World Health Organization

Conference on Health and Climate Change

27 – 29 August 2014, Geneva, Switzerland

Conference Report

"Climate change, and all of its direct consequences for health, should be at centre-stage, right now, whenever talk turns to the future of human civilizations. After all, that's what's at stake."

Dr. Margaret Chan, Director General, WHO

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This report is dedicated to Professor Anthony McMichael AO tragically passed away soon after the first Health and Climate Conference. He was internationally recognised for his work in the environmental determinants of health, and climate change. His passion, tireless contributions to expert academic research, and commitment to advocating for an equitable response to climate change will be deeply missed in the international public health community. However, all who knew him – and many more beyond that who were influenced by his work – will undoubtedly be inspired by his visionary approach, and will carry the lessons from his life through in striving for a sustainable and healthy future

FOREWORD BY DG OR DIRECTOR OF PHE

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Introduction

The first WHO conference on Health and Climate drew approximately 400 participants from 96 countries across all WHO regions. This included 25 government ministers, heads and senior staff from UN agencies and other intergovernmental organizations, as well as experts, practitioners and civil society representatives from the fields of health, climate change and sustainable development.

In response to the very strong scientific evidence of the health risks presented by climate change, the participants gave a clear warning; that without adequate mitigation and adaptation, climate change poses unacceptable risks to global public health.

The conference supported stronger engagement by the global health community, to ensure that public health concerns are reflected in upcoming international climate and development discussions, and national adaptation and mitigation policies. Participants affirmed the critical importance of strategies to reduce health impacts from climate changes already occurring – as well as realising potential health benefits from measures to mitigate climate change, particularly through reductions in death and disease caused by air pollution.

The conference technical papers, presentations, panel and workshop sessions, led to the following conclusions.

Climate change risks to health

There is now clear evidence that human actions, principally the burning of fossil fuels and associated release of climate pollutants, are causing significant changes to the global climate system. At the current pace of emissions of greenhouse gases, average surface temperatures are expected to rise by 4° Celsius by the year 2100. This would have major consequences for health, including submerging currently inhabited low-lying areas, and turning significant areas of the world into places where it is no longer safe to work or carry out physical activity outdoors throughout much of the year.

The latest evidence suggests that climate change will cause approximately 250,000 additional deaths per year, before the middle of the current century. The most recent report of the Intergovernmental Panel on Climate Change assesses that there is strong evidence for greater risk of injury, disease, and death due to more intense heat waves and fires; increased risks of food- and water-borne diseases; increased risks of vector-borne diseases; increased risk of under-nutrition resulting from diminished food production in poor regions; and consequences for health of lost work capacity and reduced labour productivity in vulnerable populations. There is weaker evidence for some positive effects, including modest improvements in cold-related mortality and morbidity. However, there is considered to be high confidence that negative health effects will outweigh positive effects at the global level. A new quantitative assessment for WHO indicates significant excess mortality from climate change over the period 2030-2050 , even considering only those impacts with relatively strong evidence, and assuming continued economic growth and health progress.

There are other important potential health risks for which there is less conclusive evidence, but which should not be discounted. These include: the potential for increasing severity and frequency of extreme weather events including storms and floods; mass displacement and disruption of livelihoods in low-lying coastal zones and small island states; inland flooding in

particularly vulnerable urban centres; breakdown in food systems from drought, flooding, and extremes in precipitation; the potential for increased risk of violent conflict associated with resource scarcity and population movements; slow-down in economic growth and exacerbation of poverty, with negative implications for health targets including achievement of the Millennium Development Goals, and the objectives of the forthcoming post-2015 development agenda.

All of the health risks above are strongly affected by non-climatic determinants, such as socioeconomic status, age, gender, ethnicity, displacement, or disability. There is strong evidence that health impacts of climate change disproportionately affect poorer populations and children, and, for some risks in some situations, differ between women and men. Overall, climate change is likely to widen existing health inequalities, both between and within populations.

Health protection from climate risks can be enhanced through ensuring improved and more equitable access to the social and environmental determinants of health, strengthening of basic public health interventions, and targeted interventions to specifically address climate risks . There is also a need for more specific efforts to adapt to changing climate through a continuing and iterative process of assessing health risks, identifying, prioritizing, and implementing adaptation options, and monitoring and evaluation.

The health community has a critical role in the response to climate change. The emerging evidence and experience in this area suggests that to be fully effective, this requires a broad public health approach, including not only the preventive and curative functions that are under direct control of the formal health sector, but also appropriate leadership, guidance and regulatory roles with regard to health-determining sectors and functions, such as water and sanitation, or disaster risk reduction.

The potential to improve health while mitigating climate change

There is a very large potential to obtain health benefits from policies that also reduce climate change. These include reduced risks from air pollution-related diseases and fewer environmental health risks from transport, housing, and energy systems as well as health benefits from healthier lifestyles (e.g. more physical activity) and diets. This can translate into significant health cost-savings, particularly through reductions in the burden of non-communicable disease.

Health benefits associated with climate change mitigation can be achieved locally, and in relatively short time frames. For example, urban public transport policies that facilitate walking and cycling, not only emit less climate change pollutants, they can also immediately promote increased physical activity, reduce air pollution-related mortality (from strokes, respiratory and heart disease), and potentially reduce traffic injury deaths.

There is a particular opportunity to reduce the roughly 7 million deaths a year associated with air pollution, while also reducing climate warming. Approximately 1 in every 8 deaths globally is now attributable to ambient and household air pollution. Inefficient combustion of fossil fuels and biomass creates releases particles including black carbon, which is both a major contributor to air pollution mortality, and a short-lived climate pollutant.

Health benefits can be achieved by greener and more sustainable choices in sectors including household energy; electricity generation; transport; urban planning and land use; buildings; food and agriculture. For example, the use of cleaner fuels and cooking

technologies can dramatically reduce the large burden of disease from household air pollution in developing countries; greater use of renewables in electricity generation increased efficiencies through cogeneration of heat and power can cut ambient air pollution; modal shifts towards walking and cycling can reduce the burdens of both physical inactivity and air pollution: and moderated consumption of red meat and some processed foods can reduce risks of obesity, heart disease and cancers.

There are possibilities for the health sector to improve health services, while adopting a low-carbon trajectory. While health services in developed countries are major consumers of energy and significant emitters of greenhouse gases, many health facilities in the poorest countries lack any electricity supply. In power-intensive settings, energy efficiency, shifting to renewables, and greener procurement and delivery chains can improve services while cutting carbon. For resource-constrained and off-grid hospitals and clinics, low-carbon energy solutions can form an important component of an overall strategy to increase energy access.

Needs to support countries

Although significant progress has been made in recent years, there are important weaknesses in the current international health response to climate change. These include relatively weak engagement of the health sector in the international and national policy processes on climate change; a lack of technical capacity to design and implement health adaptation plans or health promoting mitigation measures; and inadequate financing for the health sector to strengthen climate resilience, or to play its role in health-promoting mitigation policies.

Opportunities to protect health from climate change, and to gain health benefits while reducing climate change, are not yet being fully utilized. Proven interventions already exist to reduce climate-sensitive risks to health and to improve health while reducing emissions of climate pollutants. However, health is often neglected in climate change adaptation policy, and knowledge of health benefits is rarely used to inform the selection of climate mitigation policies and the allocation of financing needed to implement them. Opportunities to avoid ill health are therefore frequently overlooked.

