



## Climate Change and Health: A Lens to Refocus on the Needs of the Poor

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### Published by the Commonwealth Secretariat

Editor: Joan Ross Frankson  
Designer: Rob Norridge

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ISBN: 978-0-85092-903-4 (print)  
ISBN: 978-1-84859-041-0 (electronic)

ISSN: 2071-2022

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Pall Mall  
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Adaptation strategies to deal effectively with the anticipated health impacts of climate change are in the early stages of development. It is therefore vital that careful consideration is given to the policy options available to ensure that policy responses are evidence based, ethical and use scarce resources efficiently. Climate change is expected to be ecologically and socially transforming. It is likely to increase the burdens of existing diseases by exposing new populations to vector-borne diseases, intensifying health stresses from extreme temperatures and impaired agricultural productivity, and exacerbating existing health inequalities.

The response to these increased health burdens should not be to demand new responses to new problems, but rather to find solutions to crucial existing problems: lack of access to water and basic sanitation, lack of access to primary health care, and food insecurity. This is not to deny that climate change will introduce new pressures that could have health impacts for which we should prepare, such as rising sea levels, flooding and salinisation. But the emphasis must be on ensuring that the agenda for climate change and health remains focused on anticipated needs, and the interventions

that can respond to these needs, to bring about genuine health improvement. As such, the growing interest in climate change and health is an opportunity to refocus on the health needs of the poor, and to make these concerns paramount in developing adaptation and mitigation policies.

### Early Stages

#### *Defining the climate change and health policy agenda*

During the last decade climate change has become a major topic in international affairs. This debate has been dominated by arguments about the reduction of greenhouse gases, leaving other concerns, most notably the health impacts of climate change, largely outside the attention of global policy-makers. While the discussion on the anthropogenic causes of climate change and its impacts on human societies has advanced from academic enquiry to (for the most part) a global discourse on practical policy responses, the debate on the health impacts of climate change has not yet fully moved from research to policy. For those involved in international public health policy-making this is an important time: a good body of research exists on the likely health impacts and their burdens, yet many countries are only just beginning to develop adaptation strategies.

Climate change is set to be one of the most transforming processes of the coming decades, and as such, climate change and health is likely to become an important topic for public health and development institutions, donors and researchers. In this regard, we must critically reflect on the response to what is currently the most high-profile health issue in public health and development—HIV/AIDS.

## Climate change is expected to intensify existing disease burdens and health inequalities

HIV/AIDS has received unprecedented levels of attention and funding, yet this funding has not always been invested in effective interventions and has not always reached those at highest risk. We need to ensure that climate change and health policy responses do not echo this. Funds must be spent on

evidence-based interventions targeted at populations at highest risk and that respond to the most likely health impacts.

### Who Will be Affected and Why?

#### *Interpreting the evidence*

Current estimates from epidemiological modelling—albeit limited by data availability—indicate the diseases that will contribute the greatest burdens of mortality and morbidity attributable to climate change will be (in descending order) malnutrition, diarrhoeal disease and malaria (McMichael et al. 2004; Campbell-Lendrum et al. 2005). The proportional increase in burdens of these diseases is not expected to be large—for example, between 2 and 5 per cent for diarrhoeal diseases (Haines et al. 2006)—and is substantially lower than that predicted for other categories, for instance deaths from flooding, which is predicted to increase over fivefold in developed regions (Haines et al. 2006). However, these conditions are expected to contribute the greatest health impacts given the high baseline prevalence rates. In 2004 diarrhoeal diseases resulted in 2.2 million deaths (3.7% global deaths)

### Climate Change Risks to Human Health

Meteorological and environmental changes anticipated to introduce risks to human health include:

- Changes to average temperatures and rainfall patterns.
- Rising sea levels.
- Possible changes in the frequency and intensity of extreme weather events.

The changes will introduce direct risks to human health, for example, the risk of injuries in extreme

weather events, increased diarrhoeal diseases through increased micro-organism proliferation in water and food, and the cardiovascular impacts of temperature extremes.

Risks to human health will also operate through indirect routes, for example changes in vector borne disease distributions, reduced agricultural productivity increasing food insecurity, increased water scarcity, worsening air quality, disrupted access to health care, and destruction to property and livelihoods.

and malaria resulted in 0.9 million deaths (1.5% global deaths) (World Health Organization 2008). The vast majority of these deaths were of children under 5 years, with diarrhoea causing 17 per cent of global under-5s mortality and malaria responsible for 7 per cent (World Health Organization 2008). Given the dynamic relationship between malnutrition and infection, estimating the burden of mortality caused by malnutrition is complicated as deaths are often attributed to infections rather than the underlying impaired nutrition state. According to some estimates more than one-third of the disease burden in low-income countries is due to malnutrition (Mason et al. 2003), and malnutrition is responsible for an estimated 3.5 million deaths a year (Black et al. 2008), being a major contributory factor in deaths from diarrhoea, malaria, measles and other infections.

