World Bank Group

# Climate Change and Health

## Approach and Action Plan

INVESTING IN CLIMATE CHANGE AND HEALTH SERIES

WORLD BANK GROUP

# World Bank Group Approach and Action Plan for Climate Change and Health

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This document is part of the "Investing in climate change and health" series, which aims to enable management and task teams with the tools and resources necessary to improve World Bank action on climate change and health. Current documents in this series include:

- "World Bank approach and action plan for climate change and health"
- "Geographic hotspots for World Bank action on climate change and health"
- "Climate-smart healthcare: low carbon and resilience strategies for the health sector"

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# Contents

# Foreword

Climate change is a risk multiplier that threatens to unravel decades of development gains. Among the most critical and direct risks to humans is the impact of climate change on health. Heat stress will worsen as high temperatures become more common and water scarcity increases; malnutrition, particularly in children, could become more prevalent in some parts of the world where droughts are expected to become more frequent; and water- and vector-borne diseases are likely to expand in range as conditions favor mosquitoes, flies, and water-borne pathogens. Worse still, these threats will be greatest in regions where the population is most dense, most vulnerable, and least equipped to adapt, pushing more people in poverty and reinforcing a cycle of environmental degradation, poor health and slow development.

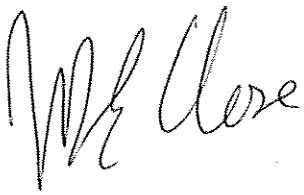
Addressing these climate-associated health risks is critical. Alongside risk, there is opportunity. Responses to climate change have unearthed significant potential for improving both human health and the environment. Low carbon hospitals can draw upon the many advances made by the energy sector in developing cleaner and renewable resources. Pharmaceutical supply chains can benefit from more efficient and less polluting transport. And food and nutrition can be improved by the advances achieved through climate-smart agriculture.

Climate change challenges are multi-sectoral and so too are the solutions. At the World Bank Group, we are tackling different dimensions of these environment and health threats in different ways. For example, the 'Pollution Management and Environmental Health' Trust Fund addresses air pollution, toxic land pollution, and marine litter. Work on Climate-Smart Agriculture aims to sustainably increase food productivity and human well-being in a changing climate. We are putting in place a new operational framework for strengthening human, animal, and environmental health systems in response to disease threats. And within the health sector, we have made Universal Health Coverage core and increasingly considerate of climate change and resilience.

At the World Bank Group, we work with the broader development community to create solutions that can respond to and reduce these risks. Our work aligns with other global efforts aimed at improving environmental and human health, such as the work of the Climate and Clean Air Coalition, Global Alliance for Clean Cookstoves, One Health and Planetary Health communities, and broader efforts to achieve the Sustainable Development Goals.

This report outlines a World Bank Approach and Action Plan for climate change and health. It is intended to establish an institutional foundation from which country programming can be built. The document reflects a consultative process across the World Bank Group taken together with other experts to determine the most promising and feasible practices. And though the plan is specific to the World Bank Group, the approaches are intended to be generally applicable to any institution aiming to finance or implement climate change and health programs.

The work presented here is expected to assist the development community in further mainstreaming climate change and health into development operations so that we may address the emerging needs of vulnerable communities, particularly women and children. We are committed to working with development practitioners around the world on climate change and health, capitalizing upon associated opportunities and technologies, and contributing to the overall goals of ending extreme poverty and boosting shared prosperity.



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# Acronyms

| | |
|---|---|
| **AAP** | Ambient Air Pollution |
| **CCSA** | Cross-Cutting Solutions Area |
| **CEETI** | City Energy Efficiency Transformation Initiative |
| **CMU** | Country Management Unit |
| **CoP** | Conferences of the Parties |
| **CPFs** | Country Partnership Frameworks |
| **CC** | Climate Change |
| **CSA** | Climate Smart Agriculture |
| **CURB** | Climate Action for URBan Sustainability tool |
| **DPOs** | Development Policy Operations |
| **EDGE** | Excellence In Design For Greater Efficiencies |
| **ENR** | Environment and Natural Resources |
| **ESMAP** | Energy Sector Management Program |
| **GFDRR** | Global Facility for Disaster Reduction and Recovery |
| **GHG** | Greenhouse Gas |
| **GP** | Global Practice |
| **HAP** | Household Air Pollution |
| **HNP** | Health Nutrition and Population |
| **IFC** | International Finance Corporation |
| **IHME** | Institute for Health Metrics and Evaluation |
| **IPCC** | The Intergovernmental Panel on Climate Change |
| **LLI** | Leadership Learning and Innovation |
| **MDG** | Millennium Development Goals |
| **MOOC** | Massive Open Online Course |
| **NAPA** | National Adaptation Programs of Action |
| **NDC** | Nationally-Determined Contributions |
| **NDF** | Nordic Development Fund |
| **OECD** | Organization for Economic Co-operation and Development |
| **PPCR** | Pilot Program for Climate Resilience |
| **SCDs** | Systematic Country Diagnostics |
| **SDG** | Sustainable Development Goals |
| **SLCP** | Short-Lived Climate Pollutants |
| **TA** | Technical Assistance |
| **TTL** | Task Team Leader |
| **UHC** | Universal Health Coverage |
| **WHO** | World Health Organization |
| **WMO** | World Meteorological Organization |

# Introduction

Climate change (CC) impacts on health outcomes—both direct and indirect—are sufficient to jeopardize achieving the World Bank Group's visions and agendas in poverty reduction, population resilience, and health, nutrition and population (HNP). In the last 5 years, the number of voices calling for stronger international action on climate change and health has increased,[1] as have the scale and depth of activities. But current global efforts in climate and health are inadequately integrated. As a result, actions to address climate change—including World Bank Group (WBG) investment and lending—are missing opportunities to simultaneously promote better health outcomes and more resilient populations and health sectors.

Accordingly, with the financial support of the Nordic Development Fund (NDF), the World Bank Group set out to develop an approach and a 4-year action plan—outlined in this paper—to integrate health-related climate considerations into selected WBG sector plans and investments.[2]

The approach and 4-year action plan is to integrate health-related climate considerations into selected WBG sector plans and investments. It does so using the prevailing health sector conceptual framework of Universal Health Coverage, which brings in the positive and negative impacts that investments in other sectors/areas of the economy have on health outcomes. A substantial share of the impacts that climate has on health are mediated through interventions in sectors other than health. Therefore, while reducing GHGs for climate change reasons will generally produce substantial short- and long-term benefits for health, that alone is unlikely to maximize the outcomes of health investments, and in the case of some investments in non-health sectors it may even negatively affect health outcomes.[3]

This paper proposes a two-pronged approach. One prong proposes to focus most of the World Bank's efforts on improving the climate resilience of the health sector, both through purely adaptive solutions but also through improvements to the sector's sustainable energy access and efficiency. The other prong proposes to look at selected investments in other sectors that affect climate-sensitive health outcomes, to maximize development impact while minimizing the possibility of maladaptation.

As such, this paper sets out to inform key groups within the World Bank. It outlines a potential approach for the WBG in climate and health by considering the current health-climate change imperative, the evolution of the global policy environment and the picture today, and global initiatives and

1 Climate change has been called both the 'biggest global health threat' and the "greatest global health opportunity" of the 21st century (Costello, 2009; Watts, 2015). The Director General of the World Health Organization (WHO) has called climate change "the defining global health threat of the 21st century" (Chan, 2014), and the Executive Secretary of the United Nations Framework Convention on Climate Change has noted "a climate agreement is a global health agreement."

2 In addition, NDF resources have also been allocated under a different Bank product to support Mozambique's Ministry of Health in their efforts to strengthen the health sector's resilience to climate change.

3 E.g.: Irrigation schemes, and reintroduction of mangroves as a coastal protection may help vector disease transmission if parallel measures are not considered. Fuel policy exclusively looking at pollution for health reasons may have substantial GHG impacts or vice versa, and climate resilient transport investments may worsen chronic flooding in certain areas or stimulate urban development in areas likely to become unhealthy because of flooding.

WBG roles now and in the future. It also describes strategic objectives and potential operational steps and tools. The underlying premise is that climate affects health today and has the potential to significantly impact global health and poverty reduction in the future, and that there exists a number of options for the WBG and its partner countries to prevent an added burden of illness or death from a changing climate.