Countries are now clearly outlining the areas in which they need support. These include awareness raising on the opportunities to increase health resilience to climate risks and to gain health benefits while reducing carbon emissions, particularly through reduced air pollution; stronger health engagement in national and international climate policy mechanisms; more systematic monitoring of country progress in enhancing health resilience to climate risks; technical, analytical, health impact assessment and research support; opportunities for information exchange, coordination and collaboration; support for increasing the climate resilience and reducing the environmental impact of health facilities; guidance on accessing climate finance for health.

Strategic opportunities to enhance the public health response to climate change

Nations have already acknowledged the need both to reduce the human impact on the climate system, and to strengthen resilience to climate-sensitive health risks. Existing policy mandates, and public opinion, already support stronger action on health and climate change. Health is a central justification within the UN Framework Convention on Climate Change (Article 1), and countries passed a World Health Assembly resolution on climate change in 2008, now supported by regional resolutions and action plans. Surveys from around the

world have shown that, when presented with the evidence of links between climate change and health, there is a high degree of public recognition.

There is an opportunity within 2015 to ensure appropriate representation of health within the international agendas on climate change, sustainable development, and disaster risk reduction. By the end of 2015, countries are aiming to reach agreement on a new international framework for disaster risk reduction, definition of Sustainable Development Goals, and a new international agreement to address climate change. Each of these processes makes reference to the others, and to health. This presents a rare chance to ensure coherence in the way that health is represented in critical development agendas.

There is a range of mechanisms to build national capacity for a more comprehensive and systematic public health response to climate change. Under the UNFCCC, countries are developing cross-sectoral National Adaptation Plans (NAPs), which routinely identify health as a priority sector. Parties to the UNFCCC have recently requested the further development of work on health adaptation under the Nairobi Work Programme (NWP) on impacts, vulnerability and adaptation to climate change. In addition, the UNFCCC calls on countries to assess the health implications of adaptation and mitigation decisions taken in other sectors, providing an additional entry point to ensure a "health in all policies" approach. New international partnerships support parts of this agenda, including the Global Framework on Climate Services (providing climate information to support health decisions), and the Climate and Clean Air Coalition, to address short-lived climate pollutants that are both harmful to health, and contribute to climate change.

A consensus is beginning to emerge on the health-systems functions that should be strengthened in order to increase resilience and adapt to a changing climate. Based on emerging experience at regional and country level, WHO has proposed a draft framework taking as a reference point the six generally recognized building blocks of health systems, and elaborates ten functions that map onto these, to add the additional dimensions of addressing climate risks. This framework provides an overview of the range of actions necessary to provide a comprehensive approach to building health resilience, which can be adapted to varying national policy contexts.

Health benefits constitute some of the largest and most immediate pay-offs from low carbon development choices. There is a rapidly growing body of evidence that the health benefits of greener and more sustainable policy choices would bring about large, local and immediate health gains, that in many cases would largely offset the financial costs of the measures. This has now been more clearly recognized in the latest report of the Intergovernmental Panel on Climate Change, and forms the basis of national climate change plans in some countries. This could be further supported through stronger intersectoral collaboration, a wider use of tools such health impact assessments and cost-benefit analysis that incorporates all relevant health benefits and risks; and monitoring of health trends associated with measures taken.

The role of the health community in protecting and promoting wellbeing provides a compelling argument to lead by example in strengthening the climate resilience, and reducing the environmental impact, of the health sector. There is also an important major opportunity for the health sector to harness climate mitigation finance to support critical health facility infrastructure improvements, particularly for clean and more reliable energy and power systems, as well as healthier and more climate resilient buildings.

Next Steps

In addition to the strong endorsement of the importance of this issue, conference participants made a strong request for a mechanism for continued consultation and engagement, so as to address the needs outlined above. WHO will carry out the following actions by the end of 2014.

1) WHO has reported on the conference outcomes at the Climate Summit hosted by UN Secretary-General Ban Ki-Moon on the 23rd September 2014, and provided a summary report and conference materials to national delegations to consider in formulating their own national positions, in advance of the summit.

2) It will propose a revision and update of the WHO workplan on climate change and health, for consideration by Member States at the 136th session of the WHO Executive Board in January 2015. Based on the feedback from the conference, the proposed revisions are likely to include a greater consideration of the opportunities to promote health while mitigating climate change, particularly through reducing air pollution; more systematic provision of country specific information on climate-health linkages and support in monitoring country progress; and guidance in accessing climate finance for health.

3) Finally, WHO will establish a platform to support Member States in responding to climate change, through WHO's own mandates and programmes, and also through collaboration with other agencies, including the World Meteorological Organization, the Secretariat of the UN Framework Convention on Climate Change, UN Environment Programme, World Bank, and International Strategy for Disaster Reduction.

TECHNICAL BRIEFING PAPERS

In preparation for the conference, the WHO convened a technical advisory group (TAG), in order to support and review preparations for the technical aspects of the proceedings. The TAG consisted of international experts from around the world, with specialisations in public policy, population health, and climate science. The table in Annex 1 provides an overview of the members of the TAG.

One of the primary tasks of the TAG was to work with the WHO Health and Climate team to assist in drafting and reviewing two technical briefing papers for the conference. These papers were designed to provide a comprehensive overview of the state of the evidence; ensure that all conference participants were working from a common baseline; and to help ensure the conference was policy and solutions focused.

Two papers were developed - *Strengthening Health Resilience to Climate Change*, and *Promoting Health While Mitigating Climate Change*. Their summaries have been included in this report. Full version of the papers available at http://www.who.int/globalchange/mediacentre/events/climate-health-conference/en/

TECHNICAL BRIEFING PAPER 1: STRENGTHENING HEALTH RESILIENCE TO CLIMATE CHANGE

SCOPE AND PURPOSE OF THE PAPER

This is one of two technical background papers prepared as a basis for discussion at the WHO Health and Climate Conference. It provides a brief summary of the available evidence on the health impacts of climate change, and an outline of the necessary response to protect health from these evolving risks. Specifically, it considers the need for overall strengthening of the health system, specific functions both within and outside the health sector that require strengthening and modification to address climate risks, and introduces some of the main areas and opportunities for future progress.

The accompanying paper covers the health benefits that can be achieved through mitigation measures.

ACKNOWELDGEMENTS

The paper was prepared by Nick Watts (University College London), Diarmid Campbell-Lendrum, Marina Maiero, Lucia Fernandez Montoya and Kelly Lao (WHO-HQ). It benefited from review and input from the following WHO staff: Carlos Corvalan, Guto Galvao (WHO-AMRO), Hamed Bakir (WHO-EMRO), Bettina Menne, Gerardo Sanchez (WHO-EURO), Lesley Onyon (SEARO), Elena Villalobos Prats, Jonathan Abrahams (WHO-HQ), Marie Noel Brune Drisse (WHO-HQ), and Silvia Ferazzi (Roll Back Malaria Partnership), Mariam Otmani del Barrio (WHO-HQ) and from the following members of the Technical Advisory Group of the Health and Climate Conference: Jonathan Balbus (US National Institute of Environmental Health Sciences), Kristie Ebi (University of Washington), Andy Haines (London School of Hygiene and Tropical Medicine), Jonathan Patz (University of Madison-Wisconsin). The paper also draws on material prepared for WHO by Joy Shumake-Guillemot (WMO/WHO joint office), and Kristie Ebi. The paper was copy-edited by Nina Behman.

