Urgent action is needed to protect human health from the increasing effects of climate change

The progression of climate change is increasingly recognised as a climate emergency by international advisory bodies and governments worldwide, and there are growing warnings that it will be accompanied by severe health consequences.\(^1\)\(^-\)\(^3\) During the UN Climate Conference in June, 2019 the UN Climate Change Executive Secretary Patricia Espinosa, called for more ambitious and immediate climate action to meet Paris Agreement targets. The World Conference on Health and Climate Change, organised by the International Federation of Red Cross and Red Crescent Societies in conjunction with WHO in April, 2019, was an important step in bringing stakeholders together to discuss preparedness and adaptation measures. A combination of mitigation measures to reduce greenhouse gas emissions and adaptation measures to adjust to the unavoidable is needed to meet global health needs, particularly given that many mitigation measures also have substantial health co-benefits. The growing attention of decision-makers to the health aspects of climate change is welcome and needed, but the increasing political visibility requires robust evidence to inform urgently needed, meaningful, and sustainable policies without inadvertent consequences.

There is mounting evidence of negative consequences of climate change on human health, from both direct and indirect effects, mediated by ecosystems and socioeconomic systems. Direct risks arise from increases in temperature and in the severity and frequency of heatwaves, droughts, wildfires, floods, and other extreme weather events. Ecosystem-mediated risks are a result of changes in air pollution, allergen exposures, water availability and quality, food and nutrition security, and altered distributions of pathogens, vectors,\(^1\)\(^4\) and hosts of infectious diseases. Risks mediated by socioeconomic systems come from forced migration, damage to infrastructure and health services, the economic effects of declining labour productivity (eg, due to rising temperatures), and conflict. In addition to hazard-related injuries, the resultant health effects include diseases communicated by vectors, water, and food; non-communicable diseases, especially cardiovascular, cerebrovascular, and respiratory illnesses; undernutrition; and violent injuries (arising, for example, from indirect effects of climate change on civil conflict or criminal activity) and death. In addition, there is increasing recognition of mental health consequences of climate change.\(^5\) The groups most vulnerable to climate change related health effects are children, older people, those who are sick, and migrating and marginalised populations.

The health effects of climate change are detectable now and risks will increase over time, linked to the magnitude of climate change. However, solutions are attainable, and there are major opportunities to improve public health. A compelling example illustrating the health co-benefits of mitigation is shown by Lelieveld and colleagues,\(^6\) who state that a phase out of fossil fuels would avoid approximately 3.6 million premature deaths per year globally from ambient air pollution at today’s population. The global benefit could be up to 5.6 million fewer deaths per year from air pollution if emissions from agriculture and households were also controlled. The health co-benefits of reducing combustion of fossil fuels and agricultural emissions to mitigate climate change were also emphasised in recent statements by national academies of science and medicine.\(^7\)\(^-\)\(^8\)

The recent report from the European Academies’ Science Advisory Council (EASAC)\(^9\) focuses on climate change effects on health in the EU but recognises that climate change effects in other regions have tangible consequences for Europe, and that the EU has roles and responsibilities in addressing problems outside Europe. The health risks from climate change originate from a wide range of interconnected causes and consequences, and therefore require broad policy consideration. For example, prolonged heatwaves might result not only in heat-related illnesses and deaths, but also in droughts affecting food and nutrition security, and wildfires causing air pollution. Therefore, there must be explicit consideration of health effects in all policies, ranging from climate change adaptation and mitigation strategies to the development of climate-smart food systems, urban planning, and new options for energy production and
Panel: The European Academies’ Science Advisory Council (EASAC) policy recommendations for climate change in relation to human health

On the basis of detailed evaluation of a broad range of scientific evidence with a focus on Europe, the EASAC policy advisory report1 reaffirms as an overarching recommendation that the top priority is to urgently stabilise the climate and to increase efforts to limit greenhouse gas emissions, with the aim of achieving a zero-carbon economy before 2050. EASAC’s recommendations relating to human health can be summarised as follows.

