

Come hell and high water

As fires and floods hit the poor hardest, it is time for the world to step up adaptation actions

Online Annexes



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Come hell and high water

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Online Annexes

Adaptation Gap Report 2024

Annex 2 Global progress on adaptation planning

Annex 2.A Methodology underlying section 2.2

Section 2.2 provides a global overview of adaptation planning at the national level by looking at the overall number of national planning instruments for adaptation (e.g. plans, strategies, policies) that aim to guide/facilitate medium- to long-term adaptation planning.

Purpose

This section updates analysis conducted in the Adaptation Gap Reports (AGRs) 2020–2023 and seeks to demonstrate the progress made by countries in establishing national plans, strategies and policies to guide and facilitate adaptation.

Methodological approach

Policy instruments were identified through a desk review of publicly accessible databases with global coverage. These included:

- Party submissions to the United Nations Framework Convention on Climate Change (UNFCCC), i.e. nationally determined contributions (NDCs),¹ adaptation communications,² national communications³ and national adaptation plans (NAPs) submitted to NAP Central,⁴ a UNFCCC-hosted database of NAPs
- Climate Change Laws of the World (CCLW) database⁵ hosted by the Grantham Research Institute on Climate Change and Environment

In addition to reviewing these databases, an individual Google search was conducted for each country in the 2024 analysis.⁶ The purpose of this additional search was to reduce the analysis' reliance on secondary data (see limitations section below).

¹ More information available at <https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs>

² More information available at www.unfccc.int/topics/adaptation-and-resilience/workstreams/adaptation-communications.

³ Annex I (see www.unfccc.int/NC7 and www.unfccc.int/NC8) and non-Annex I (www.unfccc.int/non-annex-I-NCs).

The cut-off date for analysis of the various documents and databases was 5 August 2024.

To be counted in this analysis, planning instruments had to meet the following criteria:

Planning instruments relevant to this analysis included national policies, strategies and plans that were designed to guide/lead to adaptation action. These instruments could be exclusively adaptation-focused, or cross-cutting across adaptation and mitigation. When instruments were cross-cutting, they had to have specific, time-bound policies and tools that were focused on adaptation (and not merely recommendations) in order to be counted as an adaptation planning instrument.

Planning instruments also had to have a cross-sectoral purview (i.e. instruments focusing on single or specific clusters of sectors were not counted). Furthermore, they had to have a medium- to long-term outlook. This means that the analysis did not count national adaptation programmes of actions (NAPAs) or similar adaptation programmes that were one-off and short-term in nature.

Data processing

Once individual planning instruments had been identified, the data for each country was reviewed to identify cases where individual planning instruments were direct subcomponents of other planning instruments, and could thus be considered part of the same 'policy package'. In cases where individual planning instruments were considered part of a singular policy package, the data points were merged so that they only counted as one instrument.

This process of normalizing the data set was required as countries publish adaptation planning

⁴ More information available at <https://napcentral.org/submitted-naps>.

⁵ See <https://climate-laws.org>.

⁶ The search terms used were: [country name] national adaptation plan/strategy/policy, [country name] national climate change plan/strategy/policy, [country name] adaptation law/act, [country name] climate change law/act.

instruments in different ways, with some countries publishing single instruments that contain a policy, strategy and action plan (i.e. publishing what could be considered as multiple instruments as one instrument), and others publishing policies, strategies and action plans as separate documents, despite the policy, strategy and/or action plan being directly connected (i.e. part of the same policy package). Thus, grouping instruments together in this manner was required to enhance the comparability of data between different countries.

Where there was insufficient evidence to confidently establish that two planning instruments were part of the same policy package, these were counted as two separate instruments.

Limitations

The methodology applied during this assessment has several material limitations that should be considered when assessing the trends described in section 2.2 of chapter 2. These are described below:

The timing of the assessment means that data for 2024 is incomplete. As the cut-off date for collecting the data assessed was 5 August 2024, the values for 2024 provided in the chapter represent just over half of the year. This can lead to a slightly misleading picture of the progress visualized by figure 2.1.

Reliance on secondary data means that data for more recent years is under-represented. There is an inevitable time lag between a country publishing a plan, strategy or policy, and this information being either reported in its submissions to the UNFCCC or present in databases such as the CCLW database. As there are often multi-year gaps between Party submissions to the UNFCCC, new plans, strategies and policies may not be identified through this methodology until several years later. This limitation means that the overview provided

by this assessment is likely to under-represent the number of new plans, strategies and policies published in recent years. Similarly, it also means that the number of plans, strategies and policies published in years covered by assessments conducted in previous AGRs (i.e. 2000–2021) is likely to have increased in the 2024 assessment. Supplementation of data extracted from Party submissions to the UNFCCC and the CCLW with a Google search was intended to minimize the extent to which numbers for more recent years are underestimated.

Focus on national-level instruments does not sufficiently capture progress being made in countries where adaptation planning primarily falls under the jurisdiction of line ministries and subnational governments. The assessment focuses on the national level for two main reasons: (1) it is at this level that countries engage with the UNFCCC, and (2) it is at this level that reasonable data coverage exists (comprehensive records of sectoral/subnational adaptation planning are not presently available).

A result of the decision to focus on national-level planning, however, is that progress made by countries in which adaptation is primarily under the jurisdiction of subnational levels of government (e.g. the state level) is not adequately captured. For example, the approach may give the impression that countries without a national-level adaptation plan, strategy or policy in place are making no progress in adaptation planning, which may not always be the case. For example, Belarus is registered in this analysis as having no adaptation plan, strategy or policy in place. However, in its most recent national communication, Belarus reports that line ministries with jurisdiction over vulnerable sectors have developed adaptation strategies, meaning that progress is occurring on some level (Belarus, Ministry of Natural Resources and Environmental Protection 2022). This progress, however, is not captured by this analysis.

Annex 2.B: Methodology underlying section 2.3

The analysis presented in section 2.3 assesses the potential effectiveness of NAPs submitted to the UNFCCC by developing countries. To do this, the analysis assesses NAP documents against

four criteria of potentially effective national adaptation planning:

1. Robustness of the evidence base

2. Coverage
3. Implementability
4. Inclusiveness

To assess NAP documents against these criteria, four individual assessments were conducted, the

results of which are presented in sections 2.3.1–2.3.4. A description and rationale for these criteria are presented in table 2.1 in the main chapter of the report. A list of the NAPs submitted to the UNFCCC that were reviewed across all four of these assessments is included in table 2.B.1, while full methodologies for each assessment conducted are described in the following sections.

Table 2.B.1 NAPs reviewed across analyses presented in section 2.3

Country	Region	Date posted of reviewed submission	Language of reviewed submission
Benin	Africa	8 July 2022	French
Burkina Faso	Africa	15 October 2015	English
Burundi	Africa	4 December 2023	French
Cabo Verde	Africa	23 October 2022	English
Cameroon	Africa	26 October 2015	French
Central African Republic	Africa	16 October 2022	French
Chad	Africa	15 February 2022	English
Democratic Republic of the Congo	Africa	6 July 2022	English
Ethiopia	Africa	1 March 2019	English
Kenya	Africa	28 February 2017	English
Liberia	Africa	16 December 2021	English
Madagascar	Africa	29 May 2022	French
Morocco	Africa	5 January 2024	French
Mozambique	Africa	7 July 2023	English
Niger	Africa	14 November 2022	French
Sierra Leone	Africa	8 February 2022	English
South Africa	Africa	29 September 2021	English
South Sudan	Africa	1 November 2021	English
Sudan	Africa	26 September 2016	English
Togo	Africa	17 January 2018	French
Zambia	Africa	11 November 2023	English
Bhutan	Asia and the Pacific	22 September 2023	English
Bangladesh	Asia and the Pacific	23 March 2023	English
Cambodia	Asia and the Pacific	7 July 2021	English
Fiji	Asia and the Pacific	12 December 2018	English
Kiribati	Asia and the Pacific	21 January 2020	English
Kuwait	Asia and the Pacific	11 February 2021	English

Marshall Islands	Asia and the Pacific	9 December 2023	English
Nepal	Asia and the Pacific	30 October 2021	English
Pakistan	Asia and the Pacific	15 August 2023	English
Philippines	Asia and the Pacific	30 May 2024	English
Papua New Guinea	Asia and the Pacific	11 April 2023	English
Sri Lanka	Asia and the Pacific	1 November 2016	English
State of Palestine	Asia and the Pacific	11 November 2016	English
Thailand	Asia and the Pacific	18 April 2024	English
Timor-Leste	Asia and the Pacific	31 March 2021	English
Tonga	Asia and the Pacific	27 October 2021	English
Albania	Eastern Europe	27 October 2021	English
Armenia	Eastern Europe	24 September 2021	English
Bosnia and Herzegovina	Eastern Europe	21 December 2022	English
Republic of Moldova	Eastern Europe	26 June 2024	English
Argentina	Latin America and the Caribbean	23 November 2023	English
Brazil	Latin America and the Caribbean	12 May 2016	English
Chile	Latin America and the Caribbean	7 September 2017	Spanish
Colombia	Latin America and the Caribbean	27 February 2018	Spanish
Costa Rica	Latin America and the Caribbean	5 May 2022	Spanish
Ecuador	Latin America and the Caribbean	21 March 2023	Spanish
Grenada	Latin America and the Caribbean	6 November 2019	English
Guatemala	Latin America and the Caribbean	2 August 2019	Spanish
Haiti	Latin America and the Caribbean	5 January 2023	French
Paraguay	Latin America and the Caribbean	14 July 2022 (updated NAP reviewed)	Spanish
Peru	Latin America and the Caribbean	22 July 2021	Spanish
Saint Lucia	Latin America and the Caribbean	21 September 2018	English
Saint Vincent and the Grenadines	Latin America and the Caribbean	14 November 2019	English

Suriname	Latin America and the Caribbean	2 June 2020	English
Trinidad and Tobago	Latin America and the Caribbean	15 May 2024	English

Methodology underlying section 2.3.1

Section 2.3.1 analyses information about climate projections and impacts, vulnerability and risks (IVR) contained within NAPs. The purpose of this analysis is to answer the research question: To what extent is information about future climate change and IVR informing NAP preparation appropriate for supporting robust decision-making?

Methodological approach

To answer this research question, information related to climate change projections and IVR were reviewed in each NAP. The analysis examines the information about climate projections and IVR included in NAP documents, using this data as a proxy for the information reviewed during the NAP preparation process. To evaluate this information, the analysis focuses on seven key indicators: two related to climate projections and five related to IVR (these indicators and their corresponding metrics are described in box 2.B.1).

Indicators related to climate projections:

- 1.1 Have climate projections informing the preparation of NAPs been developed using multi-model ensembles?
- 1.2 Do NAPs discuss uncertainty associated with climate change projections?

Indicators related to IVR:

Does information about IVR

- 1.3 Consider future climate change impacts?
- 1.4 Consider how vulnerable groups experience IVR?
- 1.5 Consider compound risks?
- 1.6 Consider cascading impacts?
- 1.7 Consider transboundary risks?

These indicators were selected based on the review of relevant best practice guides and scientific literature.⁷ They capture key best practices in climate projection development and IVR assessment that are recognized as enhancing the ability of information generated by these processes to support robust decision-making.

As IVR information in NAPs is typically organized into socioeconomic sectors,⁸ indicators 1.3–1.7 were collected separately for each sector. This approach allows the analysis to evaluate the prevalence of IVR-related indicators across different sectors presented within a NAP. It also ensures that the presence of one sector that scores highly does not give the impression that IVR information concerning all sectors is of similar quality.

Box 2.B.1 Indicators for assessing the robustness of the evidence base underlying NAPs

Indicators related to climate change projections:

- 1.1 Have climate projections informing the preparation of NAPs been developed using multi-model ensembles?

⁷ For example: Taylor, Stouffer and Meehl (2012), Woodruff and Regan (2019), O'Neill *et al.* (2022), New *et al.* (2022), United Nations Office for Disaster Risk Reduction (2022) and Reckien *et al.* (2023).

⁸ In addition to IVR being presented by socioeconomic sector, in a handful of cases, NAPs also presented IVR

by region (three) or climate hazard (three). When this occurred, regions and climate hazards were treated as sectors and therefore feature in this analysis.

This indicator assesses whether climate projections have been developed using large multi-model ensembles (e.g. Coupled Model Intercomparison Project Phase 5 or 6).

Metrics:

Large multi-model ensemble used: The NAP states that an ensemble of over five models was used to generate climate projections presented in the NAP.

Small number of models used: The NAP states that five or fewer models were used to generate climate projections presented in the NAP.

No information: No information is provided about the number of models used to generate climate projections presented in the NAP.

1.2 Do NAPs discuss uncertainty associated with climate projections?

This indicator assesses whether uncertainty associated with climate projections has been discussed within the NAPs. This indicator serves as a proxy for assessing whether this uncertainty has been considered within (1) IVR assessments based on these climate projections and (2) decisions concerning priority actions identified in the NAP itself.

Metrics:

Yes: The uncertainty associated with the results of climate projections is discussed.

No: The uncertainty associated with the results of climate projections is not discussed.

Indicators related to IVR information:

1.3 Does information about IVR contained in NAPs consider future climate change impacts?

This indicator assesses whether information about IVR contained within a NAP discusses IVR associated with future levels of climate change. This indicator serves as a proxy for assessing to what extent IVR assessments informing NAPs have considered future climate change in their assessments of IVR.

Metrics:

Yes, future IVR is quantified: Summaries of sectoral or regional IVR quantify future levels of IVR.⁹

Yes, future IVR is discussed in the context of specific future scenarios: Summaries of sectoral or regional IVR refer to elaborated future climate scenarios when describing potential future impacts.¹⁰

⁹ This can include through quantifying impacts (e.g. 1,000 km² of land inundated due to 1 m sea level rise) or providing qualitative metrics that describe levels of risk or vulnerability (e.g. 'high-risk', 'medium-risk', 'low-risk').

¹⁰ Examples of sentences that meet this criteria include: (1) "By 2050, a 6 per cent reduction in precipitation is expected, which will have significant impacts on the agricultural sector", (2) "One metre of sea level rise will lead to significant inundation of coastal areas", and (3) "Under a pessimistic warming scenario, increased precipitation can be expected to lead to greater instances of landslides, which will lead to destruction of informal settlements in the outskirts of mountainous urban areas".

Yes, future IVR are discussed in the context of general climate trends: Summaries of sectoral or regional IVR refer to general climate trends (e.g. increasing precipitation or increasing frequency of floods) when describing potential future impacts.

No, future climate change is not discussed: Summaries of sectoral or regional IVR fail to refer to climate trends or changes in IVR due to climate change.

1.4 Does information about IVR consider how vulnerable groups experience IVR?

This indicator assesses whether information about IVR contained within NAPs discusses how vulnerable groups are impacted by, at risk of or vulnerable to climate impacts. This indicator serves as a proxy for assessing to what extent IVR assessments informing NAPs have assessed how certain vulnerable groups are especially affected by climate change, considering their greater propensity to be vulnerable to its impacts. Stakeholder groups considered as vulnerable in this analysis follow those proposed in the AGR 2022: women, Indigenous peoples, migrants, persons with disabilities, children and young people, local communities and future generations (United Nations Environment Programme [UNEP] 2022).

Metrics:

Yes: NAP identifies specific vulnerable groups as being particularly impacted by, vulnerable to or at risk of climate impacts.

No: No specific vulnerable groups are identified in sectoral summaries of IVR.

1.5 Does information about IVR contained in NAPs consider compound risks?

This indicator assesses whether information about IVR contained within NAPs discusses compound risks. This indicator serves as a proxy for assessing to what extent IVR assessments informing NAPs have considered compound risks. Compound risks are defined in the glossary of the Intergovernmental Panel on Climate Change Working Group II Sixth Assessment Report (2022a) as arising “from the interaction of hazards, which may be characterised by single extreme events or multiple coincident or sequential events that interact with exposed systems or sectors”. To be allocated the ‘Yes’ indicator, NAPs must explicitly refer to the potential for multiple (climate and non-climate) hazards to be compounded, leading to larger impacts.

Metrics:

Yes: The summary of IVR for a sector or region refers to a risk that meets the definition of compound risks.

No: The summary of IVR for a sector or region does not refer to a risk that meets the definition of compound risks.

1.6 Does information about IVR contained in NAPs consider cascading impacts?

This indicator assesses whether information about IVR contained within NAPs discusses cascading impacts. This indicator serves as a proxy for assessing to what extent IVR assessments informing NAPs have considered cascading impacts. Cascading impacts from extreme weather or climate events are defined by the glossary of the Sixth Assessment Report (2022a) as occurring when “an extreme hazard generates a sequence of secondary events in natural and human systems that result in physical, natural, social or economic disruption, whereby the resulting impact is significantly larger than the initial impact. Cascading impacts are complex and multidimensional, and are associated more with the magnitude of vulnerability than with that of the hazard.” For a NAP to receive a ‘Yes’ indicator, it must describe potential impact chains that

include impacts situated at least two or more "links" away from the closest climate hazard within the chain.¹¹

Metrics:

Yes: The summary of IVR for a sector or region refers to a risk that meets the definition of cascading impacts.

No: The summary of IVR for sector or region does not refer to impacts that meet the definition of cascading impacts.

1.7 Does information about IVR contained in NAPs consider transboundary risks?

This indicator assesses whether information about IVR contained within NAPs discusses compound risks. This indicator serves as a proxy for assessing to what extent IVR assessments informing NAPs have considered transboundary risks. Transboundary risks are defined by Anisimov and Magnan (2023) as risks induced by climate change that cross national borders. Such risks can be transmitted across land borders through shared natural resources (e.g. transnational water bodies) or via teleconnections (e.g. supply chains and global food markets) (Moser and Hart 2015; O'Neill *et al.* 2022). To be allocated the 'Yes' indicator, NAPs must refer to the potential for impacts occurring in other territories to have knock-on implications for their country.

Metrics:

Yes: The summary of IVR for a sector or region refers to a risk that meets the definition of transboundary risks.

No: The summary of IVR for a sector or region does not refer to a risk that meets the definition of transboundary risks.

Methodology underlying section 2.3.2

The analysis presented in section 2.3.2 aims to answer the following research questions: What do adaptation priorities contained within NAP documents address, and to what extent could they comprehensively address the various themes, processes and enabling factors necessary to achieve their aim of reducing climate risks?

Methodological approach

To answer these research questions, the substantive emphasis of adaptation priorities contained within NAP documents were mapped against:

- the thematic areas captured by the United Arab Emirates Framework for Global Climate Resilience's (UAE FGCR) thematic targets
- the elements of the iterative adaptation policy cycle captured by the UAE FGCR's dimensional targets
- the six enabling factors for effective NAP processes identified by NAP Global Network (2023)

These themes, elements and enabling factors are presented in box 2.B.2.

¹¹ For example, a NAP that states that urban-rural migration (second impact) could be triggered by agricultural losses (initial impact) caused by extreme drought (closest climate hazard) in rural areas would be allocated a 'Yes' indicator. A NAP that states that destruction of property (initial impact) could be caused by increases in glacial meltwater (second hazard) due to increased average temperatures (initial hazard) would not be allocated a 'Yes' indicator.

