

# SCOPE 27 - Climate Impact Assessment

## Part III Social and Economic Impacts and Adjustments

As the impact analyst moves from first-order biophysical impacts to higher-order consequences, the possibilities, outcomes and human choices attached to each link increase, and the causal chain becomes less distinct. Part III reflects that complexity. Three of the chapters, written from disciplinary perspectives, deal with second-order consequences on human health ([Chapter 10](#)), economy ([Chapter 12](#)), and society ([Chapter 13](#)). Three of the chapters deal with case study methods to assess so-called 'natural experiments', focusing on historical study ([Chapter 11](#)), climatically and economically marginal places ([Chapter 14](#)), and extreme weather and climate events ([Chapter 15](#)). Finally, two chapters deal with adjustment responses and mechanisms for their perception and choice ([Chapters 16](#) and [17](#)).

When studying self-provisioning societies it is convenient to think of human nutrition and related health effects as second-order consequences—climate-related yields of food leading to various health and demographic impacts. But there are few fully self-provisioning societies, therefore biological increases or decreases in the availability of foodstuffs must be traced through a network of existing social and economic relationships. Escudero's proposal for a case comparison of both shores of the Windward Passage is a case in point.

Economic and social relationships are the substance of the social sciences, particularly economics and sociology. Within the framework of market economies, but with some applicability to all economies, there are a set of well-defined quantitative approaches designed to answer two fundamental questions of how economies interact with climate. Given a change in either the mean or distribution of climate events, how will the allocation of resources change and which persons or places will lose or gain from such resource changes? As Lovell and Smith point out in [Chapter 12](#), robust methods exist to answer these questions, but rarely have been applied. Nor have they been adapted to the special qualities of climatic variability and change: stochastic nature, large-area impact, and long time-horizon over which consequences take place.

Ironically, the more diffuse, less-defined social impacts appear to be better illustrated, with interesting and recent case examples from studies of weather modification and extreme events. With a broader view than economic analysis, social impact analysis, as Pilgrim notes in [Chapter 13](#), is a class of policy analysis that arose from a concern with the 'hidden costs' of societal undertakings. Thus there is a strong emphasis on identifying the many different stakeholders affected by climatic variability or change and assessing the differential impact upon them.

Historical analysis, de Vries informs us in [Chapter 11](#), employs the full array of social science methods and is limited only by the availability of data from the past. Climate adds to the rationale of historical explanation of human events, and historical events allow us to expand the stock of relevant climates and

societies to examine. (See also the extensive discussion in [Chapter 21](#).) In the latter case, historical analysis is often employed for the two types of natural experiments that are emphasized in this volume—a focus on vulnerable margins or groups and a focus on extreme climatic events, usually of interannual or decadal length.

Natural hazard research, described by Heathcote in [Chapter 15](#), provides a rich body of relevant methodology to study the extreme events of the past as well as those of current experience. To illustrate, Heathcote reviews such methods within the ordered sequence of impacts and the interactive model of human response. The immediate dramatic impacts of violent storm or persistent drought are most easily identified and measured; the long-term impacts, however, are much in doubt. The margins of climatically sensitive activities that Parry documents in [Chapter 14](#) seem to be more sensitive barometers of the impacts of longer-term changes in climate.

Woven throughout Part III are specific issues of adjustment and adaptation. Although some studies of biophysical impact attempt to ignore or to constrain societal interaction, studies of social and economic impacts are always interactive, analyzing the differential societal impacts of climate change and variability in the light of the differential ability to cope with or take advantage of such change. Indeed, several authors point out that the differential between societies and their resources is much greater than the differential between climatic regions or epochs in their impact on human beings.

At the level of individual and small-group decision-makers, studies of perception, alluded to in [Chapters 11](#) and [15](#) and given full treatment by Whyte in [Chapter 16](#), have served as a major link to studies of adjustment of the type described by Jodha and Mascarenhas in [Chapter 17](#). Reports of the nature of adjustment to climate change and variability are scattered throughout the text. Lists of adjustments are given in most of the sectoral chapters. Given the bias towards industrialized nation experience, however, Jodha and Mascarenhas examine specifically developing country adjustment, drawing on their rich experience in South Asia and Africa.

When this set of disciplinary methods and case study opportunities for identifying human social and economic impacts is compared, a strong negative bias emerges. Most methods and case studies focus on climate as hazard; only scattered efforts have been made to study climate as a resource. Within the focus on climate as hazard, the balance of effort has been to identify the residual damages and losses caused by the impact of climate events on vulnerable groups or regions; less effort has been expended on identifying and measuring the social cost of adaptation and adjustment. Assessing the social cost of climate adjustment and the opportunities of climate as a resource are important items for a research agenda.

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