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Chapter 2

Framing the Adaptation Gap Report

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Flooding in Cap Haïtien, Haiti. After days of continuous rains in 2014, parts of Haiti's north suffered serious flooding, leaving more than a dozen dead and thousands homeless.

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2.1 Introduction

The Adaptation Gap Report AGR2021 builds on the framing first introduced in the 2020 edition of the report to further advance knowledge on adaptation progress around the world. It focuses on adaptation progress at the global and national scales, relying primarily on publications from national governments (for example, documents submitted under the United Nations Framework Convention on Climate Change [UNFCCC] process). It has also expanded the sources of information to include recent peer-reviewed scientific literature and reports by multilateral organizations and think tanks. This chapter frames the report both in terms of the climate risk context within which adaptation is taking place (section 2.2) and the conceptual and methodological approach used to understand adaptation progress (section 2.3).

2.2 The climate risk context

Climate risk is a function of exposure and vulnerability to climate hazards. Current and future climate risks will not only be determined by changes in global temperature levels and associated hazards at the local scale, they will ultimately result from the combination of these hazards with the affected systems' exposure and vulnerability. Due to interactions between affected systems, there are cascading and often reinforcing consequences of climate-driven hazards on natural systems and human systems and sectors. As a result, only a combination of adaptation – the purpose of which is primarily to minimize exposure and vulnerability to a changing climate – and ambitious mitigation actions can reduce climate risks over different timescales and in the various ecological and societal systems around the world. Accordingly, adaptation must be considered a priority not only at the national and local levels but also as an issue of high global concern. This means there is an urgent need to track global progress on adaptation and identify gaps.

2.2.1 Appraisal of climate risk is changing over time

Our appraisal of climate risk has evolved as we learn more about the interactions between rising temperatures and climate impacts. Since the Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report (Smith *et al.* 2001) this relationship has been expressed as "reasons for concern" and presented in the iconic "burning embers" diagram shown in figure 2.1 (Zommers *et al.* 2020). The evolution of this framework and associated conclusions across the IPCC assessment cycles show that risk levels at a given temperature have generally increased from one IPCC report to the next, particularly for higher levels of greenhouse gas emissions. Accordingly, climate impacts are likely to be larger than previously projected and the related cost of adaptation and residual losses and damages will also be higher. In turn, this means it will be necessary to be more ambitious and act sooner than anticipated to avoid high risks through mitigation and adaptation. Assessments also show that moderate levels of risk across all "burning embers" are virtually unavoidable, even if the global temperature rise is kept to 1.5°C above pre-industrial levels through ambitious climate change mitigation (Hoegh-Guldberg *et al.* 2018; Magnan *et al.* 2021). Similarly, this is a strong call to ramp up adaptation planning, finance and implementation to reduce residual climate impacts on people, society and nature.