The thematic and dimensional targets of the UAE FGCR were selected as the basis for this analysis as they have been agreed upon by Parties to the Paris Agreement as the overall framework against which the next UNFCCC global stocktake will assess progress towards the global goal on adaptation (FCCC/PA/CMA/2023/16/Add.1). They can thus be seen to represent a shared vision, agreed on by Parties, of the key areas that must be addressed to successfully adapt to the impacts of climate change. This analysis, therefore, captured the extent to which countries' sectoral priorities are reflected in the thematic and dimensional targets of the UAE FGCR.

Meanwhile, the six enabling factors for effective NAP processes identified by NAP Global Network (2023) were selected to capture the extent to which adaptation priorities addressed different aspects of the enabling environment for adaptation. While these factors are not captured in the UAE FGCR, they correspond to those identified as being important for adaptation action in the wider literature, including by the Intergovernmental Panel on Climate Change (2022b) and Brulo *et al.* (2024).

Box 2.B.2 Thematic areas, stages of the iterative adaptation policy cycle and enabling factors against which adaptation priorities contained within NAPs were mapped

UAE FGCR thematic targets to be achieved by 2030:

- **Water:** "Significantly reducing climate-induced water scarcity and enhancing climate resilience to water-related hazards towards a climate-resilient water supply, climate-resilient sanitation and access to safe and affordable potable water for all"
- **Agriculture and food:** "Attaining climate-resilient food and agricultural production and supply and distribution of food, as well as increasing sustainable and regenerative production and equitable access to adequate food and nutrition for all"
- **Health:** "Attaining resilience against climate change related health impacts, promoting climate-resilient health services and significantly reducing climate-related morbidity and mortality, particularly in the most vulnerable communities"
- **Ecosystems and biodiversity:** "Reducing climate impacts on ecosystems and biodiversity, and accelerating the use of ecosystem-based adaptation and nature-based solutions, including through their management, enhancement, restoration and conservation and the protection of terrestrial, inland water, mountain, marine and coastal ecosystems"
- **Infrastructure and human settlements:** "Increasing the resilience of infrastructure and human settlements to climate change impacts to ensure basic and continuous essential services for all, and minimizing climate-related impacts on infrastructure and human settlements"
- **Poverty and livelihoods:** "Substantially reducing the adverse effects of climate change on poverty eradication and livelihoods, in particular by promoting the use of adaptive social protection measures for all"
- **Cultural heritage.** "Protecting cultural heritage from the impacts of climate-related risks by developing adaptive strategies for preserving cultural practices and heritage sites and by

designing climate-resilient infrastructure, guided by traditional knowledge, Indigenous Peoples' knowledge and local knowledge systems"

UAE FGCR targets related to dimensions of the iterative adaptation cycle:

- **Impact, vulnerability and risk assessment:** by 2030 all Parties have conducted up-to-date assessments of climate hazards, climate change impacts and exposure to risks and vulnerabilities and have used the outcomes of these assessments to inform their formulation of national adaptation plans, policy instruments, and planning processes and/or strategies, and by 2027 all Parties have established multi-hazard early warning systems, climate information services for risk reduction and systematic observation to support improved climate-related data, information and services.
- **Planning:** 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;
- **Implementation:** 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
- **Monitoring, evaluation and learning:** 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

Six enabling factors essential for adaptation action and their links to the IPCC's enabling conditions:

- **Leadership:** The active involvement of high-level political leaders and recognized "champions" who are committed to addressing adaptation. This is linked to the IPCC's enabling condition of, "political commitment and follow-through."
- **Institutional arrangements:** The rules, regulations, and associated organizational structures that enable coordination on adaptation across sectors and actors at all levels, as well as the systematic integration of adaptation into development processes. This is linked to the IPCC's enabling condition of, "institutional frameworks, policies and instruments."
- **Engagement:** Efforts that enable a range of diverse actors at all levels, including civil society organizations, the private sector, communities, the media, and academia, to participate in and influence adaptation efforts. This is linked to the IPCC's enabling conditions of, "inclusive governance processes."
- **Data, knowledge, and communications:** The generation, sharing, and use of (i) data and information—especially climate data; (ii) knowledge, including local knowledge and research;

and (iii) key messages tailored to specific audiences to advance adaptation. This is linked to the IPCC's enabling condition of, "enhanced knowledge on impacts and solutions."

- **Skills and capacities:** Investments in individuals and organizations at all levels to ensure they have the skills and capacities to enable effective and efficient NAP processes.
- **Financing:** The availability and accessibility of public and private financing for climate adaptation from domestic and international sources. This is linked to the IPCC's enabling condition of, "mobilization of and access to adequate financial resources."

(adapted from NAP Global Network, 2023; IPCC, 2022b).

To collect the data for this analysis, adaptation priorities were defined as higher-level categories of more specific adaptation actions and/or measures. For example, the Philippines' NAP, includes eight priority sectors, under which each contain "sector outcomes," which themselves have corresponding "key strategies". The eight priority sectors were retained for this analysis, as not all NAPs include more detailed actions or measures; focusing on these higher-level priorities – which are often characterized by sectors (e.g. water, agriculture, tourism, etc.) and/or cross-cutting issues (e.g. awareness raising, research, institutional strengthening, etc.) – allowed all countries to be similarly reviewed in the analysis. Each NAP reviewed contained between 4–25 priorities.

To allocate a substantive focus for each adaptation priority, information about each priority – including its title, descriptive text describing the rationale for its selection – were extracted and reviewed. Based on this review, each priority was mapped against the thematic targets, dimensional targets or enabling factors, where a score of 1 was assigned to the target or enabling factor that reflected what was emphasized in the priority. In cases where the adaptation priority was deemed to belong to multiple targets or enabling factors, the score was divided equally among relevant targets or enabling factors (e.g. Argentina's priority of "Sustainable management of food systems and forests" led to a score of 0.5 under the Food and Agriculture target, and 0.5 under the Ecosystems and biodiversity target).

In cases, where adaptation priorities – or portions thereof – were not deemed to directly address any thematic or dimensional targets of the UAE FGCR, or any of the enabling factors, scores were assigned to a category of "other". The sectors or themes that fell under "other" included energy, early warning and disaster risk reduction or management, tourism, gender equality and social inclusion (GESI), and the private sector.

Once the priorities were mapped/scored, the results were analysed at both the aggregate level (i.e. across all priorities extracted from all NAPs reviewed) and at the country level. The purpose of the aggregate analysis was to provide an overview of the primary focus of adaptation priorities in NAPs – e.g. percentage of adaptation priorities put forward in NAPs that focus on agriculture and food – and the purpose of the country-level analysis was to identify the proportion of countries that have prioritized different themes, dimensions, and enabling factors – e.g. percentage of countries with a NAP that have an adaptation priority focused on water.

Limitations

No standard structure or naming conventions used in NAPs. While most countries who have submitted NAPs organize their adaptation priorities in terms of sectors or themes, four out of 56 countries organized theirs by geography (i.e., by sub-national jurisdictions, like states or departments), climate hazard (e.g., droughts, floods), or some other way; adaptation actions listed under such categories were subsequently

bundled into sectors or themes to allow for comparison with other countries. While some countries presented their adaptation priorities in the main body of their NAP document, others included them in their annexes; some presented both a longlist and shortlist of priorities (the latter being chosen for this analysis). Moreover, “adaptation priorities” was the generic term used to describe the highest, most aggregated, category of adaptation action in a NAP, but this term wasn’t used by most/all countries. Terms used instead ranged from “priority actions” and “instrumental lines” to “strategic objectives” and “system or sectoral components,” to name a few. In short, the ways in which adaptation priorities were presented or named differed across NAPs.

Granularity of adaptation actions. Adaptation actions are rarely about just one sector or dimension or enabling factor. An adaptation priority on “public health” may, for example, include more specific actions focused on updating building codes of health facilities, public awareness raising campaigns, establishing health early warning systems, expanding green spaces in cities to deal with extreme heat, and mainstreaming adaptation into the national health sector strategy. These actions would map against the UAE FGCR target on health and infrastructure and human settlements, ecosystems and biodiversity, data, knowledge and communications, and planning. As such, focusing at the level of “adaptation priority” as defined in this analysis likely obscures the extent to which all of the UAE FGCR targets and enabling factors are addressed by countries within a NAP.

Methodology underlying section 2.3.3

The analysis presented in section 2.3.3 aims to answer the research question: To what extent do NAPs submitted to the UNFCCC by developing countries possess features that facilitate implementation?

Methodological approach

To answer this research question, 11 indicators were developed. These indicators capture whether NAPs possess characteristics that enhance the likelihood that activities contained in

the document will be implemented, whether their contents are aligned with domestic and international policy agendas, and whether implementation is likely to be monitored and evaluated.

Indicators that capture whether the planning document possesses elements that facilitate implementation:

- 3.1 Are lead organizations clearly identified for each adaptation priority area or activity?
- 3.2 Are timelines and sequencing of activities clearly identified for activities contained in the NAP?
- 3.3 Do activities identified in the NAP have clearly identified associated costs?
- 3.4 Does the NAP identify sources of finance for its implementation?

Indicators that capture whether the NAP is aligned with domestic and international policy agendas:

- 3.5 Does the NAP provide evidence that priority areas or actions are aligned or linked with national development plans?
- 3.6 Does the NAP provide evidence that priority areas or actions are aligned or linked with sectoral development plans?
- 3.7 Does the NAP provide evidence that priority areas or actions are aligned or linked with subnational development plans?
- 3.8 Does the NAP provide evidence that priority areas or actions are aligned or linked with other global frameworks?

Indicators that capture whether the NAP possesses elements that facilitate MEL:

- 3.9 Does the NAP include MEL indicators?
- 3.10 Does the NAP refer to the need for a MEL system?
- 3.11 Does the NAP include a commitment to (regular) progress reporting?

These indicators were selected based on the review of relevant best practice guides and scientific literature.¹² They capture good practices in ensuring that adaptation planning is

implementable and is likely to lead to high-quality implementation. These indicators are described in more detail in box 2.B.3.

Box 2.B.3 Indicators for assessing the implementability of NAPs

Indicators that capture whether the planning document possesses elements that facilitate implementation:

3.1 Are lead organizations clearly identified for each adaptation priority area or activity?

This indicator assesses whether actors are clearly identified for implementing adaptation actions in NAPs. Note that this is specifically about roles for implementing adaptation actions, not just participating in the formulation of the NAP document.

Metrics:

Yes: Lead actors or organizations are identified for specific roles in implementing priority adaptation actions in the NAP.

No: Lead actors or organizations are not identified for roles in implementing priority adaptation actions in the NAP.

3.2 Are timelines and sequencing of activities clearly identified for activities contained in the NAP?

This indicator assesses whether time frames and sequencing are assigned to specific adaptation actions in the NAP. For example, in a table of adaptation actions, there may be a column that identifies different time frames, either in terms of years (e.g. 2024–2026) or the period (e.g. short-term).

Metrics:

Yes: Time frames and/or sequencing of activities are clearly identified for activities contained in the NAP.

No: Time frames and/or sequencing of activities are not clearly identified for activities contained in the NAP (note that even if the NAP contains an overall time frame, this is still marked 'No').

3.3 Do activities identified in the NAP have clearly identified associated costs?

This indicator assesses whether costs are identified alongside activities included in the NAP.

Metrics:

Yes: There are costs associated with activities in the NAP.

No: There are not costs associated with activities in the NAP.

¹² For example: Dazé, Price-Kelly and Rass (2016), Woodruff and Regan (2019), UNEP (2021a), UNEP

(2021b), IPCC (2022b), Konrad, Dale and Wretling (2023), Reckien et al. (2023) and UNEP 2023.

3.4 Does the NAP identify sources of finance for its implementation?

This indicator assesses whether the NAP identifies sources of financing for adaptation, which may include domestic budgets (referring to the government's own resources from public sector finance that will be allocated for adaptation), the private sector (referring to private sector investment as a way of financing adaptation), international climate finance (referring to funds from multilateral funds as well as from bilateral finance providers), and other sources of financing.

Metrics:

Yes: The NAP identifies sources of financing.

No: The NAP does not identify sources of financing.

Indicators that capture whether the NAP is aligned with domestic and international policy agendas

3.5 Does the NAP provide evidence that priority areas or actions are aligned or linked with national development plans?

This indicator assesses whether the NAP contains at least one reference to the country's national development plan. Reviewers searched for set key terms (national development plan; development plan; Vision 2030), as well as the titles of countries' unique national development plans, and references to separate sectoral adaptation plans.

Metrics:

Yes: The NAP references the country's national development plan.

No: The NAP does not reference the country's national development plan.

3.6 Does the NAP provide evidence that priority areas or actions are aligned or linked with sectoral development plans?

This indicator assesses whether the NAP contains at least one reference to adaptation in sectoral development plans, whether these are dedicated sectoral adaptation plans, or broader sectoral development plans that include adaptation.

Metrics:

Yes: The NAP references the country's sectoral development plans in the context of adaptation.

No: The NAP does not reference the country's sectoral development plans in the context of adaptation.

3.7 Does the NAP provide evidence that priority areas or actions are aligned or linked with subnational development plans?

This indicator assesses whether the NAP contains at least one reference to adaptation in subnational development plans, whether these are dedicated sectoral adaptation plans, or broader subnational development plans that include adaptation.

Metrics:

Yes: The NAP references the country's subnational development plans in the context of adaptation.

No: The NAP does not reference the country's subnational development plans in the context of adaptation.

3.8 Does the NAP provide evidence that priority areas or actions are aligned or linked with other global frameworks?

This indicator assesses whether the NAP contains at least one reference to other global frameworks based on keyword searches for: Sustainable Development Goals (SDGs); Sendai Framework for Disaster Risk Reduction; United Nations Convention on Biological Diversity (CBD); National biodiversity strategy and action plans (NBSAPs); United Nations Convention to Combat Desertification (UNCCD).

Metrics:

Yes: The NAP references alignment with other global frameworks for sustainable development.

No: The NAP does not reference alignment with other global frameworks for sustainable development.

Indicators that capture whether the NAP possesses elements that facilitate MEL:

3.9 Does the NAP include MEL indicators?

This indicator assesses whether the NAP has included MEL indicators as part of its approach for MEL, whether in a monitoring and evaluation framework included in the document or listed alongside priority adaptation activities.

Metrics:

Yes: The NAP includes MEL indicators.

No: The NAP does not include MEL indicators.

3.10 Does the NAP refer to the need for a MEL system?

This indicator assesses whether the NAP includes or refers to the need for a MEL system that provides a structured approach to monitor progress, evaluate results and promote learning (e.g. a logical framework including activities, outputs and indicators) for the adaptation priorities included.

Metrics:

Yes: The NAP refers to the need for a MEL system.

No: The NAP does not refer to the need for a MEL system.

3.11 Does the NAP include a commitment to (regular) progress reporting?

This indicator assesses whether the NAP includes a commitment to assessing and reporting on the progress of its implementation, linked to its MEL approach.

Metrics:

Yes: The NAP includes a commitment to reporting on implementation regularly.

No: The NAP does not include a commitment to reporting on implementation.

Methodology underlying section 2.3.4

The analysis presented in section 2.3.3 aims to answer the research question: to what extent do NAPs submitted to the UNFCCC consider issues related to gender equality and social inclusion (GESI)?

Methodological approach

To answer this research question, four indicators were developed that capture whether GESI issues are considered within NAPs. These were:

- 4.1 Is gender mentioned in the body of the NAP?
- 4.2 In what context do references to gender appear?
- 4.3 What is the positioning of women in the NAP?
- 4.4 Which intersectional factors or other particularly vulnerable groups are identified in the NAP?

These indicators were selected based on the review of relevant best practice guides and scientific literature.¹³ They capture good practices in ensuring that NAPs are gender-responsive, inclusive and just. These indicators and keywords used in their collection are described in more detail in box 2.B.4.

To collect the metrics associated with these indicators, the NAPs submitted to the UNFCCC were reviewed using word searches in MAXQDA. References to keywords associated with each indicator were coded, and results were exported into Excel, where quantitative analysis was conducted.

Box 2.B.4 Indicators for assessing the inclusiveness of NAPs

4.1 Is gender mentioned in the body of the NAP?

This indicator assesses the prevalence of gender issues within NAPs, using the number of mentions of keywords associated with gender as a proxy for assessing the extent to which gender issues have been considered within the NAP.

Metrics:

Is the word “gender” referenced in the body of the NAP? (Yes/No)

If yes, how often is the word mentioned:

¹³ For example: Dazé and Cameron (2022)

- 1–9
- 10–100
- 100+

If yes, which gender concepts are referenced:

- Gender equality
- Gender equity
- Gender sensitivity
- Gender responsiveness
- Gender differences
- Gender-based discrimination

4.2 In what context do references to gender appear?

This indicator analyses the context in which references to gender appear in the NAP. The purpose of this indicator is to capture how gender features in important elements of the NAP document that are likely to lead to the NAP being gender-responsive or addressing specific gender issues.

Metrics:

- Gender identified as a cross-cutting issue for the plan
- Gender equality/sensitivity/ responsiveness identified as a principle for the plan
- Gender equality identified as a goal or objective of the plan
- Gender identified as a priority sector or program area for the NAP
- Specific adaptation options identified to address gender issues

4.3 What is the positioning of women in the NAP?

This indicator captures how NAPs position women in relation to climate adaptation. How women are framed within a NAP is an important determinant of how it approaches gender issues, which can have implications for the potential effectiveness of the actions and measures planned within it.

Metrics:

- Women are positioned as a group that is particularly vulnerable to climate change
- Women are positioned as beneficiaries of adaptation actions
- Women are positioned as stakeholders in adaptation planning processes
- Women are positioned as agents of change

4.4 Which intersectional factors or other particularly vulnerable groups are identified in the NAP?

This indicator captures the extent to which NAPs capture intersectional factors associated with GESI and other vulnerable groups are considered by NAPs. Within this indicator, the following intersectional factors or vulnerable groups were assessed:

Metrics:

Are there references to concepts that may represent entry-points for an intersectional and/or systemic approach? (Yes/No)

The following concepts were considered as entry-points for an intersectional and/or systemic approach:

- (In)equity
- (In)equality
- Inclusion/exclusion
- (In)justiceSocial discrimination
- Empowerment
- Human rights
- Disadvantaged and marginalized groups,
- Social norm(s)
- Power [in relation to dynamics among people]
- Intersectionality or intersectional approaches [in relation to intersecting identities and/or inequalities]

Are particularly vulnerable groups other than women identified? (Yes/No)

The following groups were considered as particularly vulnerable:

- Youth
- Elderly people
- People with disabilities
- Ethnic or racial minorities
- Religious minorities
- Socially marginalized groups
- LGBTQIA+ community/People of underrepresented sexual orientations, gender identities and/or expressions and sex characteristics
- Indigenous peoples

Annex 2.C Methodology underlying section 2.4

Purpose

The analysis seeks to enhance the understanding of the extent to which the adaptation information included in NAPs and NDCs is aligned.

