



# **PROVIA Guidance on Assessing Vulnerability, Impacts and Adaptation to Climate Change**

**SUMMARY**

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## Preface

In 1994 the Intergovernmental Panel on Climate Change published *Technical Guidelines for Assessing Climate Change Impacts and Adaptations*. These guidelines outlined a series of generic steps to be followed when designing and conducting a climate change impact and adaptation assessment. The guidelines were complemented in 1996 by the *UNEP Handbook on Methods for Climate Change Impact Assessment and Adaptation Strategies*. The IPCC Guidelines and the UNEP Handbook were applied in a range of country studies during the decade following their publication. They also inspired the publication of additional guidance, including the *International Guidebook for Vulnerability and Adaptation Assessments* carried out as part of the US Country Studies Program, and the *Adaptation Policy Frameworks for Climate Change: Developing Strategies, Policies and Measures*, published by UNDP.

The past decade has seen a shift from centralized guidance for climate vulnerability, impact and adaptation assessment to the development of specific, often sectoral or place-based approaches. There has been a proliferation of assessment methods and tools, and it has become increasingly difficult for potential users to understand the utility, benefits, requirements and tradeoffs of those methods and tools. Stakeholders' demand for knowledge on vulnerability, impacts and adaptation needs to be matched with the supply from the research community of clear technical guidance that takes into account both the academic

developments of the past 20 years as well as user needs at local, national and international levels.

The Global Programme of Research on Climate Change Vulnerability, Impacts and Adaptation (PROVIA) has responded to this challenge by revising and improving existing guidance for assessing climate change vulnerability, impacts and adaptation, covering the range of available approaches, methods and tools. This document is the result of this effort, which has been a pleasure for me to coordinate. The PROVIA Guidance is meant to be informative rather than prescriptive; its intended users are researchers, adaptation practitioners, decision-makers and those involved in project, programme and policy formulation. The Guidance is conceived as a "living document": the current version is a consultation document that will benefit from feedback from users.

The PROVIA Guidance has been prepared by a ten-strong author team, supported by a large group of experts and reviewers (see opposite page). The conceptual basis, the decision trees and the methods and tools included in the PROVIA Guidance build on research conducted within the project MEDIATION: Methodology for Effective Decision-making on Impacts and Adaptation. MEDIATION was funded by the European Commission's 7th Framework Programme under contract number 244012. The preparation of the PROVIA Guidance was funded by UNEP, with additional support provided by the Government of Sweden.

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Harvesting carrots, India © Flickr/CGIAR-CCFAS

## Summary

Climate change poses a wide range of risks – and, in some cases, opportunities – to human and natural systems around the world. In order to understand and address these risks and opportunities, stakeholders need clear technical guidance that combines robust science with explicit consideration of user needs at local, national and international levels. This document responds to that challenge by updating and improving existing guidance for assessing climate change vulnerability, impacts and adaptation, covering the range of available approaches, methods and tools.

The guidance is structured along a five-stage iterative adaptation learning cycle:

1. **Identifying adaptation needs:** What impacts may be expected under climate change? What are actors' vulnerabilities and capacities? What major decisions need to be addressed?
2. **Identifying adaptation options:** How can the specific risks and opportunities that were identified be addressed? There may be several options available to achieve the desired goals.
3. **Appraising adaptation options:** What are the pros and cons of the different options, and which best fit the adaptation actors' objectives?
4. **Planning and implementing adaptation actions:** After an option is chosen, implementation can begin. The focus here is on practical issues, such as planning, assigning responsibilities, setting up institutional frameworks, and taking action.
5. **Monitoring and evaluation of adaptation.** As measures are implemented, the process is monitored and evaluated to ensure it goes as planned, identify any problems, document the outcomes achieved, change course as needed, and draw lessons from the experience.

This is an idealized model of adapting to climate change; "real-world" adaptation processes may not be linear, and in fact, may require refinement through iteration. This guidance therefore provides multiple entry points, highlighted in boxes throughout the document, to allow readers to enter (and re-enter) at various stages or sub-stages of the process.