EXECUTIVE SUMMARY

There is now clear evidence that human actions, principally the burning of fossil fuels and associated release of climate pollutants, are causing significant changes to the global climate system. As many aspect of health are strongly influenced by weather and climate conditions, this inevitably presents risks for human health. Member States have agreed the need both to reduce the human impact on the climate system in order to avoid the most extreme scenarios of climate change, and to strengthen resilience to climate-sensitive health risks. This paper focuses on strengthening health resilience to climate change.

At the global level, there is considered to be the strongest evidence for the following health impacts by the middle of the coming century: greater risk of injury, disease, and death due to more intense heat waves and fires; increased risks of food- and water-borne diseases; increased risks of vector-borne diseases; increased risk of under-nutrition resulting from diminished food production in poor regions; consequences for health of lost work capacity and reduced labour productivity in vulnerable populations. There is weaker evidence for some positive effects, including modest improvements in cold-related mortality and morbidity. However, there is considered to be high confidence that negative health effects will outweigh positive effects at the global level.

In addition, there are other important potential health risks for which there is less conclusive evidence, but which nonetheless require consideration. These include: the potential for increasing severity and frequency of extreme weather events including storms and floods; mass displacement and disruption of livelihoods in low-lying coastal zones and small island states; inland flooding in particularly vulnerable urban centres; breakdown in food systems from drought, flooding, and extremes in precipitation; the potential for increased risk of violent conflict associated with resource scarcity and population movements; slow-down in economic growth and exacerbation of poverty, with negative implications for health targets including achievement of the Millennium Development Goals, and the objectives of the forthcoming post-2015 development agenda.

All of the health risks above are strongly affected by non-climatic determinants, such as socioeconomic status, age, gender, ethnicity, displacement, or disability. There is strong evidence that health impacts of climate change disproportionately affect poorer populations and children, and, for some risks in some situations, differ between women and men. Overall, climate change is likely to widen existing health inequities, both between and within populations.

The health community has a critical role in the response to climate change. The emerging evidence and experience in this area suggests that to be fully effective, this requires a broad public health approach, including not only the preventive and curative functions that are under direct control of the formal health sector, but also appropriate leadership, guidance and regulatory roles with regard to health-determining sectors and functions, such as

water and sanitation, or disaster risk reduction.

Due to the strong influence of social determinants on health vulnerabilities, overall progress in alleviation of poverty, reduction of inequities in the social and environmental determinants of health, and strengthening of basic public health interventions are critical to health protection from climate change. There is also a need for more specific efforts to adapt to changing climate through a continuing and iterative process of assessing health risks, identifying, prioritizing, and implementing adaptation options, and monitoring and evaluation.

Within the comprehensive approach, a consensus is beginning to emerge on the health-systems functions that should be strengthened in order to increase resilience and adapt to a changing climate. The paper proposes a draft framework to organize these functions. This takes as a reference point the six generally recognized building blocks of health systems, and elaborates ten functions that map onto these, to add the additional dimensions of addressing climate risks.

There remain large challenges to strengthening health resilience to climate change, including deficits in awareness of climate and health linkages and governance mechanisms to manage them, institutional and technical capacity to design plans, and resources to implement them.

However, there are important opportunities in the near future. The parallel discussions on negotiating a new climate treaty under the UN Framework Convention on Climate Change (UNFCCC), and the definition of the post-2015 sustainable development and disaster risk reduction agendas within the next two years, can help to raise awareness and promote coherence between climate and health policy goals. The UNFCCC process also provides a series of technical and financial support mechanisms that could facilitate mainstreaming of climate change into traditional health programmes. There is a need for a more systematic and sustained approach, to make use of these opportunities, and to continue to make progress in protecting health from climate change.

TECHNICAL BRIEFING PAPER 2: PROMOTING HEALTH WHILE MITIGATING CLIMATE CHANGE

SCOPE AND PURPOSE OF THE PAPER

This is one of two technical background papers prepared as a basis for discussion at the WHO Health and Climate Conference. It provides a brief summary of the available evidence on the health impacts (co-benefits and risks) of climate change mitigation strategies, and an outline of the necessary health sector responses that may contribute to optimizing co-benefits while mitigating risks.

The accompanying paper provides a brief summary of the available evidence on the health impacts of climate change and responses needed to protect health from these evolving risks, including areas of health system strengthening.

ACKNOWLEDGEMENTS

This paper is a work in progress and will be refined following further and more extensive consultation during and after the conference. As it stands, the current draft provides a flavour of what could be achieved for public health from harnessing the wealth of information and experience on climate mitigation health co-benefits. The draft draws upon WHO's reviews of the health co-benefits of climate change mitigation measures discussed in the Fourth and Fifth Assessment Reports of the Intergovernmental on Climate Change (IPCC) *Mitigation of Climate Change* (IPCC, WGIII/AR5) and (IPCC, WGIII/AR4), as presented in the *Health in Green Economy* series (The report also draws upon WHO work on health indicators of sustainable development a new report on *Access to Modern Energy Services for Health Facilities in Resource-Constrained Settings* (WHO, 2014); forthcoming WHO paper on *Reducing Short Lived Climate Pollutants for Better Health – Early Responses*; and a forthcoming WHO EURO technical briefing on the health implications of the IPCC Fifth Assessment report (IPCC, WGIII/AR5). Direct quotations from the IPCC are indicated with the use of italics, and in-text references are provided to their location in WGIII.

This paper was written by Nick Watts (University College London), with later contributions from Carlos Dora, Elaine Fletcher, Michaela Pfeiffer, and Heather Adair-Rohan (WHO-HQ). Earlier versions benefitted from review by WHO Regional Focal Points, Diarmid Campbell-Lendrum, Marina Maiero, Lucia Fernandez Montoya and Kelly Lao (WHO-HQ) and Professor Andy Haines, London School of Hygiene and Tropical Medicine. Oversight of Dr Maria, Director, Department of Public Health, Environmental and Social Determinants of Health, is also gratefully acknowledged. The many contributors to the Health in Green Economy series are gratefully acknowledged, along with the following lead authors: Nathalie Roebbel (Housing), Jamie Hosking (Transport), Tara Garnett (Agriculture), Walter Vernon and Susan Wilburn (Health Care); and Noah Scovronick (SLCPs & Health)

EXECUTIVE SUMMARY

There is a very large, unrecognized potential to obtain health co-benefits from policies that reduce climate change. Moreover, many of these benefits can be enjoyed locally, by communities that adopt low-carbon development strategies.

Some of the most important health benefits include: reduced risks from air pollution-related diseases and fewer environmental health risks from transport, housing, and energy systems as well as health benefits from healthier lifestyles (e.g. more physical activity) and diets. Climate change mitigation policies can therefore prevent significant communicable and non-communicable disease caused by key economic sectors. This can translate into significant health cost-savings from averted deaths and diseases. Harnessing climate change actions for health benefits can play a transformative role in the climate debate – strengthening public and policymaker will for action.

Many health benefits of climate change mitigation can also often be enjoyed in the near- or mid-term – while reducing climate change's long-term risks (e.g. increased droughts, extreme weather, disease pattern changes, etc.). For example, well planned urban public transport policies that encourage walking and cycling, as preferred modes of transport, not only emit less climate change pollutants, they also reduce very immediately traffic injury deaths, promote increased physical activity, and air pollution-related mortality (from strokes, respiratory and heart disease).