## Scope and Limitations

Reducing the impact of CC on health and increasing the resilience of populations to the effects of climate on health requires policies, technologies and interventions to increase adaptive capacity and mitigate pollution and greenhouse gases across a number of sectors and actors. The proposed approach recognizes this and takes into consideration ongoing efforts to counter climate change and its effects by various actors and their generally positive impacts on health. It focuses on leveraging those efforts and addressing specific gaps. For instance, while reduction of greenhouse gas (GHG) emissions (i.e., climate mitigation) is central to health in the short term (by addressing pollution) and in the long term (by slowing or stopping CC), the proposed approach places limited emphasis on this remedy given that such efforts are already underway through other sectors. Instead, the proposed approach seeks to address the most significant apparent weakness—the *resilience* of the health sector, particularly its adaptive capacity. In those sectors outside health, nutrition and population, the emphasis is on *maladaptation,* given its potential negative effects, as well as opportunities to increase the impact of development activities by optimizing them for both climate change and climate sensitive effects. Taking into account both the initiatives already underway and these two goals, this paper proposes a plan based around universal health coverage (UHC) as the entry point for climate engagement as it relates to health outcomes. Achieving UHC is the current core goal and strategic framework for the global health community and for the World Bank's HNP Global Practice (GP). The strategic directions to support countries to achieve UHC that the HNP GP is putting forward, emphasizes the importance of other sectors to improving health outcomes.

There are two factors that argue in favor of UHC as the basis for a new conceptual framework. First, it ensures the approach and plan can be understood and integrated within the context of the existing priorities and activities of the WBG's health, nutrition and population community. Second, it serves to recognize the centrality of health to efforts in other sectors.

In addition to the analytic work already carried out by the Climate Change Cross-Cutting Solutions Area (CCSA), this paper has benefited from and builds on the knowledge generated by multiple initiatives and research across GPs, as well as the WBG Climate Action Plan and regional CC strategies. It also draws from documents prepared as part of the "Building an Approach to Climate Change and Health" knowledge product financed by NDF, including:

- A geographical hotspots analysis using existing indicators to identify countries where climate change—or exposure to drivers of climate change (e.g., air pollution)—are expected to most significantly alter the burden of disease. The analysis guides the focus of this approach.
- A report on "Climate Smart Healthcare" which aims to identify low carbon and resilience strategies for the health sector.
- Two sector knowledge notes identifying issues and entry points to integrate health-related climate consideration into the agriculture and transport sector portfolios.

The CC and health work is anchored in the CCSA commitment to deliver on corporate mandates, respond to client demand by supporting efforts across GPs and country management units (CMUs), and position the World Bank externally as the partner of choice in global climate change risk identification, mitigation and response. The participatory approach taken to develop this work has enhanced the cooperation between the CCSA and relevant GPs on this topic.

CHAPTER

# 1 The Scope of the Climate Challenge to Health Development

Climate impacts on health are likely to be greater in low- and middle-income countries. These are often most vulnerable to climate shifts and have the least capacity to take adaptation or mitigation measures given their weak health infrastructure and capacity. The threat posed by climate to health outcomes has been extensively discussed for some years and is seen to be growing.

Climate change impacts could drag more than 100 million people back into extreme poverty by 2030 (Hallegate, 2016), with a significant part of this reversal attributable to negative impacts on health outcomes. There is clear and mounting evidence that health outcomes will—in large part—be negatively impacted by rising sea levels and temperatures and weather extremes due to climate change. Several of the emissions that drive climate change also affect health directly. These impacts will be greatest in the poorest countries and regions where the population is densest, most vulnerable, and least equipped to adapt (World Bank, 2012, 2013, and 2014; Smith et al., 2014).

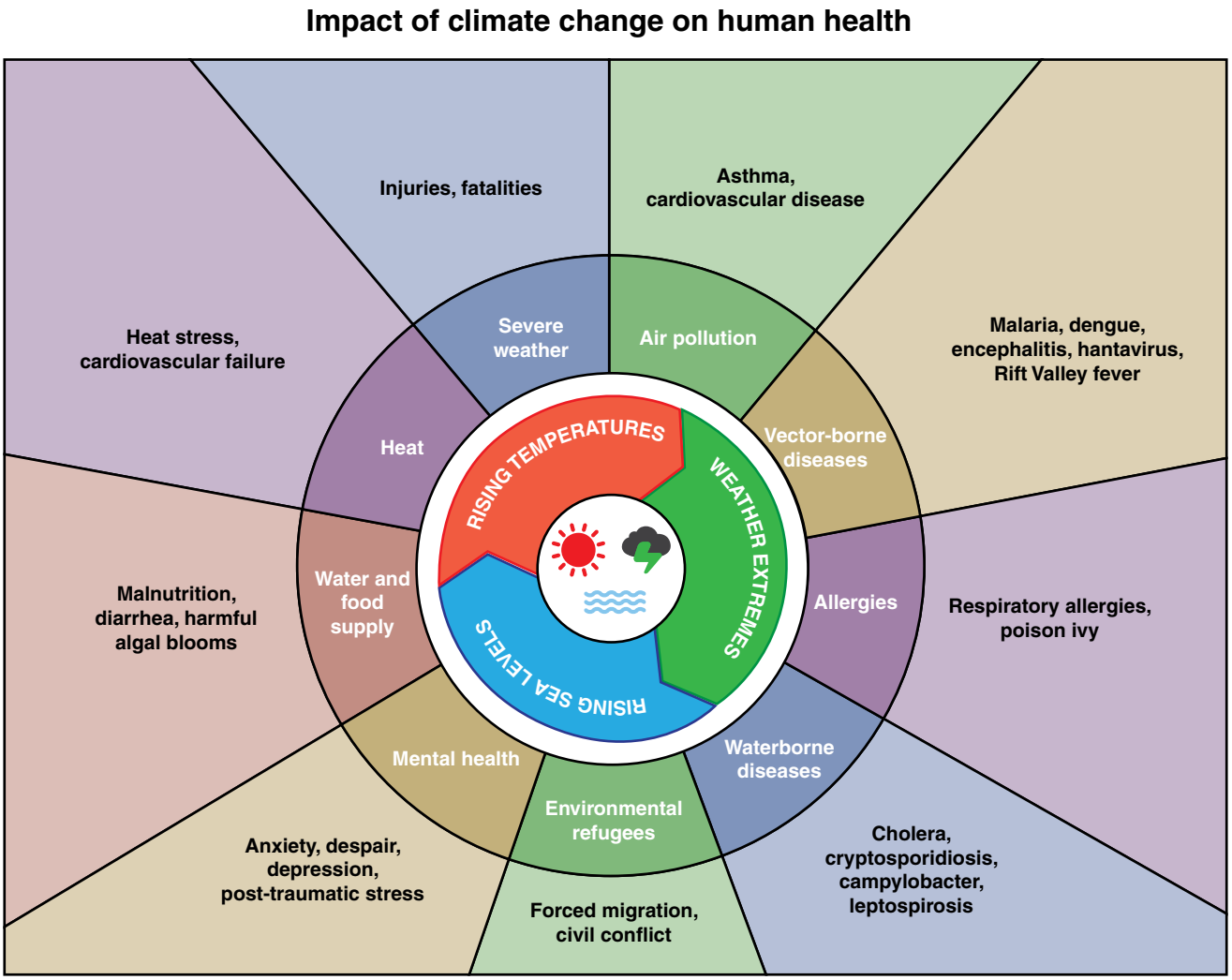
Given the complexity of social and environmental factors that influence disease and health outcomes, the precise extent of this impact is difficult to establish. The World Health Organization (WHO), for example, estimated in the early 2000s that climate change was already accounting for an additional 150,000 annual deaths (WHO, 2004). Forecasts suggest that by 2030 an additional 250,000 deaths per year will occur from heat exposure, undernutrition, malaria, and diarrheal disease due to climate change. These estimates are regarded as conservative and do not include all climate-sensitive health impacts, e.g., pollution, injuries, non-malaria infectious disease, and others for which projection data is lacking (WHO, 2014). Figure 1.1 shows the endpoints of climate-sensitive health impacts and correlates them to environmental variables, sensitive to a cycle of broader climatic change.

This additional burden of disease comes with a significant economic global and local impact. One study (Ebi, 2008) estimates the global additional costs associated with climate change-related cases of just three sets of diseases—malaria, diarrheal diseases, and malnutrition—to be US$4–12 billion in 2030 under the business-as-usual scenario.[4] A significant part of this burden is borne by poor countries where those three conditions are already persistent.

