.** The Annex II list of climate finance contributors has not changed since its creation in 1992 (except for the removal of Türkiye in 2001). This Annex II list is turning into a weakness of the UNFCCC in the context of a changing geopolitical world order, countries' diversifying emission and economic growth pathways; as well as increasing climate finance needs (Pauw *et al.* 2024). Adding countries to the Annex II list was not possible under the NCQG. In practice, however, many developing countries are already contributing significantly, and if such contributions were included, it significantly increases total international public adaptation finance by 27 per cent (see section 4.3). The Roadmap could identify ways in which those developing countries that are in a position to do so can contribute to closing the adaptation finance gap in ways that are more transparent and accountable than current South-South cooperation, but without formally adding such countries to the Annex II list of contributors. The aim should be to increase the volume of adaptation finance with the help of new climate finance providers, without diluting existing responsibilities of developed countries.

3. **Engage the financial system more broadly.** As well as increasing the amount of adaptation finance, it is imperative to integrate climate resilience in investment decisions in both public and private sectors. A draft negotiation text on the NCQG ("streamlined compilation of proposals") referred to relevant actors for this, including central banks, commercial banks, credit rating agencies and export credit agencies (UNFCCC 2024b). While the integration of physical climate risks into financial decision-making is less straightforward than for transition risks, their integration is critical to managing financial risks of climate change. Some central banks are starting to manage these risks.[27] The insurance sector also needs to integrate physical risks in its policies (Mills 2009), and is increasingly

27 For example, the Reserve Bank of India carried out a survey in 2022 to assess the status of climate risk and sustainable finance among leading commercial banks (Reserve Bank of India 2022), and concluded that they need to fully grasp the physical risks associated with climate risk and actively start managing these to make their loan and investment portfolios more resilient. The Reserve Bank of New Zealand conducted a climate stress test to assess the financial impacts of climate-related risks on its largest banks' balance sheets. The banks themselves indicated that they could reduce their exposure to physical climate risks by, for example, changing to risk appetite settings, including by limiting new lending in flood-prone areas; repricing for climate-related risks such as adding climate risk premiums; and providing favourable loan terms for adaptation purposes such as flood defence.

central to climate change adaptation efforts (Collier, Elliott and Lehtonen 2021).[28]

The integration of physical risks in financial decision-making might not necessarily mobilize additional investments in adaptation, but it will help to increase climate resilience over time. It must be reiterated (UNEP 2023a), however, that it could also negatively impact on the economies of developing countries in the short term, as addressing risks could increase prices, for example through insurance, guarantees or other de-risking instruments. In the worst case, the identification and integration of climate-related risks might led to investments being prohibitively expensive or unprofitable, and could even cause capital flight. Advancing article 2.1(c) of the Paris Agreement – if solely driven by financial materiality – might therefore lead to the increase of perceived risks and negative biases against the most vulnerable populations, including LDCs and SIDS (Moody's Investors Service 2017; Fitch Ratings 2021), or the most exposed sectors such as agriculture, natural capital and infrastructure. This is an issue of fairness that UNFCCC urgently needs to address (UNEP 2023a).

28 In the United States of America, insurance is growing more costly and less available for millions of Americans, especially for those in the most disaster-prone areas. Premiums paid by people living in places where climate-related losses were expected to be highest were on average 82 per cent higher than the premiums of people living in the least risky areas (Clark 2025). There is also evidence that mortgage providers integrate climate risks into their products. For example, although flood risk information is increasingly incorporated in the underwriting process in the United States of America, both hurricanes Harvey and Sandy led to elevated levels of commercial mortgage delinquency (Holtermans, Kahn and Kok 2024).

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Chapter 1

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Chapter 4

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A view of the artificial reef installed at Mont Choisy Beach, Mauritius, in an attempt to combat soil erosion. The installation will break up the waves before they reach the shore, and will also act as a habitat for fish.

Photo: © Reuben Pillay / Climate Visuals Countdown

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