Air pollution is a special example of the linkage between climate change and health. Outdoor (ambient) air pollution and household pollution ($PM_{2,5}$) from solid fuel cookstoves causes an estimated 1 in every eight premature deaths, or roughly 7 million a year. Inefficient fuel combustion of fossil fuels and biomass that creates particulate air pollution ($PM_{2,5}$) also generates climate pollutants (e.g. $CO_{2,}$). A significant proportion of particulate pollution may include black carbon, which is a short-lived climate pollutant.

This report covers the evidence about health co-benefits from key measures to reduce climate change in a range of economic sectors, including: energy, housing, industry, waste management, agriculture, and urban settings and in the health sector itself. Examples of measures that are good for climate and for health are given in this briefing and include:

- **Electricity generation** that is powered by clean energy sources such as solar, wind or hydro power, reduce both climate and pollution emissions, created by coal and diesel fuels. Coal and diesel fuel are carcinogens (as classified by IARC) and a major source of particulates ($PM_{2,5}$) and CO_2. Energy efficiencies such as from co-generation of heat and power (CHP) can capture heat otherwise lost as waste in conventional grid electricity production, thus reducing air and climate pollution. In regions with no grid or unreliable grid electricity "mini-grid" energy networks can often harness new renewable energy technologies, producing electricity at points of greatest need, and as substitutes for stand-alone diesel generators and kerosene lighting.

- **The use of clean fuels and household cookstoves**, including liquefied petroleum gas (LPG), biogas, biofuels (e.g. ethanol) and/or advanced combustion cookstoves that comply with emission rates recommended by new WHO *Indoor air quality guidelines for household fuel combustion*, can dramatically reduce deaths from household air pollution, one of the largest environmental health risk among women and children in low income countries. Insofar as these cookstoves reduce emissions of black carbon, a short-lived climate pollutant, produced by inefficient coal and

biomass cookstoves, they can offer a climate benefit as well.

- **Smart urban policies and investments in transport, land use, buildings**, waste management and industry, are under the influence of local authorities and stakeholders. This package of measures offers great potential for the health of city populations. Particularly in the transport sector, where emissions are now amongst the most rapidly growing, modal shifts to low-carbon rapid transit, walking and cycling systems can yield multiple benefits for climate as well as health – particularly when cities are built around these modes of travel.

- **Housing and buildings designed to be energy-efficient and climate-adapted** (e.g. using minimal energy for heating, cooling, or lighting), and which make effective use of natural daylighting and natural ventilation with appropriate screening to prevent entry by insects), can reduce the morbidity and mortality related to heat and cold exposure, as well as risks of airborne infectious disease transmission; and acute and chronic respiratory diseases related to indoor air pollution risks, mould, and dampness. A more robust building envelope, also helps protects occupants not only from heat and cold, but storms and extreme weather, as well as diseases borne by pests and vectors.

- **In affluent countries, shifting to diets** richer in fresh, in-season vegetables, fruits and legumes can help reduce certain climate change emissions from agricultural systems – as well as risks of obesity, heart disease and cancers associated with excessive consumption of red meat and some processed foods. In low-income countries, it is also important to maintain the biodiversity of food systems, for healthy dietary diversity, as agricultural production industrializes.

- **Putting the health sector on a low-carbon trajectory can benefit health systems in power-intensive settings,** through greater energy efficiencies, greener forms of on-site power generation, through renewables and co-generation of heat and power, as well as shifting to greener procedures at every link in the health service procurement and delivery chain.

- **For resource-constrained and off-grid hospitals and clinics**, low-carbon energy solutions may also help improve access to energy for vital services. This can be essential to address the energy gap in rural areas and developing countries, a key constraint to the achievement of universal health coverage.

Such measures are available for implementation *today*. And yet, In spite of the obvious associated win-wins, knowledge about the above types of health co-benefits is rarely used to inform the selection of climate mitigation policies and the allocation of financing needed to implement them. The consequences of this omission are that low-cost opportunities to avoid ill health are being systematically overlooked.

The impact of climate mitigation policies on health is a result of corresponding changes in environmental and social determinants or root causes of health. The health sector has a critical role to play in elucidating those impacts, and by engaging with other sectors to inform and promote climate change mitigation measures that are most beneficial to health. An effective policy response must present an urgent and comprehensive framework which unites interventions in mitigation and adaptation with the ultimate aim of protecting the planet while simultaneously promoting the health and well-being of its inhabitants.

A focus on human health and wellbeing also ensures that these policies yield additional public health benefits often associated with the green economy. At a broader level, this is closely aligned with many of the pre-existing goals in development and global health pursued by the development community,

national governments, the World Health Organization, and the United Nations.

To unlock these opportunities, the following crucial advances are required: enhanced global governance which fully accounts for the links between climate change and health in intergovernmental forums such as the UN Framework Convention on Climate Change; strengthening of the contributions of the health sector to climate change discussions including through a wider use of tools such health impact assessments and cost-benefit analysis that incorporates all relevant health co-benefits and risks; monitoring of health trends associated with measures taken; and provision of effective climate change interventions in improving health, all designed to identify the local health risks and benefits of any given mitigation policy; and overall strengthen inter-sectoral collaboration of national and local level policy implementation, to ensure any response improves health and health equity.

This mandate is reflected strongly in the 2013 World Health Assembly resolution on health and climate change, and supported at the regional level through member state declarations such as the Libreville Declaration on Health and Environment in Africa, the European Parma Declaration on Environment and Health, and the South East Asian New Delhi Declaration on the Impacts of Climate Change on Human Health.

The following central messages emerge from this briefing, each with important policy implications:

1. The long-term cost of global mitigation efforts needed to stabilise global warming at an acceptable level is relatively small over the long-term when compared to the cost-savings from the health benefits of these policies. In addition the health benefits are often realised in the short-term, and should be considered as offsets from initial cost of investment;

2. Many of the largest and best understood health benefits are seen in transport policy, in interventions to improve air quality which can often be used in urban settings. Such measures will reduce the millions of deaths globally which occur as a result of household (indoor) and outdoor air pollution – currently one in 8 premature deaths;

3. Climate change exacerbates poverty and affects the socially disadvantaged first and most severely. Mitigation measures and sustainable development counteracts this effect, and should be seen as an opportunity to combat health inequities and to contribute to sustainable development.

4. Partnerships between health and other sectors are essential in achieving policies benefit health and climate. These are facilitated by a proactive engagement of the health sector for health in all policies, for example by providing health impact assessments and by linking data on health trends, economic costs, and evidence of effective interventions.

5. Interventions to reduce climate change offer some of the largest opportunities for improving the health of local populations through health in all policies approaches. These health benefits can quickly follow mitigation measures and can be enhanced and documented by a proactive role of the health sector, using tested tools.

6. Given the central role of health professionals and the health system in protecting and promoting the wellbeing of the public, there is a compelling argument for the health sector to lead by example in implementing mitigation measures. Not only that, but there is also a major opportunity for the health sector to harness climate mitigation finance to support critical health facility infrastructure improvements,

particularly for clean and more reliable energy and power systems, as well as healthier and more climate resilient buildings.