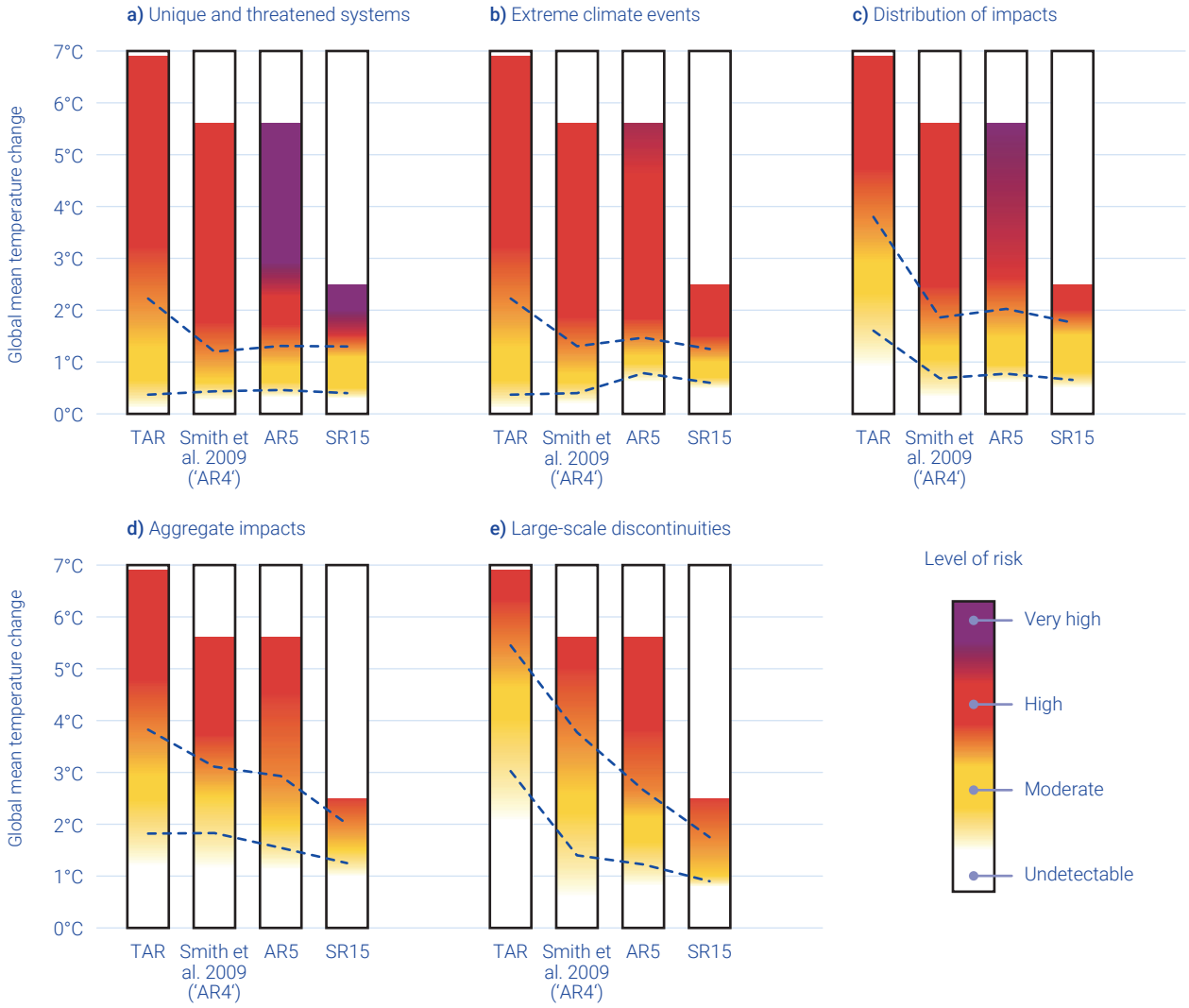
2.2.2 Estimating global climate risk

The NDCs of the Parties do not currently reflect the level of ambition required for mitigation that would avoid locking in temperature changes that will result in high risks to essentially all of the "reasons for concern" (UNFCCC 2021). Average global temperatures are projected to reach 3°C above pre-industrial levels at the end of this century, a point at which many fragile and unique systems, for example, will have been heavily deteriorated or even lost (IPCC 2021). The IPCC estimates that temperatures will likely be above rather than below the 1.5°C threshold in the near term (2021–2040) even under a very low greenhouse gas emissions scenario, and will very likely cross this marker without strong mitigation action (IPCC 2021).

The three recent special reports of the IPCC on the 1.5°C threshold, land and ocean–cryosphere, respectively (IPCC 2018; IPCC 2019a; IPCC 2019b), provide more details of the risks to natural and human systems, allowing a better understanding of "global climate risk". A synthesis study using a composite risk index shows firstly that climate change impacts are expected to substantially increase over the course of this century, probably in an accelerated way; and secondly, while different societies and social groups around the globe will be affected differently in the coming decades, climate impacts will affect us all (Magnan *et al.* 2021). The IPCC special reports on ocean–cryosphere and land (Hurlbert *et al.* 2019; Oppenheimer *et al.* 2019) assessed climate risk levels under contrasting mitigation-adaptation scenarios in contexts including representative low-lying coastal settlements (atoll islands, deltas, megacities, arctic communities), food insecurity, land degradation and desertification. The combined results illustrate the potential outcomes of different societal adaptation at the global level (figure 2.2), with the potential to reduce today's global climate risk level by almost a half by the end of this century under both low and high mitigation scenarios (Magnan *et al.* 2021). However, even ambitious adaptation will not eliminate all future climate risks. Residual risks will rise in the second half of the century, albeit at much lower levels than under less ambitious adaptation.