Separate work suggests there are also significant costs associated with disaster-related health impacts. Although little research has been undertaken for the developing world, it was estimated that climate-related disasters have already caused US$14 billion in health-related costs over a 10-year period in the US alone (Knowlton, et al., 2011). Other research has estimated that impacts associated with labor productivity losses due to excess heat (correlating to health stress) may be as much as 11–20 percent in heat-prone regions such as Asia and the Caribbean by 2080 (Kjellstrom, 2009). If avoided,

4 This corresponds to a scenario that assumes that nothing additional would be done to control climate (e.g., reduce greenhouse gas emissions) beyond what would occur through increased efficiency, reductions in air pollution, etc. It corresponds to a $CO_2$ concentration in the atmosphere of 750 parts per million.

**Figure 1.1:** Climate sensitive health impact endpoints.



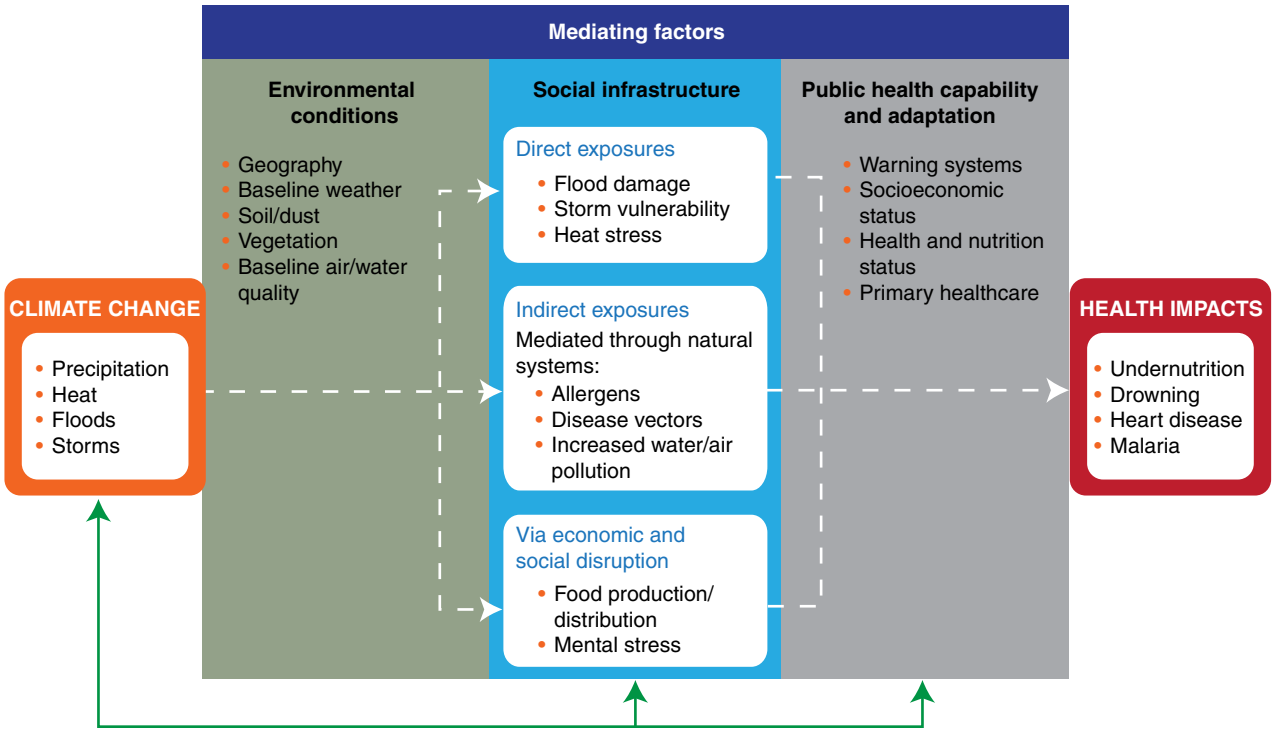

Source: Adapted from J. Patz. National Oceanic and Atmospheric Administration. (https://toolkit.climate.gov/image/505).

these aggregate health costs—along with other benefits of limiting warming to 2°C—can amount to economic savings that exceed the US$1.5–2 billion per year for health sector adaptation and start to approach the estimated US$70–100 billion per year of overall adaptation investment needed by 2050 (World Bank, 2009).

Importantly, not all climate-related health impacts of concern will occur in the future. Along with some direct impacts, the emissions that drive climate change are largely co-emitted by the same sources that are responsible for air pollution. The 2013 Global Burden of Disease data suggest that ambient air pollution (AAP) and, in the developing world, household air pollution (HAP) already kill more than 5.5 million people annually (IHME, 2016). Tens of millions more suffer from related diseases, including pneumonia (particularly affecting children), lung cancer, cardiovascular disease, stroke, and chronic obstructive pulmonary diseases (WHO, 2015). As such, reducing emissions of greenhouse gases through better transport, food and energy-use choices can result in improved health, especially through the reduction of air pollution.

The economic costs associated with the air pollution-related burden of disease are also considerable. A study by the Organization for Economic Co-operation and Development (OECD, 2014) found that air pollution illnesses and mortalities correspond to US$1.7 trillion of lost output annually in OECD countries, US$1.4 trillion in China, and US$500 billion in India.

**Figure 1.2:** Exposure pathways by which climate change affects health.




Source: Smith et al., 2014.

## Climate Change Pathways and Climate Drivers

The Intergovernmental Panel on Climate Change (IPCC) has identified three ways in which climate change can influence health outcomes (Figure 1.2): 1) the direct pathway of climate change impact on health; 2) an ecosystem-mediated pathway for health impacts; and 3) a human institution-mediated pathway for health impacts (Smith et al., 2014). Co-emitted air pollution is treated separately to better account for the health impacts associated with the drivers of climate change and is classified in terms of sources that contribute to ambient air pollution versus those that contribute to household air pollution.

1. **Direct Pathway to Health Impacts**
   This pathway refers to direct illness and death due to exposure to extreme weather events in which climate change may play a role. These include effects of high heat (including "heat exhaustion" and heat waves), floods, storms, air quality, etc.

2. **Ecosystem-Mediated Pathway**
   This applies to illnesses and deaths due to events such as shifts in patterns of disease-carrying mosquitoes and ticks, or increases in waterborne diseases caused by warmer conditions and increased precipitation and runoff. It also includes worsening air quality in general, and increased air pollution in particular, due to temperature increases.

3. **Societal Systems/Human Institutions-Mediated Pathway**
   This includes death and sickness from altered systems created by humans. These include agricultural production and distribution, urban environments and food insecurity, stress and undernutrition and violent conflict caused by population displacement, economic losses due to widespread "heat exhaustion" impacts on the workforce, or other environmental stressors.

In Figure 1.2, the green box indicates the moderating influences of local environmental conditions on climate change exposure pathways in a particular population. The gray box indicates the

extent to which factors such as background public health and socioeconomic conditions and adaptation measures moderate the actual health burden produced by the three categories of exposure. The green arrows at the bottom indicate that there may be feedback mechanisms—positive or negative—between societal infrastructure, public health, and adaptation measures and climate change itself.

A significant percentage of the impacts of climate change and its drivers is preventable through a range of proven health and non-health interventions and adaptation measures that help increase a population's resilience. According to the IPCC, there is substantial potential to reduce the climate impacts on health across eight dimensions[5] by shifting to higher levels of adaptation than those currently proposed. Whether in infectious disease, heat waves or natural disasters, history has shown that preparedness and response to threats can greatly limit the losses to health, human life and economies. For example, in 1970 a Category 3 hurricane battered East Pakistan (present day Bangladesh) resulting in 500,000 deaths. Similar storms hit Bangladesh again in 1991 and 2007, causing 140,000 and 3,400 deaths, respectively. Collaborative adaptation over the intervening decades led to these dramatic improvements in lives lost (Smith et al., 2014) by increasing Bangladesh's resilience to natural disasters. The country shifted to a higher level of adaptation that included improving general disaster education (greatly assisted by rising literacy rates, especially among women), deployment of early warning systems (which included community mobilization), building a network of cyclone shelters, relocation efforts, and increasing connectivity of health facilities in high-risk areas.