At the current pace of climate emissions, temperatures could rise by 4° Celsius or more over much of the globe by the year 2100. This would have major consequences for health. Low-lying areas where people live today could be lost forever due to rising sea levels. Rising temperatures could turn the warmest parts of the world into places where it is no longer safe to work or carry out physical activity outdoors.

Already, climate change is causing hundreds of thousands of deaths ever year from changing patterns of disease, weather events, such as heat-waves and floods, and degradation of water supplies, sanitation, and agriculture, according to the latest WHO data. Children, women and the poor are among those most vulnerable to climate-related impacts and consequent diseases, such as malaria, diarrhoea and malnutrition.

However along with the threats, that are very real, responding to climate change should be seen as a great opportunity -- to promote health and well-being through investment in smarter, more liveable, and more sustainable cities and rural environments for peoples worldwide.

What is now urgently needed is for the health sector to position itself to better advocate and leverage the above described opportunities for health and development.

CONFERENCE PROCEEDINGS

CONFERENCE AGENDA

The conference ran for three days, at WHO headquarters in Geneva, and was organized along two thematic themes: health resilience and the health co-benefits of mitigation. The next section of the report is designed to provide an overview of the conference agenda, speakers and proceedings.

DAY 1, 27 AUGUST: DEFINING THE AGENDA

Opening Plenary

The conference was opened with high-level support across the United Nations system, with WHO Director General, Margaret Chan, who referred to climate change as "the defining health issue of this century". In particular, she noted that climate change discussions ongoing in the UN Framework Convention on Climate Change had not yet given sufficient notice to the relationship between climate change and human health and wellbeing. The Director General drew attention to recent WHO data which emphasizes the seven million deaths attributed to air pollution in 2012, which provides an opportunity for public health interventions which both protect human wellbeing and mitigate climate change.

UNFCCC Executive Secretary, Christiana Figueres spoke next, referring to the COP21 climate agreement planned for December 2015 as essentially "a global public health agreement". Addressing government delegates, she asked ministries of health to work within their national cabinets to help build a climate agreement able to ensure a good quality of life for future generations.

This was followed by introductions (via video) from UN Secretary General Ban Ki-moon, President of the World Bank Jim Yong Kim, and Executive Secretary of the UN Environment Programme Achim Steiner. Each passionately declared their support for the international health community further engaging in responding to climate change, with the UNSG concluding that the Climate Summit in September 2014 was essentially about public health and jobs. Additional video addresses were provided by Albert II, Prince of Monaco, and HRH Prince of Wales. Dr. Fiona Godlee, Editor of the British Medical Journal, and John D.E. Boyce, Minister of Health for Barbados, were also introduced as host and conference chair for the coming three days.

Early on in the conference, the WHO Director General was presented with a Children's Declaration on Health and Climate Change, which had been developed by the children of WHO staff members working in Geneva. This set an ambitious and positive tone for the rest of proceedings, and helped remind delegates that the result of deliberations will have important implications for the health and wellbeing of future generations.

The Science of Climate and Climate Change & the Current State of Knowledge on Climate and Health

Following the opening addresses, conference participants were briefed on the current state of climate science and what is known about its links with human health. Secretary-General of the World Meteorological Organization, Michel Jarraud commenced his presentation by declaring that a lack of scientific knowledge is no longer an excuse for political inaction. He provided a brief summary of the 5th Assessment Report from the Intergovernmental Panel on Climate Change, stressing the rapid pace of climate change and the full extent of the changes observed and predicted across a range of indicators.

Professor Alistair Woodward, lead author of the health chapter for IPCC AR5, took this one step further, linking the environmental and social determinants of health and demonstrating the profound impacts climate change is having on human wellbeing.

Panel Discussion: Linking International Climate, Sustainable Development, and Health policy

Panellists	
Ms Margaeta Wahlström	Special Representative of the Secretary-General for Disaster Risk Reduction
Mr Mohammed Nasim	MP, Honourable Minister, Ministry for Health and Family Welfare, People's Republic of Bangladesh
Ms Valentia Tapis	Minister of Environment, Republic of Moldova
Ms Christiana Figueres	Executive Secretary United Nations Framework Convention on Climate Change
H.E. Mr Fidèle Mengue ME Engouang	Minister Ministry of Health, Social Affairs and Solidarity, Gabon
Dr. Oleg Musii	Minister Ministry of Health, Ukraine
Mr James Close	Director of Climate Change Group World Bank
Mr Elhadj Sy	Secretary General, International Federation of Red Cross and Red Crescent

The first panel of the conference saw a number of high-level delegates from government and the UN system discuss the broad policy landscape within which the health and climate discussions are occurring. Panellists begun by laying out three substantial processes in negotiation over the next 18 months: the UNFCCC COP21 agreement, the post-2015 development agenda, and the 2nd phase of the Hyogo Framework. Margareta Wahlström noted that whilst it is unlikely that these processes will formally link up, it is vitally important there is policy coherence between them, and that this extends to 'true' trans-sectoral collaboration at the national level.

James Close from the World Bank stressed the importance of harnessing these collaborations to yield substantial health and economic co-benefits. He highlighted the findings of the recent Climate Smart Development Report, and encouraged delegates to help make the business case for climate investments. Government representatives from a number of countries, including Bangladesh, Panama, Egypt, and Gabon pointed to national policies and actions currently being developed and implemented, which will a) protect health in the short term, and b) provide the political space for further international agreement in the long term.

The International Federation of Medical Students' Associations (IFMSA) presented a crowd-sourced statement on behalf of young health professionals, which urged delegates to take advantage of health as a "catalyzer" for action on climate change, and called the situation "desperate but not hopeless". This was the result of work between the IFMSA and WHO interns to coordinate a social media outreach campaign designed to empower youth from around the world crowdsource their inputs to the conference.

Introduction to the Public Health Response to Climate Change

Having commenced the conference with firm political support and a sound technical background, Dr. Maria Neira, Director of the WHO Department of Public Health, Environmental and Social Determinants of Health, introduced the public health response to climate change. She described two key areas of interest, which she encouraged the conference to discuss: the resilience of health systems and their capacity to respond to new health risks; and the health benefits of mitigation policies in cities and urban centres.

She described the concept of primary prevention as central in responding to climate change, and outlined the importance of the health sector leading by example in both mitigating its own carbon footprint, and supporting communities to adapt to climate change impacts.

A Multi-Stakeholder Dialogue on Climate Change and Health – Round Table on Health Resilience

Panellists	
Hon. Lyonpo Tandin Wangchuk	Minister Ministry of Health, Bhutan
Hon. Dr.Elioda Tumwesigye	Environmental Health Ministry of Health Uganda
Dr. Louise Newport	Policy Lead for Climate Change, Sustainable Development, and Extreme Weather Department of Health, United Kingdom
H.E. Thomas Fitschen	Ambassador Permanent Mission of the Federal Republic of Germany to the UN and other International Organizations in Geneva
Mr. Jeremiah R.D. Lengoasa	Deputy Secretary General World Meteorological Organization
H.E. Ms. Pamela Hamamoto	Ambassador Permanent Representative of the United States of America to the UN and other International Organizations in Geneva

Discussion in this first roundtable focussed on a) showcasing solutions in health resilience, and b) discussing the necessary conditions and actions needed to help accelerate and scale-up these responses. The Minister of Health for Bhutan noted a number of ways in which his country is working to respond to the health risks of climate change, including through national disease surveillance and early warning systems, efforts to develop a national strategy on climate change, an programmes which focus on empowering communities and reducing vulnerabilities in health infrastructure. Whilst many of these programmes are conducted in collaboration with WHO, UNDP, and the GEF, it was emphasised that a lack of available funding is currently the primary barrier to further adaptation policies.