The review focused on the following key aspects:

- References to the NAP in the NDC document
- Framing of the NAP process within the NDC document
- References to the NDC in NAP documents
- Alignment of information related to adaptation priority sectors and adaptation priorities included in both documents

Methodological approach

The findings of the NAP-NDC analysis are based on a systematic desk-based review of 56 multisectoral NAP documents that were submitted to the UNFCCC as at 31 July 2024, available on the [NAP Central](#) platform, as well as the latest NDCs of these 56 countries. The review included 10 countries from Latin America, 23 from Africa and the Middle East, four from Eastern Europe and the Caucasus, five from the Pacific, nine from Asia and five from the Caribbean. The year of submission ranges from 2014 to 2024.

A list of all 56 NAP countries was compiled, then divided into three categories:

- category 1: countries where the NAP was published before the NDC

- category 2: countries where the NDC was published before the NAP
- category 3: countries where the NAP and NDC were published in the same year
- The NAP is referenced as an existing planning or policy document.
- The NDC makes reference to being directly informed by the NAP.

For category 1, if the NAP document was published before the NDC, the NDC was reviewed for a reference to the NAP process/NAP document. If the NAP was referred to in the NDC, the contextual framing of the NAP was assessed. The review team differentiated between references to NAPs in NDCs in two ways:

- The NAP is referenced as an existing planning or policy document.
- The NDC makes reference to being directly informed by the NAP.

For category 2, if the NDC was published before the NAP, the NDC was reviewed for a commitment to developing a NAP or establishing a national adaptation planning process.

For category 3, if both documents were published in the same year, the NDC was reviewed for a reference to the NAP process/NAP document. If the NAP was referred to in the NDC, the contextual framing of the NAP was assessed. The review team differentiated between references to NAPs in NDCs in two different ways:

The next stage of the systematic review involved an analysis of two indicators to determine the level of alignment and overlap of adaptation information contained in the NAPs and NDCs. The key indicators used were adaptation priorities and adaptation priority sectors.

- No alignment was given to countries when priority sectors were not shared between the NAP and NDC, and no mention of adaptation priorities were found.
- Partial alignment was given to countries that had most to all of the same priority sectors in the NAP and NDC, and – when adaptation priorities were mentioned – had most to all of them listed in both documents.
- Full alignment was assigned to countries where the priority sectors were fully represented within the NDC, and where adaptation priorities were captured within the NDC and the NAP.

Table 2.C.1 summarizes the approach described above. The table was used to assign countries to one of three levels of alignment (1) no alignment, (2) partial alignment and (3) full alignment.

Table 2.C.1 Criteria for allocation of level of alignment

No alignment	Partial alignment	Full alignment
Adaptation component is not included in NDC.	Adaptation component is included in NDC.	Adaptation component is included in NDC.
NAP is not acknowledged.	NAP is acknowledged or there is commitment to developing a NAP; NAP references NDC.	NAP is acknowledged as the primary mechanism for adaptation planning and source for adaptation-related information.
	No or some adaptation priorities in the NDC and NAP are partially aligned; some are misaligned.	Adaptation priorities are common across NAP and NDC.
	Priority sectors for adaptation in the NDC and NAP are	Priority sectors are common across NAP and NDC.

	missing, misaligned or partially aligned.	
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Limitations

The use of different words by countries to describe 'adaptation priorities' made the identification of such priorities in NAP and NDC documents challenging. Sometimes they are referred to as 'strategic objectives' or 'programmes', and other times they are framed more as outcome statements, with the action

word in the past tense (e.g. "increased"). In some NAPs, cross-cutting or enabling priorities are included, either together with or separately from adaptation priorities. These are actions that are not specific to a particular sector. For the purposes of this review, the team aimed to identify adaptation priorities related to concrete adaptation actions rather than those that address the enabling environment or are cross-cutting.

Annex 3 Global progress on adaptation implementation

Annex 3.A Scope and evolution of the chapter on global progress of adaptation implementation

The scope of the implementation chapter covers adaptation actions the implementation of which has started or been completed. It excludes any proposed actions that have merely been planned or announced. The implementation chapter therefore complements the planning chapter which sets out what countries *intend* to do, and the finance chapter which analyses financial flows, pledges and needs. The implementation chapter provides insights about actual implementation, which is essential to assess whether countries are becoming better adapted to the impacts of climate change.

Adaptation actions are implemented by many different actors from the local to the international level and with different intentions, i.e. either explicitly to adapt to climate risks, or for other primary objectives that have co-benefits for adaptation, or as autonomous adaptation. Due to this great diversity of adaptation(-related) actions at all geographic scales, it is not possible to account for the full spectrum of adaptation actions that occur across the globe. The

implementation chapter therefore relies on the availability of data sources that cover either all countries or all developing countries, and that are accessible for desk-based analysis. It is not feasible in the context of the report to undertake primary data gathering on local adaptation actions in every country.

New data sources are being added to the implementation chapter every year, which means that the chapter is able to present novel analysis annually. Table 3.A.1 shows the evolution of the implementation chapter since its first edition in 2020. Since space in the chapter is limited, not every analysis and data source that was featured in previous years can be repeated annually. The information shown in table 3.A.1 can therefore point readers to earlier editions of the implementation chapter that cover additional content.¹⁴ The following sections of this annex describe the data sources and analyses undertaken for each of the four sections of the chapter.

Table 3.A.1 Data sources in the implementation chapter of the Adaptation Gap Report (AGR)

Data source	Coverage	AGR
Project documents from the three multilateral funds that serve the Paris Agreement (Adaptation Fund, Green Climate Fund [GCF], Global Environment Facility [GEF])	Developing countries	Annually since 2020
Implemented adaptation actions reported in journal articles (data from the Global Adaptation Mapping Initiative)	Worldwide	2020 (preview), 2021 (detailed)
Organisation for Economic Co-operation and Development [OECD] Creditor Reporting System: Data on projects labelled as primarily addressing adaptation	Developing countries	2021, 2022
GCF: Documents of projects that address both mitigation and adaptation (cross-cutting projects)	Developing countries	2022
Adaptation communications submitted by countries to the United Nations Framework Convention on Climate Change (UNFCCC) secretariat	Developed and developing countries	2022 (preview), 2023 (detailed)
Evaluations of completed adaptation projects funded by the Adaptation Fund, GCF, GEF	Developing countries	2024

¹⁴ All editions of the AGR are available at <https://www.unep.org/resources/adaptation-gap-report>.

Reports about the implementation of national adaptation plans (NAPs)	Developed and developing countries	2024
Adaptation actions implemented by urban local governments	Worldwide	2024

Annex 3.B Analysis of implemented adaptation projects

To analyse what international public adaptation finance is being invested in, the implementation chapter has examined the number, volume and types of adaptation projects funded by the Adaptation Fund, the GCF and the primary adaptation windows under the GEF, namely the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF).¹⁵ These three funds were selected because they constitute the financial mechanism that serves the UNFCCC and the Paris Agreement.¹⁶ Findings about their implementation and results are therefore particularly relevant for Parties. In addition, these funds provide comprehensive information about each of their adaptation projects, which is a prerequisite for this analysis. The information was taken directly from the websites of each of the funds' secretariats. Similar information is not yet publicly available from other multilateral funds such as the multilateral development banks, which hinders a similar analysis of their funded adaptation actions.

The three funds that serve the Paris Agreement accounted for only 5 per cent of the international public adaptation finance in 2022 (see chapter 4, figure 4.3). Hence, this section of the chapter covers just a small part of the implementation that is enabled through international public adaptation finance. Therefore, previous editions of the implementation chapter also analysed bilateral adaptation finance from the top 10 adaptation funders as reported under the OECD Development Assistance Committee (see table 3.A.1 for data sources covered in each edition of the implementation chapter since its inception in 2020).

The scope of this section of the implementation chapter includes the following:

- **Projects that are primarily focused on adaptation.** Projects that jointly cover mitigation and adaptation (referred to as

'cross-cutting projects' under the GCF) have been analysed in the 2022 edition of the implementation chapter.

- **Projects that are under implementation or that have been completed.** Projects which have been approved, but whose implementation has not yet started, are excluded.
- **Projects whose funding volume (excluding cofinancing) exceeds US\$500,000.** This amount was chosen as a cut-off value to exclude small actions that are not comparable to projects, e.g. funding for individual studies or workshops.

The first edition of the implementation chapter in the AGR 2020 analysed the project documents to determine the hazards addressed, the primary sectors covered, the main actors supported by the projects, and the proportion of projects that focus on climate information, on gender aspects, on ecosystem-based adaptation, and that aim to reach the most vulnerable (UNEP 2021, chapter 5). Subsequent editions of the chapter have not repeated this detailed analysis due to spatial constraints, instead presenting the evolution of the number and size of adaptation projects over time, which is summarized in figure 3.1. In 2022, the combined annual funding volume of newly starting adaptation projects and its five-year moving average was added to this figure. To count the annual funding value, the total grant amount (funding size) of a project is added up for all projects that start in each calendar year. Cofinancing is not included – only the amount that is provided directly by the Adaptation Fund, GCF and GEF is counted. Moreover, only grants are included (all projects under the Adaptation Fund and under the LDCF are purely grant-financed). Loans, guarantees, equity and other instruments utilized by the GCF are not included in the combined funding value shown in figure 3.1. Apart from the addition of the combined funding volume in 2022, the data analysis of this

¹⁵ The GEF secretariat was designated as the operational entity responsible for managing the LDCF and SCCF by Decision 5/CP.7 under the UNFCCC, overseeing their administration, project

approval and implementation, in collaboration with national governments and implementing agencies.

¹⁶ See <https://unfccc.int/process-and-meetings/bodies/funds-and-financial-entities>.

section has remained constant since its first edition in 2020 (see also the annex of the AGR 2022 [UNEP 2022]).

Annex 3.C Analysis of final evaluations of adaptation projects under three multilateral funds that serve the Paris Agreement

3.C.1 Data sources and analysis

Projects of the Adaptation Fund above US\$1 million, all GCF projects irrespective of funding size, and LDCF and SCCF¹⁷ projects above US\$2 million, are to be evaluated at completion. As outlined in their evaluation policies, evaluations are conducted either by the implementing organizations or by an independent evaluation unit (Adaptation Fund 2012; GEF Independent Evaluation Office [IEO] 2010; GEF IEO 2019; GCF 2021; Adaptation Fund 2023a).¹⁸ The funds require final evaluations within six months to a year post-project completion. In addition to project evaluations, independent evaluation units also conduct thematic, portfolio, country, and ex-post evaluations (Bours, McGinn and Pringle 2014; Binet *et al.* 2021; GEF IEO 2020; GEF IEO 2021; Adaptation Fund 2022; Adaptation Fund 2023b). To ensure better consistency, guidelines for evaluations by implementing entities and accredited entities have been produced (Adaptation Fund 2011; GEF IEO 2017; GCF Independent Evaluation Unit 2023; GEF IEO 2023; Adaptation Fund 2024).

Evaluation selection and access

The 168 completed projects analysed comprise the full cohort of completed adaptation projects for which final evaluations were available on 1 August 2024. Final evaluations of Adaptation Fund projects were accessed on the fund's website, as was a downloadable project overview. GEF final evaluations were accessed on the GEF Independent Evaluation Office (IEO) website. For the GCF, the overview of completed projects was available on the website, whereas the final evaluations were provided by the implementing

agencies of those completed projects for which final evaluations were available.

Analysis of the sectoral composition

While the GEF does not state the sector to which an adaptation project refers, the Adaptation Fund mentions one sector in the overview page of each project. To apply a coherent list of sectors, the documents of all 91 LDCF and 43 SCCF projects were reviewed, and the content of the project components informed the assignment to sectors (figure 3.A.1). 'Food security' was a sector identified in several Adaptation Fund, LDCF and SCCF projects. Since these projects focused mainly on agricultural development and not on food distribution, infrastructure, market systems and policies that support equitable access to food, these projects were grouped under the sector 'agriculture'. 'Climate information and early warning systems' (CIEWS) and 'health' were sectors identified for several LDCF and SCCF projects, but these sectoral categories are not used by the Adaptation Fund in their project overview. The project documents for all 32 completed Adaptation Fund projects were reviewed and three projects were marked as CIEWS. None of the Adaptation Fund projects reviewed had a health focus.

More than half of the projects focus on more than one sector (table 3.A.2). Sectors that are often jointly addressed are agriculture and rural development, agriculture and water management, and disaster risk reduction and CIEWS. The portfolios of the LDCF and Adaptation Fund show a focus on more than one sector in most projects, whereas the SCCF has

¹⁷ The SCCF has four programmatic windows of which two continue to be actively funded. Adaptation is covered through Window A, while mitigation activities are supported mainly under Window B which focuses on technology transfer, energy, transport, industry, agriculture, forestry and waste management

¹⁸ Note that the Adaptation Fund board adopted a new evaluation policy in 2022, which supersedes the 2012 Adaptation Fund evaluation framework, though the

new policy and guidance will only apply to projects and programmes approved from October 2023 onwards. Projects and programmes considered here follow the older evaluation framework and guidance. The GEF council adopted a new evaluation policy in 2019, which supersedes the 2010 GEF monitoring and evaluation policy. The new policy and related guidance apply to projects approved from July 2014 onwards. Projects and programmes considered here follow the older monitoring and evaluation policy and guideline.

more single-sector projects (table 3.A.2). The LDCF is the only fund where the data shows that projects approved in later years have a stronger focus on two or more sectors.

Figure 3.A.1 Sectoral composition of the evaluated projects per fund

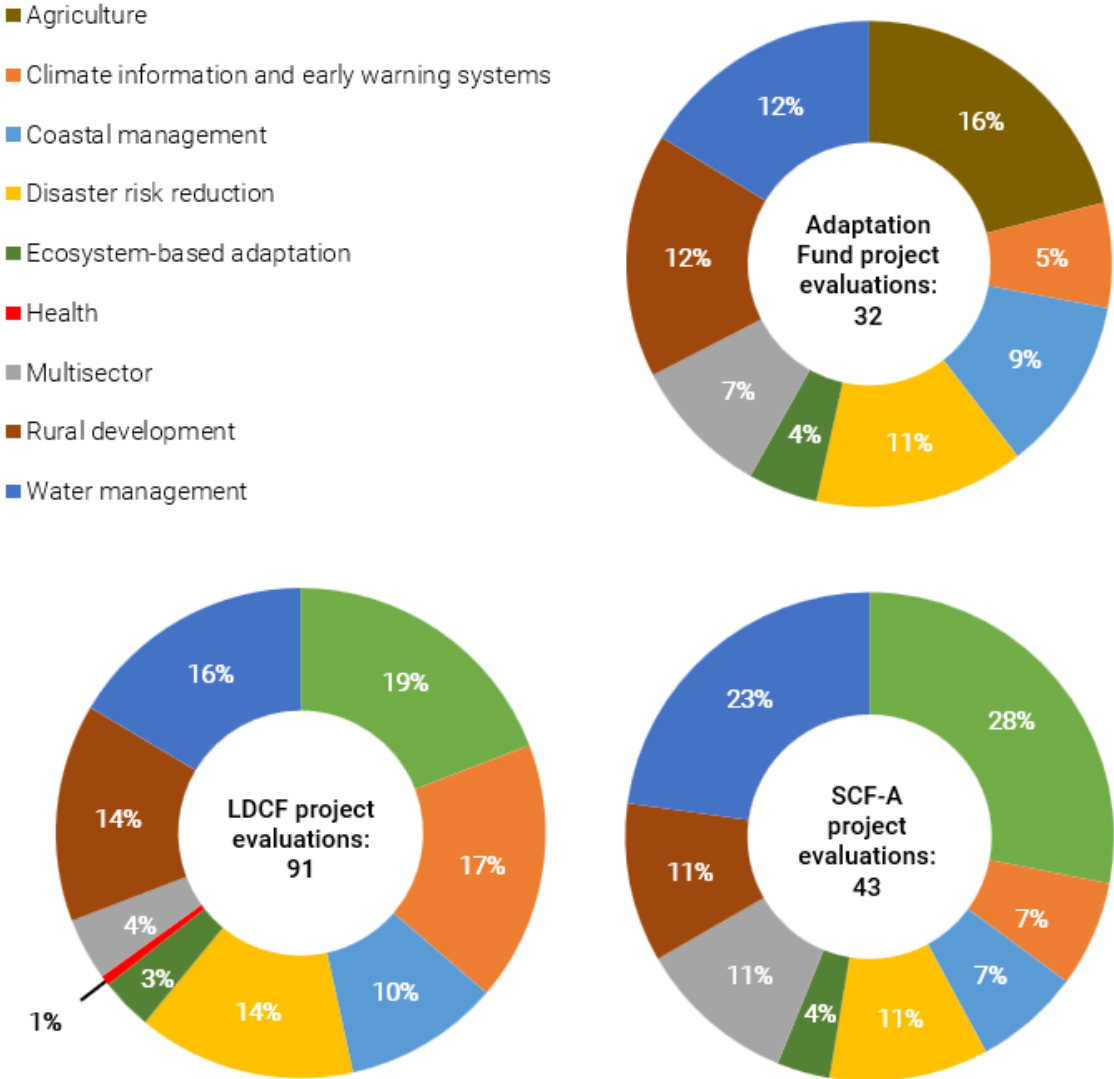


Table 3.A.2 Number of sectors covered by completed adaptation projects

	Single sector	Two sectors	Multisector (three or more)
Adaptation Fund	41%	47%	13%
LDCF	40%	54%	7%
SCCF	53%	33%	14%

Outcome and sustainability ratings

The evaluations of Adaptation Fund and of GEF projects provide an overall score for outcomes and for sustainability (see criteria in box 3.1). The GEF IEO then validates final evaluations, including the outcome and sustainability ratings of LDCF and SCCF projects. The GEF IEO provides a downloadable overview of validated ratings on its website.

A similar validation was undertaken for the analysis in this chapter for final evaluations of the Adaptation Fund. To ensure comparability, the GEF IEO terminal evaluation report validation guidelines were applied to evaluations of Adaptation Fund projects (GEF IEO 2023, annexes

B and C). Outcome ratings for 5 of the 32 Adaptation Fund projects were adjusted. The overall sustainability ratings for 11 of the 32 Adaptation Fund projects were adjusted, due to a different appreciation of the financial, sociopolitical, institutional, environmental and other risks as described in the evaluations.

3.C.2 Ratings per fund and evolution of evaluation ratings over time

The breakdown of the outcome and sustainability ratings per multilateral fund is shown in figures 3.A.2 and 3.A.3. The distribution of ratings per year for the period of project starts between 2010 and 2015 is depicted in figures 3.A.4 and 3.A.5.

