

# 13

## Conclusions and Recommendations for Action

Sustainability is essentially about maintaining Earth's ecological and other biophysical life-support systems. If these systems decline, human population wellbeing and health will be jeopardised. Technology can buy time, but nature's bottom-line accounting cannot be evaded. We must live within Earth's limits. The state of human population health is thus a central consideration in the transition towards sustainability.<sup>1</sup>

Climate change, like other human-induced large-scale environmental changes, poses risks to ecosystems, their life-support functions and, therefore, human health (Figure 13.1).<sup>2,3</sup> WHO, WMO and UNEP collaborate on issues related to climate change and health, addressing capacity building, information exchange and research promotion.

### Recommendations

- *Climate-related exposures*

The IPCC's Third Assessment Report projected that, as we

continue to change atmospheric composition, global average surface temperature will rise by 1.4 to 5.8°C in this century, along with changes in precipitation and other climatic variables. Research needs include developing innovative approaches to analysing weather and climate in relation to human health; setting up long-term data sets to answer key questions; and improving understanding of how to incorporate outputs from Global Climate Models into human health studies.

- *Reaching consensus on the science*

The science of climate change has

achieved increasing consensus among scientists. There is increasing evidence that human health will be affected in many and diverse ways. Knowledge is still limited in many areas, for example on the contribution of short-term climate variability to disease incidence; on development of early warning systems for predicting disease outbreaks and extreme weather events; and on understanding how recurring extreme events may weaken adaptive capacity.

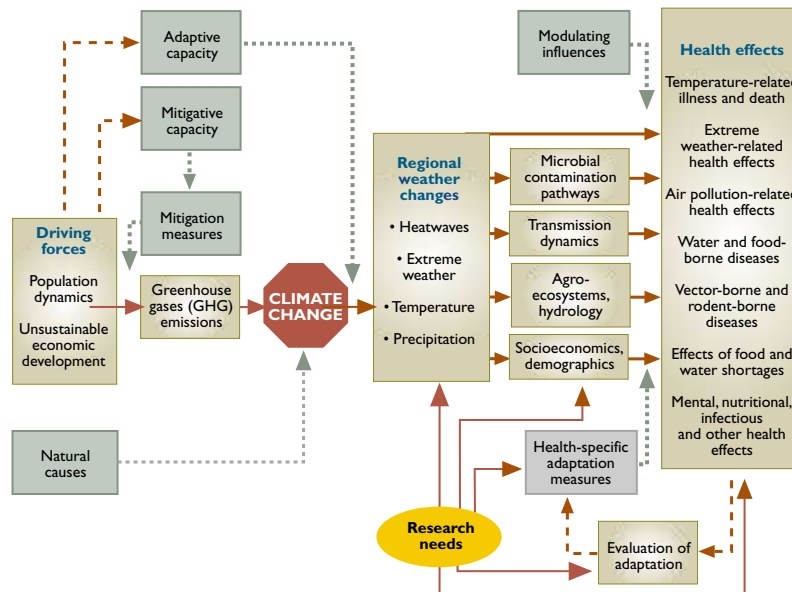
- *Challenges for scientists*

Climate change poses some special challenges, including the complexity of causal process, the unavoidable uncertainties, and temporal displacement of anticipated impacts into the future. Some key research topics to address include identifying where first effects of climate change on human health will be apparent; improving estimates of climate change impacts; and better expressing the uncertainties associated with studies of climate change and health.

- *Extreme climate events*

The IPCC's Third Assessment Report projected changes in extreme climate events that include more hot days and heat waves; more intense precipitation events; increased risk of drought; increase in winds and tropical cyclones (over some areas); intensified droughts and floods with El Niño events; and increased variability in the Asian

Figure 13.1. Climate change and health: pathway from driving forces, through exposures to potential health impacts. Arrows under research needs represent input required by the health sector. (Modified from reference 4)



summer monsoon. Research gaps to be addressed include further modelling of relationships between extreme events and health impacts; improved understanding of factors affecting vulnerability to climate extremes; and assessment of the effectiveness of adaptation in different settings.

- *Infectious diseases*

Infectious diseases, especially those transmitted via insect vectors or water, are sensitive to climatic conditions. Disease incidence data is needed to provide a baseline for epidemiological studies. The lack of precise knowledge of current disease incidence rates makes it difficult to comment about whether incidence is changing as a result of climatic conditions. Research teams should be international and interdisciplinary, including epidemiologists, climatologists and ecologists to assimilate the diversity of information from these respective fields.

- *The burden of disease*

The stock of empirical evidence relating climatic trends to altered health outcomes remains sparse. This impedes estimating the range, timing and magnitude of likely future health impacts of global environmental changes. Even so, an initial attempt has been made, within the framework of the WHO Global Burden of Disease 2000 project. Analyzing only the better studied health outcomes, the climate change that occurred since the climate

baseline period 1961-1990 was estimated to have caused 150,000 deaths and 5.5 million DALYS in the year 2000.<sup>5</sup>

- *Stratospheric ozone depletion, climate change and health*

Stratospheric ozone depletion is essentially a different process from climate change. However, greenhouse-warming is affected by many of the chemical and physical processes involved in the depletion of stratospheric ozone.<sup>6</sup> Also, because of changes in climate (in addition to public information and education campaigns), patterns of individual and community sun exposure behaviour will change – duly affecting received doses of ultraviolet radiation.

- *National assessments*

Several developed and developing countries have undertaken national assessments of the potential health impacts of climate change, including reference to vulnerable areas and populations. There is a need to standardize the health impact assessment procedures, and tools and methods are being developed. More accurate climate information at the local level, particularly on climate variability and extremes, is needed.

- *Monitoring climate change impacts on human health*

Climate change is likely to affect diseases that are also influenced by other factors. Monitoring to assess climate-change impacts on health

therefore requires data-gathering coupled with analytical methods able to quantify the climate-attributable portion of such diseases. Monitoring and surveillance systems in many countries currently cannot provide useful data on climate-sensitive diseases. Less developed countries should strengthen existing systems in order to meet current needs.

- *Adapting to climate change*

Since climate change is already underway, we need adaptation policies to complement mitigation policies. Efficient implementation of adaptation strategies can significantly reduce adverse health impacts of climate change. Human populations vary in their susceptibility, depending on factors such as population density, economic development, local environmental conditions, pre-existing health status and health-care availability. Adaptation measures usually will have near-term as well as future benefits, by reducing the impacts of current climate variability. Adaptation measures can be integrated with other health strategies.

- *Responses: From science to policy*

The magnitude and character of global climate change necessitates a community-wide understanding and response, guided by policies informed by good scientific advice. A successful policy-focused assessment of the potential health impacts of climate change should include: i) a

multidisciplinary assessment team; ii) responses to questions asked by all stakeholders; iii) evaluation of risk management adaptation options; iv) identification and prioritisation of key research gaps; v) characterization of uncertainties and their implications for decision-making; and vi) tools that support decision-making processes.

## Conclusion

International agreements on global environmental issues such as climate change should consider the principles of sustainable development proposed in Agenda 21 and the UNFCCC. These include the “precautionary principle”, the principle of “costs and responsibility” (the cost of pollution or environmental damage should be borne by those responsible), and “equity” – both within and between countries and over time (between generations).

Adherence to these principles would help prevent future global environmental threats and reduce existing ones. With climate change already underway, there is need to assess vulnerabilities and identify intervention/adaptation options.<sup>7</sup> Early planning for health can reduce future adverse health impacts. The optimal solution, however, lies with governments, society and individuals – and requires changes in behaviour, technologies and practices to enable a transition to sustainability.