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Chapter 5

Progress in implementing
adaptation: insights from
project proposals and
scientific literature

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Key messages

- ▶ Since 2006, the United Nations Framework Convention on Climate Change (UNFCCC) climate funds have financed close to 400 projects with the primary aim of adaptation. A trend towards larger projects (from more than US\$10 million to over US\$100 million) is apparent since 2017, which might signal a shift in programming from smaller pilots to larger scale implementation.
- ▶ The most frequently addressed sectors by projects under UNFCCC climate funds align with two of the three sectoral priorities for adaptation mentioned in the first round of nationally determined contributions (NDCs), namely agriculture and water. Health as the third priority is seldom the primary subject of adaptation projects in developing countries. However, evidence from scientific articles shows that extreme heat is the fourth most-targeted climate hazard globally.
- ▶ The top three climate hazards addressed by adaptation projects under UNFCCC climate funds and by actions documented in the literature are drought, rainfall variability and flooding.
- ▶ The actors most commonly targeted are national and local governments, individuals and households, farmers and pastoralists, local communities and technical government agencies. Engagement of the private sector has remained low except for tourism, agriculture and the insurance industry.
- ▶ UNFCCC climate funds primarily monitor portfolio indicators at the output level. As at May 2019, the Adaptation Fund had reached over 6 million direct beneficiaries and trained close to 100,000 people on climate resilience measures, while the Least Developed Countries Fund (LDCF) projects that were active as at 30 June 2020 had reached more than 13.6 million direct beneficiaries and trained 414,000 people.
- ▶ Evidence of adaptation outcomes, such as reduced vulnerability, however, is still rare to find even within evaluations of UNFCCC climate fund projects. To understand whether adaptation actions make a difference, more attention is needed to assess the effects of adaptation, safeguard against maladaptation and share lessons learned.

5.1 Introduction

The preceding two chapters examined progress in adaptation planning and finance. This chapter looks at implementation of adaptation by addressing the question: are adaptation actions taking place? It provides one of the first global accounts of implemented adaptation actions, including which hazards they address, who is adapting, how they align with the adaptation priorities in NDCs, whether they target the most vulnerable and whether gender and nature-based solutions are considered. Findings of this analysis are therefore directly relevant for the Global Stocktake and can serve as a baseline for future Adaptation Gap Reports.

5.2 Scope and data sources

While information on climate risks and adaptation planning processes is generally available (for example, for national planning see [chapter 3](#)), information on adaptation actions is scattered across funding and implementing entities and

information on results is scarce and not easily comparable or aggregable. Therefore, this implementation chapter of the Adaptation Gap Report focuses on adaptation actions and their results. This is an important complement to the assessment of planning and finance in chapters 3 and 4, neither of which examine whether on-the-ground action actually follows from plans, nor the impacts that financial investments have had. For resources administered by UNFCCC climate funds, this chapter provides the first combined account of the actions that the finance translates into on the ground.

As outlined in the 2017 Adaptation Gap Report (United Nations Environment Programme [UNEP] 2017), global assessments of adaptation require a coherent data source with global coverage. While [chapter 3](#) on national adaptation planning is based on submissions by countries to the UNFCCC, few countries have so far reported on actions other than creating enabling environments and even fewer have reported results of adaptation actions (Lesnikowski *et al.* 2015). For this year's report, two original data sources have been employed, namely project proposals funded by UNFCCC climate funds and

observed adaptation actions documented in scientific articles. As these data sources have only limited overlap, combining them enables greater insight into the extent of adaptation than what would otherwise be possible. For example, actions funded by UNFCCC climate funds only cover developing countries, while responses documented in scientific articles are in principle open to any type and form of adaptation anywhere.

Nevertheless, even when taken together, both sources cover only part of the large variety of actions and actors that contribute to adaptation worldwide. Autonomous and community-based actions, adaptation by the private sector as well as the many activities with co-benefits for adaptation are not accounted for. However, finding reliable data with global coverage has been identified as a bottleneck to assessments of adaptation progress (Ford *et al.* 2015). The two data sources chosen for this chapter have two decisive advantages: they have undergone some form of quality review and are accessible online, making them feasible for a desk-based analysis of global adaptation progress with immediate relevance to the UNFCCC community.