Figure 3.A.2 Project outcome rating from final evaluations of completed adaptation projects, by fund

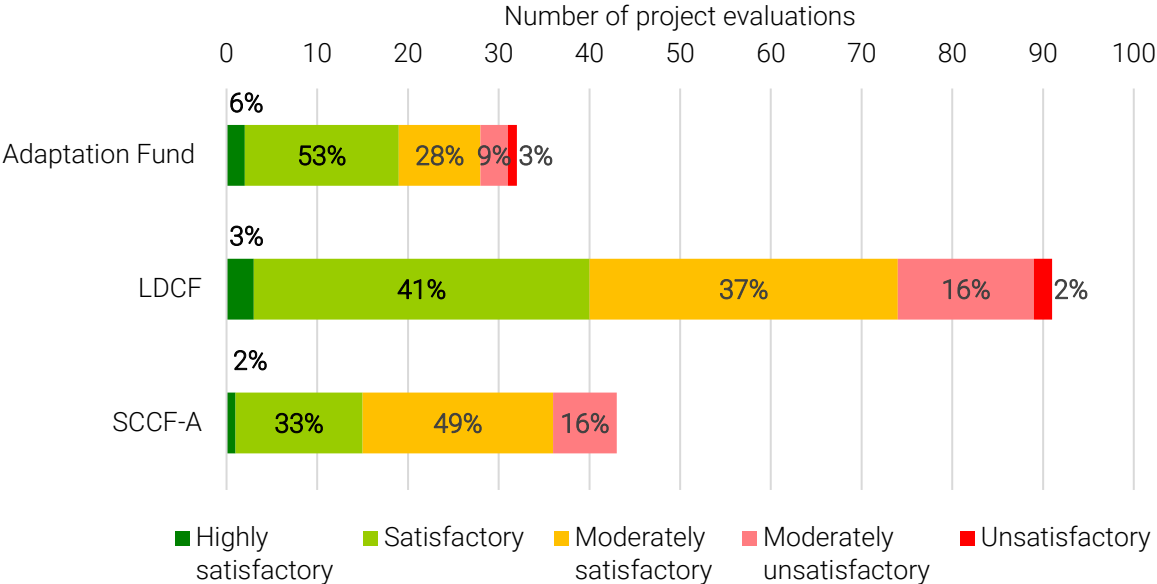


Figure 3.A.3 Sustainability rating from final evaluations of completed adaptation projects, by fund

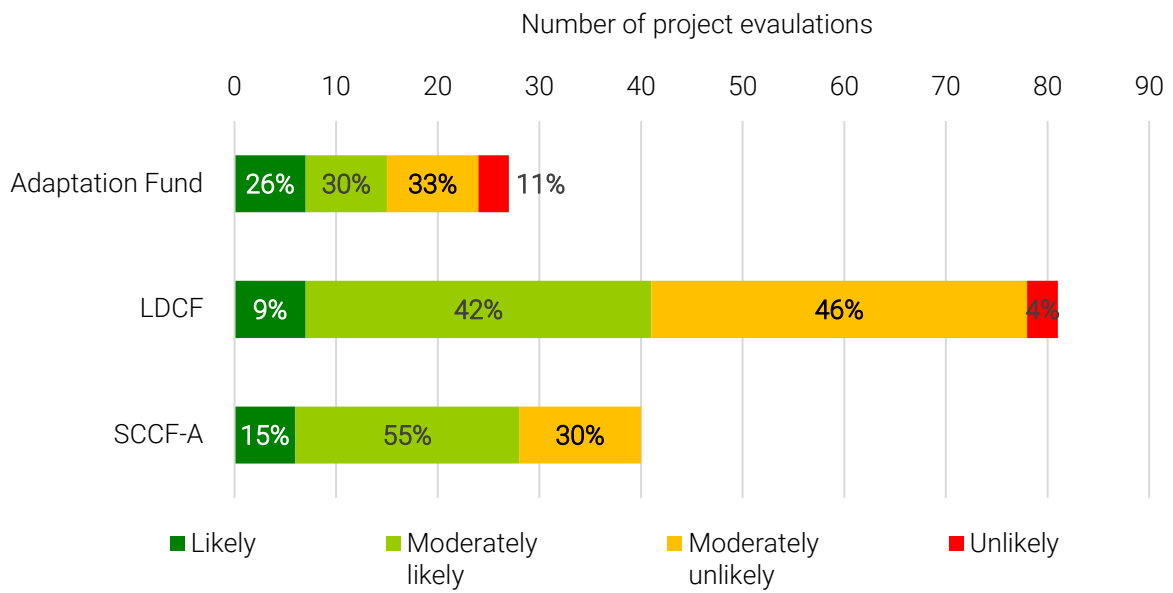


Figure 3.A.4 Project outcome rating from final evaluations, by year of project approval

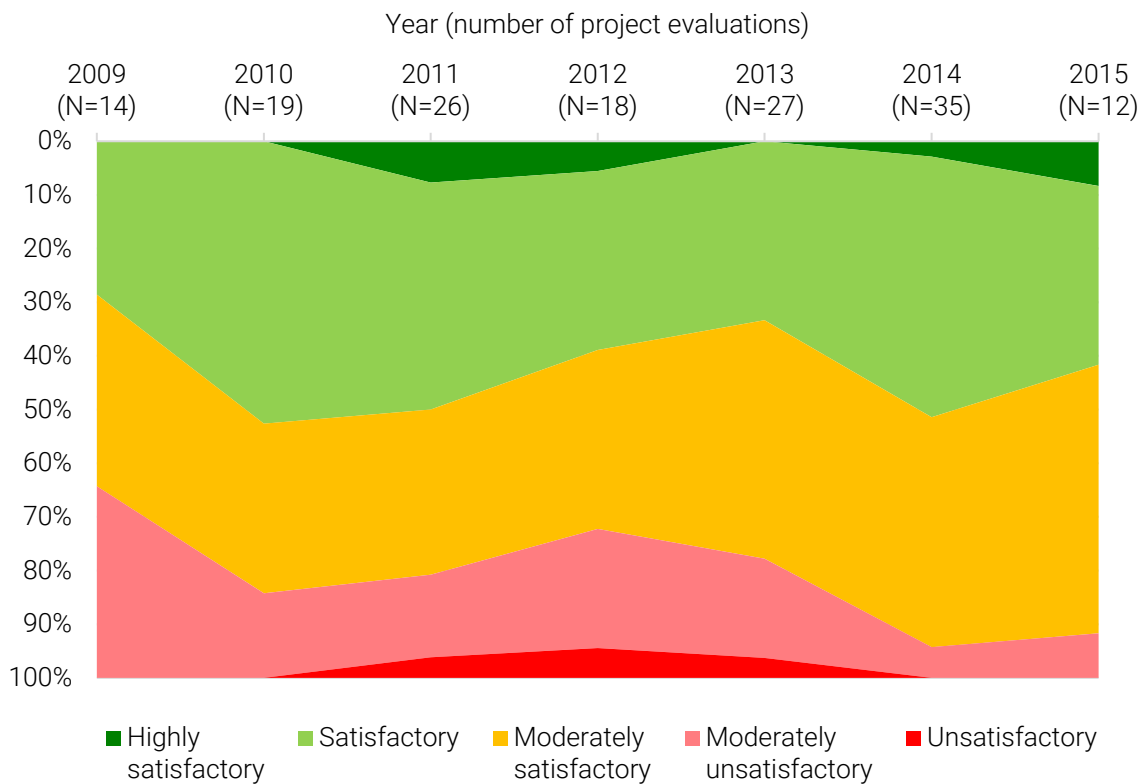
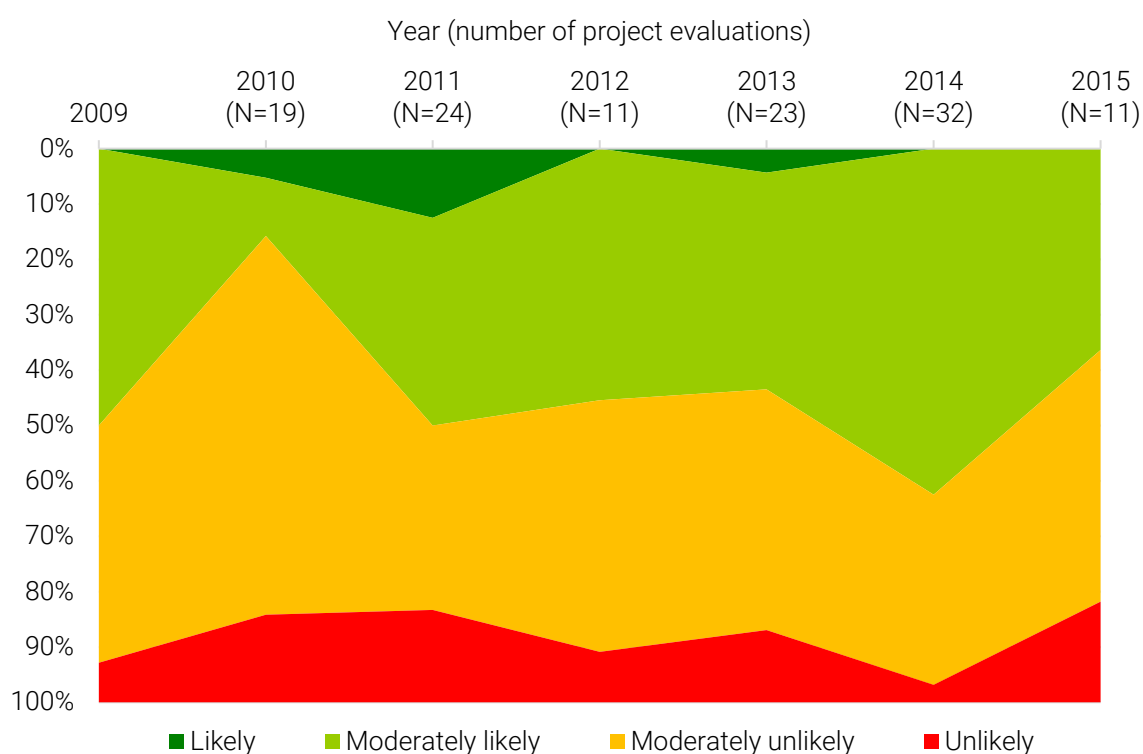


Figure 3.A.5 Project sustainability rating from final evaluations, by year of project approval



Annex 3.D Analysis of NAP progress reports

A new data source analysed for the first time in this year's implementation chapter are reports about the implementation of an NAP, referred to as NAP progress reports. Besides providing a valuable data source for assessing progress at the national level, NAP progress reports are also an important resource for international reporting on adaptation under the Paris Agreement (Leiter 2021; Guerdat, Masud and Beauchamp 2023).

Similar to the protocol developed for the 2023 implementation chapter to analyse Adaptation Communications (UNEP 2023), this year's edition developed a methodology for assessing NAP progress reports based on key variables. These

variables capture the assessment approach, the extent of implementation including barriers and enablers, the integration of cross-cutting themes like gender and equity, and whether recommendations are provided to improve policies. NVivo 12 was used to code and analyse specific sections of the NAP progress reports, applying a deductive approach based on a predefined coding framework (table 3.D.1). For countries that have undergone multiple cycles of NAP progress assessments, the chapter focused on the most recent reports, ensuring the analysis reflects the latest developments. Table 3.D.2 lists the NAP progress reports that were analysed.

Table 3.D.1 Protocol for extracting and analysing data from NAP progress reports

Dimension	Variable	Definition	Instructions and coding options
Country attributes	Country	Name of country	Open field
	Region	Based on the United Nations classification of geographical regions of the world.	(Select one) Africa, Eastern Europe, Western Europe and Other States, Latin America and the Caribbean, Asia-Pacific

	UNFCCC classification	Based on the annexes to the UNFCCC.	(Select one) Annex I, Non-Annex I
Document attributes	Publication year of progress report	The year when the progress report was published.	Open field, as indicated on the document
	Document language	The language in which the original progress report was published.	Open field
	Number of progress reports published	Reflects the number of progress reports the country has published so far. While the most recent report could be the first for the current adaptation policy cycle, this number considers whether there were other reports, which could be part of a previous NAP process cycle.	Open field
	Support to prepare a progress report	Whether the country received external support to prepare the progress report.	(Select one) Yes, no If yes, from whom?
	NAP linkage	Whether the progress report is linked to an NAP. This helps distinguish NAP progress reports from progress reports associated with other plans, e.g. the progress reports for climate change action plans	(Select one) Yes, no
	Year of NAP adoption	The year the NAP or action plan associated with the progress report was adopted.	Open field
Progress assessment methodology	Assessment approach	Primary approach to assessing progress, including data sources, how the data is collected and which stakeholders are involved.	Open field

	Criteria for assessing progress	Details of any framework or elements the country considers when assessing implementation progress, including whether specific indicators are used.	Open field
Details of NAP implementation	Overall implementation progress	In addition to detailed descriptions of implementation progress, this variable considers statements articulating overall progress in NAP implementation.	Open field
	Overall results	Considers whether the progress report provides an overall assessment of the adequacy and effectiveness of adaptation actions	Open field
	Barriers	Does the progress report provide information on factors that could have hindered NAP implementation?	(Select one) Yes, no Categories of barriers: Financial, human capacities, informational, institutional, organizational, social, emerging issues e.g. COVID-19
	Enablers	Does the progress report provide information on factors that could have supported NAP implementation?	(Select one) Yes, no Categories of enablers: Financial, human capacities, informational, institutional, organizational, social, emerging opportunities
Learning for subsequent implementation cycle	Does the report provide recommendations?	Considers whether there is a specific section in the report outlining recommendations. These may also be summarized in the executive summary of the report, or listed in sector-specific sections.	(Select one) Yes, no
	Types of recommendations	Categorizes the recommendations based on the issues they are designed to address.	(Assign code as relevant) Financial relates to actions to be taken to address financial constraints, e.g. strategies to increase investments in adaptation and assessing financial needs for adaptation.

		<p>Human resource entails steps to enhance the human resources available to enhance NAP implementation, e.g. recruitment of new staff and training to improve skills.</p> <p>Informational entails developing tools and methods to guide adaptation actions, improving availability of information on climate risks and adaptation actions, research, and adaptation monitoring, evaluation and learning.</p> <p>Institutional relates to improvements required in the policy environment for NAP implementation, including enacting and enforcing laws, and mainstreaming NAP priorities in other strategic plans.</p> <p>Organizational relates to adjustments required to enhance organization structures for NAP implementation, e.g. establishment of coordination mechanisms and clarifying roles of different actors.</p> <p>Strategic planning and adaptation design captures recommendations related to improvements in how adaptation is designed, e.g. better prioritization of actions, aligning NAPs and Sustainable Development Goals, and better definition of adaptation goals and objectives.</p>
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Table 3.D.2 NAP progress reports included in the analysis, as at 31 August 2024

Country	United Nations regional classification	UNFCCC classification	Year of NAP adoption	Publication year of analysed progress report	Progress report title (English translation)	Number of progress reports published
Albania	Eastern Europe	Non-Annex I	2021	2023	<i>Albania's National Adaptation Plan First Progress Report</i>	1
Austria	Western Europe and Other States	Annex I	2013	2021	<i>Zweiter Fortschrittsbericht zur österreichischen Strategie zur Anpassung an den Klimawandel</i> (Second progress report on the Austrian strategy for adapting to climate change)	2
Belgium	Western Europe and Other States	Annex I	2010	2021	<i>Plan National d'adaptation 2017 - 2020. Évaluation finale de la mise en œuvre</i> (National Adaptation Plan 2017 - 2020. Final assessment of implementation)	2
Brazil	Latin America and the Caribbean	Non-Annex I	2016	2017	<i>National Adaptation Plan. First monitoring and evaluation report 2016 - 2017</i>	1
Burkina Faso	Africa	Non-Annex I	2015	2021	<i>Evaluation of Burkina Faso's National Climate Change Adaptation Plan (NAP) 2015-2020: Final report</i>	1

Chile	Latin America and the Caribbean	Non-Annex I	2014	2019	<i>Reporte Nacional de Adaptación al Cambio Climático (National Plan for Adaptation to Climate Change Report)</i>	4
Finland	Western Europe and Other States	Annex I	2014	2020	<i>Implementation of Finland's National Climate Change Adaptation Plan 2022 – A Mid-term Evaluation</i>	3
France	Western Europe and Other States	Annex I	2018	2022	<i>Midterm assessment of the second climate change national adaptation plan</i>	3
Germany	Western Europe and Other States	Annex I	2015 ¹⁹	2020	<i>Second Progress Report on the German Strategy for Adaptation to Climate Change (DAS)</i>	2
Japan	Western Europe and Other States	Annex I	2015	2023	<i>気候変動適応計画の令和4年度施策フォローアップ報告書 (FY2022 Policy Follow-up Report for Climate Change Adaptation Plan)</i>	
Kenya	Africa	Non-Annex I	2015	2022	<i>Review of the implementation of Kenya's National Adaptation Plan 2015 - 2030 in the agriculture sector</i>	1

¹⁹ Although the progress report is for the second Adaptation Action Plan, the action plan is part of a broader and longer-term adaptation strategy which was established in 2008. The five-year action plans define specific activities, and their progress reports inform subsequent updates to the implementation of the German adaptation strategy.

Kiribati	Asia-Pacific	Non-Annex I	2014	2020	<i>Kiribati Joint Implementation Plan for climate change and disaster risk management (KJIP) 2014-2018 implementation progress report</i>	1
New Zealand	Western Europe and Other States	Annex I	2022	2024	<i>Progress report: National Adaptation Plan</i>	1
Philippines	Asia-Pacific	Non-Annex I	2011	2020	<i>The Philippine National Climate Change Action Plan Monitoring and Evaluation Report 2011-2016</i>	1
Saint Lucia	Latin America and the Caribbean	Non-Annex I	2018	2022	<i>Saint Lucia's First National Adaptation Plan Progress Report</i>	1
Spain	Western Europe and Other States	Annex I	2006 ²⁰	2019	<i>Evaluation report of the Spanish National Climate Change Adaptation Plan.</i>	1
South Africa	Africa	Non-Annex I	2011	2017	<i>South Africa's 2nd annual climate change report</i>	2
South Korea	Asia-Pacific	Non-Annex I	2010	2023	<i>2022년 추진상황 점검결과 보고 (2022 Progress review results report)</i>	3
Switzerland	Western Europe and Other States	Annex I	2014	2017	<i>Final report Evaluation of the Strategy for Adaptation to Climate Change: Module A</i>	2
Tonga	Asia-Pacific	Non-Annex I	2018	2021	<i>Progress Report of the Joint National Action Plan 2 on Climate Change and Disaster Risk Management</i>	1

²⁰ In 2021, Spain published a new NAP, which is informed by the 2019 progress report.

United Kingdom of Great Britain and Northern Ireland	Western Europe and Other States	Annex I	2018 ²¹	2023 ²²	<i>Progress in adapting to climate change 2023 Report to Parliament</i>	7
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²¹ In 2023, the United Kingdom adopted its third national adaptation programme/NAP. However, the progress report covers the second NAP.

²² Although in March 2024 the Climate Change Committee published another report, this report is an assessment of the United Kingdom's third NAP as opposed to a progress report. For this reason, we analysed the 2023 report, which assesses the implementation progress of UK's second NAP.