The continuous rise in climate impacts means that adaptation costs and the costs of residual losses and damages will invariably continue to rise as the century progresses. Impacts will be felt much more strongly in many developing countries, however, strong mitigation action would avoid many of these costs, particularly in

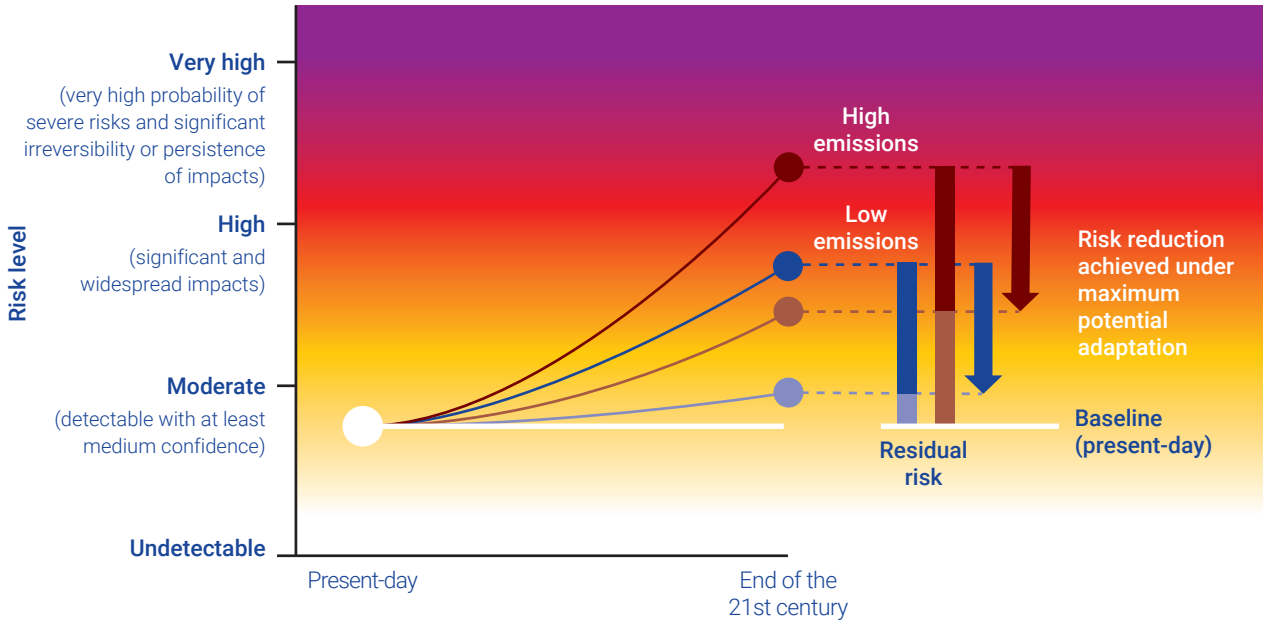
Figure 2.1 Comparison of risk thresholds across IPCC assessments



Note: Burning embers link the global mean surface temperature increase to estimates of risk to unique and threatened ecosystems (**panel a**), extreme climate or weather events (**panel b**), distribution of impacts (**panel c**), aggregate impacts (**panel d**) and large-scale discontinuities (called large-scale singular events in the IPCC Fifth Assessment Report [AR5] and the Special Report on Global Warming of 1.5 Degrees [SR15] (**panel e**). All burning embers are presented with the same colour and temperature scale, removing technical details that varied between the original publications. White areas at the top of each column correspond to temperatures above the assessed range in the corresponding report. Dashed lines connect the midpoints between undetectable and moderate risk, and moderate and high risk. Risk transitions have generally shifted towards lower temperatures with updated scientific understanding.
Source: Zommers *et al.* (2020).

the second half of the century (Admiraal *et al.* 2016; De Cian *et al.* 2016; UNEP 2016; Hoegh-Guldberg *et al.* 2018; UNEP 2021; Chapagain *et al.* 2020). Strong mitigation action will impose earlier costs, but climate change cannot be seen as an optimization problem in which estimated mitigation costs are simply compared against the estimated costs of adaptation and damage. Such an approach disregards the significant uncertainties surrounding all cost estimates. For instance, despite improving to better reflect observations (Ueckerdt *et al.* 2019), the top-down damage functions used in integrated assessment models are rather simplistic and do not take into account ethical considerations or non-monetary loss and damage (Walsh, Hormio and Purves (eds.) 2016; García 2020; Hattori 2021). Moreover, they disregard the possibility of large-scale discontinuities with catastrophic consequences (IPCC 2018; Dietz *et al.* 2021). As such, considering the uncertainties, the IPCC special report on 1.5°C estimates that limiting global warming to 1.5°C instead of 2°C would avoid economic damage of 22 per cent (10–26 per cent) (Hoegh-Guldberg *et al.* 2018).