One of the difficulties of assessing adaptation progress is defining what counts as adaptation (Ford and Berrang-Ford 2016). In line with the intention to understand explicit adaptation actions under the UNFCCC, this chapter takes a conservative approach whereby actions need to directly aim towards climate risk reduction, meaning they need to have adaptation as their explicit objective. This approach includes mainstreaming, capacity-building and technology transfer as long as they are targeted at addressing climate risks, while excluding efforts that only indirectly support adaptation. The purpose of this chapter is not to identify the maximum number of activities that could somehow be linked to adaptation, but to form the basis for determining whether those that explicitly aim at adaptation actually support it.¹

The chapter also excludes readiness and other preparatory actions such as vulnerability assessments or national planning that are setting the foundation for later implementation of actions. This is not to discount the importance of such preparatory efforts, but rather to enable a better understanding of whether adaptation ultimately takes place. Furthermore, under the framework of the 2020 Adaptation Gap Report (see section 1.2), progress in national planning is addressed in chapter 3 and financial flows including readiness funds in chapter 4. Finally, since this chapter is mainly concerned with

actual implementation rather than possible future actions, its focus is on implementation that is ongoing or has already been completed. The cut-off date for scientific articles was December 2019² and for adaptation projects 30 November 2020. The project pipeline of UNFCCC climate funds was considered separately to enable an outlook on near-term adaptation actions.

Adaptation actions can be funded by a variety of sources. For those funded by international climate funds, this first edition of the implementation chapter of the Adaptation Gap Report focuses on the climate funds under UNFCCC, i.e. those that officially serve the Paris Agreement, namely the Adaptation Fund,³ the Green Climate Fund (GCF)⁴ and the Global Environment Facility (GEF), which manages the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF).⁵ Together, these funds account for a significant, albeit partial, share of international adaptation finance (approximately 50 per cent of adaptation finance reported by Annex II countries in 2016, but a far lower percentage if all multinational sources are considered; see figure 4.3 in chapter 4). It was not feasible for this year's report to undertake an analysis of projects from other international funding sources such as multilateral development banks, partly because details of their portfolios relevant to adaptation are not commonly available online. However, future reports will intend to expand the analysis to cover further funding bodies.

To account for adaptation responses in all countries and irrespective of funding source, the second data source for this chapter is scientific articles that describe implemented adaptation actions. Since 2016, literature on adaptation has been growing at a rate of over 10,000 articles per year (Callaghan, Minx and Fosters 2020). However, most articles are conceptual rather than empirical, discussing concepts or undertaking vulnerability assessments rather than documenting actual adaptation. The Global Adaptation Mapping Initiative (GAMI) has been created to systematically screen and review the scientific literature (articles published in scientific journals between January 2013 and December 2019) to find evidence of human adaptation that has already occurred (details of the methodology are described in Berrang-Ford *et al.* forthcoming). It enables a comparison between trends documented in the literature and trends under UNFCCC climate funds. Together, both sources provide a unique account of observed adaptation actions.

1 Independent reviews of the practice of applying the Organisation for Economic Co-operation and Development (OECD) Rio markers found that up to two-thirds of projects labelled as 'adaptation' did not have any relation to adaptation (Weikmans *et al.* 2017).

2 This date has been determined by the Global Adaptation Mapping Initiative (Berrang-Ford *et al.* forthcoming).

3 The Adaptation Fund was established in 2001 under the Kyoto Protocol and operationalized in 2007. Since 1 January 2019, the Adaptation Fund has also served the Paris Agreement.

4 The Green Climate Fund was set up in 2010 and became operational in 2015.

5 The LDCF and the SCCF were established in 2001. The LDCF is exclusively focused on adaptation in least developed countries (LDCs), while the SCCF is open to all developing countries and primarily supports adaptation. In addition to these two funds, the GEF Trust Fund previously supported adaptation through the Strategic Priority on Adaptation (SPA), which ran from 2004 to 2010. The GEF now finances primary adaptation projects solely through the LDCF and the SCCF. However, numerous projects under the GEF Trust Fund have adaptation co-benefits that are not accounted for in this chapter.