Speaking on behalf of the WHO Europe Health in Climate Change working group, Dr. Louise Newport described strategies whereby high-income countries such as the UK were working to provide support in developing data systems to identify emerging health concerns which transcend national boundaries. Thomas Fitschen presented three overlapping layers of policy which Germany focuses on, highlighting that the largest difficulties are seen in scaling up community and local-level operationalization. Mr. Lengoasa from the WMO introduced the conference to the newly established joint WMO-WHO office, which is tasked with linking research experts between health and atmospheric communities.

A Multi-Stakeholder Dialogue on Climate Change and Health – Round Table on Health Benefits of Mitigation

The final session of the day was conducted as an introductory multi-stakeholder roundtable on promoting health whilst mitigating climate change.

Panellists	
Ms Marit Viktoria Pettersen	Co-Chair Climate and Clean Air Coalition Health Task Force
Mr Nick Watts	Head of Project Lancet Commission on Climate Change and Health Policies
Mr Benoît Vallet	General-Director of Health French Government
Ms Surabi Menon	Director of Research ClimateWorks Foundation
Mr Gary Cohen	Co-Founder and President Health Care Without Harm
Professor Kalpana Balakrishnan	Professor of Biophysics Sri Ramachandra University, Chennai

Throughout the session, details about several initiatives addressing different aspects of climate and health were described, some being supported by governments, others by civil society organizations. In particular, the Global Climate and Health Alliance was referenced as a focal point for civil society organisations and health professionals to become advocates and agents of change. There was no connection or coordination between initiatives, pointing to the possible need for a global response framework against which such efforts could be aligned.

It was noted that linkages between climate and health are particularly well understood in the context of air pollution (e.g. both ambient and household, particularly in terms of short lived climate pollutants like black carbon). WHO air quality databases have served as an important information resource and in some cases served as a catalyst for cities and countries to take action on air pollution and health. As for further research, a forthcoming Lancet Commission on climate change and health was mentioned as providing a compelling argument for public health intervention in climate change.

Finally, it was apparent from subsequent government interventions that there is significant interest coming from MS to have sustained access to technical expertise, country experiences and overall exchange vis-à-vis actions to address climate change and health. It was suggested that such platform or community of practice could be created as an outcome of this conference, accommodating both resilience and adaptation issues on one part, and climate mitigation and health co-benefit opportunities on the other part.

DAY 2, 28TH AUGUST: IDENTIFYING SOLUTIONS

The second day of the conference aimed to build on the firm based provided on day one, by focusing on identifying policy and technical solutions around the two identified thematic areas. Dr. Maria Neira (WHO) begun the day by urging delegates to deliberate over specific solutions and actions needed in order to respond to climate change. In particular, she made reference to additional opportunities for engagement which may be available by linking health policy with global institutions and processes such as the GEF and UNFCCC.

Delegates were divided in to two streams throughout the day – strengthening health resilience & promoting health whilst mitigating climate change – and eventually came back in to plenary at the end of the day for a session on the economics of health and climate change.

Stream 1: Strengthening Health Resilience to Climate Change

Morning Session: The Role of the Health Sector

Panellists and Invited Commentaries	
Mr Diarmid Campbell-Lendrum	Team Leader Climate Change and Health Unit, World Health Organization
Professor Qi-Yong Liu	Chinese Centre for Disease Control and Prevention
Dr. John Balbus	Senior Advisor for Public Health to the Director, National Institute of Environmental Health Sciences, USA
Professor Jan Semenza	European Centre for Disease Prevention and Control
Ms Jutta Litvinovich	Co-Chair WHO European Working Group on Health in Climate
Dr. Adugna Woyessa Gemeda	Director for Bacterial, Parasitic and Zoonotic Diseases Research Directorate of the Ethiopian Public Health Institute

The first parallel session of Day 2 begun with Diarmid Campbell-Lendrum, team leader at the WHO Climate Change and Health Unit, sharing WHO's experience thus far in supporting countries and national health systems to adapt. He told delegates that strengthening health resilience is an iterative and inter-sectoral process which must be deeply localised and done with full consideration of the health profile of the community. He proposed an operational framework for building health system resilience with six categories of action: leadership and governance, human resources, information services, vulnerability and capacity assessments, efforts to manage the environmental determinants of health, and emergency preparedness and response.

Solutions being implemented already were then presented by experts from China, the United States, Europe, and Ethiopia. The session highlighted the need for strong and continued support from WHO, and the development of an overarching framework to coordinate all parts of the health community in strengthening resilience. Sharing information, and gaining access to information that was relevant to health professionals and public health interventions was also repeated as a key action point. To this end, services from the new joint WMO-WHO office will be in high demand.

Once this information had been gathered, participants noted a need to translate it in to training for local health professionals and

health policymakers. A programme of community mobilisation, engagement, and awareness raising was thought to be needed, to complement WHO's capabilities.

Afternoon Session: Working Across Sectors

Panellists and Invited Commentaries	
Professor Kristie Ebi	Department of Global Health, University of Washington
Ms Anna Kaplina	ECIS Regional Technical Advisor for Adaptation UN Development Programme
Dr. Nitish Dogra	Principal Public Health Advisor TARU Leading Edge, India
Ms Virginia Murray	Head of Extreme Weather Events and Health Protection Public Health England
Mr Ted Bianco	Director (Innovations) Wellcome Trust
Mr Filipe Domingos Freires Lucio	Head Global Framework for Climate Services, WMO

The afternoon component of the health resilience stream focussed on multi-sectoral collaboration and methods for enhancing collaboration between sectors to improve human wellbeing. Kris Ebi moderated the session and commenced by reminding participants that climate change is a global issue with local manifestations, which requires us to work across national, sectoral, and generational boundaries. As such, the response must stop using 20th century thinking and structures, to deal with a 21st century issue. Kris highlighted that many of the greatest health threats from climate change – such as food and water security – come from outside of the health system's formal mandate and policy reach.

Invited commentaries from the Wellcome Trust and from UNDP highlighted a lack of funding in both cross-sectoral research and programmatic implementation and the work that both are doing to address this gap. The Commission on Climate Change and Health (to be published February 2015) bridges public health with climate science, economics and finance, engineers and energy specialists, and political and social scientists – it will provide a firm foundation for moving forward with a multi-disciplinary framework.

A number of specific suggestions for action were provided throughout the session, including the need to prioritise health within national adaptation plans; proactively engage with non-health processes at the international and national level to find areas where health issues may be include; and ensure that collaborations are working towards shared goals, not just health values superimposed on other sectors.