Annex 3.E Adaptation actions by urban local governments

The [2023 Cities Adaptation Actions by Action Group](#) database (Carbon Disclosure Project [CDP] 2023) was used, in which cities have been self-reporting adaptation actions since 2017. The database is maintained by the [CDP](#).²³ The data is available separately for each calendar year. The database has been improved over time to increase clarity and consistency. In 2020, types of adaptation actions were predefined to better categorize implemented actions. In 2023, distinct identifiers for each adaptation action were added to avoid double-counting. This will allow quantitative assessments of the development of the number and types of adaptation actions over time. Such a longitudinal analysis was not possible for previous years, since the lack of unique identifiers made it infeasible to match actions across the annual data files and to avoid double-counting.

In the AGR 2024, the following variables were analysed in the 2023 data set:

- Location (region)
- Characteristics about the city (population size)
- Type of action
- Implementation status
- Realized co-benefits

Data analysis

- **Data filtering:** The original data set for 2023 contained 5,926 rows. To enhance analysis accuracy, rows lacking complete information, specifically those without clearly defined city names and/or adaptation actions were excluded. This process resulted in 3,501 valid rows across 501 cities, ensuring that only data providing clear insights into adaptation actions were retained. The analysis is represented across five UN regions: Western European and Others, Latin American and Caribbean, Asia-Pacific, African, and Eastern European.
- **Data categorization for adaptation actions:** The CDP data set is organized into 11 action groups, which were further combined for this analysis into six categories: engineering and technological

actions, nature-based solutions, behavioural and educational actions, economic actions, government and legislative actions, and other actions (see figure 3.7).

- **Data categorization for hazards addressed by adaptation actions:** The longlist of 22 hazards contained in the CDB database was reduced to 10 categories (see list below) based on close similarity between several hazards. For instance, extreme heat and heat stress were combined into heat-related hazards, and drought and water stress were combined due to their impact on water availability.
- **Data categorization for co-benefits reported by cities:** The co-benefits of adaptation actions were categorized into seven groups based on thematic alignment. For example, economic benefits, such as increased labour productivity and revenue generation, are classified under 'economy', while improvements in air and water quality are categorized under 'ecosystem services'.

Hazards were categorized into 10 categories:

1. **Heat-related:** extreme heat, heat stress
2. **Flooding and heavy precipitation:** river flooding, urban flooding, heavy precipitation
3. **Drought:** increased water demand, water stress, drought
4. **Coastal hazards:** coastal flooding (including sea level rise), oceanic events, hurricanes, cyclones, and/or typhoons, extreme wind, storms
5. **Fire:** fire weather (risk of wildfires)
6. **Erosion/landslides/mass movement:** mass movement, soil degradation/erosion, landslides
7. **Health and diseases:** vector-borne disease, infectious disease
8. **Cold-related:** snow and ice, extreme cold

²³ <https://www.cdp.net/en>

9. **Ecological degradation:** loss of green space/green cover, biodiversity loss

10. **Other**

Co-benefits were clustered into seven categories:

1. **Greenhouse gas mitigation:** Reduced greenhouse gas emissions.
2. **Health:** Reduced premature deaths, improved preparedness for health service delivery, reduced health costs, improved physical health, reduced health impacts from extreme heat or cold weather, Improved mental well-being/quality of life, reduced disaster/disease/contamination-related health impacts.
3. **Energy and infrastructure:** Reduced fuel/energy poverty, increased access to energy, increased energy security, reduced disruption of energy, transport, water and communications networks.
4. **Ecosystem services:** Improved air quality, reduced natural resource depletion, improved water/soil quality, increased water security, increased/improved green space, protected/improved biodiversity and ecosystem services.
5. **Social security and services:** Reduced noise/light pollution, reduced congestion, improved waste management, improved road safety, increased food security, fewer or no households and businesses forced from homes/places of work, improved mobility and access, increased social inclusion, equality and justice, increased security/protection for poor/vulnerable populations, improved education and public awareness on climate issues.
6. **Economy/increased labour productivity:** Improved labour conditions, revenue generation, business/technological innovation, increased economic production, job creation, reduced costs.
7. **Other:** Other, unknown, undertaken in collaboration with Indigenous Peoples, increased transparency and accountability.

Limitations

- The CDP data set collates self-reported adaptation and thus unevenly represents urban adaptation under way. It also relies on cities being part of existing networks and having interest, time and capacity to report their adaptation implementation.
- The predefined types of adaptation actions were only introduced in 2020, and it turned out to be impractical to retrospectively categorize earlier actions. Moreover, the absence of unique identifiers for each action made it impractical to clean the data for the years prior to 2023 for any duplicate entries. Such attempts were further complicated by many cities reporting not annually, but rather at different intervals. A temporal analysis of adaptation actions per year since 2017 was therefore not possible, but will be possible from 2023 onwards.
- Not all cities have all data filled. From the total data set of 5,926 rows, we mapped only 3,501 rows, where city or subregion names are clearly mentioned.
- The distribution of cities that report under this database is not proportional to the global distribution of cities/inhabitants. For example, a disproportionate number of cities from Latin America are self-reporting to this database compared to cities from Asia, which could lead to the skewed impression that Latin America would have far more adaptation actions by cities, while it might just be a matter of underreporting of actions by Asian cities in this database. We have thus clearly stated that the world map (figure 3.6) should not be interpreted as indicating the total amount of adaptation actions by cities worldwide. It only represents what those cities self-report that participate in the reporting under the CDP. Nevertheless, as explained in the chapter, the sample size is large, and the 536 cities included in the database in 2023 account for almost a quarter of all cities worldwide with more than 1 million inhabitants.
- Actions in cities are taken by multiple actors beyond local governments, and these are not accounted for in the database.

Annex 4 Adaptation finance gap

Annex 4.A Tabular results

The Adaptation Gap Report (AGR) estimates the adaptation finance gap for developing countries²⁴ using the following evidence lines:

1. The estimated needs (in US\$) for adaptation, which are derived from two different methods:
 - A modelled estimate of the costs of adaptation for all developing countries, based on global sectoral models that analyse adaptation at the national level
 - An analysis of adaptation finance needs as reported in developing countries' national adaptation plans (NAPs) and nationally determined contributions (NDCs), extrapolating these data to all developing countries
2. An analysis of global international public adaptation finance flows (in US\$) to developing countries, aggregated from country-level data.

The modelled costs and finance needs are compared with the current adaptation finance flows to estimate the size of the adaptation finance gap for developing countries.

1. Modelled costs of adaptation and adaptation finance needs

AGR 2023 (UNEP 2023a) and the supporting adaptation finance gap update (UNEP 2023b) undertook a comprehensive analysis to estimate the costs of adaptation and the adaptation finance needs for developing countries.

These results are shown below in tables 4.A.1-4.A.4, with the indicative central projected range estimated at US\$215 billion/year to US\$387 billion/year for developing countries this decade (2021 US\$), based on the central results of the two different methods (modelled costs and finance needs). It is stressed that there is a considerable range around both sets of values (UNEP 2023b). These values have also been adjusted from 2021 US\$ to 2022 US\$ to allow comparability with the finance flows (which are reported in US\$2022). This used the World Bank's global GDP deflator series, and applied the ratio of the global price level at the end of 2022 relative to the global price level at the end of 2021 to the 2021 US\$ values (World Bank 2024). This methodology is consistent with the methodology used in the AGR 2023. The values for the modelled costs are also shown for the sectoral split based on the original modelling analysis (UNEP 2023b).

²⁴ Defined here as the non-Annex I countries under the United Nations Framework Convention on Climate Change [UNFCCC]. See UNFCCC (undated).

Table 4.A.1 Estimated annual modelled costs of adaptation and adaptation finance needs for developing countries summarized by regions

MODELLED ADAPTATION COSTS (billion US\$/year for decade of 2020s)			ADAPTATION FINANCE NEEDS (billion US\$/year up to 2030)		
Region	US\$2021	US\$2022	Region	US\$2021	US\$2022
East Asia and Pacific	81.6	87.6	East Asia and Pacific	158.3	170.0
Europe and Central Asia	2.7	2.9	Europe and Central Asia	7.5	8.1
Latin America and Caribbean	67.2	72.2	Latin America and Caribbean	51.4	55.2
Middle East and North Africa	12.6	13.5	Middle East and North Africa	27.4	29.4
South Asia	22.3	23.9	South Asia	96.6	103.7
Sub-Saharan Africa	29.0	31.2	Sub-Saharan Africa	45.9	49.3
TOTAL (all regions)	215.4	231.2	TOTAL (all regions)	387.2	415.6

Note: See UNEP (2023b) for details and caveats.

Table 4.A.2 Estimated annual modelled costs of adaptation and adaptation finance needs for developing countries summarized by income group

MODELLED ADAPTATION COSTS (billion US\$/year for decade of 2020s)			ADAPTATION FINANCE NEEDS (billion US\$/year up to 2030)		
Income group	US\$2021	US\$2022	Income group	US\$2021	US\$2022
Low-income	14.4	15.5	Low-income	15.2	16.3
Lower-middle-income	48.2	51.8	Lower-middle-income	155.7	167.1
Upper-middle-income	135.4	145.4	Upper-middle-income	203.6	218.6
High-income	17.3	18.6	High-income	12.7	13.6
Total (all income groups)	215.4	231.2	Total (all income groups)	387.2	415.6

Note: See UNEP (2023b) for details and caveats.

Table 4.A.3 Estimated annual modelled costs of adaptation and adaptation finance needs for developing countries for least developed countries (LDCs) and small island developing States (SIDS)

MODELLED ADAPTATION COSTS (billion US\$/year for decade of 2020s)			ADAPTATION FINANCE NEEDS (billion US\$/year up to 2030)		
Country classification	US\$2021	US\$2022	Country classification	US\$2021	US\$2022
SIDS	4.7	5.1	SIDS	4.5	4.8
LDCs	24.8	26.6	LDCs	37.5	40.3
Total (LDCs and SIDS)	28.6	30.7	Total (LDCs and SIDS)	41.2	44.2

Note: See UNEP (2023b) for details and caveats.

Table 4.A.4 Estimated annual modelled costs of adaptation and adaptation finance needs for developing countries summarized by sector

MODELLED ADAPTATION COSTS (billion US\$/year for decade of 2020s)		
Sector	US\$2021	US\$2022
Coastal	56.3	60.4
River floods	54.3	58.2
Infrastructure	55.5	59.6
Agriculture	16.4	17.7
Fisheries and marine	4.8	5.2
Health	11.1	11.9
Disaster risk reduction and social protection	15.5	16.7
Terrestrial biodiversity (protected areas only)	1.5	1.6
Total (all sectors)	215.4	231.2

Note: See UNEP (2023b) for details and caveats.

2. Global international public adaptation finance flows (in US\$) to developing countries

The analysis of global international public adaptation finance flows (in US\$) to developing countries, aggregated from country-level data, are

shown in tables 4.A.5-4.A.7 below. Note that this data is shown only in US\$2022. The two columns represent the average annual over the period 2018–2022, and the values for 2022 only (see annex 4.B for details).

Table 4.A.5. International public adaptation finance flows (in US\$) to developing countries by region, for average annual over the period 2018–2022, and the values for 2022 only

Finance flows	Annual average 2018 - 2022	Year 2022 only
Region	Billion US\$ (US\$2022)	Billion US\$ (US\$2022)
East Asia and Pacific	3.22	2.48
Central Asia	0.71	0.96
Latin America and Caribbean	2.35	3.01
Middle East and North Africa	1.60	2.23
South Asia	3.88	4.93
Sub-Saharan Africa	7.65	11.23
Unallocated	1.87	2.71
Total (all regions)	21.28	27.54

Note: See annex 4.B for notes and caveats.

Table 4.A.6. International public adaptation finance flows (in US\$) to developing countries by income group, for average annual over the period 2018–2022, and the values for 2022 only

Finance flows	Annual average 2018 - 2022	Year 2022 only
Income group	Billion US\$ (US\$2022)	Billion US\$ (US\$2022)
Low-income	4.36	6.36
Lower-middle-income	11.30	13.98
Upper-middle-income	2.88	3.22
High-income	0.06	0.11
Unallocated	2.68	3.84
Total (all income groups)	21.28	27.54

Note: See annex 4.B for notes and caveats.

Table 4.A.6. International public adaptation finance flows (in US\$) to developing countries classified as SIDS and LDCs, for average annual over the period 2018–2022, and the values for 2022 only

Finance flows	Annual average 2018 - 2022	Year 2022 only
Country classification	Billion US\$ (US\$2022)	Billion US\$ (US\$2022)
SIDS	0.92	1.36
LDCs	7.73	10.99
Total (LDCs and SIDS)	8.32	11.79

Note: See annex 4.B for notes and caveats.

Annex 4.B Annex on international public adaptation finance flows

Data characteristics and methodological choices

Data on adaptation finance flows have been obtained from the Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC)'s Climate-Related Development Finance data set (recipients' perspective), which includes climate-related flows from public bilateral and multilateral providers, including multilateral development banks (MDBs).

Analysis was undertaken using values in 2022 constant prices, and coefficients were applied to calculate bilateral flows marked with the Rio Marker for adaptation as 'significant', and to obtain the attributable finance from developed countries within the MDBs flows (See details in table 4.B.1).

Table 4.B.1 Characteristics and main methodological choices for the analysis of international public adaptation finance flows for the AGR 2024

Technical factor	Methodological choice
Data source	OECD DAC Climate-related development finance dataset (Recipients perspective) https://www.oecd.org/en/topics/sub-issues/development-finance-for-climate-and-the-environment.html
Finance type	International public finance flows in 2022 constant prices
Period covered	2018–2022
Geographic classification	Providers: Annex II Parties to the United Nations Framework Convention on Climate Change (UNFCCC) Recipients: non-Annex I Parties to the UNFCCC, except Parties in Europe
Sources of finance	<ul style="list-style-type: none"> • Bilateral flows • Multilateral outflows (from MDBs, climate funds and other multilateral institutions) attributed to developed countries

Financial instruments	<ul style="list-style-type: none"> • Grants and loans (concessional and non-concessional*) • Other (equity and shares in collective investment vehicles, mezzanine finance instruments)
Point of measurement	Commitment flows only**
Methodological decisions	<ul style="list-style-type: none"> • Bilateral transactions marked as 'significant' under the 'Rio marker' for adaptation were discounted by a coefficient reported by each bilateral provider (according to OECD 2022). If a coefficient was not reported, 40 per cent was used to discount transactions by European Union countries, and 42 per cent for non-European Union countries. Activities marked as 'principal' were not discounted. • For multilateral finance providers outflows, 2020 coefficients to identify amounts attributable to developed countries were applied (according to OECD 2024). • Exclusion of coal-related projects, administrative costs of finance providers, and official export credits.

Notes: * Grants are concessional instruments. Loans can be concessional and non-concessional. Concessional loans are those with grace periods or interest rates better than the market, or a combination of both (OECD 2008). ** Commitments are the financial obligations for the duration of an activity; as opposed to disbursements, which reflect the financial payment flows towards recipients (OECD 2008). Disbursement data is only available reliably for bilateral providers, while most multilateral providers do not report disbursements to the OECD DAC.

Adaptation finance providers and recipients

The AGR 2024 report of international public adaptation finance from developed to

developing countries in the global South. All adaptation finance providers and recipients included in the analysis can be found in tables 4.B.2. and 4.B.3. respectively.

Table 4.B.2 Adaptation finance providers included in the AGR 2024

Bilateral providers of adaptation finance	Multilateral providers of adaptation finance
<ul style="list-style-type: none"> • Australia • Austria • Belgium • Canada • Czechia • Denmark • Estonia • European Union Institutions (excl. European Investment Bank) • Finland • France • Germany • Greece • Hungary • Iceland • Ireland • Italy 	<ul style="list-style-type: none"> • Adaptation Fund • Climate Investment Funds – Strategic Climate Fund • African Development Bank • African Development Fund • Asian Development Bank (ADB) • Asian Infrastructure Investment Bank • International Monetary Fund (IMF) Resilience and Sustainability Trust • Global Environment Facility (GEF) Least Developed Countries Fund (LDCF) • GEF Special Climate Change Fund (SCCF) • Caribbean Development Bank • Central American Bank for Economic Integration • Council of Europe Development Bank

- | | |
|--|--|
| <ul style="list-style-type: none"> • Japan • Latvia • Liechtenstein • Lithuania • Luxembourg • Monaco • Netherlands • New Zealand • Norway • Poland • Portugal • Romania • Slovakia • Slovenia • Spain • Sweden • Switzerland • United Kingdom • United States of America | <ul style="list-style-type: none"> • Development Bank of Latin America • CGIAR • GEF General Trust Fund • Green Climate Fund • European Union institutions (European Investment Bank) • European Bank for Reconstruction and Development • IDB Invest • Inter-American Development Bank • Food and Agriculture Organization of the United Nations • International Fund for Agricultural Development • Nordic Development Fund • International Bank for Reconstruction and Development • International Development Association • International Finance Corporation • Islamic Development Bank • Global Green Growth Institute |
|--|--|

Table 4.B.3 Adaptation finance recipients included in the AGR 2024

Recipients of adaptation finance

- | | | |
|---|--|--|
| <ul style="list-style-type: none"> • Afghanistan • Africa, regional • Algeria • America, regional • Angola • Antigua and Barbuda • Argentina • Armenia • Asia, regional • Azerbaijan • Bangladesh • Belize • Benin • Bhutan • Bolivia • Botswana • Brazil • Burkina Faso • Burundi • Cabo Verde • Cambodia • Cameroon | <ul style="list-style-type: none"> • Eswatini • Ethiopia • Far East Asia, regional • Fiji • Gabon • Gambia • Georgia • Ghana • Grenada • Guatemala • Guinea • Guinea-Bissau • Guyana • Haiti • Honduras • India • Indonesia • Iran (Islamic Republic of) • Iraq • Jamaica • Jordan • Kazakhstan • Kenya | <ul style="list-style-type: none"> • Niger • Nigeria • Niue • North of Sahara, regional • Oceania, regional • Pakistan • Palau • Panama • Papua New Guinea • Paraguay • Peru • Philippines • Rwanda • Saint Lucia • Saint Vincent and the Grenadines • Samoa • Sao Tome and Principe • Senegal • Sierra Leone • Solomon Islands • Somalia |
|---|--|--|

- Caribbean and Central America, regional
 - Caribbean, regional
 - Central African Republic
 - Central America, regional
 - Central Asia, regional
 - Chad
 - Chile
 - China
 - Colombia
 - Comoros
 - Congo
 - Cook Islands
 - Costa Rica
 - Côte d'Ivoire
 - Cuba
 - Democratic People's Republic of Korea
 - Democratic Republic of the Congo
 - Developing countries, unspecified
 - Djibouti
 - Dominica
 - Dominican Republic
 - Eastern Africa, regional
 - Ecuador
 - Egypt
 - El Salvador
 - Equatorial Guinea
 - Eritrea
 - Kiribati
 - Kyrgyzstan
 - Lao People's Democratic Republic
 - Lebanon
 - Lesotho
 - Liberia
 - Libya
 - Madagascar
 - Malawi
 - Malaysia
 - Maldives
 - Mali
 - Marshall Islands
 - Mauritania
 - Mauritius
 - Melanesia, regional
 - Mexico
 - Micronesia
 - Micronesia, regional
 - Middle Africa, regional
 - Middle East, regional
 - Mongolia
 - Morocco
 - Mozambique
 - Myanmar
 - Namibia
 - Nauru
 - Nepal
 - Nicaragua
 - South & Central Asia, regional
 - South Africa
 - South America, regional
 - South Asia, regional
 - South of Sahara, regional
 - South Sudan
 - Southern Africa, regional
 - Sri Lanka
 - Sudan
 - Suriname
 - Syrian Arab Republic
 - Tajikistan
 - Thailand
 - Timor-Leste
 - Togo
 - Tonga
 - Tunisia
 - Turkmenistan
 - Tuvalu
 - Uganda
 - United Republic of Tanzania
 - Uzbekistan
 - Vanuatu
 - Venezuela
 - Viet Nam
 - West Bank and Gaza Strip
 - Western Africa, regional
 - Yemen
 - Zimbabwe
 - Zambia
-

Annex 4.C Sources and instruments for financing adaptation

There are different sources of finance – including international public, domestic public, private, philanthropic and non-governmental organizations (NGOs), and voluntary and community organizations. There are also a range of different financial instruments (e.g. grants, concessionary loans, equity, guarantees) that can be used for adaptation. The AGR 2024 has undertaken a review of sources and instruments for financing adaptation (see main report, section 4.6.3). The data sources for this and review insights are set out in this annex.