5.3 Implemented adaptation actions

In collaboration with the secretariats of the Adaptation Fund, the GCF and the GEF, the number of projects that primarily aim at adaptation have been identified alongside the number of proposals in the pipeline. Excluding readiness projects, close to 400 explicit adaptation projects were counted, 51 per cent of which have started since 2015 (see [table 5.1](#)). In addition, the Global Adaptation Mapping Initiative identified almost 1,700 articles that document the implementation of adaptation actions (Berrang-Ford *et al.* forthcoming). The articles provide evidence of some degree of adaptation in almost every country while indicating regional concentrations in South-East Asia; Eastern, Southern and parts of West Africa; Europe; and North and Central America. The majority of adaptation actions documented in scientific articles published between 2013 and 2019 are in the early or expanding stages of implementation, with less than 15 per cent under widespread implementation (see [figure 5.1](#)).

Adaptation projects implemented under UNFCCC climate funds vary widely in content and budget. The total number of projects, while providing a rough indication of the extent of adaptation actions globally, conceals these differences and must therefore be interpreted with care. One way towards a more meaningful interpretation is to differentiate projects by funding size. [Figure 5.2](#) shows the number of projects that have started per year since 2015 according to four categories of grant size: US\$0.5–10 million, US\$11–25 million, US\$26–50 million, and more than US\$50 million (based on total grant amount provided by the fund, excluding co-financing and non-grant based forms of funding such as loans). Before 2015, the largest grant provided for individual projects by UNFCCC climate funds was less than US\$15 million and grant sizes rarely exceeded US\$10 million. Few projects had a successor or a follow-up phase. Since 2017, a trend towards larger projects is apparent, which might signal a shift in programming from smaller pilots to larger scale projects that address climate risks more widely. This trend has been facilitated by the GCF, which accounts for 82 per cent of all projects with grant sizes above US\$10 million since 2015.

Accounting for different funding sizes explains that despite a decrease in the total number of new projects since 2018, the overall funding volume per year has in fact increased (see [chapter 4](#)). To understand what these figures mean on the ground, adaptation projects that have started since 2015 were analysed regarding the sectors covered, the hazards responded to, and the actors adapting (see [figures 5.3–5.5](#)). The analysis is based on the short project descriptions on the funds' websites (see [box 5.1](#)). If that information was inconclusive, the detailed project documents were consulted.

Of the 203 projects that have started since 2015, 53 per cent are located in least developed countries (LDCs) and

Box 5.1. Adaptation projects funded by UNFCCC climate funds

- ▶ **Adaptation Fund** (www.adaptation-fund.org): an interactive map of projects, a list of projects by sector and a list of all projects are provided. Project documents are available online.
- ▶ **Green Climate Fund** (www.greenclimate.fund): a list of all projects can be filtered for adaptation. Project documents, gender assessments and annual performance reports are available online.
- ▶ **Global Environment Facility** (www.thegef.org): a list of all projects is available for download and can be filtered by topic area or fund (for example, LDCF or SCCF). Short project descriptions with a timeline are presented for most projects. Project documents are available online.

14 per cent in small island developing states (SIDS). The sectors most commonly addressed were agriculture (including food security) and water, which correspond to the top two priorities mentioned in the first round of NDCs that were mainly submitted in 2015 and 2016 (see [figure 5.3](#)). Agriculture and water are closely interlinked and projects often considered them together. Hence, their flipped order compared to NDC adaptation priorities does not indicate a significant divergence. Ecosystems and forestry rank in joint fourth position. A noticeable difference concerns health, which was the third most commonly mentioned adaptation priority in the first round of NDCs, but none of the 203 projects since 2015 were dedicated primarily to adaptation in the health sector. However, the analysis of observed adaptation in scientific articles found that health concerns related to extreme heat were the fourth most-targeted hazard, indicating that health aspects are underrepresented in the sample of projects from developing countries (see [figure 5.4](#)).