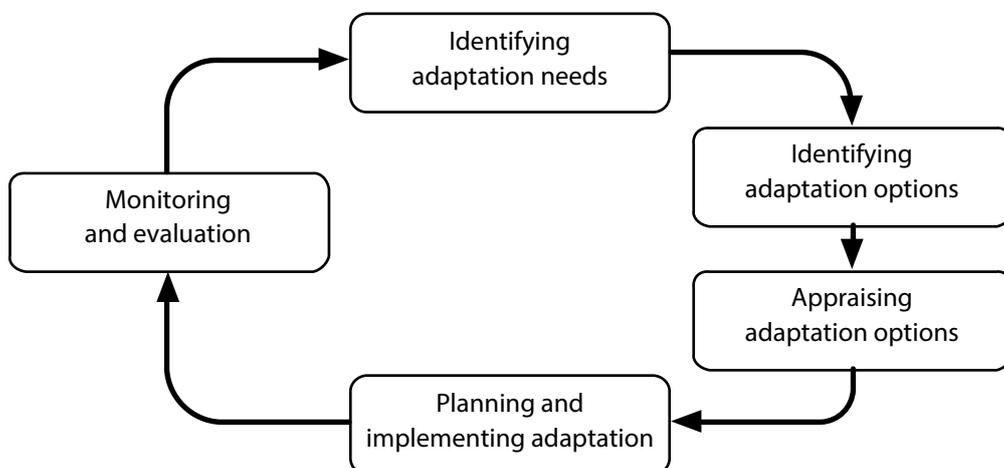
All of these tasks are complex, and many need to be carried out by experts. There is no “one size fits all” approach, and this document emphasizes the diversity of adaptation challenges and the variety of methods and tools available to address them. We use decision trees to identify key criteria that may indicate the need for a particular kind of analysis or method, but never prescribe an approach as the only valid one. The aim of the document is to provide an overview of the range of activities that make up climate risk assessment and adaptation, and a coherent and integrated structure for addressing them.

Generally, this document is targeted at professionals such as researchers, consultants, policy analysts and sectoral planners who have some prior knowledge on climate risk assessment and adaptation. Some of the material is technical and requires some relevant experience. The guidance should also be of use to those leading or initiating planned and collective adaptation, such as community-based organizations or NGOs. Below we provide brief overviews of the four sections of the document, with an emphasis on Section 2, which guides readers through the adaptation cycle and suggests approaches to different tasks. ■

## Section 1: Introduction

This section introduces the basic structure and terminology used in the guidance, including how to frame the adaptation process, how to differentiate adaptation challenges based on different criteria, and how to identify the most relevant (salient) tools and approaches to address those challenges. In differentiating adaptation challenges, we emphasize two key empirical criteria: the stage in the adaptation cycle, and the type of adaptation situation: public or private, and individual or collective. Private individual situations are those in which persons act in their own interest, such as coastal dwellers flood-proofing their homes. Private collective situations are those in which groups of people take action together in their own interest, and may involve interdependence and, sometimes, conflicting interests. Public situations are those in which public actors, such as governments, take action with a fiduciary duty to act in the public interest – either seeking to influence individual or collective actions, or coordinating collective actions.

The guidance also highlights three other key sets of empirical criteria: the characteristics of the climate risks (or opportunities) involved, such as whether they are already present; the characteristics of the affected actors, such as whether they are



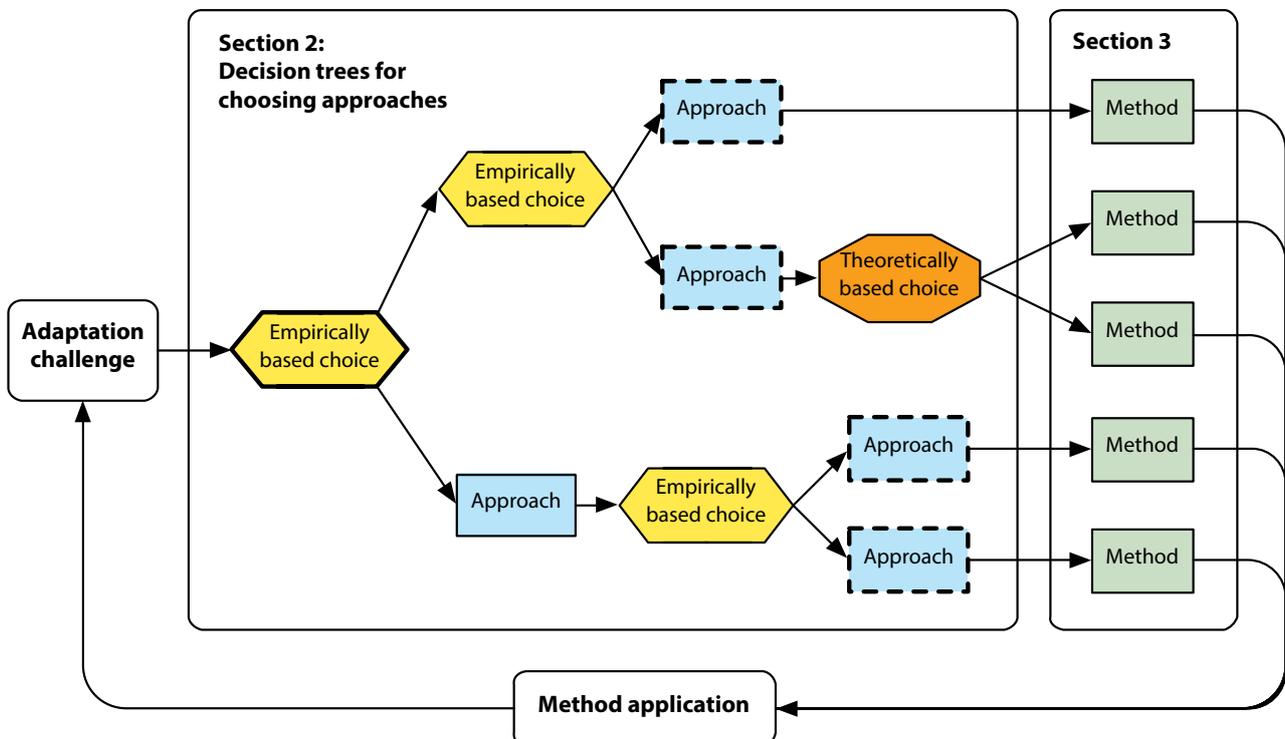
The adaptation learning cycle.

