

MANAGING THE HEALTH EFFECTS OF CLIMATE CHANGE

2 Food

Climate change is not just an environmental issue—it is also a health issue. The major health threats due to climate change are caused by changing patterns of disease, water and food insecurity, vulnerable shelter and human settlements, extreme climatic events, and population growth and migration.

The UCL Lancet Commission on Managing the Health Effects of Climate Change

London's leading multidisciplinary university, UCL, has teamed up with the *Lancet*, one of the world's leading medical journals, to launch a joint commission to study and report on managing the human-health effects of climate change. Chaired by Professor Anthony Costello of the UCL Institute for Global Health, the commission's membership includes 24 academics from a wide range of disciplines varying from anthropology to mathematics.

For detail and references, please see 'The UCL Lancet Commission on Managing the Health Effects of Climate Change' published in the *Lancet*, Issue 373, May 2009 (Costello *et al*).

Climate change will worsen any existing food insecurity. Under-nutrition from food scarcity will have major impacts on public health, resulting in hunger, illness and death. The global poor, particularly subsistence farmers who are often affected by land and market access difficulties, are amongst those likely to see the greatest adverse impacts. Last year's food crisis has seen an estimated 100 million to 850 million additional people become food insecure and the UN's World Food Programme has reported a doubling in the annual average number of food emergencies since the 1980s. Recently increased food prices have rendered urban populations food insecure. This situation is likely to be intensified by the predicted urban population growth in developing countries, as well as rural-urban migration due to the impacts of climate change in rural areas.

Models have predicted that climate change will put South Asia and Southern Africa at great food security risk by 2030, and by 2100 half of the world's population will be food insecure. Yields of staple foods such as corn, soya bean, maize, wheat and rice have all been found to decrease dramatically due to temperature rises. A possible increase of food productivity in the richer high latitudes has been considered, but this may prove insufficient relative to the major challenges to

food security that climate change brings. Increased extreme weather events, flooding due to sea level rise, drought, and changes to livestock and plant disease patterns have all been cited as other factors threatening food security. Rich countries will also be affected by climate-related events as global food systems are disrupted.

The changes brought about by global warming will necessitate changes to agricultural practices. Drastic changes may be required in some areas as the types of crop typically grown become unfeasible. This poses a challenge in terms of information and social practices, insofar as alternatives to traditional staple foods will be needed. Cash crops, though rendered unsustainable in some areas by climate change, may remain favoured due to market forces. The increased irrigation and pesticide inputs that will therefore be applied are known to be less environmentally sustainable. Further still, the neglect of local food production could be perpetuated by an emphasis upon cash crops.

Some governments and multinational biotechnology companies suggest technological solutions to the agricultural challenges of climate change, for example Genetically Modified plants. However, the 2008 International Assessment of

Agricultural Science and Technology for Development (also known as the World Agriculture Report), which was written by over 400 scientists, rejects that view. It sees ‘...a major role for agricultural knowledge, science and technology...to increase adaptive capacity and enhance resilience through purposeful biodiversity management’. The options set forth include ‘...irrigation management, water harvesting and conservation technologies, diversification of agriculture systems, the protection of agro-biodiversity and screening germ-plasm for tolerance to climate change’.

Crops typically grown in the tropics are particularly vulnerable to changes in climate, posing the technological challenge of developing crops suited to higher temperatures for this region. A focus upon the management of biodiversity (i.e. working with a greater variety of crops on each farm) could help to reduce the overall vulnerability of farming systems to the impacts of climate change.

The globalised food and agriculture system serves the interests of large corporations, while neglecting the needs of the increased numbers of hungry people. Whilst the majority of the world’s farms are small-scale, the 0.5 per cent of farms exceeding 100 hectares receive the majority of global farming income (including subsidies). In the meantime, affluent US and European consumer demand has led to changes in production that leave many countries dependent upon food imports and therefore vulnerable to market changes.

