

Mitigating climate change: improving global health

Climate change poses a major threat to the health of populations across the globe. Immediate and substantial action must be taken to reduce the greenhouse gas (GHG) emissions that are causing climate change. There is increasing evidence that mitigation strategies can be developed that, in addition to reducing GHG emissions and associated climate change, have sizeable and near-term benefits to health in both high- and low-income countries. These co-benefits must be realised. Given that some climate change is inevitable, attention must also focus on strategies to adapt to the health impacts of climate change, particularly in low-income countries where the impacts will be greatest. Leaders of nations around the world are negotiating strategies to combat the growing dangers of climate change. They should do so with the health of all nations in mind.

Impacts

The burning of fossil fuels has undoubtedly enabled major improvements in health throughout the world by making possible industrial and technological development. However, it is now widely agreed that the associated production and accumulation of GHGs in the atmosphere are, along with other human activities such as land use change, causing climate change.¹ Depending on how fast future GHG emissions grow, scientists estimate that, by the end of the century, the average global surface temperature will be between 1.1 and 6.4°C higher than at the end of the last century.¹ The G8 group of industrialised nations is focusing on efforts to limit the global average temperature increase to 2°C above pre-industrial levels to avoid the worst impacts of climate change.

As the temperature rises, so will the risk of more frequent and severe weather events such as storms, floods and heatwaves that will increase death, injury and disease directly.¹ Other impacts of climate change on health are expected to include: malnutrition and associated disorders through failure of crops; diarrhoeal diseases via contaminated water; food poisoning; morbidity and mortality from increased concentrations of ground-level ozone; and changes in the distribution of disease vectors.² Interactions between population growth and climate change are likely to place further stress on food, shelter, and water systems, in addition to causing large-scale human migrations.³ The impact of these adverse effects will far outweigh any small positive effects from reducing deaths from cold as global temperature rises.²

Climate change will cause greatest harm in resource poor countries, which have the lowest per capita GHG emissions. This is especially the case in Africa, where there is less resilience among the population and where health care systems are already under pressure. The impact of climate change on health will greatly undermine global initiatives, such as the Millennium Development Goals, that aim to reduce the extreme poverty that prevents more than 1.4 billion people meeting their basic needs for food, water, shelter, sanitation, and health care.⁴

Higher-income countries will not escape the impacts of climate change. A 2°C rise in average temperature in the UK could lead to increases in: heat-related deaths from extreme summer temperatures; respiratory disease caused by higher concentrations of ground level ozone; mental health complications as a consequence of the effects of flooding; and contamination of some sources of drinking water from increased bacterial load resulting from changes in water levels and increased temperatures.⁵ In addition, the UK and other high-income countries could be affected indirectly by increased migration of populations from climate change affected areas, increased disease prevalence across the globe and increased potential for conflict creating a security risk.

In short, climate change is expected to have an adverse affect on food, water, air, shelter and social stability, all of which are key determinants of health. Implementation of mitigation strategies to reduce GHG emissions and avoid the worst health impacts of climate change is now imperative.

Mitigation

To minimise the extent of climate change all nations must take immediate and substantial action to reduce GHG emissions. Action should be greatest in those higher-income countries that have benefited most from the use of fossil fuels and land use changes that have resulted in GHG emissions. The longer we delay, the more severe the impacts on health, the environment and the economy; and the greater the future cost of mitigation.⁶ In addition, there is now increasing evidence that some actions to mitigate GHG emissions can have substantial and near-term benefits to health in both high and low-income countries, over and above those benefits resulting from avoided climate change.⁷ These 'co-benefits' indicate the potential for 'win-win' policies that contribute to climate protection whilst improving health. They add weight to the already compelling arguments for the reduction of emissions and could wholly or partially offset the costs of these mitigation strategies.

A series of studies, funded by the Academy of Medical Sciences and others,⁸ has analysed the health impacts of four areas of mitigation: urban land transport; food and agriculture; low carbon electricity generation; and household energy. The studies estimated the implications for health, by 2030, of mitigation strategies aimed at meeting the recommendations of the UK's Committee on Climate Change.⁹ Recommendations are for a global target of a 50% reduction in GHG emissions and other relevant pollutants by 2050 (with 80% reductions in the UK). The results indicate considerable co-benefits to health from certain mitigation strategies.¹⁰⁻¹³ In London, for example, replacing motor car use on short journeys with low emission vehicles and more active methods of transport such as walking and cycling will reduce GHG emissions and could also reduce ischaemic heart disease by almost 20%.¹⁰ Active transport has the biggest impact on cardiovascular health with additional reductions in cerebrovascular disease, depression, dementia and diabetes.

Livestock production is the major source of global agricultural GHG emissions. Assuming each sector contributes equally to GHG reductions, it seems likely that technological improvements and a 30% reduction in livestock production will be required in the UK to attain climate

mitigation goals. If this is associated with a similar reduction in consumption of animal products, the total burden of ischaemic heart disease in the population could be reduced by around 15% in the UK.¹¹

The studies show that the degree and nature of the benefit will vary between countries of different income levels. In India, replacing existing inefficient cookstoves or open fires with increased efficiency low emission stoves for burning local biomass would result in substantial benefits through the reduction of childhood respiratory infection and adult heart and lung disease, as well as reducing black carbon – a short lived pollutant that contributes to climate change.¹² Household energy measures in the UK, such as improved home insulation and ventilation systems, will have a major impact on GHG emissions but relatively small benefits to health. Changing modes of electricity generation to reduce GHG emissions would also reduce levels of particulates which cause cardio-respiratory disease and lung cancer.¹³ This would provide greater health benefits in countries like India where levels of particulate pollution are high compared to Europe where levels are already low. These studies suggest that, rather than conflicting with development goals, the provision of clean energy to low-income countries can meet both climate protection goals and global health targets.

The choice of mitigation strategies within countries and between countries (eg via the Clean Development Mechanism) must exploit the positive health co-benefits and minimise any disbenefits. The sooner we mitigate, the greater the chance of preventing the worst impacts of climate change and realising the health co-benefits.

Adaptation

Although not the primary focus of this statement, adaptation to the health impacts of climate change must also be urgently addressed. The climate is already warming.¹ Due to climate feedbacks and persistence of many GHGs in the atmosphere, this warming is expected to continue for centuries even if we succeed in stabilising GHG emissions.¹⁴ The G8 is focusing on efforts to limit global temperature increases to a maximum of 2°C above pre-industrial levels, but even this increase could have adverse impacts on health. As the impacts will be felt most strongly in low-income countries, this is where adaptation efforts should be greatest. Activities should include monitoring and surveillance of climate impacts (including spread of disease) and capacity building of both health systems and research programmes. Many of these actions will also bring more immediate benefits for health.

References and notes

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This statement has been endorsed by the Academy's Foreign Secretary, Professor Robert Souhami FMedSci, on behalf of its Council.

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