To determine the climate hazards that adaptation projects responded to, up to three of the most prominently mentioned hazards in each project description were extracted. If a broad range of hazards was mentioned without a specific focus, the label 'multitude of hazards' was applied. Drought and inland flooding were most often mentioned, followed by rainfall variability. This order is almost identical to the top three hazards addressed by responses documented in the literature (see [figure 5.4](#)). Hence, most adaptation actions deal either with too much or too little water, extreme events, and sea-level rise alongside associated salinization of soils or water resources. Extreme heat ranked as the fourth most

Table 5.1. Number of Adaptation Fund, GCF and GEF explicit adaptation projects under implementation, completed or in the pipeline as at 30 November 2020

	Implementation		Pipeline (approved ¹)	Pipeline (proposals)
	Implementation started during 2006–2020	Percentage started since 2015		
Adaptation Fund	86	65% (56)	4 ²	9 ³
GCF	54	100% (54)	11	29 ⁴
GEF-LDCF	161	42% (67)	18 ⁵	38 ⁶
GEF-SCCF	74	35% (26)	3	4
GEF Trust Fund (SPA 2004–2010)	22	0%	N/A	N/A
Total	397	51% (203)	36	80

1 Referring to projects that have been approved but whose implementation has not yet started.

2 Proposals stated on the Adaptation Fund website under [Project waitlist](#).

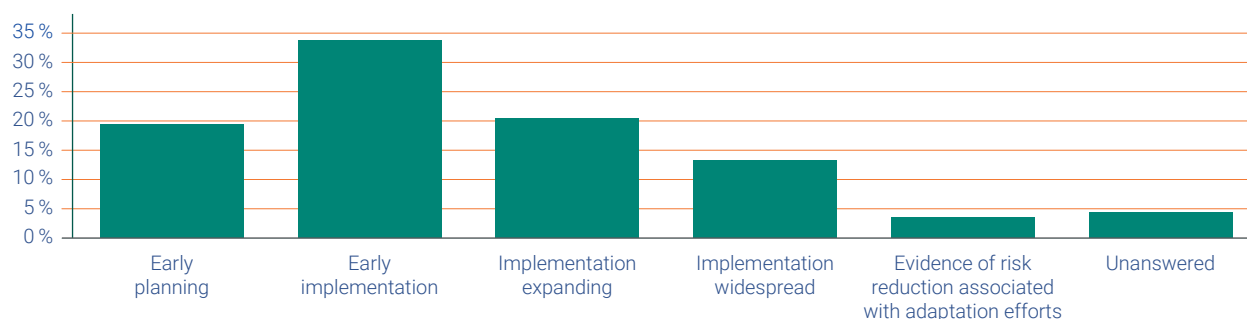
3 Proposals stated on the Adaptation Fund website under [Active pipeline projects](#) as 'Proposal not approved'.

4 Number of funding proposals (not concepts) in the entire pipeline.

5 For LDCF and SCCF, the numbers provided are for proposals that have been CEO endorsed but are not yet under implementation.

6 For LDCF and SCCF, the data provided is for Council-approved and CEO-approved concepts that are not yet CEO endorsed or under implementation.

Figure 5.1. Stage of implementation of adaptation actions documented in scientific articles



Note: This figure is based on data from the Global Adaptation Mapping Initiative (Berrang-Ford *et al.* forthcoming) which identified close to 1,700 scientific articles published between 2013 and 2019 that document adaptation actions. It shows the percentage of articles per stage of implementation. It is worth noting that just 3.5 per cent of articles referred to some degree of achieved risk reduction.