The application of Intellectual Property Rights in the agri-food sector also impacts upon local markets and farmers in developing countries. Here the private sector dominates, leaving governments and local communities more vulnerable. Although problematic, the agri-food sector remains important in ensuring production is sufficient to meet global population needs.

Box 1. North-South Funding Issues

In recent years Organisation for Economic Co-operation and Development (OECD) farmers have received extensive funding, whilst low-income country farmers have been negatively affected by trade reforms and increased competition with heavily subsidised northern agribusinesses. Development assistance towards agriculture has also seen a decrease, now forming only 3.4 per cent of OECD aid budgets.

Agricultural practices and the global food system are major contributors to global warming. Whilst industrialised and intensive agricultural production has increased food output, this has been at great cost to ecosystems. Increased food availability needs to be enabled in ways that are not detrimental to the environment. The Stern Review estimates agriculture is responsible for 14 per cent of greenhouse gas emissions. Green house gas emissions are directly linked to fertiliser production, the raising of livestock and the clearance of land for agricultural use. The global transportation of food is also implicated.

A shift from the global agri-food system to more local food production and consumption would be a positive step. However, this will require considerable economic and political change. Some governments are considering the regulation of the financial systems influencing food prices, and changes in food consumption patterns may also help meet goals in sustainability as well as health. For example, reduced meat intake can lower greenhouse gas emissions as well as the incidence of some forms of heart disease and cancers.

The current methods of dealing with disaster and distributing food aid tend not to alleviate the long-term situation, often resulting in dependency upon aid. Whilst short-term (humanitarian)

relief may help communities deal with the malnutrition caused by food insecurity, sustainable solutions are required in the long term. Further still, there is a need for planning and prevention, focussed at the local level.

Models, such as those developed by the UK Climate Impacts Programme, can be used to predict changes in food security and allow appropriate planning. Early warning systems for famine and food security have also been developed in some areas, but would be enhanced by using primary health care systems to monitor health indicators.

The withdrawal of food aid can result in social unrest amongst populations rendered dependent. Again the health of the poor is particularly vulnerable since food that is available to them is often of poorer quality, leading to greater disease burdens. There is an urgent need to deal with humanitarian emergencies in a way that will support and sustain, rather than undermine, local and regional food producers and markets. Long-term capacity building rather than aid in the form of food itself should therefore be emphasised.

The impact of climate change on global food security, and in turn the public health risks, need to be tackled holistically. Policy will need to consider ecosystems and sustainability on a local and global scale, in both the long and short term. Disaster relief efforts are also in need of revision with such emphasis, increasing the potential to improve the health prospects and livelihoods of the poor.

Conclusions

- Climate change adaptation and mitigation are central to overall development policy across government departments and should be taken into consideration for all governance actions.

- Agricultural practices and the global food system are major contributors to global warming. The changes brought about by global warming will necessitate changes to agricultural policy as well as practices.
- Climate change will worsen any existing food insecurity. Under-nutrition from food scarcity will have major impacts on public health, resulting in hunger, illness and death.
- Accountability mechanisms are crucial. New funding and networks are required to monitor what is happening in government, civil society, academia, local government and communities, especially in the most vulnerable populations.
- Individuals, organisations and governments all have a vital role to play in advocating for and implementing change at a variety of levels.
- The current methods of dealing with disaster and distributing food aid tend not to alleviate the long-term situation and often result in dependency upon aid.
- Global task forces, and research and advocacy groups need to adequately represent and involve those who will be most affected by climate change.
- Health issues can play a crucial role in strengthening carbon mitigation debates and targets.
- A comprehensive solution to the health problems associated with climate change will need to move beyond responses internal to health systems. Health systems must not simply act as a platform for the delivery of clinical services, but also provide the foundation for an effective public health response to the many climate-induced threats to health.

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Managing the health effects of climate change: Changing patterns of disease and mortality

Managing the health effects of climate change: Food

Managing the health effects of climate change: Water and sanitation

Managing the health effects of climate change: Shelter and human settlements

Managing the health effects of climate change: Extreme events

Managing the health effects of climate change: Population and migration

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