

# 9

## National assessments of health impacts of climate change

Estimates, even if approximate, of the potential health impacts of climate change are an essential input to policy discussion on reducing greenhouse gas emissions and on social adaptation to climate change. Societies must respond despite the unavoidable uncertainties. Indeed, national governments have a responsibility, under the UN's Framework Convention on Climate Change (1992), to carry out formal assessments of the risk to their population's health posed by global climate change.

Health impact assessment (HIA) has been defined as “a combination of procedures, methods and tools by which a policy, project or hazard may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population”.<sup>1</sup> Despite recent advances in health impact assessment methods, its integration into mainstream policy-making has yet to be satisfactorily achieved. Besides, impact assessments typically refer to health impacts over the next 10 to 20 years (e.g. due to current smoking rates, obesity levels, or population ageing), rather than the 50 to 100 year time-scale appropriate to climate change projections. So there is need for scenario-based impact assessments that incorporate, and communicate, a higher level of uncertainty. The steps in climate change impact and adaptation assessment are shown in figure 9.1.

Several types of national health impact assessments have been undertaken. A basic assessment identifies the types, but not much about the magnitudes, of potential impacts. In contrast, comprehensive well-funded and well-supported assessments are undertaken. For example, in the United States assessment, published in 2000, population health was one of the five target sectors included in the 16 detailed regional assessments and in the overall assessment. The US assessment involved stakeholder participation and extensive consultation and peer review.<sup>3</sup> Further Comparative details of two national assessments are shown in the box.

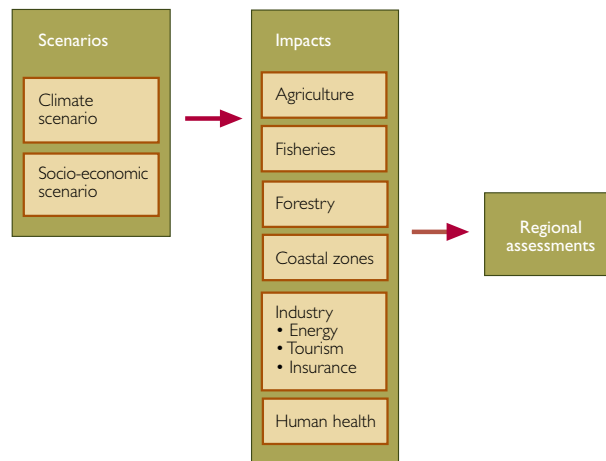
Comprehensive multi-sectoral assessments have been conducted by the USA, Canada, the UK and Portugal. Assessments in developing countries have been

undertaken only under the auspices of donor-funded capacity-building initiatives. (Other sub-national or local assessments of potential health impacts may have been undertaken for climate change, but, if so, such studies are in the “grey” literature, not widely available.) The outcomes listed refer to the likely health impacts reported on for that particular country. The level of uncertainty accompanying these estimates is usually not described. Vector-borne diseases, particularly malaria, have been widely addressed. Other potentially greater impacts, such as from weather disasters, have been less well addressed.

Out of these experiences, several conclusions can be drawn:

- Assessments should be driven by region and country priorities in order to determine which health impacts are considered. No single set of guidelines covers all health and institutional situations.
- HIA is a policy tool, therefore the actual process of conducting assessments, particularly the involvement of stakeholders, is very important.
- Assessments should set an agenda for future research. Nearly all the assessments done to date have identified research gaps, and they often specify detailed research questions.
- Assessment should be linked to follow-up activities such as monitoring and updated reports.

Figure 9.1. Steps in climate change impact and adaptation assessment (reference 2)



## Box: Comparing Assessments: UK and Fiji

The UK assessment concentrated on producing quantitative results for the following health outcomes<sup>4</sup>, for three time periods and for four climate scenarios:

- Heat-related and cold-related deaths and hospital admissions
- Cases of food poisoning
- Changes in distribution of *Plasmodium falciparum* malaria (global) and tick-borne encephalitis (Europe), and in seasonal transmission of *P. vivax* malaria (UK)
- Cases of skin cancer due to stratospheric ozone depletion.

The large uncertainty surrounding these estimates was acknowledged. The main conclusions of the report were the impact of increases in river and coastal flooding, and severe winter gales. This report also clearly addressed the balance between the potential benefits and adverse impacts of climate change: the potential decline in winter deaths due to milder winters is much larger than the potential increase in heat-related deaths. Climate change is also anticipated to lessen air pollution-related illnesses and deaths, except for those associated with tropospheric ozone, which will form more readily at higher temperatures.

The Fijian assessment addresses health impact in the context of

current health services. Fiji's main concerns were dengue fever (recent epidemic in 1998), diarrhoeal disease and nutrition-related illness. The islands are malaria free and an anopheline mosquito vector population has not been established despite a suitable climate. Hence, the risk of introduction and establishment of malaria and other mosquito-borne diseases due to climate change was considered to be very low. Filariasis, an important vector-borne disease on the islands, is likely to be increased by warmer temperatures. The distribution of the vector (*Aedes polynesiensis*) may also be affected by sea level rise, since it breeds in brackish water. A dengue fever transmission model was incorporated into a climate impacts model developed for the Pacific Islands (PACCLIM). The modelling indicates that climate change may extend the transmission season and geographic distribution in Fiji.

Diarrhoeal disease may increase in Fiji because of increased temperature and altered patterns of rainfall. However, no evidence was presented on the association between flooding or heavy rainfall and cases of diarrhoea. The 1997/998 drought (associated with El Nino) had widespread health impact, including diarrhoeal disease, malnutrition and micronutrient deficiency in children and infants.<sup>5</sup>

The development of formal guidelines for the national assessment of health impacts will improve methods used, will achieve some standardization, and will facilitate the development of relevant indicators. Health Canada has prepared an initial framework<sup>6</sup>, proposing that there are three distinct phases to the assessment task:

1. Scoping: to identify the climate change problem (concerns of vulnerable groups) and its context, describe the current situation (health burdens and risks) and identify key partners and issues for the assessment.
2. Assessment: estimations of future impacts and adaptive capacity, and evaluation of adaptation plans, policies and programmes.
3. Risk management: actions to minimize the impacts on health, including follow-up assessments.

This type of health impact assessment, in relation to large-scale climatic-environmental changes, requires guidelines that accord with the mainstream HIA framework of WHO and other international agencies. Achieving this would help to move the climate change policy discussion beyond the environmental impact domain and into the social and public health impacts arenas. Currently, in most countries, sector differentiation and the associated

policy environment neither facilitates nor fosters intersectoral collaboration. Within the health sector, resources are allocated primarily in relation to dealing with existing problems, taking some account of the relative burden of disease.

A major shortcoming of many climate change health impact assessments has been the superficial treatment of the population's adaptive capacities and policy options. Strategies to enhance population adaptation should promote measures that are not only appropriate for current conditions, but which also build the capacity to identify and respond to unexpected future stresses/hazards. The restoration and improvement of general public health infrastructure will reduce population vulnerability to the health impacts of climate change. In the longer-term, and more fundamentally, improvements in the social and material conditions of life and the reduction of inequalities within and between populations are required for sustained reduction in vulnerability to global environmental change.