5 Those are: heat effects, vector-, food-, and waterborne diseases, mental and occupational health, undernutrition, air quality, and extreme weather events.

Mitigation, in addition to delivering long-term health effects by reducing the level of GHG emission, would also have an immediate impact on health outcomes due to lower pollution levels. A significant proportion of potential deaths could be avoided with stringent climate mitigation, given air pollution's role as a co-emitted byproduct of fossil-fuel combustion. However, the remaining deaths are also avoidable through mitigation of black carbon and methane, the so-called short-lived climate pollutants or SLCPs (Rogelj et al., 2014).

Importantly, the present health status of a population may be the single most important predictor of both the future health impacts of climate change and the costs of adaptation (Smith, 2014). A population's health status is a function of both access to health services and general development, the latter measured through access to other basic goods and services such as food, education, clean water and energy, clean air, and disaster preparedness and protection. Currently, UHC is the ultimate goal of the health community as reflected in the new Sustainable Development Goals (SDGs), national health policies, and strategies at development institutions. Achieving UHC—that is, ensuring that 100 percent of the population has access to equitable and affordable basic health promotion, prevention, and treatment and rehabilitation services—would significantly contribute to increases in a population's resilience to both climate change impacts and the impacts of pollution. Further details on UHC are provided in Chapter 3.

Despite evidence both of the problems and their potential solutions, there has been little effort in most low- and low-middle income countries to increase the levels of community resilience through interventions in health and other sectors to improve health outcomes. This historic trend is currently changing, and we may be at a "tipping point" for health and climate change.

CHAPTER

# 2 Evolution of the Climate-Health Imperative

The past 24 years have brought advances in better understanding and quantifying the impacts of CC and pollution in health. However, it is only in the past 5 years (and notably in 2015) that a series of global changes and events have taken place, opening for the first time a real window of opportunity for intervention at significant scale. To seize this emerging opportunity, steps need to be taken globally and by the WBG to pursue well-targeted knowledge gathering and operational and capacity building efforts to correct some of the evident system failures. In this chapter is a brief summary of global and WBG efforts to date.

## The Global Perspective

### Growing Awareness and Research Attention on Impacts of Climate Change and Health

Beginning with the Rio Earth Summit in 1992, a small group of health experts has advocated greater consideration of the impacts of climate change on human health. Subsequently, there has been a growing body of research addressing both singular and collective dimensions of climate change and health. Initially, public work in this area focused on raising awareness of the impacts of climate change: notably vector-borne diseases, waterborne diseases, and malnutrition. Over time, the focus on impacts expanded to encompass approaches to adaptation and by the early 2000s included heat stress, psychological impacts, respiratory impacts, and injuries from extreme weather. The onset of the European heat wave of 2003 served to heighten interest in the field. At the global level, this focus has gradually expanded to address the co-health benefits of mitigation (such as cardiorespiratory health), the recurrence in recent years of climate-sensitive infectious diseases, the greater scientific understanding of the impacts of temperature changes on pollution, the quantification of the related burden of disease, and the growth of highly polluted megacities.

In the meantime, specialized research institutions have been established, nongovernmental organizations have dedicated themselves to the cause, the World Health Organization (WHO) and Pan-American Health Organization have created climate change and health divisions, and a number of private foundations have devoted specialized funding streams. WHO has led the effort in developing a catalogue of country engagement resources including training, assessments, and analytical pieces to be used in supporting national adaptation plans and country strategies. In collaboration with the World Meteorological Organization (WMO), WHO has supported 17 major projects focusing on health adaptation to climate change in 14 countries across all WHO regions. It has also carried out assessments of health vulnerability to climate change in over 30 countries. WHO reviews country requirements and serves as a clearinghouse of current adaptation projects, while also providing guidance to pilot projects on green and safe health services.

## International Bodies, Governments Placing New Emphasis on Health Impacts of Climate Change

Politically, the topic of climate change and health became increasingly recognized in international resolutions and public statements from governments and organizations, from the African Union to the United Nations Security Council. The private sector has also taken notice, performing analysis and publishing detailed climate change and health industry reports and business plans. The 2013 WHO conference on climate change and health attracted more than four dozen health ministers and hundreds of global delegates to explore solutions to climate and health challenges.

Countries have been progressively emphasizing the health impacts of climate change. In 2008, a total of 193 countries endorsed a World Health Assembly resolution calling for action to protect health from climate change. In 2011, 39 out of 41 National Adaptation Programs of Action (NAPAs) from least-developed countries identified health as a priority sector affected by climate change, and 30 included health interventions within adaptation needs. In addition, substantial work has been done in sectors and topics that moderate the impacts of climate on health outcomes such as agriculture, water pollution and other environmental services. Yet, despite all these efforts, in 2011 only 1 percent of the financial resources for adaptation were devoted to the health sector.

The reasons behind this limited attention in practice to increasing the health resilience of the health sector include:

- The effects of climate on agriculture and water resources (e.g., droughts, floods) are much more readily understood by decision makers and the population, than climate effects on vector- or water-related diseases.
- Until recently, the health community was focused on achieving the Millennium Development Goals (MDGs), which did not make any connection between CC and health.
- The uncertainty of long-term climate effects on health and the perceived distant time horizon in a sector that is dealing with immediate life-threatening conditions make it difficult for professionals to focus on the issue. It is only recently that the emergence of new threats and the expansion of existing health problems related to environmental disruption and climate (e.g., meningitis, Ebola, Zika, and deaths caused by heat waves) are providing evidence for the global and national health community that climate change is already affecting health.
- Similarly, disasters that affect entire communities capture attention more readily, while the plight of a sick person is perceived as an individual issue. Decision makers often turn their attention and resources to illnesses only when these acquire epidemic proportions. Financing for noncrisis efforts to build systems (health and others) that could prevent or respond to those epidemics has not been forthcoming until recently.
- Financing for adaptation efforts became significant only after the Tokyo protocol. Even today, it remains below financing efforts to mitigate GHG emissions.
- There is a perception that the health sector has been, and continues to be, receiving more per capita resources than other sectors. In reality, most funds have until recently been tightly earmarked for diseases or issues and have not been conducive to increasing the health sector's resilience.
- Finally, knowledge gaps in the health sector compound the situation. First, climate data and model forecasting are complex and difficult to interpret for those unfamiliar with these tools. To make things worse, the effects of similar climate situations on health vary depending on geography and other factors, complicating forecasting and decision making. Second, there is limited experience in integrating climate considerations in health sectors and climate sensitive-health considerations in other sectors. Third, there is insufficient knowledge within the health community of how to access climate adaptation funds, as well as limited interest among donors in health adaptation.

## Shifts in Emphasis to Resilience, Health Systems Present Opportunity

Recent years have brought a shift in attention and determination globally that presents a window of opportunity to bring past efforts to fruition. In the climate community, successive Conferences of the Parties (CoPs) have expanded from their original almost exclusive focus on emissions reduction to placing equal emphasis on increasing resilience, which has opened the door for interventions to improve health outcomes and financing adaptation measures. At the same time, the health community has evolved from its prior disease-centered focus to a health system focus, as reflected both in the concept of UHC and the formulation of the SDGs. In the broader development sphere, the SDGs put climate change at the center of the development mandate and took a far more expansive view of interaction of health and climate change than the Millennium Development Goals. The body of experience as to how to increase the resilience of health systems is increasing, and WHO recently published an operational framework for building climate health systems (WHO, 2015).

Partly as a consequence of these changes, low-income countries have increasingly included health impacts in their National Adaptation Plans of Action and Nationally-Determined Contributions (NDCs). To date, NDCs for 67 countries (of which 36 are eligible for IDA resources) out of 143 screened by the WBG include health

as a focus area. Moreover, multilateral financing institutions and several other donors and foundations have begun to show interest in investing in health sector resilience.

Both the SDGs and the Paris CoP accord offer a number of entry points for increased World Bank activity, particularly as WBG client countries (and other partners) often lack planning and program capabilities in this area.

## The World Bank Perspective

### A Growing Body of Research and Analysis

World Bank work in health and climate change has followed a trajectory somewhat similar to that of the global community. The WBG acknowledged the climate change/health connection in 1994 and has progressively accelerated its analysis through to the 2010 *World Development Report* (focusing on climate change and development) and the 2012 *Turn Down the Heat* report. More recently, the 2015 *Shockwaves* report (Box 2.1), quantified the links between climate change and health outcomes, particularly for malnutrition and poverty. Climate change analyses from the Eastern Europe and Central Asia and the Middle East and North Africa regions have included chapters on impacts and potential interventions in those areas.