Stream 2: Promoting Health While Mitigating Climate Change

Morning Session: Opportunities to Improve Public Health in Cities

Panellists and Invited Commentaries	
Dr. Carlos Dora	Coordinator Interventions for Healthy Environments, WHO
Professor Jonathan Patz	Director of Global Health University of Wisconsin, Madison, USA
Professor Paula Saldiva	University of São Paulo, Brazil
Professor François Reeves	University of Montreal, Canada
Professor Geetam Tewari	Sustainable Transport Initiative, India
Mr Matthias Rinderknecht	Swiss Federal Office of Transport
Mr Michal Kocubovski	Co-Chair Transport, Health and Environment Pan European Programme
Professor Ilona Kickbusch	University of Geneva, Switzerland

The second stream of Day 2 focused on identifying and enabling opportunities for promoting public health whilst mitigating climate change. Carlos Dora (WHO) begun the first session, asking delegates to focus on cities and urban centres as hotspots of health impacts and opportunities. In particular, he noted the need to reframe climate mitigation as a massive opportunity for health promotion and protection.

Jonathan Patz presented on the health benefits of mitigation in the US< citing a study which found estimated costs of cleaner energy in the US to be around USD$30/tCO2, whereas the benefits due to reduction in morbidity and mortality reach an average of USD$200/tCO2. Delegates were told that it is important to communicate the full range of benefits, from economic through to quality of care and clinical services.

Ilona Kickbusch explained the Health in All Policies approach, and how it might apply to the links between health, climate change, and sustainable development. She went on to note that policy measures must take account of commercial drivers, giving examples about of the 'commercial determinants of health' and the impacts this has on consumer behaviour with regards to nutrition, active transport. Local government was seen to be particularly important in combating potentially obesogenic and unsustainable urban environments.

Two important thematic focuses of the session, which were repeated by a number of panellists and audience interventions, were the need for enhanced data and WHO guidance on the air pollution and food system & nutrition related health benefits of climate change mitigation. A number of participants noted that the root of the problem lies in high income countries' continued dependency on fossil fuels (in particular, coal), and noted the need for significant leadership from WHO to assist a transition to cleaner and healthier energy sources.

Afternoon Session: Leading by Example in the Health Sector

Panellists and Invited Commentaries	
Ms Sonia Roschnik	Head Sustainable Development Unit, UK NHS
Dr Christoph Hamelmann	UN Development Programme
Mr Walter Vernon	President Mazzetti, USA
Ms Richenda van Leeuwen	UN Foundation
Mr Mark Rhodes	Vice President, Sustainability GlaxoSmithKline
Ms Michaela Pfeiffer	World Health Organizations
Mr Sameer Akbar	Social Environmental Specialist World Bank

The Parliamentary Secretary for Health from Malta, Christopher Fearne, introduced the session on low-carbon health systems before handing over to the session's moderator, Sonia Roschnik – head of the NHS Sustainable Development Unit. She noted that health budgets around the world are at 5-15% of national GDP, and that estimates from the US and UK suggest that health systems may be responsible for as much as 3-8% of national emissions. The session begun with a strong case made for mitigation within the health sector on the basis of cost-savings, improved quality of care, and the need to demonstrate moral leadership in responding to climate change.

A number of central areas were discussed throughout the session:

- Access to clean and renewable energy production was discussed as a priority for many health systems in the world, which would drastically improve patient care in health settings with unreliable grid electricity. Large initial investments, lack of national infrastructure, and inadequate maintenance systems were cited as major barriers to implementation.
- Leveraging environmental and climate finance for investments in health system strengthening and climate resilience was also discussed as a key enabling factor. Here, a number of possibilities were suggested, including the Clean Development Mechanism and government taxation and leasing policy to incentivise sustainability-oriented public private partnerships.
- Opportunities to mainstream climate change considerations into health systems and health system finance. Here, the development of green procurement protocol and engagement with suppliers and manufacturers was thought to be particularly important. The importance of moving a investments outside of fossil fuels, and re-investing in renewable energy was also discussed as an important strategy.

The session's chair summarised discussion with three key action points for moving forward:

1) Build understanding about the health and climate benefits of climate smart healthcare systems, both within and outside of the health community
2) Ensure mitigation measures are incorporated into national health system plans and embedded in national legislation
3) Establish capacity within systems (and supporting finance) to facilitate adequate monitoring, evaluation, and reporting.

Thematic Event: Creating a Climate for Nutrition, Health and Gender Equality

The Swiss Confederation's Federal Office for the Environment and the International Union of Nutrition Scientists hosted delegates for a lunch-time thematic side event. Speakers at the event include: Francesco Branca, WHO Director of Nutrition; José Romero, Chief Scientist, Swiss Federal Office for Environment; Xiangjun Yao, Director of the FAO Liaison Office; and Cristina Tirado, Chair of the IUNS task force on Climate and Nutrition.

This round table aimed to provide delegates with an opportunity to discuss:

- Integrated approaches to achieving food security, nutrition, health, gender equality, resilience and sustainability in a changing climate.
- Co-benefits of nutrition-sensitive climate adaptation and mitigation measures.
- Approaches that governments, stakeholders and UN agencies can consider to address nutrition in the run-up to Paris and within the post-2015 agenda framework.

Plenary: Economics of Health and Climate Change

The final session of the second day was designed to discuss the economics (both microeconomic and macroeconomic dimensions) of health and climate change. Professor Sir Andy Haines from the London School of Hygiene and Tropical Medicine moderated the session, and provided an introduction to the current state of knowledge on costing the health co-benefits of climate change mitigation. In particular, he stressed the need for diverting government subsidies and public and private investment in to low-carbon development and sustainable health systems.

Jeremy Oppenheim, Programme Director of the New Climate Economy Commission, gave the keynote address for the session. He described the work conducted by the Commission over the past 12 months, demonstrating that all of the mitigation policies needed to return the international community to a 2 degree pathway by 2020 were in fact cost-saving and good for business and the macro-economy. The links to health were obvious, ranging from improved economic prospects to reduced cardiopulmonary illness from the phase-out of coal-fired power plants.

Mr Oppenheim gave 10 transformative actions – drawn from the New Climate Economy Commission – which had been designed to generate significant economic benefits and were seen as essential for reducing future climate risks:

10 transformative actions have the potential to generate significant economic benefits and are essential for reducing climate risks

1. Systematic approach – integrate climate risk into strategic decisions
2. Secure a global climate deal
3. End perverse subsidies
4. Price carbon
5. Scale-up innovation
6. Reduce the cost of capital for low-carbon investments
7. Move toward connected and compact cities
8. End deforestation
9. Restore degraded lands
10. End unabated coal

Following the presentation, commentaries were offered by member states, the World Bank, and WHO Europe. Gerado Sanchez from WHO Europe presented work from the Regional Office in assessing the health and adaptation costs of climate change. He brought forward a toolkit which had been developed to assist technical experts and governments in calculating these costs, and demonstrated ways in which it would be useful to future policymakers.

DAY 3, 29TH AUGUST: DEFINING IMPLEMENTATION MECHANISMS

The final day of the conference was focused on implementation mechanisms to accelerate the public health response to climate change. It consisted of thematic sessions along the conference's two themes, followed by open discussion and a concluding segment.

Summary Session and Concluding Discussions: Strengthening Health Resilience to Climate Change

Delegates focused discussion on health ownership and engagement, the development of technical capacity, and on new action items not yet raised at the conference. There were a range of views on how this should best be presented back to plenary, ranging from the drafting of an agreed conference declaration, through to identifying key suggestions forward which built on the WHA climate change and health resolution, that the WHO could then action.