aware of the risks and have the capacity to adapt; and the characteristics of the available adaptation options, such as their relative cost and flexibility. In addition, we note other types of criteria that may inform the choice of approach, including theoretical criteria, such as whether methods from economic theory or social psychology are preferred; normative criteria, or the values and priorities that define what options are acceptable; and pragmatic criteria, such as time, skill or funding constraints.

Finally, we stress the importance of stakeholder participation at all stages of the adaptation learning cycle, which should cover the full range of affected groups, including women and marginalized populations. This is particularly the case for collective adaptation situations, to understand and take steps towards harmonizing the diverse and potentially conflicting perspectives of different actors. ■

## Section 2: Choosing approaches for addressing climate change adaptation

This section goes through each stage of the adaptation cycle and identifies tasks that may arise and different approaches that may be applicable. We start by explaining how we use the term “vulnerability” here: in the most general sense, as the propensity to be adversely affected by climate change, rather than adopting any of the more specific formulations in the literature. We describe methods that model climate change impacts as “impact analysis”, and methods that analyse the institutional context of vulnerability – including political, social and economic factors – as “institutional analysis”. The latter include methods for assessing “social vulnerability”, considering rights, entitlements and power in the analysis. Finally, we use the term “indication” to describe methods that



**Exemplary decision tree and its iterative application for choosing approaches based on the current adaptation challenge. Decision nodes on empirical criteria are represented by yellow hexagons; decision nodes on theoretical criteria are represented by orange octagons. The salient approaches are represented by blue rectangles. The entry point to a decision tree is a decision node with bold borders. Exit points are approaches that lead to the next stage in the overall adaptation cycle. They are represented with dashed bold borders.**

## Summary

use indicators (individually or in indices) to measure climate impacts, adaptive capacity, or both.

### *Identifying adaptation needs*

Identifying adaptation needs involves two equally important and complementary sub-tasks: 1) analysing observed or expected *impacts* of climate change (with and without adaptation); and 2) analysing the potential *capacity* to prevent, moderate or adapt to these impacts. In most adaptation situations, both types of analysis are likely to be relevant, but resource constraints and/or the characteristics of the adaptation challenge may make it necessary to prioritize one type of analysis over the other.

In choosing approaches to impact analysis, we identify several decision nodes: Are studies on future impacts available? Are the available studies comprehensive and credible? Are the results of these studies ambiguous regarding impacts? If future impacts need to be projected, are impact models available to do so? Should adaptation be included in the projection? Are monetary values involved and not known? If impact models are not available, can a trend be detected and attributed to climate change? When no impact studies or models are available and no trend can be detected and attributed to climate change, then the identification of adaptation needs and opportunities

influence their actions at later stages in the adaptation process. Towards this end, capacity indicators or indices are used. It is important to note that adaptive capacity indicators and indices only provide a rough and rapid assessment of actors' potential capacity to adapt. Whether this potential capacity is realized in the context of a specific climate threat depends on many contextual institutional and cognitive factors, which may need to be explored through behavioural and/or institutional analysis. In collective private adaptation situations, organizational self-assessment methods may be relevant.

### *Identifying adaptation options*

Once specific adaptation needs have been identified, the next step is to identify ways to address them. For example, a climate impacts and vulnerability analysis might have found that due to sea-level rise and changing weather patterns, coastal communities will be exposed to major floods during storm surges. We refer to the different pathways that can be taken as *adaptation options*. For example, for a municipality, protecting the coast might involve building new infrastructure, such as a sea-wall, or working to restore natural barriers such as dunes and mangroves, or both. Individual homeowners might consider raising or fortifying their houses, or getting better insurance. The public sector might consider financial incentives to

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