In addition, there are multiple analytical products that identify health as a co-benefit of interventions in other sectors. Examples include work on short-lived climate pollutants (SLCP), the development of low-carbon cities, the phasing out of fossil fuel subsidies, as well as waste management, climate-smart agriculture, and disaster risk management. A comprehensive World Bank paper summarizing the work done on CC and health across sectors identified a range of analytical products that mentioned or discussed the CC and health connection, but concluded that there has been little, if any, translation from analytics to operations.

Accordingly, it is important to identify opportunities to emphasize the climate and health connection. For example, the 2013 WBG Strategy and the CC Strategy both might have drawn the link between health and CC. Similarly, the 2007 HNP strategy might have made reference to climate change, as well as the 2013–2015 Global Facility for Disaster Reduction and Recovery (GFDRR) strategy. Similarly, while the WBG has made major strides in introducing climate considerations throughout its operations and strategies in transport, energy, environment, agriculture, urban development and disaster risk management, the link between those two issues has not been, until very recently, recognized in documents, country dialogues, or operations. The exceptions have been Climate Smart Agriculture (CSA) and the 2012 Environmental Strategy.

### Knowledge Yet to Permeate WBG Operations

To date, only two HNP projects (Nagaland and Moldova) include climate consideration in their design. Similarly, more could be done to mention CC impacts on health in Systematic Country Diagnostics (SCDs) and Country Partnership Frameworks (CPFs) and to suggest low-cost/no-regret interventions to minimize impacts. Cross-sector adaptation programs such as the Pilot Program for Climate Resilience and the Small Island States Resilience Initiative also could include health as one area of strategic focus. GFDRR does include health facilities in its disaster assessments and often it may leverage other resources for reconstruction after climate-related disasters. GFDRR collaborated with WHO several years ago on a safe hospitals guidance document and it could build on this promising effort by establishing a global program for safer facilities, as it has through a similar initiative in education.

In terms of translating knowledge into operational work, the WBG's experience has again largely mirrored that of the global community, with the key difference that the strengthening of health systems has been central to World Bank HNP work for over a decade. In addition, the World Bank has for many years supported pollution abatement efforts across the world with the intention of improving health outcomes, in addition to improving environmental results. Notwithstanding these exceptions, it is fair to characterize climate-related health work as a new opening for the WBG, both in HNP and across other sectors, including the Climate Change CCSA.

### Recent Developments Open a Window for Improvement

The past 12 to 18 months have brought new opportunities within the climate field to deliver on the promise of WBG knowledge on health and climate in its operations:

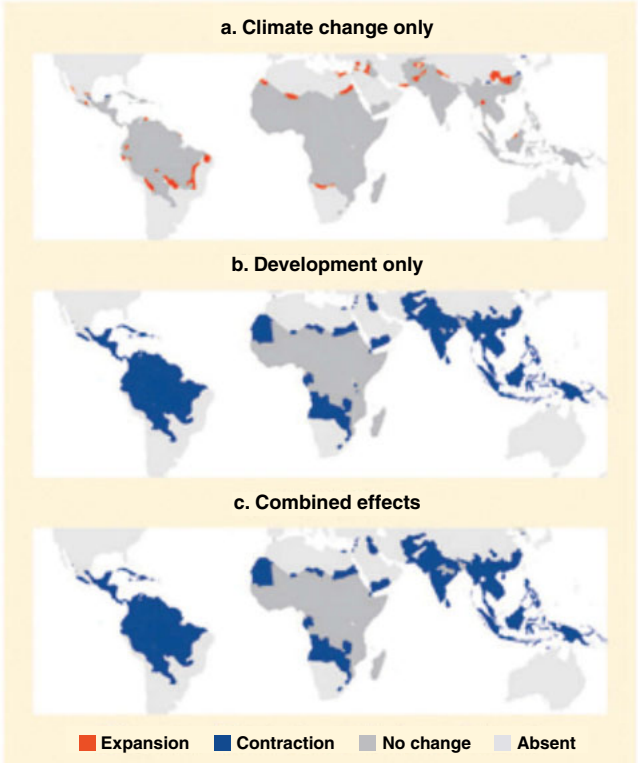
- The WBG Climate Change Action Plan (March, 2016) includes health as a key tool for climate resilience while acknowledging the need to make the health sector itself climate resilient.
- The Climate and Disaster Risk Tool launched last fiscal year includes a module to screen health projects, although it could benefit from the inclusion of questions focusing on the climate/health angle while screening projects in other sectors.
- The corporate commitment to screen all International Development Association (IDA) projects for climate risks, and to increase climate financing to 28 percent of World Bank lending, sets an appropriate incentive structure across sectors.

## Box 2.1: The 2015 *Shockwaves* Report

Climate change (CC) threatens the objective of sustainably eradicating poverty. The Shock Waves report identifies health as one of the main channels through which CC will threaten poor and vulnerable people, including children. The precise impacts of CC on health threats remain uncertain in what is still an emerging research field. Progress in medical treatments offers hope that some of these issues could be solved over the long term thanks to new drugs and better health infrastructure. But short-term impacts could still be significant.

Health shocks are important for poverty dynamics and the impact of CC for three main reasons. First, the diseases that most affect poor people are diseases expected to expand with CC (such as malaria and diarrhea). In Africa, for instance, malaria could increase by 5–7 percent among populations at risk in higher altitudes, leading to a potential increase in the number of cases of up to 28 percent. Similarly, climate impacts could increase the burden of diarrhea by up to 10 percent by 2030 in some regions. Second, health expenditures are regressive, with poor households largely uninsured (such outlays push an estimated 100 million people per year into poverty) and the loss of income for the sick or the caregiver can have a large impact on family prospects. Third, children are most vulnerable to these shocks and can suffer from irreversible impacts that affect their lifetime earnings and lead to the intergenerational transmission of poverty. Partly because of its impacts on agriculture, CC will increase undernutrition and could sharply increase severe stunting. By 2030, an additional 7.5 million children may be stunted. Climate Change may even lead to an absolute increase in the number of stunted children in some parts of Africa, with the negative effect of climate change outweighing the positive effect of economic growth. Recent evidence suggests that the nutritional quality of food (e.g., its content in terms of micronutrients such as iron, iodine, vitamin A, folate, and zinc) could also be affected by CC, even though little is known about potential impacts. Development—notably better access to health care and to services such as water and sanitation infrastructure—has the potential to reduce but not eliminate the risks climate change poses for health (see for instance, figure on malaria incidence). Universal health coverage would contribute greatly to climate change adaptation—and monitoring and surveillance systems (both in the health and environmental sectors) will be critical to deal with emerging health issues.[6]

**Figure 2.1:** By 2050, socioeconomic development should reduce malaria incidence, even with climate change (Shockwaves, p. 119).




(Extract from Hallegatte, et al. 2016. *Shock Waves: Managing the Impacts of Climate Change on Poverty, Climate Change and Development;* Washington, DC: World Bank.)

- Increasing demand from countries for support with the health impacts of climate through the NDCs and NAPAs.
- The launching of the Pollution Management and Environment Health Program (PMEH), managed by the Environment GP, considers GHG in its discussion of pollution and its health impacts.
- The creation of a Climate Change Cross-Cutting Solution Area (CCSA) that oversees all World Bank climate change efforts and that has considerable technical capacity.
- Resources from the Nordic Development Fund have allowed the development of this approach and action plan paper, and technical assistance for Mozambique's Ministry of Health to develop its health sector climate change action plan and disaster preparedness and response.

There are also recent efforts to link CC and health in the context of other sector goals. The Energy Efficient Cities initiative in the

6 Source: Based on Béguin et al., 2011.
Note: Map of projected areas of malaria presence for 2050. Areas where the malaria status changes between the baseline and the scenario period are shown in color. Grey areas represent those regions in which the model predicts no malaria transmission by 2050 under any scenario.

Energy Sector Management Program (ESMAP) includes hospitals and health facilities, and the Clean Heating and Cooking initiative, led by ESMAP in collaboration with HNP and the CCSA works to reduce indoor air pollution. The CityStrength tool, a collaboration between the Urban Development Team and GFDRR, allows for the inclusion of health while focusing on increased city resilience to climate change and disasters in general.