Figure 5.2. Number of primary adaptation projects per year and size of grant (excluding co-financing)

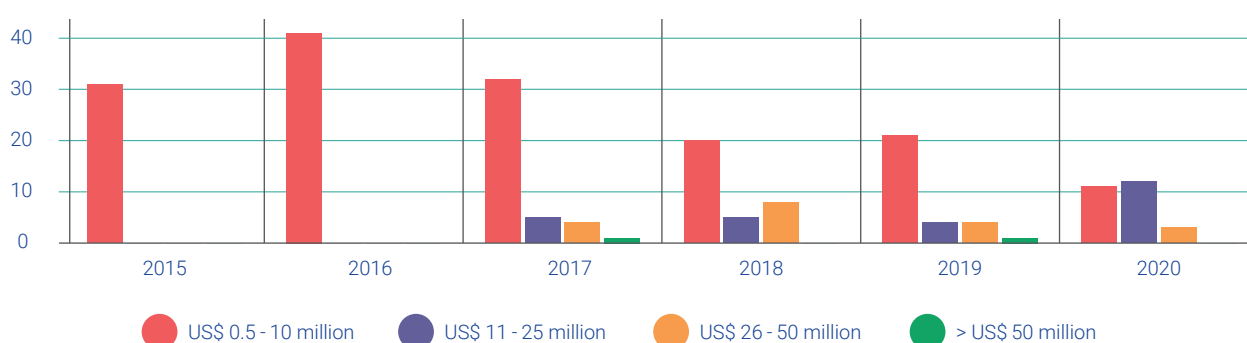
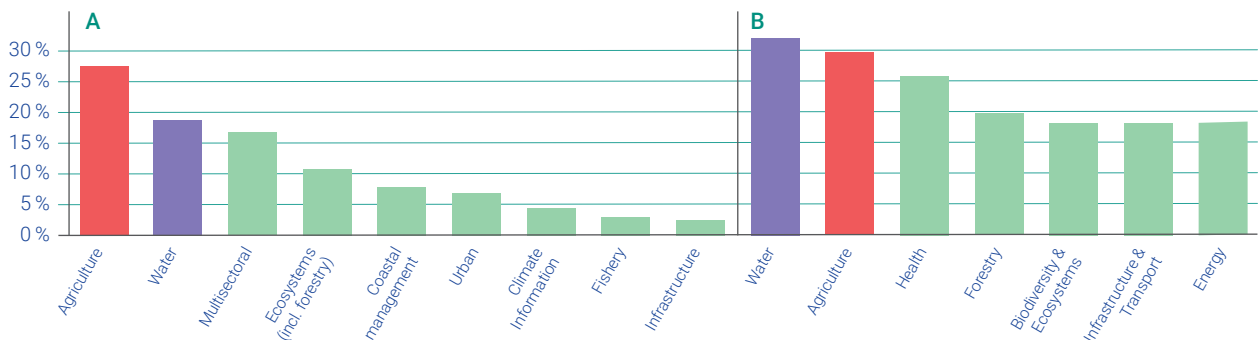
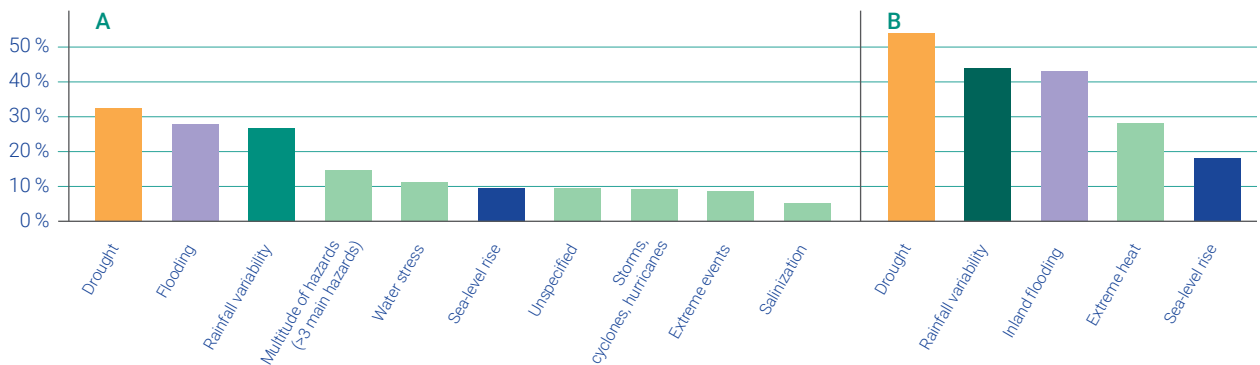