A number of previous reports have documented the sources and instruments available for adaptation (OECD 2015; Global Center on Adaptation 2021; International Institute for Sustainable Development [IISD] 2022; Cities Climate Finance Leadership Alliance 2023; European Commission undated). For the AGR 2024 analysis, we drew on a recent European project review (England *et al.* 2023), which conducted a review of 16 catalogues of sources and instruments with relevance to adaptation. The review of catalogues as well as best practices in adaptation financing identified a total of 57 sources (institutions that provide finance for adaptation) and 78 instruments (mechanisms that enable transfer of funds). These are shown in tables 4.C.1. and 4.C.2. below.

The review provided a number of insights. First, to date, adaptation has mostly focused on existing sources (e.g. UNFCCC funds) and instruments, but a much broader range of both could be potentially used. Second, different sources and instruments have differing potential for different types of adaptation. For example, loans have more potential for large infrastructure investments, while grants are likely to be more relevant for non-market sectors, as well as for catalysing transformational adaptation. Third, sources and instruments are context- and institution-specific, varying by geography, but also depending on the timing of the adaptation, as well as the envisaged financing strategies (e.g. leveraging debt, risk

transfer, generating revenues). Finally, the review highlighted that the relevant source has a bearing on the types of instruments used.

As countries make progress on adaptation, and their financing approach matures, the range of sources (and respective actors) working on adaptation is likely to become broader. This means that strategically tailoring and targeting sources and instruments to the types of adaptation and context of projects is becoming increasingly important. This approach is being advanced by several initiatives, and by the development of bespoke financing strategies and business models (e.g. Stoll *et al.* 2021; American Society of Adaptation Professionals 2022; Wise *et al.* 2022; Gouett, Murphy and Parry 202). These approaches also tend to be more inclusive – involving more stakeholders who stand to benefit, or could benefit, to increase the range of project benefits and co-benefits available, and structuring financial models in a way which aligns risk ownership and/or adaptation costs with adaptation benefits and co-benefits (Global Center on Adaptation 2021; NAP Global Network (undated); Wise *et al.* 2022; England *et al.* 2023).

It is also unlikely that the traditional set of financial instruments will be enough to scale up adaptation across all areas. Therefore, new and innovative approaches and financial instruments are needed, and are being developed for adaptation. The AGR 2024 has explored these to see how they might help fill the adaptation finance gap, and has summarized these in the finance chapter (box 4.3). However, while such instruments have potential, they can be challenging to develop, as they have more complexity and require more capacity than traditional instruments. They are often specific, and require local and site/context information, which can hamper replicability and aggregation, alongside the common challenges of quantifying adaptation effectiveness and outcomes. This suggests that they will be most applicable for specific cases, particularly when traditional sources and instruments will not work.

Table 4.C.1 Typology of sources for climate change adaptation finance

Actor type	Category	Subcategory	
Public	International climate or development funds		
	International finance institutions		
	International bilateral		
	National-level public entities	Central banks	
		Government agencies	
		National development bank	
		National governments	
		Publicly owned utilities	
		Regulators	
		Sovereign wealth funds	
	Regional and subnational government entities	Local municipalities	
		Regional agencies	
		Regional government	
Third sector	Charities, trusts, NGOs and philanthropy	Charities	
		Foundations and trusts	
		NGOs	
		Philanthropists	
Private	Asset owners / institutional investors	Asset managers	
		Faith-based investment groups	
		Impact investors	
		Insurers	
		Pension funds	
		Real estate investment trusts	
		Reinsurers	

Banks	Corporate banks
	Investment banks
	Retail banks
Businesses	Adaptation-focused companies
	Business improvement districts
	Investor-owned utilities
	Large enterprises and multinationals
	Micro-, small- and medium-sized enterprises
	Social enterprises
Community entities	Community development companies
	Community development financial institutions
	Community land trusts
Households	Bills/utilities
	Direct
	Insurance
	Property owners
Individuals	Direct
	High-net-worth individuals (through private wealth managers)
	Retail investors
	Savings
	Visitors
Lotteries	Lotteries
Private investors	Angel investors
	Project developers
	Venture capital investors

Source: England et al. (2023).

Table 4.C.2. Typology of instruments for financing adaptation

Category	Subcategory 1	Subcategory 2
Grants		
	Implementation grants	
	Donations	
	Technical assistance	
Debt		
	Loans	Balance Sheet lending

		Commercial loans
		Concessional loans
		Credit lines
		Syndicated loans
		Subordinate loans
		Debentures
		Revolving funds
		Crowdfunding
	Bonds	
		General obligation bond
		Green bonds
		Blue bonds
		Social bonds
		Sustainability bonds
		Sustainability-linked bonds
Equity		
	Private equity	
	Green equity	
Fees/user charges		
	Property-related fees	
	User charges	
	Business improvement	
	Stormwater/wastewater fees	
	Development impact fees	
	On-bill financing	
	Carbon pricing / offsetting	
Results-based financing		
	Payments for ecosystem service	
	Debt for climate swaps	
	Debt for nature swaps	
	Work for taxes	
	Fiscal transfers	
Risk mitigation	Insurance	
		Risk pooling
		Catastrophe bonds
		(Climate) resilience bonds

	Guarantees	Loan guarantees
		Performance guarantees
Taxation		
	Tourism tax	
	Property and land tax	
	Betterment charges and special assessments	
	Tax increment Financing	
Land value capture	Land sale or lease	
	Joint development	
	Air rights sale	
	Land readjustment	
	Urban redevelopment schemes	
	Subsidies	
Non-financial instruments	Regulations and mainstreaming	
	Incentives	
	Time (labour)	
	Time (leadership)	
Non-monetized inputs	Access to land	
	Access to equipment / facilities	
	Donation of materials	
	Expertise	
		Concession-based PPP
		Outcome-based PPPs
		Availability-based PPP
Public private partnerships (PPPs)	PPPs	Service contracts
		Management contracts
		Affermage or lease contracts
		Build-operate-transfer contracts
		Joint ventures

Source: England et al. (2023).

Annex 4.D Enabling factors for enhancing adaptation finance

The AGR 2024 undertook a review of the **enabling factors** for enhancing investment and mobilizing adaptation finance. This is summarized in this annex.

Climate budget tagging and climate fiscal planning. Climate change is now recognized as a fiscal risk for countries, with the potential to reduce government revenues, increase government expenditure and contingent liabilities, alter external performance, and even influence sovereign credit ratings and the cost of debt (Buhr *et al.* 2018;; IMF 2020). In response, countries are increasingly undertaking climate fiscal risk assessments, which identify the potential impacts of climate change on a country's fiscal position. Examples include the ADB's climate responsive fiscal management and the IMF Climate Public Investment Management Assess (C-PIMA) (IMF 2021). These raise the awareness of the fiscal risks of climate change, and can help in allocating domestic finance (or for justifying borrowing) for adaptation. A related activity is climate budget tagging (green budgeting) and climate public investment expenditure reviews, which assess current allocations of domestic public finance to adaptation. See UNFCCC (2022) for a review of countries, but also some of the challenges in these assessments).

Mainstreaming in national development and financial planning. At the country level, there are existing planning processes that develop national and sector priorities, with accompanying investment plans for domestic and external finance. These typically include medium-term national development plans (e.g. five-year plans). There are also often equivalent sector development plans (e.g. five-year plans for agriculture or other sector strategic plans). This existing medium-term planning and investment framework are key entry points for more strategic and programmatic adaptation investment of adaptation. These plans also set out the key performance indicators for government and relevant ministries, and thus strongly influence priorities. Alongside this planning process, all countries have an existing framework and processes for public financial management. This typically consists of a medium-term expenditure framework (MTEF), such as a three-year MTEF, which is updated on a rolling basis. This in turn links through to the annual budgeting process. Supporting this is a public investment management framework. This sets out how

governments manage public investments and how they assess and prioritize projects.

Many countries are now integrating adaptation into medium-term national development plans (e.g. into five-year plans), as well as into corresponding sector development plans (e.g. five-year plans for agriculture) and decentralized development plans. Such activities can deliver adaptation at scale and can help mobilize adaptation finance (domestic spending and external finance) by prioritizing it in government spending and investment decisions within national MTEFs and annual budgeting processes. Public funding, (including that of national development banks) can also be used strategically to leverage private sector finance.

Adaptation investment planning. All countries have now identified adaptation priorities and have reported these in NDCs and NAPs, often with estimates of costs. However, while these provide country-owned priorities for adaptation, these plans are not yet investment-ready. To help address this, several initiatives are supporting countries to take identified adaptation priorities (in NDCs and NAPs) and develop these towards investment ready pipelines to unlock finance. These include the ADB's Climate Adaptation Investment Planning initiative (ADB 2023), the United Nations Development Programme (UNDP) adaptation accelerator (UNFCCC 2024), and the NDC Partnership and the Climate Investment Funds. These develop strategic (programmatic) investments in adaptation, with the identification of adaptation benefits (or co-benefits) including the potential for revenues, and then assess and target the relevant sources of finance and instruments.

International financial institutions and MDB reform. There is a wider debate on the international finance architecture, including MDB reform. This includes the Bridgetown Initiative and subsequent updates (Bridgetown Initiative 2024), and the recommendations of the capital adequacy framework review of the MDBs for the G20 (Independent Expert Panel convened by the G20 2022) It also includes the consideration of vulnerability as part of lending criteria (Climate Policy Initiative [CPI] 2023), new concessionary instruments for adaptation (i.e. very long tenure loans, highly concessional rates and long grace periods), prioritization of adaptation over mitigation, increasing fiscal headroom for

countries for adaptation (debt forgiveness or suspension for climate shocks), use of concessional loans for all adaptation (including for middle-income countries) and adaptation swaps. Other studies have highlighted the potential for reform of the wider financial architecture, including credit rating agencies.

Another suggestion includes establishing common databases of climate data and scenarios in an effort to reduce transaction costs for project developers, countries and cities. This would ensure they are able to prepare funding applications which have been screened for climate risk and made resilient (CPI 2023).

While it is not within the scope of the AGR 2024 to make specific recommendations on MDB reform, the various initiatives above could help overcome some of the challenges with mobilizing adaptation finance, especially at national level. It also highlights the need to bring development and adaptation objectives together.

Financing facilities, accelerators and platforms.

One way governments and private sector can support adaptation finance is through dedicated facilities (or accelerators) that provide support to project development, develop new business models, and develop new goods and services, as well as financial models and instruments and which can help connect developers and investors.

Several countries have set up national adaptation funds or financing facilities (UNFCCC 2022), to help mobilize public adaptation finance at scale. These initiatives have been nationally driven, but supported by capacity-building and technical assistance from the IFIs and development partners (who sometimes act as interim fund or facility managers). Once established, these can build capacity across government and support line ministries to access finance. Such facilities can encourage more harmonized and strategic approaches for accessing finance and build capacity across government. While most adaptation funds/facilities have initially concentrated on international public finance (sometimes with domestic co-financing), a number are expanding to include private and blended finance, for example, with project preparation facilities, innovation grants to help develop private proposals or business cases/models, and concessionary finance (loans, guarantees or equity) to help de-risk investment.

A number of similar facilities to scale up adaptation finance have also been set up, run by public or private organizations. These accelerators can target new adaptation goods and services, provide support for new business models, and support the development of new financial instruments. They usually include a central facility which provides early-stage support to de-risk investment, e.g. technical assistance or innovation funding), alongside offers of concessional lending, guarantees or equity. One innovation has been the Global Innovation Lab for Climate Finance – an investor-led, public private initiative. This supports the creation of financial instruments itself, rather than products or services.

These are being complemented with adaptation platforms that help to connect developers and potential investors. While welcome, these private orientated facility models will gravitate to certain types of adaptation investments. To demonstrate this, the AGR 2024 has reviewed the portfolios of six of the key adaptation accelerators and mapped their projects to sectors, shown in the finance chapter (figure 4.10).

To identify the sample, the report built on the initial tranche of five accelerators that were identified and reviewed as part of the European Union Horizon Europe research programme, Pathways2Resilience (England *et al.* 2023). These initial accelerators aimed to inform and support an emerging catalogue of sources, instruments and best and innovative practices for adaptation financing in Europe, so that the sectoral focus and the types of results being yielded could be better understood.

For this review, the AGR adopted the definition of an accelerator as follows:

A project or programme of support or designed to facilitate the development of new financial sources and/or instruments for adaptation, or as a proxy for new finance through the development of goods and services for adaptation.

This definition was adopted to explicitly acknowledge the mix of types of accelerators currently operating in the adaptation finance space. The original accelerators were then screened against this definition, resulting in the exclusion of one accelerator (Adaptation Scotland Climate Finance Working Group). Additional accelerators were identified by the steering committee and the authors during their review of

material for the chapter. These were reviewed and screened for inclusion. The main criteria for inclusion were the compliance with the definition, but also the availability of project information. As a result of this, two additional accelerators were included:

- The GSMA Innovation fund for Climate Resilience and Adaptation
- The Climate Resilience Programme of the Global Innovation Fund

The final list of accelerators included is shown in the table 4.D.1.

Table 4.D.1 List of accelerators included in the AGR 2024 review

Provider	Accelerator	Number of projects
CPI	Global Innovation Lab for Climate Finance ²⁵	22
European Institute of Innovation and Technology Climate Knowledge Innovation Community (EIT Climate-KIC) / South Pole	City Finance Lab ²⁶	6
GEF	GEF Challenge Programme for Adaptation Innovation (Rounds 1 and 2) ²⁷	19
Global Innovation Fund	Climate Resilience Programme ²⁸	8
GSMA	Innovation fund for Climate Resilience and Adaptation ²⁹	24
SEED	Practitioner Labs for Climate Finance ³⁰	16

The study then reviewed the accelerators and then either compiled the associated project information, or, in the case of the Global Innovation Lab, updated the database to reflect the additional ideas funded since the original work. The list of Global Innovation Lab projects was further refined with the CPI due to challenges with project categorization on their website. In addition to updating the project information, the study added a number of additional data categories included for the AGR 2024. These included:

- **Sectors** – sectors were mapped to the AGR 2023 definitions of need
- **Product developed** – Projects were classified to identify if they developed a new product or

service, the development of a financial instrument itself, or both

- **Operational country** – The country which the project was targeting/operating in
- **Developed/developing** - whether the operational country(ies) was developing (Annex 1) or developing (Non-Annex I)
- **Gender equality and social inclusion (GESI) consideration** – Projects were coded as GESI blind, GESI specific, GESI integrative or GESI responsive

Of the 95 projects within these accelerators, around 50 per cent are in the agriculture sector (many of which are irrigation projects). This analysis suggests that the focus of such accelerators is on meeting private sector demand

²⁵ <https://www.climatefinancelab.org/>

²⁶ <https://www.southpole.com/clients/city-finance-lab-catalysing-climate-action-in-cities-with-innovative-finance-solutions>

²⁷ <https://www.thegef.org/what-we-do/topics/challenge-program-adaptation-innovation>

²⁸ <https://www.globalinnovationfund.com/innovating-for-climate-resilience>

²⁹ <https://www.gsma.com/solutions-and-impact/connectivity-for-good/mobile-for-development/the-gsma-innovation-fund-for-climate-resilience-and-adaptation/>

³⁰ <https://seed.uno/programmes/ecosystem-building/practitioner-labs-climate-finance>

as impacts increase, and is not so well aligned to the adaptation finance needs outlined in NAPs/NDCs, i.e. they are financing actions that fall under the definition of adaptation, but they rarely target the explicit priorities identified in national documents. This mismatch is important as it suggests that even with enhanced support for development, private finance will not address the public adaptation needs in non-market sectors that have been prioritized by countries, and for elements of the Global Goal. It also suggests that NAPs / NDCs are not recognizing emerging demands for adaptation in the private sector. This also raises a question of whether the best use of concessionary adaptation finance is to de-risk existing development options (such as irrigation) that perhaps could or should be using other private sources of finance (e.g. from commercial banks).

Sustainable finance frameworks including disclosures and green (adaptation) taxonomies.

Recent sustainable finance reforms aim to boost the availability of finance for green investment (including mitigation, adaptation and nature). This includes regulations (mandatory or voluntary) for disclosures by companies and financial institutions, including the International Sustainability Standards Board (ISSB) frameworks on climate-related physical risk, following on from the Taskforce on Climate-related Financial Disclosures, as well as the subsequent Taskforce on Nature-related Financial Disclosures. These support the identification and disclosure of physical climate and nature risks, and should in turn help encourage private sector adaptation. However, as highlighted in the AGR 2023, it may also lead to detrimental impacts if financial markets or investors start to price these risks into investment decisions in highly climate vulnerable countries, and that this could be exacerbated by market anticipation (of future risks). In some regions, there is also a focus and guidance on transition planning for financial institutions and private sectors that also include adaptation (e.g. Transition Plan Taskforce, 2023).

Sustainable finance taxonomies have also been developed. These provide guidance on activities, assets, and/or project categories that can be counted as adaptation (International Capital Markets Association 2021). In turn, this can help identify activities that qualify for sustainable investment funds, and can be used to provide tailored packages of support for adaptation (e.g. access to concessionary finance and lower interest rates for qualifying adaptation activities

from national development or commercial banks). They also have a number of secondary use cases, such as expenditure-tracking or budgetary policy-making (Nataxis 2023). The number of countries covered by sustainable finance taxonomies has increased in recent years.

The AGR 2024 sought to consolidate an understanding of the state of play by mapping the current state of play on adaptation taxonomies. To do this, adaptation taxonomies were sourced globally from English- and Spanish-language sources. Jurisdictional taxonomies were included in the analysis if they explicitly included climate change adaptation as one of their objectives and if they were already launched (i.e. not in development).

Adaptation taxonomies of non-state actors were identified by searching the literature for frameworks addressing public and private adaptation finance. These are generally published by international institutions, civil society organizations and financial institutions. A total of 36 frameworks that were commonly referred to as adaptation taxonomies were identified. An initial screening process was then carried out to 12 exclude frameworks without the explicit objective of classifying adaptation-aligned economic activities, such as performance measurement frameworks and high-level principles.