The Climate Smart Agriculture Strategy places emphasis on the effects of climate on undernutrition (particularly stunting) through its impact in the agricultural value chain. Additionally, the One Health initiative, led by the Agriculture GP in collaboration with HNP, links animal and health to climate and to human health. Finally, efforts to add a clean air and health module to the existing Climate Action for URBan Sustainability tool (CURB) will make the links between efforts to reduce GHG emissions and health outcomes, via air pollution, directly quantifiable.

On the health side, HNP is currently updating its strategy through a strategic directions paper. This presents an opportunity to include climate considerations at the core of HNP operations. HNP has made its mission "to support countries accelerating their progress towards UHC," which is in itself a key means to increase population resilience to climate sensitive conditions and disasters. Moreover, one of the three HNP strategic activities to realize this mission includes "harnessing the potential of other sectors to strengthen climate-sensitive HNP results and generate public goods." This emphasis, which is exclusive to the World Bank, is an entry point to capitalize on efforts in other sectors to increase health sector and community resilience to climate sensitive health effects.

To crystalize the existing opportunities and address the weaknesses identified, the proposed WBG approach and action plan outlined in Chapter 4 and detailed in Annex C recognize both the importance of a resilient health sector as well as the need to embrace cross-sector solutions. It proposes to begin the dialogue not from the basis of climate, as has been the case, but from the prevailing health community policy framework (i.e., UHC). Such an innovative approach could help facilitate dialogue both with the health sector and other sectors.

CHAPTER

# 3 The Conceptual Framework: Making UHC Climate Smart for World Bank's Clients' Population

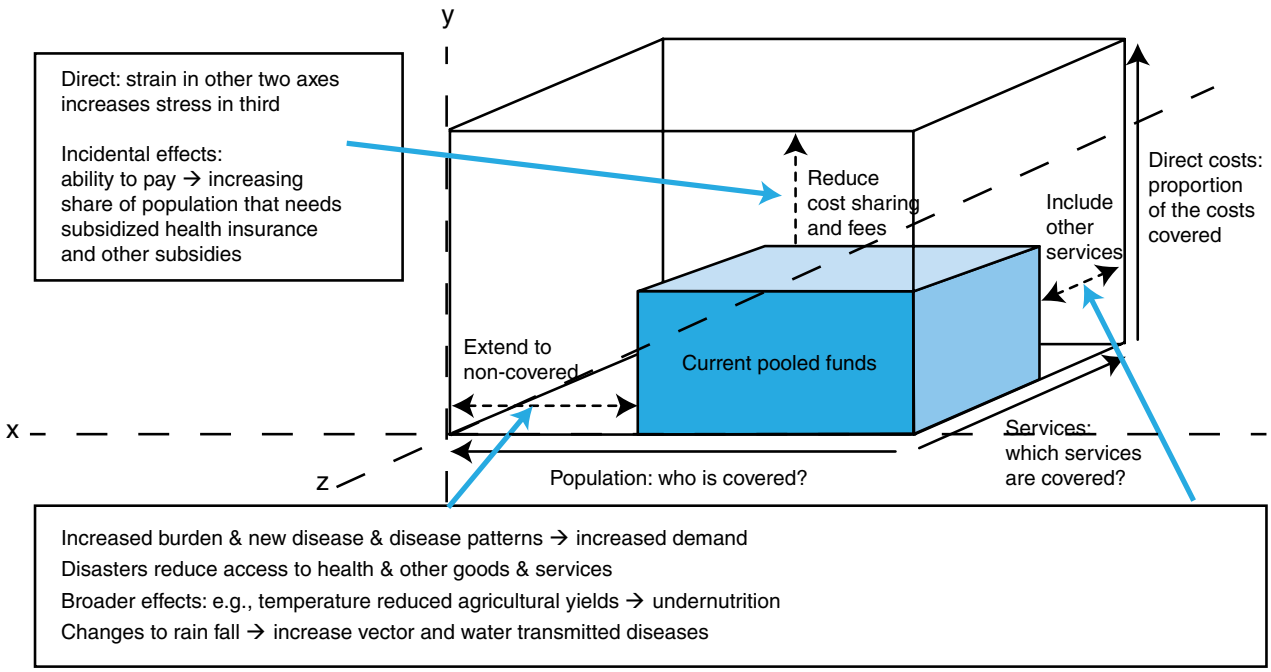
The single most significant predictor of future health impacts of climate change and health-related adaptation costs in a country may be the population's current health status. It has also been noted that effective resilience hinges upon a country's progress toward UHC, the degree of public access to basic goods and services beyond the health sector, and preparedness and response to disasters (whether climate-related or otherwise). These all serve to reduce impacts in terms of health and the costs of climate adaptation to the minimum.

The 2010 World Health Report defined UHC as ensuring that everyone receives the health services they need—including initiatives designed to promote better health, prevent illness, and to provide treatment, rehabilitation, and palliative care of sufficient quality to be effective—while at the same time ensuring that the use of these services does not expose the user to financial hardship (WHO, 2010). In practice, these health services can encompass policies that discourage smoking, vaccination programs, and end-of-life care. UHC's three dimensions—health services, finance, and population—are represented in what has come to be known as the "Coverage Cube" (Boerma T. et al., 2014; Figure 3.1).

As illustrated in Figure 3.1, attaining universal health coverage requires growing the smaller blue cube to fill the larger cube. The larger cube represents the ideal world and the dotted arrows the gap between the situation today and the goal to be achieved. The X axis reflects the goal of ensuring health coverage of 100 percent of the population. At the same time, UHC requires increasing the number and types of services to which all the population has access from whatever is included today in the basic package of services to reach those determined to be defined policy aims (Y axis). For instance, a policy goal may be to make dental care available to all regardless of whether they can afford it. Finally, the Z axis corresponds to the percentage of the costs of health care that are financed by so called out-of-pocket payments. Under UHC, everyone is covered by one form or another of financial pooling mechanisms (e.g., insurance). This is to guarantee that no one is impoverished because of the need to pay for health care costs.

The same way that "good" development is a necessary but not sufficient condition to increase the population's resilience to climate change (World Bank, 2009), accelerating progress toward UHC is absolutely necessary to protect individuals and communities from the health effects of climate change but will be insufficient if pursued in a "business as usual" manner. Moreover, full implementation of UHC cannot eliminate all climate risks. Even wealthy countries with high adaptive capacity have pockets of poverty and groups of people who tend to be more vulnerable to climate variability and change, as demonstrated by the European heat wave in 2003, the Chicago heatwave in 1995 (Scheraga and Grambsch, 1998; NOAA, 1995), and Hurricane Sandy in 2012 (EHP, 2013; JAMA, 2014).

**Figure 3.1:** How climate change impedes achievement of UHC.




Source: Authors, adapted from Boerma T., et al. (2014) Monitoring Progress towards Universal Health Coverage at Country and Global Levels. *PLoS Med* 11(9): e1001731. doi:10.1371/journal.pmed.1001731

Generally, efforts to achieve UHC will strengthen health systems and address many climate-sensitive health impacts (Box 3.2). However, it is important to explicitly consider climate variability and change in health sector's strategy especially in certain geographies where disease risk is likely to be climate sensitive or change with coming decades. Forward planning to ensure the correct facilities are in place, e.g., diagnostic labs, and public health campaigns, e.g., for heat stress or infectious disease are essential to realize best outcomes.

Climate change can affect the ability of countries to achieve UHC by putting stress on progress along all three axes of Figure 3.1 (blue arrows):

- **By increasing the burden and modifying the pattern of disease, climate change impedes the expansion of service coverage, as well as the package of services.** As illustrated in Boxes 2.1 and 3.1, climate change increases the burden of disease by facilitating the transmission of existing diseases, contributing to the resurgence of old diseases, and/or introducing new ones. It also modifies the pattern by, for instance, facilitating transmission in a different month of the year, taking health facilities by surprise. Box 2.1 also illustrates the effects of climate in nutritional status through its influence over agricultural production. In addition, climate can affect the functioning of the health system. Disaster can render health facilities unreachable and/or inoperable. Discrete chronic stress can also affect the sector; for example, rising temperatures increase energy demand (especially in those buildings that are not prepared for it), producing brown-outs and otherwise disrupting service provision. Even moderate drought can affect the reliability of hydropower utilities.
- **Climate change can jeopardize the expansion of financial coverage for health services.** Increased pressure in the other two axes automatically reduces the availability of resources to increase the level of financial coverage. Moreover, by increasing poverty—through disasters or hardships—climate affects the ability of individuals and families to contribute financially to risk-pooling systems.