Figure 5.3. Panel A: Primary sectors of UNFCCC climate fund adaptation projects since 2015
Panel B: Sectors identified as adaptation priorities in the first round of NDCs



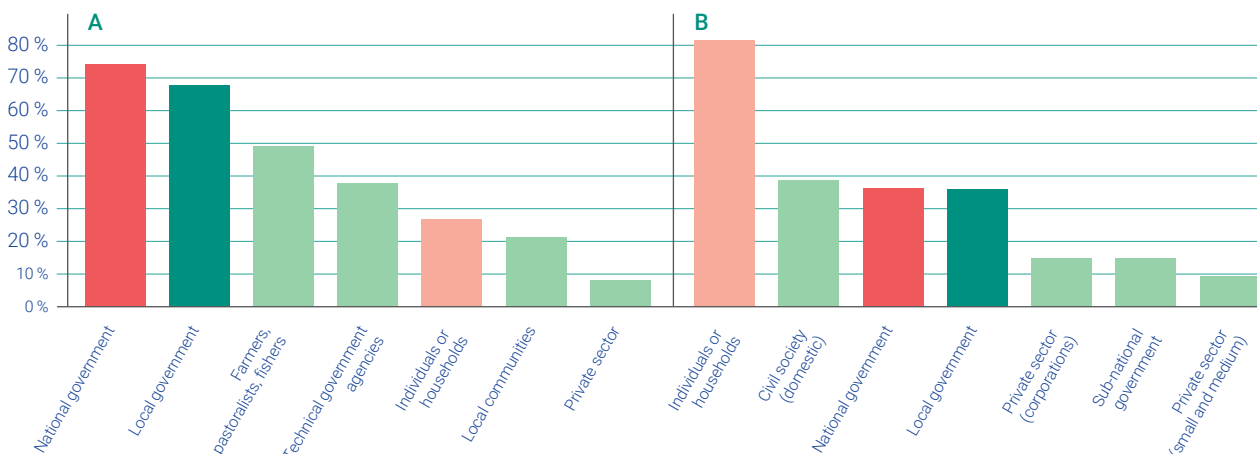
Note: Agriculture and water were marked in the same colour in both panels to highlight the alignment of the top two sectors between UNFCCC adaptation projects and NDCs. **Panel A** is based on the primary sector of each of the 203 projects (the designation of sectors used by UNFCCC funds is not harmonized, therefore, a reassignment was necessary to obtain comparability). The bars in **Panel A** add up to 100 per cent because each project was assigned to just one primary sector (1.5 per cent were left unassigned due to missing project documents). **Panel B** shows the five most frequently mentioned priority adaptation sectors in the first round of NDCs (GIZ 2020). The bars in Panel B do not add up to 100 per cent because each NDC mentions multiple adaptation priorities.

Figure 5.4. Panel A: Hazards addressed by UNFCCC climate fund projects
Panel B: Hazards addressed by observed adaptation responses documented in scientific articles from 2013–2019



Note: Identical hazards in Panels A and B have been highlighted in the same colour to ease comparison. The hazards most frequently addressed by the 203 adaptation projects that have started since 2015 under UNFCCC climate funds (**Panel A**) and by adaptation actions documented in scientific articles (**Panel B**) are shown (Berrang-Ford *et al.* forthcoming). The Global Adaptation Mapping Initiative used the label 'Extreme precipitation and inland flooding', whereas 'Flooding' in Panel A includes both inland and coastal flooding.