For the analysis, the AGR analysed the accompanying documentation for taxonomies, which generally included a framing section of the adaptation challenge, a section on principles guiding the identification of adaptation-aligned activities, the methodology used to design the taxonomy, and a section on example activities. The full method is available in Spacey Martin, Ranger and England (2024a), while the full results of the analysis are published separately (Spacey Martin, Ranger and England 2024b).

The work identified 24 taxonomies with adaptation as an explicit objective. Again, agriculture, forestry and water are the most common sectors covered, along with health, with lower coverage of energy, infrastructure, nature and urban (housing). However, the work found that taxonomies vary in terms of principles, sector coverage and reference activities, and that these differences are so large that this risks compromising the original objectives of clarifying what counts as an adaptation.

Finally, some taxonomies have been developed by non-jurisdictional bodies (such as the Global Adaptation and Resilience Investment Working Group [GARI], the Climate Bonds Initiative, Standard Chartered and Tailwind). While not as credible to investors as state-backed taxonomies, they have helped advance methodologies and provide guidance while jurisdictional taxonomies develop. For example, one taxonomy suggests alignment with local, regional or national plans (Standard Chartered, KPMG and United Nations Office for Disaster Risk Reduction 2024).

Methodological innovations. A number of initiatives focus on information, methods or processes to enhance the bankability (investment attractiveness) of adaptation projects. These include adjusting the scope of projects (i.e. what they aim to achieve or the benefits they provide) to help projects meet likely financing requirements (Wise *et al.* 2022), as well as inclusive approaches to development focused on maximizing participation of potential beneficiaries (Machiels *et al.* 2024). Other efforts have focused on improving project viability by modelling climate effects in cash flows (ADB and Global Center on

Adaptation 2021; Coalition for Climate Resilient Investment 2021; Institutional Investors Group on Climate Change 2024). These have sought to model the impacts of climate events in the counterfactual scenario for economic and financial appraisal, but also wider effects (e.g. on credit ratings of institutions). Similarly, work in Queensland, Australia, has focused on ex-post analysis to monetize the avoided losses (Resilience Valuation Initiative, Australian Institute for Disaster Resilience and Queensland Government 2023). These improve bankability of adaptation, but it is important to note that projects are still subject to standard investment risks (e.g. currency risks). Finally, it is also important to note that in the early stages of adaptation thinking, there is a role for using modelled costs of climate change and adaptation to help governments set the context and level of ambition/capacity-building needed by the public sector. This can be achieved by illustrating the projected economic costs of climate change and investment needs for adaptation, and comparing and contrasting them with allocated levels of resourcing on adaptation planning compared to wider development goals.

Annex 5 Capacity-building and technology transfer and cooperation

Annex 5.A Methodologies – analysis of national adaptation plans for capacity-building

5.A.1 Overview of methodology

To gain a better understanding of the landscape of needs and actions related to capacity-building for adaptation, we undertook an analysis of 56 national adaptation plans (NAPs) submitted to the United Nations Framework Convention on Climate Change (UNFCCC) through the NAP Central portal up to 30 June 2024 (see table 5.A.1). Each document was analysed to identify all references to needs, gaps and practices related to capacity-building. These were then coded using the framework depicted in Figure 5.1, which proposes three levels of analysis in looking at capacity development needs and priorities. First are adaptation priorities, which are understood as broad target areas that adaptation action must address. The second is the iterative adaptation policy process, which describes an iterative four-stage process moving from the assessment of climate-related risks and vulnerabilities to planning and implementing adaptation policies and actions, then to monitoring, evaluating and learning from the outcomes. Finally, the inner circle of the figure describes six key enabling factors that are critical to effective adaptation planning. Many of these enabling factors are more systemic in nature, and they are foundational to countries' abilities to generate, share and apply new ideas and knowledge in an ongoing manner (Dekens et al. 2024). We drew on the target areas and stages set out in the United Arab Emirates Framework for Global Climate Resilience (UAE FGCR) to offer coherence with this emerging focus within the adaptation community. Mobilizing human and institutional capacity towards the UAE FGCR's targets, particularly in regions and for populations most impacted by climate change will be a central task for

adaptation in the coming years. Reaching these targets, however, will require contextualized approaches that take into account national and subnational priorities and institutional environments. In addition to the analysis described above, we coded all capacity development activities identified in NAP documents according to the type of capacity-building intervention that was being described (e.g. training programmes, educational programmes, knowledge exchange, etc.) and the stakeholders that were being targeted (e.g. government representatives, civil society, communities, etc.).

Limitations

The scope of this analysis introduces some important limitations that should be highlighted. These relate principally to our use of NAPs as our primary source of data. Our emphasis on NAPs tends to place an emphasis on activities being initiated at the national scale and through government-led programming. This may overlook or underemphasize work that is being carried out at more local levels, or via civil society, private sector or other non-governmental channels. We have sought to use our wider review of the literature as well as our illustrative case studies as a way of broadening that focus. Finally, the scope of this analysis did not allow for a comparable analysis of capacity needs and priorities set out in other national policy documents such as adaptation communications to the UNFCCC or nationally determined contributions. Where possible, we summarize the findings from other analyses about these other documents and offer insights about how they compare to our own analysis.

Table 5.A.1 List of national adaptation plans reviewed

Country	Region	Date posted of reviewed submission	Language of reviewed submission
Benin	Africa	8 July 2022	French
Burkina Faso	Africa	15 October 2015	English
Burundi	Africa	4 December 2023	French
Cabo Verde	Africa	23 October 2022	English
Cameroon	Africa	26 October 2015	French

Central African Republic	Africa	16 October 2022	French
Chad	Africa	15 February 2022	English
Democratic Republic of the Congo	Africa	6 July 2022	English
Ethiopia	Africa	1 March 2019	English
Kenya	Africa	28 February 2017	English
Liberia	Africa	16 December 2021	English
Madagascar	Africa	29 May 2022	French
Morocco	Africa	5 January 2024	French
Mozambique	Africa	7 July 2023	English
Niger	Africa	14 November 2022	French
Sierra Leone	Africa	8 February 2022	English
South Africa	Africa	29 September 2021	English
South Sudan	Africa	1 November 2021	English
Sudan	Africa	26 September 2016	English
Togo	Africa	17 January 2018	French
Zambia	Africa	11 November 2023	English
Bhutan	Asia and the Pacific	22 September 2023	English
Bangladesh	Asia and the Pacific	23 March 2023	English
Cambodia	Asia and the Pacific	7 July 2021	English
Fiji	Asia and the Pacific	12 December 2018	English
Kiribati	Asia and the Pacific	21 January 2020	English
Kuwait	Asia and the Pacific	11 February 2021	English
Marshall Islands	Asia and the Pacific	9 December 2023	English
Nepal	Asia and the Pacific	30 October 2021	English
Pakistan	Asia and the Pacific	15 August 2023	English
Philippines	Asia and the Pacific	30 May 2024	English
Papua New Guinea	Asia and the Pacific	11 April 2023	English
Sri Lanka	Asia and the Pacific	1 November 2016	English
State of Palestine	Asia and the Pacific	11 November 2016	English
Thailand	Asia and the Pacific	18 April 2024	English
Timor-Leste	Asia and the Pacific	31 March 2021	English
Tonga	Asia and the Pacific	27 October 2021	English
Albania	Eastern Europe	27 October 2021	English
Armenia	Eastern Europe	24 September 2021	English
Bosnia and Herzegovina	Eastern Europe	21 December 2022	English

Republic of Moldova	Eastern Europe	26 June 2024	English
Argentina	Latin America and the Caribbean	23 November 2023	English
Brazil	Latin America and the Caribbean	12 May 2016	English
Chile	Latin America and the Caribbean	7 September 2017	Spanish
Colombia	Latin America and the Caribbean	27 February 2018	Spanish
Costa Rica	Latin America and the Caribbean	5 May 2022	Spanish
Ecuador	Latin America and the Caribbean	21 March 2023	Spanish
Grenada	Latin America and the Caribbean	6 November 2019	English
Guatemala	Latin America and the Caribbean	2 August 2019	Spanish
Haiti	Latin America and the Caribbean	5 January 2023	French
Paraguay	Latin America and the Caribbean	14 July 2022 (updated NAP reviewed)	Spanish
Peru	Latin America and the Caribbean	22 July 2021	Spanish
Saint Lucia	Latin America and the Caribbean	21 September 2018	English
Saint Vincent and the Grenadines	Latin America and the Caribbean	14 November 2019	English
Suriname	Latin America and the Caribbean	2 June 2020	English
Trinidad and Tobago	Latin America and the Caribbean	15 May 2024	English

Annex 5.B Capacity-building case examples

5.B.1 Future Resilience for African Cities and Lands project

The Future Resilience for African Cities and Lands project was implemented across nine southern African cities (six core cities in Botswana, Malawi, Mozambique, Namibia, Zambia and Zimbabwe, and three South African learning partner cities) between 2015 and 2021. The project partners and stakeholders worked together to build capacities to: i) understand from multiple perspectives the complex drivers and differential impacts of urban climate risks; and ii) produce and draw relevant climate science information into key urban decision-making processes to strengthen climate resilience. For example, exploring the impacts of climate on the future potential of the Kafue River to satisfy the water and hydropower demands of the city of Lusaka as well as assessing in a participatory way the organizational capacities of the Department of Infrastructure, Water and Technical Services in the City of Windhoek to integrate climate risks and opportunities into their planning and operational decisions. Mutual learning was at the heart of the project design. The capacities of researchers, city government politicians and technical officials, civic organizations and international agencies working in each of the cities and between the nine cities involved were all being strengthened.

The competencies to navigate and interpret technical terms used in the domains of climate science, climate adaptation, urban infrastructure planning and public service delivery were strengthened. The skills to facilitate and meaningfully participate in multi-stakeholder workshops were improved. The competencies to co-develop and context-sensitively apply various climate risk assessment and decision support methods and tools (such as process mapping, distilling climate risk narratives and decision scaling) were built. Key modalities for capacity strengthening included: convening a series of Learning Labs in three cities; facilitating city exchange visits between teams of researchers, policymakers and practitioners; embedding junior researchers in the operations of city governments through co-hosting arrangements; convening various thematic working groups across the project teams; and co-authoring diverse types of publications. The Future Resilience for African Cities and Lands project was led by the University of Cape Town, and it was resourced by the Department for International Development and the Natural Environment Research Council of the

United Kingdom. For further details, see <https://www.fractal.org.za/>.

5.B.2 Improved Municipal Planning in African Cities project

The Improved Municipal Planning in African Cities (IMPACT) project, a three-year initiative in Blantyre and Lilongwe in Malawi as well as Bulawayo and Harare in Zimbabwe, aimed to enhance collaboration mechanisms between all tiers of government and their social partners to support climate-resilient development in African cities. IMPACT began by co-producing an understanding of what critical capacity and/or knowledge gaps existed in Malawi and Zimbabwe, which were hindering collaboration between tiers of government and their social partners – collaboration necessary to improve local-level climate change adaptation planning and implementation.

IMPACT then sought to contribute to plugging these gaps by developing tools requested by project partners in the two project countries. This led to the creation of a comprehensive toolkit on multi-level governance collaboration, including a *Guide to Collaborative Multi-level Governance for Climate Resilient Development* and an accompanying online learning course. The guide has also been included in the Coalition for High Ambition Multilevel Partnerships guidance pack. The guide and course offer support to national and subnational governments in developing climate-resilient policies and strategies through effective multi-level governance, tailored to the African context. To date, over 26 people have participated in the online course.

The co-production processes undertaken to understand how multi-level governance could be improved in both countries, and to co-develop the tools to respond to such, led to improved understanding and capacity among stakeholders about the importance of multi-level governance and climate-resilient development, as well as how improvement of the former can enhance climate resilience outcomes.

Key factors that enhanced project outcomes included:

- Adapting globally recognized good practice collaboration mechanisms to local contexts.

- Adopting an iterative learning approach that allowed for continuous refinement of project activities, tools and outputs.
- Facilitating 10 peer-to-peer exchanges between project cities within and across the two countries, as well as with cities in ICLEI Africa's wider city network, which provided insights into practical solutions that worked in similar contexts.
- Strong institutional support from national and subnational governments, owing to the project's responsiveness to needs articulated by stakeholders.

"The cross-pollination was incredibly beneficial. Simply understanding what other departments and ministries do and their mandates opens doors for more collaboration. This kind of insight fosters greater cooperation and allows us to align our efforts more effectively toward shared goals."

Alfred Muriya, City Environmental Planner, City of Harare.

IMPACT was led by ICLEI Africa in partnership with the African Climate and Development Initiative, Chinhoyi University of Technology and the University of Malawi, and it was funded by the International Development Research Centre.

5.B.3 Needs-based Finance project

In 2017 and 2021, the Conference of the Parties requested the United Nations Climate Change Secretariat to explore ways and means to assist developing country Parties in assessing their climate finance needs and priorities, in a country- and region-driven manner, and to translate these needs into action (UNFCCC decision 6/CP.23, para 10; UNFCCC decision 4/CP.26, para 22). In response to these mandates, the United Nations Climate Change Secretariat launched the Needs-based Finance (NBF) project with the objective of facilitating access and mobilization of climate finance for the implementation of priority regional mitigation and adaptation projects.

The NBF project and its three phases support a country- and region-driven, technopolitical process for accelerating access to climate finance. The process aims to generate political buy-in at the highest levels of regional and national government, while simultaneously providing the technical support to ensure that needs and

challenges are translated into tangible climate finance programmes. To date, the NBF project has supported 112 countries from 11 regions, subregions or constituencies in the Global South, and it has facilitated the development of nine regional climate finance access and mobilization strategies.

The Climate and Development Knowledge Network co-designed an in-person training and co-ideation process for conceptualizing ambitious regional climate programmes to address respective regional priorities. The trainings proceeded the NBF process to evaluate barriers and challenges, and to formulate and agree upon regional strategies for climate finance access. The Climate and Development Knowledge Network, along with the UNFCCC Secretariat, the major climate funds and pertinent regional partners led trainings for member States of regional economic commissions in eight regions, resulting in more than 150 government officials from 80 countries being trained. The co-creation and ideation process surfaced 31 potential regional programme ideas for respective climate finance programme pipelines. The process was fundamentally premised on peer-to-peer learning, allowing for the space to leverage respective country experience in accessing climate finance, as well as the deep technical knowledge present across all stakeholders.

The convening power of the UNFCCC and its ability to partner with the Green Climate Fund, Adaptation Fund and the Global Environmental Facility (the three major operating entities of the UNFCCC Financial Mechanism, with the nascent Losses and Damages Fund being the newest addition) has resulted in significant buy-in to the process. Co-designing regional climate action programmes with respective regional member States, coordinated by a regional economic commission or governance body, and with the support of the major multilateral climate funds, has led to significant developments in regional climate finance pipelines across the participating regions. Additionally, the major climate funds' involvement in the training process has enhanced their awareness of the respective regional barriers, challenges and priorities.

In many instances, regional programmes that cover multiple countries are conceptualized, developed and implemented by internationally accredited entities to the multilateral climate funds. As such, they often draw criticism as not being country-owned and regionally owned, with

consequences for their impactful once in-country implementation begins. Although regional programmes will still likely have to go through an internationally accredited entity of one of the major climate funds (e.g. United Nations Development Programme), the NBF project aims

to empower countries and regions early in the process while fostering early-stage engagement with potential accredited entities, support partners and, most importantly, the major climate funds themselves.

Annex 5.C Methodologies related to analyses for technology transfer and cooperation

5.C.1 Analysis of technology needs assessments submitted under the technology needs assessment global project

Table 5.C.1 presents the list of countries from which technology needs assessments (TNAs) were analysed for this report. These countries have either completed or are in the process of completing the TNA process. From their TNA reports (first deliverable of the TNA process), each

country has identified their prioritized sectors for analysis under the TNA project. Based on the prioritized sectors, existing technologies are then identified and prioritized for further analysis. Through such analysis, these technologies can be categorized based on features such as maturity, to help understand factors affecting uptake and implementation. Using the results of the TNA reports from the list of countries in table 5.A1, the most prioritized sectors by participating countries are identified.

Table 5.C.1 List of countries from which TNA reports were analysed

Country from which TNAs were analysed		
Afghanistan	Guatemala	Pakistan
Antigua and Barbuda	Guinea	Panama
Argentina	Guinea-Bissau	Papua New Guinea
Armenia	Guyana	Peru
Azerbaijan	Haiti	Rwanda
The Bahamas	Honduras	Saint Kitts and Nevis
Bangladesh	Indonesia	Sao Tome and Principe
Belize	Jamaica	Senegal
Benin	Jordan	Seychelles
Bhutan	Kazakhstan	Solomon Islands
Burkina Faso	Kenya	Somalia
Burundi	Kiribati	South Sudan
Cambodia	Lao People's Democratic Republic	Sri Lanka
Central African Republic	Lebanon	Sudan
Colombia	Lesotho	Suriname
Comoros	Liberia	United Republic of Tanzania
Costa Rica	Madagascar	Thailand
Côte d'Ivoire	Malawi	Timor-Leste
Djibouti	Maldives	Togo
Dominica	Mali	Tonga
Dominican Republic	Mauritania	Trinidad and Tobago

Ecuador	Mauritius	Tunisia
El Salvador	Republic of Moldova	Tuvalu
Eswatini	Mongolia	Uganda
Ethiopia	Morocco	Ukraine
Fiji	Mozambique	Uruguay
The Gambia	Myanmar	Vanuatu
Georgia	Nauru	Viet Nam
Ghana	Niger	Yemen
Grenada	Niue	Zambia

5.C.2 Technology maturity in the context of the United Nations Framework Convention on Climate Change

Within the setting of the UNFCCC, climate technologies are also differentiated in terms of their maturity into traditional, modern and emerging categories.

Traditional technologies

From the perspective of the technology cycle, traditional technologies are characterized as mature. Commonalities to technologies that are categorized as traditional are that they are generally low-cost and accessible to most countries. They are often relatively easy to apply and do not require a significant amount of hardware, but they are generally more software-intensive through the application of practices and expertise. In most cases, traditional technologies are already present in the countries, but further dissemination for its wider uptake and application are identified as beneficial from a low-cost perspective and are viewed as an achievable

option where governments and donors can create a relatively fast and affordable change.

Modern technologies

Modern technologies are at a stage of the technology cycle where they are still achieving competitiveness. These technologies have been commercialized and are widely, though not universally, available.

Emerging technologies

Emerging technologies are characterized by more recent scientific advances and are often partly under development. They are only available in niche markets, particularly when it comes to developing country contexts.

An overview of how the different technology maturity stages relate to the technology cycle is also provided in table 5.A.2, with an overview of geographical dimensions, knowledge requirements, typical challenges and examples for each stage.