Deaths from malnutrition, diarrhoea and malaria are overwhelmingly borne by the poor, especially poor women and children. Poverty results in exposure to the key risk factors for these diseases—

## Poor women and children will suffer most from the health impacts of climate change

that is, food insecurity, lack of access to sufficient and safe water for drinking and personal hygiene, lack of access to basic sanitation, inadequate shelters and living conditions, and lack of access to primary health care. Currently, for example, 1.8 billion people lack access to improved water supplies and 2.6 billion to basic sanitation.

Given the socio-economic clustering of these risk factors, the extra burdens of diseases exerted by climate change can also be expected to fall on the global poor. Given the underlying cause of poverty and the synergies between malnutrition and infection, the same populations are likely to be affected by all these diseases (if in a malarial area). Climate change may act through these underlying risk factors—increased water scarcity resulting in a decline in water use for hygienic purposes or mounting food insecurity or through more direct proximal causes—with temperature increases promoting the proliferation of micro-organisms in contaminated food and drinking water. Again, given the relationship between malnutrition and infection it is possible that changes in just one risk factor, for instance increased food insecurity, will exacerbate the severity and fatality of other conditions.

### The Logical and Ethical Policy Response

#### *Increasing the adaptive capacity of vulnerable groups*

Given the populations and the diseases that it is anticipated will be affected by climate change, it follows that adaptation strategies for climate change and health should address current vulnerabilities in addition to preparing for new health threats.

Firstly, addressing the existing causes of the diseases predicted to increase with climate change by focusing on sustainable preventive interventions (rather than curative interventions) should reduce the incidence of these diseases under future climate change conditions. Within preventive interventions it is also important to consider the level of action—from interventions that act at the physiological level by improving an individual's immune response to those that address the socio-economic risk factors that increase the likelihood of exposure to pathogenic agents. For example, in preventive interventions at the individual biological level reducing the current incidence of diarrhoeal

infections by vaccinating vulnerable populations is unlikely to diminish the likelihood of those individuals or their descendants experiencing diarrhoeal infections under future climate change scenarios. In contrast, sustainable preventive interventions acting at the environmental level to transform settlements by ensuring populations have access to sufficient and safe water and sanitation and improving the socio-economic conditions of populations to enable them to reduce their risk of infection, will decrease the incidence of diarrhoeal infections both now and in the future.

Interventions that address the existing needs of vulnerable populations, by preventing new cases and improving access to treatment, will increase the

policies that focus on existing vulnerabilities are a safe response as they will ensure that funds are spent on improving health, even if the climate change health impacts are different to those anticipated and planned for. Expensive strategies tailored to respond to a new and specific anticipated health impact attributable to climate change are comparatively riskier—if the predicted health threat does not occur, or differs significantly from that predicted, the investment may achieve little or no health benefit. This is a particularly important consideration for low-income countries with large health needs and limited health budgets, which characterises the majority of countries that it is anticipated will experience the most severe climate change impacts.

Policy-makers in these countries should recognise that there is potential to invest resources in adaptation strategies that simultaneously prepare for anticipated climate change impacts and address existing health needs. Considering the scarce resources available for health in many low-income countries also underscores the importance of introducing preventive interventions to address the diseases that are expected to increase with climate change. For example, it is estimated that treating the total burden of malnutrition, diarrhoea and malaria in 2030 (including the additional climate change attributable burden) will cost between US\$4 billion and US\$12 billion, which is equivalent to the current total annual overseas development funding for health (Ebi 2008).

Thirdly, there is an ethical argument for addressing the health needs of existing vulnerable groups in adaptation strategies. The poor are the most vulnerable to climate change impacts because they lack the financial resources needed to implement their own adaptive strategies. Why should countries with severe health burdens privilege the health needs of future populations above the critical needs of their existing population?