Health in all policies
Make the best use of current evidence to develop coherent and coordinated EU policy frameworks that include benefits to health as a major consideration in adaptation and mitigation actions, including the following:

- Reform of the EU Adaptation Strategy to increase focus on health consequences of climate change
- Health impact assessment to be integrated into all climate change adaptation and mitigation strategies
- Development of healthy, climate-smart food systems, with corresponding modifications of the Common Agricultural Policy
- Development and promotion of dietary guidelines for sustainable healthy diets, including consideration of when and, if so, how the EU and Member States should use health or environmental criteria, or both, to influence food system policies
- Linkage of climate change and health objectives into all key EU domestic policies—eg, for reducing air pollution, and neighbouring country and international development policy initiatives
- Strengthen links between EU climate and health policies together with promoting similar policy links with global organisations including WHO, G7 and G20, and with collective action on the Sustainable Development Goals and the United Nations Framework Convention on Climate Change. Health considerations should be integrated into the implementation of Nationally Determined Contributions under the Paris Climate Agreement.

Fill knowledge gaps through research and integration of data sets
Alongside continued commitment to basic research, further research is needed to characterise alternative scenarios, tipping points, and effective adaptation and mitigation strategies, in addition to improved surveillance and linkage between environmental, socioeconomic, and health data.

Health-risk communication
Raise awareness of current and potential effects of climate change on health. The scientific community must do more to understand individual and institutional behaviour, counter misinformation and polarisation, and strengthen the response of health services and EU agencies.

- Reform of the EU Adaptation Strategy to increase focus on health consequences of climate change
- Health impact assessment to be integrated into all climate change adaptation and mitigation strategies
- Development of healthy, climate-smart food systems, with corresponding modifications of the Common Agricultural Policy
- Development and promotion of dietary guidelines for sustainable healthy diets, including consideration of when and, if so, how the EU and Member States should use health or environmental criteria, or both, to influence food system policies
- Linkage of climate change and health objectives into all key EU domestic policies—eg, for reducing air pollution, and neighbouring country and international development policy initiatives
- Strengthen links between EU climate and health policies together with promoting similar policy links with global organisations including WHO, G7 and G20, and with collective action on the Sustainable Development Goals and the United Nations Framework Convention on Climate Change. Health considerations should be integrated into the implementation of Nationally Determined Contributions under the Paris Climate Agreement.

Fill knowledge gaps through research and integration of data sets
Alongside continued commitment to basic research, further research is needed to characterise alternative scenarios, tipping points, and effective adaptation and mitigation strategies, in addition to improved surveillance and linkage between environmental, socioeconomic, and health data.

Health-risk communication
Raise awareness of current and potential effects of climate change on health. The scientific community must do more to understand individual and institutional behaviour, counter misinformation and polarisation, and strengthen the response of health services and EU agencies.
and polarisation, and to strengthen the response of health services and EU agencies. EASAC will support action to extend assessment of climate change effects on health to particularly vulnerable territories such as the Arctic region and the Mediterranean. In addition, through the work of the InterAcademy Partnership, the global network of academies of science, medicine, and engineering, EASAC will stimulate further assessment and action worldwide.

*Nina Hobbhahn, Robin Fears, Andrew Haines, Volker ter Meulen*

EASAC, German National Academy of Sciences Leopoldina, Halle (Saale), Germany (NH, RF, VtM); and Department of Public Health, Environments and Society and Department of Population Health, London School of Hygiene and Tropical Medicine, London, UK (AH) nina.hobbhahn@easac.eu

We declare no competing interests.

We take this opportunity to thank the participants involved in the project, listed in the EASAC report,¹ for their enthusiasm and commitment to the project.

Copyright © 2019 The Author(s). Published by Elsevier Ltd. This is an Open Access article under the CC BY NC-ND 4.0 license.