Table 5.C.2 Overview of definition of technology maturity

Differences	Traditional technologies	Modern technologies	Emerging technologies
Stage of development	Developed and implemented for decades, having attained a high level of competitiveness and cost efficiency	Entails relatively newer technologies or use of new materials and improved designs	Fairly recently developed or immature technologies
Geographical dimension	Globally, in varied country contexts across developed and developing economies	Significantly higher diffusion in developed countries and advanced economies/markets	Deployed in very limited, mostly developed country contexts and in niche markets

Access to knowledge	Skills and knowledge easily available and somewhat accessible by most countries	Fairly advanced skills and knowledge in developed economies and advanced markets	Nascent with limited and exclusive access to knowledge and resources
Typical challenges	Non-financial challenges including resource constraints, governance, behavioural challenges etc.	Finance-related challenges pose a critical barrier for uptake of these technologies	Challenges related to research and demonstration
Examples	Conservation agriculture, construction of dykes to protect against flooding and change in farming practices	Wind, solar photovoltaic, concentrated solar power, drip irrigation, rainwater harvesting systems, mobile pay and hydropower	Electric vehicles, hybrid vehicles, hydrogen fuel cells, new battery storage technology, carbon capture, utilization and storage, advanced monitoring and modelling systems

5.C.3 Needs assessment plan analysis for the technology transfer and cooperation subchapter

Overview of methodology

From the NAPs registry, all the submitted NAPs were retrieved, which included a total of 56 NAPs (as of 30 June 2024).

Literature review

A keyword-based approach was used to conduct a preliminary literature review of the NAPs. Specific keywords were employed to evaluate the significance and extent of how these keywords were addressed in the NAPs.

The keywords used:

1. Technology(ies)
2. Technology transfer
3. Innovation(s)
4. Invention(s)

The literature review was not meant to be an exhaustive review of the NAPs, but instead was conducted to provide a foundational understanding of the relevant concepts (technology-related) in the NAPs submitted so far.

In this analysis, we examine the occurrence and context of the specific search terms and related concepts within NAPs.

Limitations

While, countries may address the keywords (technology, technology transfer, innovations and inventions) in more than one way within their NAPs. In this analysis, only a keyword search was conducted to identify the presence and frequency of these search terms within the NAPs. This approach highlights the occurrence of the keywords, followed by some focus on the contextual depth of their coverage.

Impact analysis: justification for grading scale

The impact significance of the specified keywords within the NAPs was analysed using a three-level grading scale: mild, moderate and high. The scale allowed us to quantify the extent to which each country's NAP addressed the concepts of technology, technology transfer, innovations and inventions. Below is an explanation of the criteria for how the grade values 1, 2 and 3 were assigned. Table 5.A.3 provides a list of the countries and their rating based on the analysis of their NAPs.

Mild (grade 1): A NAP was assigned grade of 1 if the relevant key words only appeared a small number of times and the topics encapsulated by these key words were not discussed substantively.

Justification: It indicated that, although the keywords were present, their coverage was limited and superficial. If a NAP was given this grade, it meant that it did not provide substantial information or detailed discussion on the keywords and related concepts.

Moderate (grade 2): A NAP was assigned this grade if it included some mentions of the

keywords, but it covered a considerable amount of information on these topics.

Justification: This grade shows that there was a moderate level of use/mention of the keywords. The NAP contained a balanced amount of discussion and information, indicating that the country has integrated these concepts into its plan, but not to an extensive degree. In such NAPs, we consider that there is still some room for providing more information (possibly backed by contextual data) to support arguments related to the need for technology transfer for addressing climate change adaptation in the national context.

High (grade 3): For this grade, the NAP has a comprehensive mention of all or most of the keywords, providing an elaborate coverage of related topics and concepts.

Justification: The NAP extensively covered all or most of the keywords, indicating a thorough and integrated approach where the depth and relevance of the discussion covered by the mentioned keywords were substantial. These NAPs exhibited an approach in which the information related to technology and technology transfer was clearly linked to the articulated plans for addressing climate change adaptation in the national context.

Table 5.C.3 Table showing impact significance scores for the NAPs of the various countries analysed

Impact significance (scores)	Countries
Mild (score 1)	Albania, Armenia, Bosnia and Herzegovina, Chad, Chile, Ecuador, Ethiopia, Grenada, Haiti, Liberia, Marshall Islands, Papua New Guinea, Saint Lucia, South Sudan, Timor-Leste, Tonga, Togo
Moderate (score 2)	Burkina Faso, Burundi, Cambodia, Cameroon, Central African Republic, Costa Rica, Democratic Republic of the Congo, Fiji, Kenya, Kiribati, Madagascar, Niger, Paraguay, Sri Lanka, Zambia
High (score 3)	Argentina, Bangladesh, Benin, Bhutan, Brazil, Cabo Verde, Colombia, Guatemala, Kuwait, Republic of Moldova, Morocco, Mozambique, Nepal, Pakistan, Peru, Philippines, Saint Vincent and the Grenadines, Sierra Leone, South Africa, State of Palestine, Sudan, Suriname, Thailand, Trinidad and Tobago

5.C.4 Tracking technology-oriented projects support for implementation by the global funds

Technology-inclusive projects supported by the global funds under the United Nations Climate Convention, namely the Adaptation Fund, Green Climate Fund and the Global Environment Facility, are of particular relevance to developing countries. For this section, a selective approach was employed to trace projects that are technology-oriented. The criterion used for including projects from the Green Climate Fund and the Global Environment Facility was that a

project should directly relate to a country's TNA. For the Adaptation Fund, projects that include "technology" and/or "innovation" in their title were included. The approach for identifying technology-oriented projects from the Green Climate Fund and the Global Environment Facility is due to their active role in the TNA process as funders, allowing them to actively reference a country's TNA when it exists. However, this referencing is largely absent from the Adaptation Fund, hence the approach for identifying technology-oriented projects had to be modified. Hence, the overview should not be seen as an exhaustive overview, but rather an indicative analysis.

Annex 5.D Development finance for adaptation-related technology transfer

5.D.1 Methodology relying on the Development Assistance Committee Creditor Reporting System of the Organisation for Economic Co-operation and Development to estimate technology transfer activities for adaptation

This methodology builds on a previous attempt of identifying development finance flows to technology transfer activities, relevant for climate change adaptation from the UNEP Copenhagen Climate Centre (2022).

Data source

Aid activity data was extracted from the climate-related development finance database of the Organisation for Economic Co-operation and Development (OECD) (OECD, 2024b). The climate-related development finance database collects information on climate-related development finance from bilateral and multilateral sources based on the OECD Development Assistance Committee Creditor Reporting System. Climate-related development finance activities are reported using two different methods:

- The Rio markers methodology is applied to development finance by bilateral providers and non-bank multilateral institutions and programmes. It uses a scoring system from 0 to 2, depending on whether the project targets climate change mitigation and climate change adaptation as a significant (1) or principal (2) objective.

- The climate component methodology is applied to development finance by multilateral development banks. It identifies the climate component (i.e. share of total funding) within each project based on the joint methodology they have established for climate finance tracking (Multilateral Development Banks, 2023). These components are reported individually for climate change mitigation, climate change adaptation and the overlap between both.

Methodology

To identify technology transfer-related activities that are relevant to climate change adaptation, a keyword search methodology was applied on the title and description of projects. This search was only executed on activities that were reported through either one of the above presented methodologies (Rio marker and climate component) in the climate-related development finance database. The list of keywords used can be found in table 5.A.4. To minimize the number of false positive projects, the methodology uses only a limited list of keywords (“general keywords”) that were applied on the whole climate-related development finance database. The other six lists of keywords were only applied on activities identified with the relevant sectors. Those are the following: agriculture, forestry, fishing; disaster risk reduction (subsector) and communications; energy; health; transport and storage; and water supply and sanitation.

Table 5.D.1 List of technology-relevant keywords, per sector

Sector	Keywords
Coastal zone	beach nourishment, bioenergy, bio-energy, bioreactor, climate service, digital, early warning, electrification, engineering, geographic information system, high efficiency, high-efficiency, ict, information and communications technology, innovat, know-how, landscape approach, metereolog, metereological, methane recovery, power plant, r&d, research, research and development, satellite, science, scientif, seawall, software, tech, university, vocational, waste recovery, wetland restoration, carbon capture, drainage, flood control, floodwall, forecast, heat pump, mangrove, mapping, recycl, scient, sensor, skill, software, technolog, technological development, vocational

Agriculture, fishing and forestry	agro pastoralism, agroforestry, alternate wetting, aquaculture, climate resilient, climate-resilient, collection ponds, community-based, conservation agriculture, crop cloning, crop management, crop rotation, dam, dams, drip irrigation, drought resistant, drought tolerant, drought-resistant, drought-tolerant, drying, early maturing, feed improvement, fertiliser, fertilizer, fish farming, flood tolerant, flood-tolerant, forest conservation, forest management, freezing, heat tolerant, heat-tolerant, hillside storage, hydrodam, improved storage, improved variet, innovative farming, integrated crop livestock aquaculture forest, integrated farming, integrated-crop- livestock-aquaculture-forest, invasive spec, irrigation, irrigation method crop management, irrigation system, mariculture, micro catchment, microdose, mixed farming, mulching, new variet, nitrogen optimisation, nitrogen optimization, nutrition enhancement, optimisation of nitrogen, optimization of nitrogen, pathogen, pest control, pest management, pest tolerant, pest-tolerant, precision farm, rainwater collection, rainwater harvesting, reforestation, reservoir, salt tolerant, salt-tolerant, short duration crop, short duration variet, slow forming terraces, smart irrigation, soil manage, sprinkler, subsurface irrigation, technical, wet and dry irrigation, windbreak, bioremediation processes, breeding technologies, build capacity, building capacity, capacity building, climate resilient livestock, climate smart, climate-smart, climatesmart agricultural practices and technologies, community irrigation, conservation agriculture technologies, cooling technologies, crop breed, crop resilience, diversificati, drainage, drought resistance, efficient irrigation technologies, genetic, hydro dam, improved irrigation, land planning, land suitability zoning, living hedges or shelterbelts, manage soil, monitor, perimeter dikes and breakwaters, pesticide, polder management, post-harvest crop preservation technologies, rainwater harvesting, research, resilient crop variety, resilient crops, resistance to heat-stress, resistance to pests, resistance to salinity, resistance to water stress, salient tolerance, seasonal forecast, short-maturing varieties, skill, sustainable fish, technique, tidal irrigation, train, vertical farming, water efficient irrigation, water system
Disaster risk reduction and communications	drone, GIS, GPS, IoT, phone, radio, remote sensing, technical, automated warning, beach nourishment, beach reclamation, big data, breakwater, build capacity, building capacity, capacity building, coastal observation technologies, communication technologies, dam, dams, dyke, early warning, early warning systems, emergency telecommunication, flood barrier, geographic information system, global positioning system, groin, hurricane warning, internet, levee, mangrove, mobile device, mobile technology, monitor, networking technologies, numerical simulation models, ocean observation technologies, rain forecasting, research, revetment, sand nourishment, satellite communication, satellite navigation system, sea level rise forecasting, seasonal forecast, seawall, skill, smartphone, technique, telephone, television, tetrapods, train, tsunami warning, water system, water system, weather forecasting, weather radars, weather sensors
Energy	bio-diesel, bio-energy, bioethanol, bio-ethanol, bio-fuel, biogas, bio-gas, bio-mass, combined heat and power, efficiency, electric vehicle, heat pump, heat recovery, hydrogen, hydropower, ocean energy, photovoltaic, pv kit, pv systems, solar home systems, solar pv, technical, anaerobic digestion, bio latrines, biodiesel, biodigester, bio-digester, bioenergy, biofuel, biolatrines, biomass, build capacity, building capacity, capacity building, coating, composting, energy conservation, gasification, hydro electric, hydroelectric, hydro-electric, marine energy, monitor, offshore wind, renewable, research, skill, solar, solar dryer, solar energy, solar farm, solar home systems, solar lantern, solar mini grid, solar panels, solar powered pump, solar salt, solar thermal, solar water heater, technique, thermal, tidal, train, water system, wave energy, wind energy
Health	ct, ECG, mri, technical, air conditioning, anesthesia device, anesthesia machine, build capacity, building capacity, capacity building, computed tomography,

	electrocardiogram, infectious disease modeling, magnetic resonance imaging, medical device, medical equipment, medicine, molecular diagnostic, monitor, monitor, patient monitors, research, skill, surgical, surveillance system, technique, telemedicine, train, ultrasound, vaccine, ventilator, vital sign, water system, x-ray
Transport and storage	bus, decongestion, efficiency, electric vehicle, ferry, hybrid, hybrid car, hybrid vehicle, mass transit, mode transfer, non motorised transport, non-motorised transport, non-motorized transport, retrofit, shift from, technical, traffic, tramway, berth, build capacity, building capacity, capacity building, electric transport, energy efficient, highway, inspection system, low-carbon, monitor, no motorized transport, railway, research, skill, technique, traffic management, train, train, water system
Water supply and sanitation	alternate wetting, canal, collection ponds, dam, dams, deepening of ponds, drip irrigation, hillside storage, hydrodam, hydropower, irrigation, micro catchment, pond, rain gauge, rainwater harvesting, reservoir, sprinkler, storage reservoir, subsurface irrigation, technical, waste treatment, wastewater treatment, water catchment, water harvesting, water saving, water storage, water use association, wet and dry irrigation, aqueducts and modern wells, boreholes, boreholes, build capacity, building capacity, capacity building, community irrigation, compost, desalination, drainage, drainage infrastructure, hand pumps, hydro dam, improved irrigation, infiltration galleries, land suitability zoning, leak detection and control technologies, monitor, polder management, rain gauge stations, rainwater collection, research, skill, solar pumps, stormwater management, technique, tidal irrigation, train, tube wells, water reclamation, water resources conversation, water retention, water reuse, water system, water system

Limitations

Despite being the best attempt at quantifying technology transfer-related climate-related development finance, this methodology has a number of limitations. First, the presented data aggregates face values of projects marked as relevant for adaptation through the Rio marker methodology and the adaptation components of providers reporting under the climate component methodology. Therefore, this tends to overestimate the contribution of bilateral donors reporting with Rio markers. Second, on the other hand, as this approach to technology transfer grounds on keywords, it relies on their accuracy and coverage, and it risks excluding projects with brief descriptions, therefore leading to an underestimation of commitments. Third, the keyword search methodology only captures whether a word is mentioned or not in the project description or title, and therefore lacks in precision as it is not able to analyse the broader context in which the word is used.

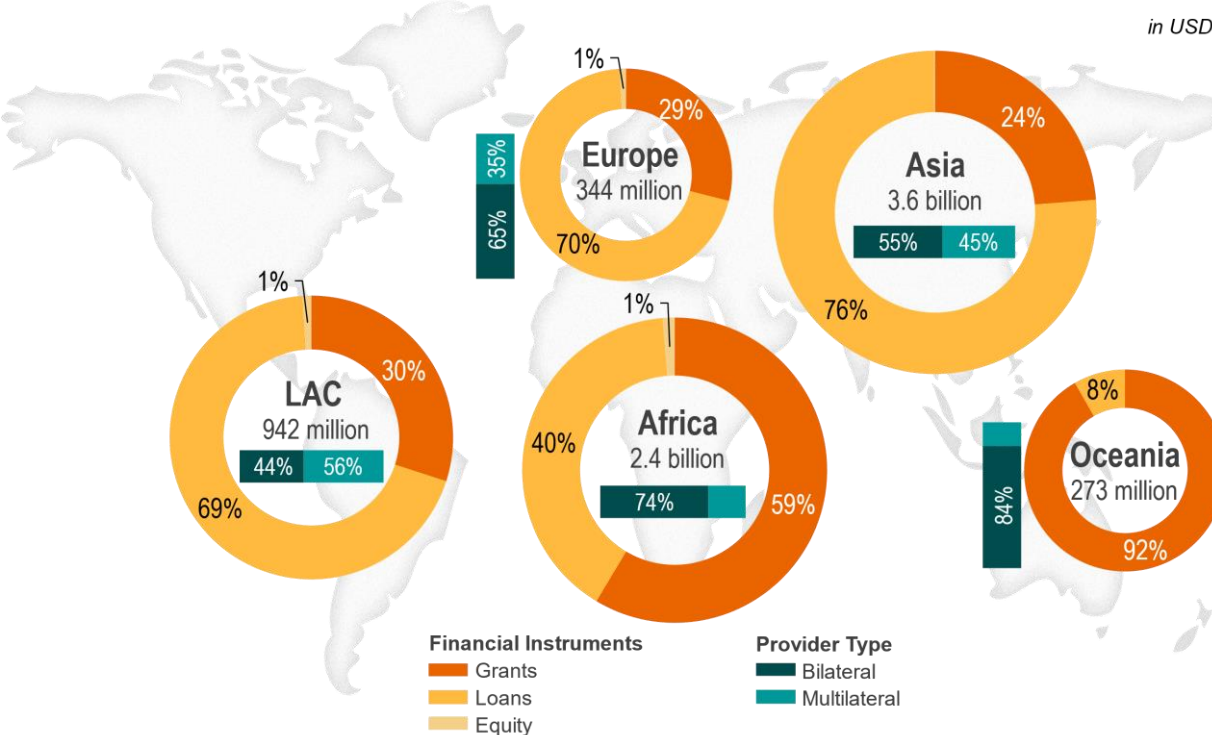
5.D.2 Analysis of the source and regional distribution of development finance for adaptation-related technology transfer and cooperation Development finance for adaptation-related technology transfer and cooperation is strongly grant-based and concentrates in Asia

Almost half of adaptation-related development finance for technology transfer is provided as grants, compared to 45 per cent in overall adaptation-related development finance. It is a clearly higher share than for overall climate-related development finance for technology with a grant share of about 26 per cent in 2018–2022. This could stem from the sectoral concentration of adaptation-related development finance for technology transfer in the agriculture sector where finance is less loan-based, because interventions are typically characterized by a limited scale, lower capital-intensity of technologies, and a higher focus on support of awareness and technical capacity. For bilateral providers, the grant share even reached more than two-thirds of their adaptation-related development finance for technology. Looking at recipient groups, while Latin America and the Caribbean, Europe and Asia received most of their finance as loans, grant shares are particularly high in Africa (59 per cent) and Oceania (92 per cent) (figure A5.1).

The geographical allocation of development finance for adaptation-related technology transfer shows a strong focus on Asia, attracting US\$3.6 billion on average annually over 2018–2022, which constitutes 41 per cent of global commitments. Africa ranks as the second biggest recipient, with US\$2.4 billion on average per year representing 27 per cent of global commitments, followed by the Latin America and the Caribbean region with US\$942 million (11 per cent). When

considering recipient income groups, almost one-quarter of adaptation-related development finance for technology transfer went to least developed countries, with a grant share of 54 per cent. The high shares of grant finance especially in Africa and least developed countries underline the importance of adaptation finance also with respect to filling a gap in essential grant provision, especially in light of high investment needs and debt burdens of many developing countries.

Figure 5.D.1 Geographical allocation of adaptation-related development finance for technology transfer, by instruments and provider type, 2018–2022 annual average in US\$ billion (constant 2022 prices)



Note: 14 per cent (US\$1.2 billion) of development finance for adaptation-related technology transfer does not specify a regional focus.

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