Figure 2.2 Adaptation outcomes based on information published in the IPCC AR6 cycle special reports on land and ocean–cryosphere



Warming scenarios

Low emission scenario (RCP2.6)

High emission scenario (RCP8.5)

Adaptation scenarios

Dark colours represent risk-level under "no-to-moderate" adaptation scenario

Faded colours represent risk-level under "maximum potential" adaptation scenario

Note: Present-day refers to reference periods used in the underlying IPCC Assessments (2006-2015 in the Land Special report, Hulbert *et al.* 2019; 1986-2005 in the SROCC, Oppenheimer *et al.* 2019).
Source: Adapted from Hurlbert *et al.* (2019); Oppenheimer *et al.* (2019); and Magnan *et al.* (2021).

2.3 Framing of the adaptation assessment presented in the AGR2021

Understanding adaptation progress essentially means asking three intertwined questions:

- What are we doing today to adapt?
- To what extent are we currently reducing climate risks?
- Depending on our mitigation trajectory, will our adaptation trajectory help us reduce future climate risks?

Establishing a clear framing (section 2.3.1) and providing guidance (section 2.3.2) is a critical part of assessing global adaptation progress, even though answering these questions still raises important methodological issues and data challenges.

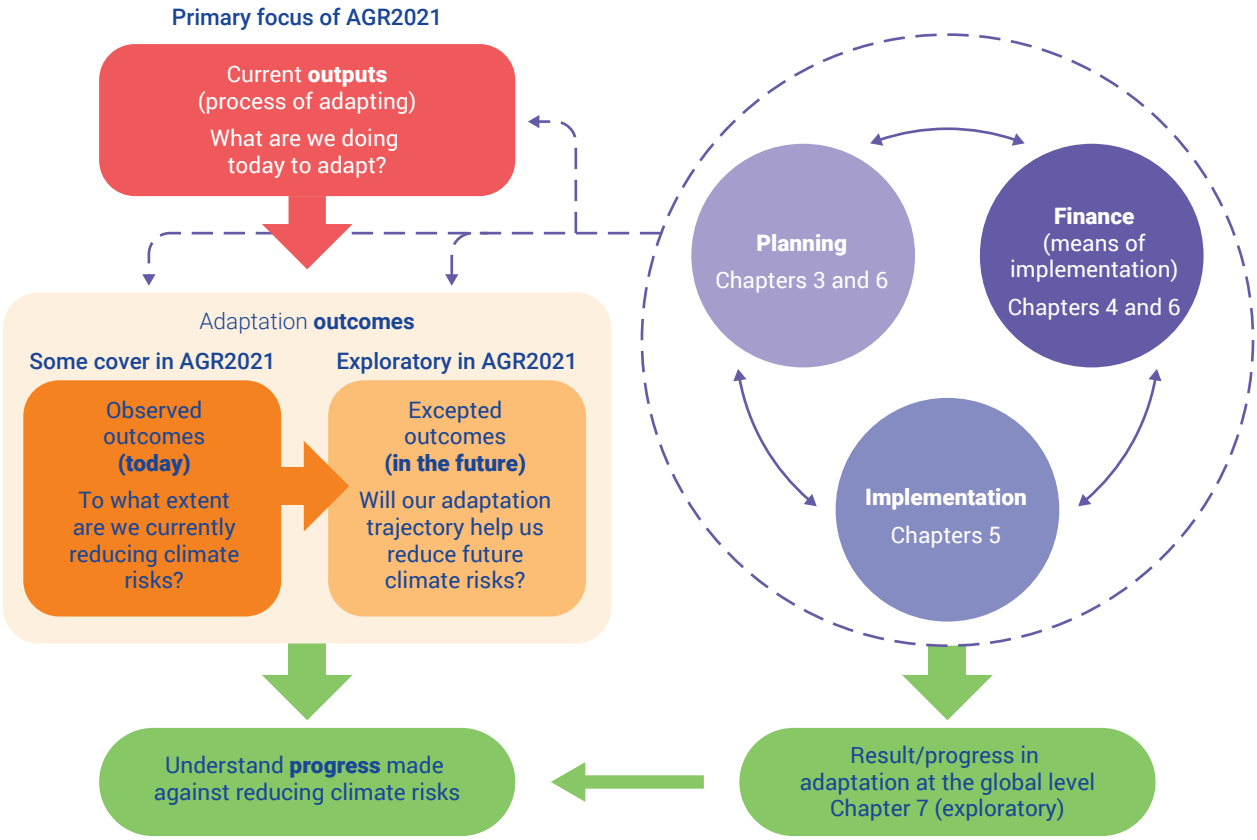
2.3.1. The overarching framing

This report builds on previous AGRs (UNEP 2017; UNEP 2021) to address "adaptation progress" in three distinct ways (figure 2.3).