Suggestions on health ownership and engagement were split in to different levels of governance. At the international level, opportunities for engaging with the UNFCCC's Nairobi Work Programme were discussed. The importance of engaging health professionals and civil society was also mentioned, with the work of the Global Climate and Health Alliance suggested as a vehicle to promote this. Government delegates suggested that the establishment of national working groups on health and climate change may help catalyse national action. Finally, supporting efforts to reduce carbon emissions within the health sector was thought to be an excellent way of empowering and engaging local health systems.

With regards to technical capacity, delegates noted significant gaps in the sharing and maintaining of public health-relevant data, and the need to enhance capacity building, education and training around its collection and use.

Finally, a number of new and innovative suggestions were brought forward, including: the important of fostering inter-sectoral partnerships to bridge the gap between adaptation and mitigation responses; and the creation of a working group or platform to help bring together the international health community in this space and coordinate work forward.

Summary Session and Concluding Discussions: Promoting Health While Mitigating Climate Change

The work of the second stream, on unlocking the health benefits of climate mitigation crafted six key "elements of a way forward" for the conference plenary to consider. These suggested the need to:

1) Increase the use of global standards as targets and to catalyse dialogue needed between sectors/actors that have the power to influence necessary changes. Examples such as WHO guidelines on air quality and air pollution were raised throughout discussion;
2) Build capacity for the use of technical tools that will help generate arguments for accelerated action. These might include tolls for cost-benefit analysis or health impact assessments of new climate policies;
3) Improve monitoring and data collection systems and in so doing make better use of data to help guide decision making. One particular example discussed included the translation of global data in to information which is relevant and useful to local governments that have the capacity to enact change;
4) Enhance research efforts which specifically address the knowledge gaps in health and climate change, combined with support to build capacity for research where

lacking. Here, the forthcoming Lancet Commission on Climate Change and Health was thought to be an important step forward for the health research community;
5) Develop a more coherent framework for the global health sector's engagement in climate mitigation. This included assistance in coordinating engagement with the growing number of initiatives being led by governments, civil society organizations and development agencies ranging from efforts focus on catalysing action at the global level (e.g. through the CCAC), at the regional level (e.g. THE PEP), at the sub-national and municipal levels (e.g. through ICLEI or C40), to those focusing on empowering specific stakeholder groups (medical practitioners);
6) Empower the health sector to make the appropriate connection with funding mechanisms.

These suggestions were broadly well received by plenary and by the WHO secretariat.

End of Proceedings

The conference's conclusion was moderated by Fiona Godlee, editor of the British Medical Journal, and provided an opportunity to present a collated version of the work stream's conclusion.

Statements were given by a number of government representatives, including the Ministers of Health for Tuvalu, Panama, Suriname, and Kyrgyzstan – all who expressed strong support for the WHO's work on health and climate change. In particular, conference delegates supported the creation of a coordinating platform or working group for the WHO to help bring together different actors within the health community. It was further suggested that the new WHO workplan should contain a stronger focus on mitigation and health, and that WHO should work to develop guidelines and tools to complement this coordinating platform.

A final conference document was then presented by the WHO secretariat, which endeavoured to capture many of the inputs from the conference's three days. This is included in the 'Conclusions' section, below. Flavia Bustreo, the WHO Assistant Director-General for Family, Women's and Children's Health, thanked the conference delegates for their passion and engagement in health and climate change, and pledged increased support from WHO to help support the health response in this space. Finally, Chair Boyce thanked the WHO staff and volunteers, Marina Maiero, the conference coordinator, and conference participants, before closing the first WHO conference on health and climate change at 3:50pm.

CONCLUSION OF THE CONFERENCE

The WHO conference on Health and Climate was held from 27-29th August 2014, at WHO Headquarters, in Geneva, Switzerland. The deliberations of the conference provided information and guidance to WHO Member States in responding to the health challenges presented by climate change, and input to the revision of WHO's programme in this field.

In response to the very strong scientific evidence of the health risks presented by climate change, the conference participants issued a clear warning, that without adequate mitigation and adaptation, climate change poses unacceptable risks to global public health.

The participants recognized the necessity to strengthen health resilience to climate change, and the opportunity to make very large gains in public health through well-planned mitigation measures.

Participants also noted that although significant progress has been made in recent years, there are important weaknesses in the current international health response to climate change. These include relatively weak engagement of the health sector in the international and national policy processes on climate change; a lack of technical capacity to design and implement health adaptation plans or health promoting mitigation measures; and inadequate financing for the health sector to strengthen climate resilience, or to play its role in health-promoting mitigation policies.

This following needs were identified:

1. Generating and sharing information so as to raise awareness of the links between health and climate, and the potential for enhancing health through climate change mitigation.

2. Supporting the health sector in engaging more actively in the UNFCCC and other relevant international policy mechanisms; and at the national level through the development of the health component of National Adaptation Plans.

3. Identification of common approaches and metrics for monitoring and evaluation of progress in strengthening health resilience to climate risks, and for measuring, valuing and incentivizing health-promoting mitigation actions in key economic sectors, for example through actions on short-lived climate pollutants to reduce air pollution.

4. Providing Member States with technical support and capacity development support in key areas, including the development of the health components of National Adaptation Plans; collection and analysis of climate and health data; and the application of health impact assessment to adaptation and mitigation policies.

5. Promoting research to identify sector policies and measures with best performance in improving health and mitigating climate change.

6. Providing a forum to facilitate information exchange, coordination and collaboration on strengthening health resilience to climate change, and on health promoting climate mitigation policies.

7. Providing guidance to the health sector in protecting health services from climate risks, and reducing the carbon emissions of health sector operations.

8. Supporting resource mobilization to build climate resilience in the health sector and promoting healthy mitigation policies; by providing guidance on the available funding opportunities, and providing technical support to countries to develop funding proposals.

There is a need to continue the process of meeting these needs, following the mandates from the World Health Assembly and the UN Framework Convention on Climate Change, and related processes. This should make use of existing mechanisms, and build on the rapidly emerging experience from around the World.

WHO stands ready to host a platform to continue this process within its existing initiatives on climate change and health.

WHO will produce a full report on the conference, and ensure that key messages will be delivered on behalf of the health community to the Climate Summit that UN Secretary General Ban Ki-Moon will host on 23rd September 2014.

Annex 1

Technical Advisory Group Members	
Professor Kalpana Kalakrishnan	Professor of Biophysics, Sri Ramachandra University (India)
Dr. John Balbus	Senior Advisor for Public Health to the Director, National Institute of Environmental Health Sciences (USA)
Professor Hae-Kwan Cheong	Professor and Chair of the Department of Social and Preventive Medicine, Sungkyunkwan University School of Medicine, Suwon (Republic of Korea)
Professor Kristie Ebi	Professor in the Department of Global Health, University of Washington (USA)
Professor Antoine Flahault	Professor of Public Health, Université Descartes, Sorbonne Paris Cité (France)
Mr. Tore Godal	Special Adviser, Office of the Prime Minister (Norway)
Professor Sir Andy Haines	Professor & Former Director, London School of Hygiene and Tropical Medicine
Dr. Saleemul Huq	Director, International Centre for Climate Change and Development (ICCCAD) (Bangladesh)
Professor Anthony McMichael	Professor Emeritus of Population Health, Australian National University, Canberra (Australia)
Professor Jonathan Patz	Director of the Global Health Institute, University of Wisconsin, Madison (USA)
Nick Watts	Head of Project, Lancet Commission on Health and Climate Change