## The safe response is to focus on existing vulnerabilities

resilience and the adaptive capacity of these populations to climate change. It is important that these infrastructure improvements are themselves built to a standard that ensures they are climate proof and will be operational under future climatic conditions over their predicted lifetime. Underlining this argument is the fact that most epidemiological models used to predict the future health impacts of climate change are assuming a continuation of current trends in the prevalence of the diseases expected to contribute the greatest health burdens. If the prevalence of malnutrition, diarrhoea and malaria dropped significantly in the next decade then their respective future burdens attributable to climate change would also lessen, resulting in a reduction in the overall health impact of climate change.

Secondly, given the uncertainty in predicting the likely health impacts of climate change, adaptation

The majority of the greatest health burdens in low-income countries exist because of insufficient resources and a lack of attention. If adaptation strategies are developed to address existing vulnerabilities then the increased attention and resources raised by climate change could provide an opportunity to refocus on the often neglected needs of poor populations in low-income countries. If existing health needs are excluded from adaptation strategies then it is likely that climate change will instead act as a competitor, detracting attention and funding away from current needs and investing in strategies that may not deliver any significant health improvement.

### What is Required?

#### *Responding to existing health needs*

Given the predicted health impacts, the uncertainty in the predictions, and the financial and ethical concerns, there is a strong argument for developing adaptation strategies to address existing health needs. As discussed above, the diseases expected to contribute the greatest health burdens attributable to climate change share a common underlying factor, poverty. Poverty exposes individuals to the risk factors that make the onset of these diseases more likely. Poverty causes those with a disease to experience worse disease outcomes, which may include suffering the complications of co-morbidity.

Poverty results in low adaptive capacity and makes the poor most vulnerable to climate change. As Jeffrey Sachs (2005) notes, extreme poverty means that households cannot meet their basic needs for survival. They are chronically hungry; unable to access health care; lack safe drinking water and sanitation; cannot afford education; and may lack rudimentary shelter. Sachs calculates that about 0.44 to 0.54 per cent of GNP is needed from donor governments each year to fund the poverty gap. This is significantly less than the 0.7 per cent of GNP

promised in ODA. However, he hastens to add that 'the donor countries should not plan to land short of their 0.7 per cent commitment ... the \$195 billion estimate of net ODA flows in 2015 leaves out one potentially large expense: help for the poorest countries to adapt to long-term climate change that is under way' (Sachs 2005).

Two key changes in the current response to existing health needs are required:

- The health sector needs to work with other sectors to address the underlying causes of these diseases.
- Research should be reoriented to investigate the current functioning of health and sanitation systems to identify the key problems that need to be addressed.

For malnutrition and diarrhoeal diseases in particular, many of the most essential preventive actions must take place outside the health sector. Many previous attempts to tackle these diseases have been limited because they are designed and implemented in the health sector alone. This limitation neglects the essential contributions of other sectors, particularly economic affairs, and often confines interventions to the curative since the root causes are beyond the health sector's influence.

Decisions made in non-health ministries such as finance and agriculture, can indirectly impact health, both positively and adversely. Greater communication and co-operation between health ministries and other sectors is essential to sensitise policy-makers across sectors to the potential health impacts of policy decisions, and to implement interventions that improve health, both directly and by addressing underlying socio-economic factors that increase the likelihood of infection and malnutrition.

The second key need is for more research on the functioning of health and sanitation systems in order

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to identify where problems arise and therefore what solutions are needed. Such research would identify the actors currently involved in the systems and their roles and capacities, which could then highlight at what stage attention is needed if change is to be achieved. Improving access to sanitation and water

## Greater co-operation between health ministries and other sectors is essential

demands an understanding of local decision-making authorities and their responsibilities, as it is often problems in these structures that obstruct change. Important questions need to be asked, such as:

- Who is responsible for improving access to sanitation, the individual, the municipal authorities, private companies or the state?
- Do those responsible for improvement have the necessary resources and capacity?

Health and sanitation systems are complex, involving multiple actors with responsibilities for specific components. An analysis of these sub-components is vital to identify the changes required at each stage, as this will ultimately determine whether health improvement is achieved.

In order to develop and implement strategies that reduce the prevalence of these conditions, both now and in future climate change scenarios, the focus must be on preventive interventions that have been developed inter-sectorally and informed by research into the current functioning of the health and sanitation systems.

Climate change is not a 'new disease' in itself. But climate change will impact health by operating through existing exposure routes and exacerbating existing health inequalities. Responding to these existing health needs should therefore be a central component of any effective adaptation strategy. This response is also the most humane, for if climate change and health adaptation strategies, and the climate change and health debate in general, ignore existing needs and divert funding and attention, climate change will indeed threaten the health of impoverished populations worldwide.

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