Figure 5.5. Panel A: Actors targeted by adaptation projects under UNFCCC climate funds since 2015
Panel B: Actors addressed by observed adaptation as documented in scientific articles



Note: Identical types of actors in **Panels A** and **B** have been highlighted in the same colour to ease comparison. The Global Adaptation Mapping Initiative (Berrang-Ford *et al.* forthcoming) that provided the data for **Panel B** divided the private sector into small and medium-sized enterprises and larger ones (corporations). In **Panel A**, the label 'Private sector' includes any business involvement, irrespective of its size.

commonly addressed hazard by actions documented in the literature, while very few of the projects in developing countries addressed its impacts on human health.⁶

Adaptation projects under UNFCCC climate funds have primarily targeted national and local governments, farmers, local communities, technical government agencies (such as agricultural services or meteorological offices) and individuals and households (see figure 5.5). Projects often address different target groups through different components or activities. As the vast majority of adaptation actions reported in scientific articles took place at the local level, they therefore had far less involvement of national governments than local governments. Private sector engagement was equally low among both data sources except for the tourism sector in Europe and Australasia (Berrang-Ford *et al.* forthcoming). Farming associations and the insurance industry were among the most common private sector actors involved in developing countries. Additional findings from the analysis of project descriptions are:

- ▶ At least 22 per cent and possibly up to two-thirds of projects that have started since 2015 target the most vulnerable.⁷
- ▶ Six per cent of projects are primarily aimed at gender and adaptation and an additional 15 per cent explicitly mention gender aspects in their short descriptions.⁸ The Adaptation Fund, the GCF and the GEF require a gender assessment for every project and some GCF projects also have an associated gender action plan available on each project's webpage (see box 5.1).
- ▶ Twelve per cent of projects either focus primarily on advancing climate information and services or have a component addressing it. At least another 20 per cent include it as one of their outputs.
- ▶ Twelve per cent of projects fall into ecosystem-based adaptation or conservation and another 15 per cent partially focus on it (see section 6.5 for details).
- ▶ The most common linkages to related topics were to natural resource management (mainly countering degradation through restoration, afforestation and rehabilitation), land and soil management and disaster risk reduction.

5.4 Adaptation results

As outlined in chapter 2, results of adaptation can be separated into outputs (what has been done) and outcomes (what effects these outputs have had). For example, training farmers about better adapted farming techniques may lead to new knowledge that, if properly applied, may have a positive effect on yields and eventually on farmers' livelihoods and well-being. The outputs (such as number of trainings and people trained) are typically directly measurable, while their effects occur later, are influenced by multiple factors, and may require more complex methods or concepts (for example, what constitutes resilience or well-being) to be measured. Accordingly, most of the portfolio indicators used by international climate funds remain at the level of outputs (Leiter *et al.* 2019). For example, as at May 2019, the Adaptation Fund had reached over 6 million direct beneficiaries and trained close to 100,000 people on climate resilience measures (Adaptation Fund 2019). Projects under the LDCF that were active as at 30 June 2020 had reached more than 13.6 million direct beneficiaries and trained 414,000 people (Global Environment Facility [GEF] 2020). As at 31 December 2019, GCF-funded activities under implementation were reported to have reached a total of 10 million direct and indirect beneficiaries (GCF 2020).

Output indicators are useful to illustrate immediate products and services created by a project and their reach. However, they neither capture whether outputs are being utilized (for example, whether participants apply the knowledge gained at a training) nor their effects (for example, whether beneficiaries' vulnerability has been reduced). One challenge in measuring adaptation outcomes is that they depend on the context and can differ among people living in the same location due to differential levels of vulnerability (Thomas *et al.* 2018). In the worst case, maladaptive actions could leave those most vulnerable worse off than before (Schipper 2020). Accordingly, adaptation outcomes are context- and people-specific and cannot easily be expressed in a few global indicators (Leiter and Pringle 2018). Although UNFCCC climate funds do employ some sector-specific portfolio indicators at the outcome level – for example increased income or hectares of natural habitat restored –, these indicators are usually only relevant to a small part of the portfolio (Leiter *et al.* 2019). Therefore, information on outcome-level results of adaptation projects remains limited to date.