First, adaptation actions and **outputs** relate to the question: what has been done until today to adapt? Outputs are assessed in the AGR in both quantitative terms (for example, the number of plans, the amount of financing committed, and the type and scale of implementation activities) and qualitative terms (for example, how actionable plans are and how they address climate risks, and the types and targets of action). This provides an overview of global progress on adaptation planning, finance and implementation.

Second, it is also key to understand the adaptation **outcomes** that have already been achieved in order to determine the extent to which we have actually reduced climate risk levels. Assessing outcomes is considerably harder than

Figure 2.3 Conceptual framework and structure of the UNEP Adaptation Gap Report (AGR) series on assessing global progress on adaptation



Note: The panel on the left describes the conceptual framing of the AGR series (starting from AGR2020), while the panel on the right illustrates the structure of this report and how it relates to the conceptual framing on outputs, outcomes and progress.

tracking outputs, for example, due to a gap in understanding the effects of adaptation on current climate risk levels (UNEP 2021), as well as because of the value judgements associated with making statements on the results of actions (UNEP 2017).

Third, **expected outcomes** refer to the question of the extent to which our adaptation trajectory (and in relation with our mitigation trajectory) will help us reduce future climate risks. Comprehensively assessing adaptation progress in terms of future climate risks requires the combined appraisal of both observed and expected adaptation outcomes. In addition to the aforementioned challenges associated with assessing current outcomes, there are large uncertainties around the ways in which climate change will affect future climate risks (IPCC 2021), as well as the definition of "(un)acceptable" levels of risk from one society to another (Handmer and Nalau 2019). This means that caution should be exercised in our understanding of assessments of future outcomes.

2.3.2. Criteria to assess adaptation progress in the AGR series

The AGR2020 introduced a number of categories in order to consistently assess adaptation planning, finance and implementation (table 2.1). Information on progress, gaps and factors constraining the interpretation of findings provided in the chapters of the report form the basis for the synthesis in chapter 7. This report presents a first attempt at informing expected outcomes of adaptation in the absence of robust information about future trends in planning, financing and implementation. This is based on forward-looking expert judgement and involved a survey to gather additional insights into future trends for the various assessment criteria based on the expertise of the chapter authors, grounded in scientific evidence and deep knowledge.

Table 2.1 Overarching criteria used to synthesize findings across adaptation planning, finance and implementation

	Progress	Gaps	Factors that constrain the interpretation of findings
Actionable policies refer to the extent to which multilateral and bilateral cooperation and national policies provide clear guidance on how to implement adaptation on the ground	■		
Adaptation finance illustrates an important aspect of international cooperation for planning and implementation of adaptation	■	■	■
Adaptation goal(s) refer to the destination we want to achieve in a changing climate, globally and nationally			■
Connection to climate risk reduction is key to understand if existing or planned policies and actions (outputs) lead to effective adaptation (outcomes)		■	■
Early signs of further progress highlight emerging experiences and knowledge showing that more progress is to be expected in the near to long term	■		
Inclusiveness illustrates broader concerns around equity and justice, such as gender and disadvantaged groups		■	
Information availability on both outputs (what are we doing to adapt?) and outcomes (to what extend does it allow us to reduce risks?) is key to ensure confidence in judging whether we face more progress or bigger gaps			■
Knock-on effects refer to the way progress at a given level (for example, national) influences progress at smaller and larger scales and potentially stimulates groups of actors (for example, youth)	■	■	
Maturity is the way adaptation is either mainstreamed into existing policies or considered as an overarching policy dimension	■		
Monitoring and evaluation is key to allow for planning and implementation to remain adequate and effective over time	■	■	
Recognition of the policy relevance of adaptation to galvanize action at the international and national levels	■		
Uncertainty around the enabling conditions for adaptation describes the external, non-climate-related factors that can influence vulnerabilities and adaptive capacities and therefore make adaptation easier or harder to achieve			■

Note: Grey cells indicate the primary focus applied in AGR2021, based on information from the core chapters 3–6 and as reported in chapter 7 (section 7.1 and figure 7.1).

People living around one the community-protected areas make roof fronds out of leaves, toothpicks and sticks as part of a project supported by UNEP and partners to help people build alternative livelihoods and decrease logging in Cambodia. Learn more about this project here.

Photo: © UNEP

References

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