

1. Introduction

The United Nations Framework Convention on Climate Change (UNFCCC) requires all parties to formulate and implement programs to facilitate adaptation to climate change. By its decision 9/CP.3, the third Conference of the Parties requested the Convention Secretariat “to continue its work on the synthesis and dissemination of information on environmentally sound technologies and know-how conducive to mitigating, and adapting to, climate change; for example by accelerating the development of methodologies for adaptation technologies, in particular decision tools to evaluate alternative adaptation strategies.” The UNFCCC Secretariat took a first step in this direction when it produced a report in 1999 entitled *Compendium of Decision Tools to Evaluate Strategies for Adaptation to Climate Change*. The aim of that report was to understand the use and availability of such decision tools.

Since then, the adaptation assessment process has changed considerably and in some ways grown more sophisticated. The UNFCCC Secretariat has subsequently sought to update the original compendium and broaden its scope. The challenge of this effort is not only to expand the structure of the compendium to include new tools that have come into use and to modify it to include tools applicable to the entire process of vulnerability and adaptation assessment (not simply decision making), but also to reorganize it so as to capture the range of thinking reflected in the different recent approaches to the assessment process.

The earlier work (sometimes referred to as the first generation) in climate change impacts and adaptation studies focused more on impacts than on adaptation. The motivation for the research was often driven by the need to understand how great the impacts of climate change might be to know how much urgency to give to the mitigation agenda or the stabilization of greenhouse gas concentrations in the atmosphere. This work was facilitated by a number of “guidance documents,” among which the most prominent were:

- ▶ SCOPE Report on impact Assessments (Kates et al., 1985)
- ▶ Intergovernmental Panel on Climate Change (IPCC) Guidelines (Carter et al., 1994; see Chapter 2 of this document)
- ▶ U.S. Country Studies Program (Benioff et al., 1996; see Chapter 2 of this document)
- ▶ United Nations Environment Programme (UNEP) Handbook (Feenstra et. al., 1988).

The first generation studies were generally based on climate scenarios derived from general circulation models (GCMs). The chosen scenarios were commonly applied to models of ecosystems, to specific species within an ecosystem, or to a component of the biogeophysical

environment such as sea level; coastal zones, including coral reefs; the hydrological cycle; mountains; deserts; or small islands. These “first order” impacts were sometimes carried forward to the modeling of “second order” impacts on economic sectors such as agriculture, forestry, water resource management, human health, and so forth. Only at the end of a long research process was adaptation considered, and only infrequently were socioeconomic scenarios developed alongside the climate scenarios.

More recently there has been an upsurge in interest and concern about adaptation linked to current climate variability and current vulnerability in addition to the concern with future climate and vulnerability. The context has also been broadened to include other environmental and social stressors, and changes in socioeconomic conditions and sustainable development.

This change in emphasis has led to the development of a second generation of studies that begin with current climate variability and current adaptation (or the lack of adaptation or maladaptation). This empirical approach provides a grounding in reality on which to base projections of future impacts, vulnerability, and adaptation. New methods, frameworks, and guidelines are being developed to facilitate second order studies, including:

- ▶ the United Nations Development Programme (UNDP) Adaptation Policy Framework (Burton et al., 2004; see Chapter 2 of this document)
- ▶ the National Adaptation Plans of Action (NAPA) Guidelines (UNFCCC, 2002; see Chapter 2 of this document)
- ▶ the Assessments of Impacts and Adaptations to Climate Change (AIACC) projects (see Chapter 2 of this document).

Much of the work under way includes a blend of first and second generation approaches and tools, and the research approaches are evolving rapidly, as is to be expected in a relatively new area of research and study. The more recent emphasis on current climate variability, and current vulnerability and adaptation, has been associated with more sophisticated approaches to socioeconomic scenarios, to stakeholder participation, to adaptation policies and measures, and to the assessment and strengthening of adaptation capacity. These changes are reflected in the content and structure of this updated version of the compendium, making it more relevant to today’s needs. This is not the end of the road, however. As understanding of climate change impacts expands and as social and economic circumstances change, there will be a continued need for new approaches and new research tools and methods. Users of this compendium are thus challenged to go past the role of passive users and to make their own contributions to the improvement of methods and tools.