Out of almost 1,700 scientific articles identified by the Global Adaptation Mapping Initiative, less than 3.5 per cent were classified as being at the stage of risk reduction (see figure 5.1). While risk reduction was often

⁶ For an overview of adaptation and human health, see the 2018 Adaptation Gap Report (UNEP 2018).

⁷ This was determined based on information about the vulnerability of the beneficiaries as mentioned in the projects' online descriptions or project documents. A more precise determination would require a closer analysis of the project contexts and would depend on the definition of who counts as 'most vulnerable'.

⁸ Not mentioning gender aspects in the short descriptions does not mean that the projects do not consider gender. A more detailed exploration would require an analysis of the project's gender assessments.

alluded to, evidence of it remained the exception rather than the norm. Assessments of risk or vulnerability reduction at the end of a project lifetime are similarly rare, despite having shown to be useful complements to traditional project monitoring systems. Their applicability, however, depends on the type of project and the available resources (Leiter 2018).

Given the limited information on the results of implementation, more attention needs to be paid to understanding the effects of adaptation actions, ensuring systematic risk reductions and avoiding maladaptation. One positive trend is that annual reports by the UNFCCC climate funds to the Conference of the Parties (COP) increasingly provide information on outputs rather than just on financial allocations and spending. New approaches to assessing results, for example via high-frequency mobile phone surveys of subjective resilience, offer the potential to directly monitor effects on beneficiaries in a resource-efficient way (Jones 2019; von Engelhardt and Jones 2018).

5.5 Outlook

As of 30 November 2020, 36 approved adaptation projects under UNFCCC climate funds were ready to start and 80 funding proposals were in advanced stages awaiting approval (see table 5.1). Around twice as many concept notes had been submitted to the funds' secretariats for review. However, the lack of information on lasting outcomes of adaptation projects raises concerns over their effectiveness. A review by the GCF's Independent Evaluation Unit (2018) found that "more than two-thirds of the GCF-approved funding proposals did not clearly define causal pathways that show how activities lead to climate change impact" (p.2). Climate funds and project developers alike need to focus more attention on how exactly adaptation is intended to occur amidst social realities and multiple drivers of vulnerability. Theories of change offer a way to map the intended change process and gain a common understanding about the mechanisms of change (Oberlack

et al. 2019). However, they need to be developed in a socially inclusive way and informed by local experiences in order not to miss causes of risk that could reduce effectiveness, particularly among the most vulnerable groups (Forsyth 2018). Greater attention to scrutinizing proposed theories of change and their assumptions also provides the basis to better monitor what matters during implementation and to adjust actions as needed. Rather than performing an accountability function, well-designed monitoring systems and evaluations need to be seen as an opportunity for learning and lesson-sharing.

Another concern for the outlook on implementation progress is that continued high amounts of global greenhouse gas emissions imply rising levels of climate risk (Intergovernmental Panel on Climate Change [IPCC] 2018; UNEP 2020). The adaptation gap is therefore inextricably linked to the emissions gap. As stated in the foreword to the first edition of the Adaptation Gap Report, "ambitious and immediate mitigation action is the best insurance against an insurmountable future adaptation gap" (UNEP 2014; see also 2.2). Although progress made in implemented adaptation as documented in this chapter is positive, it may not be able to keep pace with increasing levels of risk, despite the trend towards larger projects. In fact, 2020 saw for the first time more projects approved with funding sizes between US\$11 million and US\$50 million than those up to US\$10 million which had, with rare exceptions, been the maximum project value under UNFCCC climate funds until 2017 (see figure 5.2). While funding volume is no indication of the quality of a proposal, the possibility to design projects larger than US\$10 million offers the potential to more comprehensively address climate risks and underlying causes of vulnerability and to upscale tested applications. Finally, future adaptation projects also need to consider the occurrence of compound risks from climate hazards, economic recession and a global health crisis which could exceed levels of resilience that might have otherwise been sufficient to withstand individual shocks (Phillips *et al.* 2020). Future editions of the Adaptation Gap Report will continue to look at levels of implementation and achieved results in order to understand adaptation progress and identify areas for improvement.