As such, UHC efforts must be "climate smart" if they are to promote the increased resilience of populations to the health impacts of climate change.

## The World Bank Climate Change and Health Conceptual Framework: Climate-Smart UHC

Currently, the December 2015 draft of the *Update to the Strategic Directions for Health, Nutrition and Population Global Practice*

## Box 3.1: Shifting Disease Patterns, Natural Disasters, and 100-Year Heat Waves as "The New Normal" for Health. What Can Be Done?

A recent and significant increase in the frequency of floods and cyclones in Mozambique places enormous demands on the resources of that country's Ministry of Health, reducing the availability of resources for basic programs. Often health facilities are reconstructed without necessarily taking into consideration expanding flood plains or storm surges, making those facilities very vulnerable to another hazard in the near term. Carrying out a health facility and network vulnerability assessment, and revising construction standards are some of the interventions to be considered while designing a project to help support the government achieve UHC.

In Africa's "meningitis belt," changes in the timing of the dry and wet seasons and higher temperatures have brought unexpected meningitis outbreaks. Incorporating climate data and weather forecasts in meningitis surveillance can help identify heightened transmission risks, and thus help manage the meningitis threat.

In the Netherlands, two of the three most lethal natural disasters of the last 100 years occurred in this century, and neither was a flood. The 2003 heat wave caused approximately 1,500 deaths. Unfortunately, this was viewed as an exceptional event and insufficient measures to avoid deaths were put in place. When a second heat wave hit just three years later in 2006, the Netherlands was one of the few European countries that registered a substantial number of extra deaths, totaling 1,000 people. Developing a response plan and an early warning system helped reduce mortality across the rest of Europe.

## Box 3.2: How Health and Climate Considerations Can Be Addressed by Efforts to Achieve UHC

**In the short term . . .**

- Diminished disease burdens in populations sensitive to climate impacts through greater efforts in prevention, education, and community health influence
- Earlier identification of health threats worsened by climate change and reduction of associated morbidities, e.g., respiratory and cardiovascular disease
- More effective and immediate treatment of morbidity associated with heat stress or extreme weather impacts
- Better access to antibiotics, antiparasitic and antiviral drugs that can be used in acute outbreaks of vector-borne or waterborne diseases worsened by climate change
- Decreased morbidity from undernutrition or nutrient-deficiency associated diseases

**In the long term . . .**

- Reduced overall climate vulnerability by improving access to and quality of healthcare
- Diminished climate-sensitive disease burdens through cumulative protection measures against certain transmissible diseases
- Diminished impact of mental health issues that could be worsened by climate impacts, including displacement
- Improved labor productivity and better financial returns that would otherwise be lost from climate-sensitive health impacts
- Improved childhood development and social outcomes from better nutrition and avoidance of stunting and impaired neurological development

identifies HNP's mission as assisting countries in accelerating their progress toward UHC. To this end, HNP has identified the three following strategic directions: 1) establishing systems for fair, efficient, and sustainable financing of health nutrition and population outcomes; 2) ensuring equitable access to affordable, quality health, nutrition and population services; and 3) harnessing the potential of other sectors to strengthen HNP results and generate public goods. This last point stresses the need for policies and interventions in non-health sectors in order to achieve UHC, because the effects of climate change in those sectors also affect health status and thus the prospects for achieving UHC. Examples include food safety and security, transport access and safety, pollution abatement, energy access, water availability and quality, disaster preparedness and infrastructure safety. Therefore, the proposed framework, while focusing on health one, links reducing climate change impact in health outcomes to actions across several key sectors.

This paper suggests that by including climate consideration in its HNP Strategic Directions and its **HNP portfolio**, and including climate and health consideration in selected operations in **selected non-HNP sectors**, the World Bank will maximize the impact of its efforts to increase population resilience to climate-sensitive effects. The purpose of introducing climate considerations in an HNP operation is to improve the operation's effectiveness, resilience and sustainability, not its objectives or strategy. In non-HNP operations, introducing climate and health considerations as relevant can increase their efficiency.

In practice making UHC climate smart means: 1) Establishing systems for fair, efficient, and sustainable financing of health nutrition and population outcomes that are also adaptive (i.e., flexible and scalable); 2) Ensuring equitable access to affordable, quality health nutrition and population services that are also resilient; and 3) Leverage climate-smart interventions in other sectors to strengthen HNP results and generate public goods.

## Establishing Systems for Fair, Efficient, and Sustainable Financing of Health, Nutrition and Population Outcomes That Are Also Adaptive (i.e., flexible and scalable)

Currently, national health services financing mechanisms are generally not designed to respond to sudden increases in the number of patients, or changes in the types of services to be covered, for instance the case of an epidemic or disaster. Sudden increases on demand are not exclusively or directly related to climate. However, climate-smart UHC would require financing systems and mechanisms that can be easily scaled to provide expanded financial protection and to fund additional services that may be required after a disaster or an outbreak due to a climate-sensitive disease. These financing systems and instruments also should use climate data to forecast potential increased financial needs in a given geographic area or over a specified period of floods or storms). They may include contingency (risk) financing mechanisms to complement existing pooling mechanisms, and should be regularly updated through vulnerability assessments to ensure that they are identifying the most vulnerable groups.

## Ensuring Equitable Access to Affordable, Quality Health Nutrition and Population Services That Are Also Resilient

WHO defines a climate-resilient health system as able to "anticipate, respond to, cope with, recover from, and adapt to climate-related shocks and stress . . ." (WHO, 2015). It identifies six independent building blocks (i.e., leadership and governance, health workforce, health information systems, essential medical products technologies and infrastructures, service delivery and financing) necessary to attain UHC and improved health outcomes (Figure 3.2). These blocks must themselves be climate resilient.

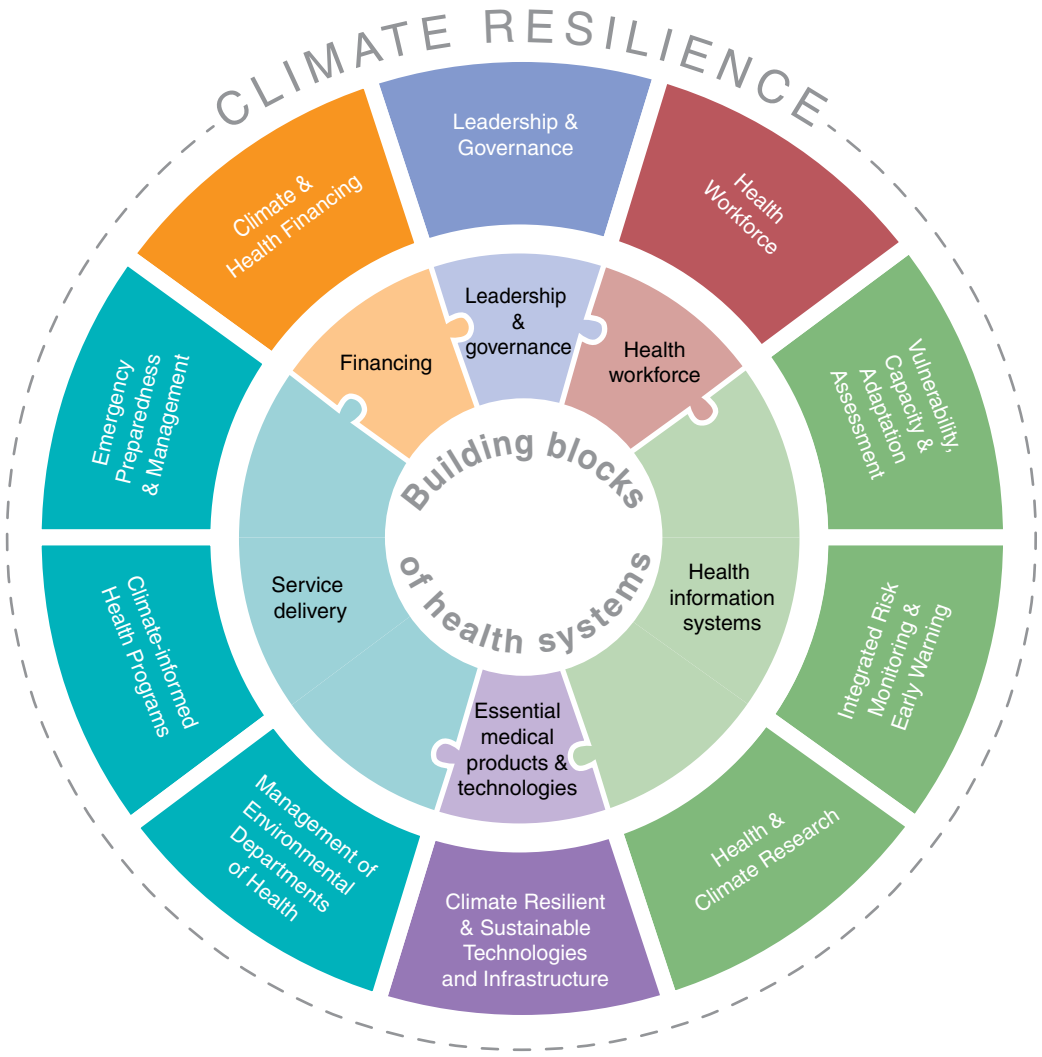
The goal is to ensure health infrastructure and systems that are climate appropriate, adequately powered, energy efficient, highly connected and resistant to disasters, and that can create or tap additional capacity during natural disasters or outbreaks. In most low and several middle income countries that is not the case. Therefore new HNP investments would finance intervention to ensure that:

- Surveillance systems are able to use climate data to forecast health risks from climate sensitive diseases (rather than wait until the outbreak or disaster strikes), take necessary measures to reduce the risk and warn the population in advance of events. Such systems promote protecting behaviors in the population and can use climate data to plan preventive measures and responses.
- Disaster risk mitigation plans for service provision apply flexible and alternative methods (e.g., "tele medicine").
- Investments plans take into consideration weather and climate changes and trends using, when relevant, risk analysis and robust decision-making tools for investment planning.
- Health staff is knowledgeable on the effects of climate and air pollution in health and on how to interpret tailored weather warnings and climate data to inform the population.
- Health facilities are climate appropriate and resilient to local current and expected disasters.
- Health facilities have access to sufficient, reliable clean power, and are energy efficient.
- Leverage **climate-smart** interventions in other sectors to strengthen HNP results and generate public goods. Solutions to climate impacts on health embrace all the affected sectors. Most mitigation and adaptation efforts in transport, energy, urban development, water and sanitation, agriculture, etc., will reduce the health impact of climate change. But if the focus of solutions is too narrow (i.e., limited to the resilience of a project or investment or to increasing the adaptation capacity of a geographic area) there can be missed opportunities to achieve the full potential, positive health impacts. The social return on these investments could therefore be raised by incorporating health benefits into analysis and planning. Table 3.1 offers examples of interventions in non-HNP sectors that have an impact in climate-sensitive health outcomes. Existing WBG tools and initiatives that already begin to incorporate climate and health consideration or can easily do so include EDGE, CityStrength, and the City Energy Efficiency Transformation Initiative,[7] among others.

Unfortunately, there is limited experience in developing countries with **adaptive** financing systems, **resilient and responsive** health services, and with leveraging others sectors' knowledge and platforms to increase the resilience of the health sector and the population to climate impacts. Currently, the WBG's Social Protection GP is advancing an initiative to work with adaptive financing for social protection systems. However, in this and other initiatives it is too early to identify substantive lessons learned; close attention to these efforts could help define HNP's modalities.

7 EDGE is an IFC initiative that helps design green buildings in 125 countries by providing a relatively straightforward process culminating in certification. The hospital track is somewhat underdeveloped at this point. CityStrength is a rapid diagnostic tool that aims to help cities enhance their resilience to a variety of shocks. The qualitative diagnostic takes a holistic and integrated approach (that includes the health sector), and encourages collaboration between sectors to more efficiently tackle issues and unlock opportunities within the city. The City Energy Efficiency Transformation Initiative is a technical assistance program led by the World Bank's Energy Sector Management Assistance Program (ESMAP) that provides support in identifying, developing, and mobilizing finance for transformational investment programs in urban energy efficiency. Its activities include financial and technical support, capacity building and e-learning, knowledge creation and exchange.

**Figure 3.2:** WHO operational framework for building climate resilient health systems.




Source: WHO 2015.

Additionally, major infrastructure projects have treated positive health outcomes as secondary benefits and often these aspects have been omitted from project or economic analyses. Recently, experience with the CityStrength diagnostic tool in Vietnam has shown that an integrated resilience diagnostic review can substantially modify project design. This suggests that the integration of aspects such as health during project design can inspire very different types of investments.

Most experience in increasing community resilience has been related to disasters and increasing the resilience of health infrastructure (but not necessarily health systems). The example of Mirebalais (Box 3.3) speaks to increasing energy resilience. In Bangladesh, substantial mortality reduction was achieved chiefly through early warning systems that utilized climate data, through improved women's literacy, and a reliance on local disaster workers who cycled to different communities to warn them of cyclones and explain protection measures, evacuation routes and shelter locations. Naturally, political will is central to these actions and their success.

The next chapter outlines the operational steps for the WBG to help countries move toward making UHC climate smart, recognizing that the solutions will require planning and coordination across key sectors that can strengthen and sustain climate-adjusted health improvements.

**Table 3.1:** Examples of interventions in non-HNP sectors that affect climate-sensitive health outcomes.

| NON-HEALTH SECTOR EXAMPLES | CLIMATE SENSITIVE HEALTH EFFECTS |
|---|---|
| **Education:** Weather and climate appropriate, with electricity, energy efficient electrified and safe school buildings. Improved access to education, awareness raising & integration into education. | Resilient schools, higher population education levels, especially among women, instrumental in disaster preparedness & response, reduction of vector & water transmitted diseases. |
| **Energy:** Clean renewable energy generation & resilient distribution, universal access to clean energy, renewable energy, incentives for energy efficiency. | Reduces climate-sensitive health impacts, through reduction in indoor & outdoor air pollution which negatively affects health outcomes. |
| **Urban development:** Urban planning & upgrading programs; air quality standards, building standards (resilience & energy efficiency), active transport, heat reflecting surfaces, maintaining wetlands & urban green spaces; infrastructure & services; managing development in flood prone and other high risk areas; land zoning laws; easement areas, storm and drain clearance, waste management. | Reduces climate-sensitive impacts, through reduction in outdoor air pollution & health island effect. Drainage reduces vector transmitted diseases. Wetlands in urban and peri-urban areas are likely to increase vector transmitted diseases. Depending on the model, waste management can increase or decrease (or at least maintain) vector transmitted diseases at times in different areas of a city. |
| **Agriculture:** Income, asset & livelihood diversification; improved infrastructure; access to technology and decision-making forums; increased decision-making power; changed cropping & livestock practices; reliance on social networks, extension services sharing indigenous, traditional and local knowledge; seed banks; crop insurance. | Increasing yields while reducing stagnant water, food security & safety interventions improve climate-sensitive health outcomes. Water storage, to reduce impact of drought in crops can increase water stagnation & vector transmitted diseases. Effects of climate, especially heat stress in agriculture workers needs to be taken into consideration. |
| **Disaster Management:** Sea walls, flood levees & coastal protection; early-warning & response systems; hazard & vulnerability mapping; floods and cyclones shelter; building codes/practices; climate services; participatory scenario development; integrated disaster assessments. | Reduction of direct disaster impacts in health, and vector and water transmitted diseases. |
| **Environment:** Air quality standards; reduction stressors on ecosystems and habitat fragmentation; maintenance of genetic biodiversity, restoring wetlands; ecological restoration; soil conservation; afforestation & reforestation including mangroves; assisted species migration and green infrastructure; control overfishing; aquaculture practices; payments for ecosystem services; national & subnational adaptation plans. | Improved AQM, and environmental services will generally reduce the impacts of climate-sensitive diseases. Maintenance of wetlands in urban and peri-urban zones is likely to increase vector-transmitted diseases. Environment authorities often lead national adaptation plans and determined contributions, close coordination with other authorities is at the center of successful adaptation efforts. |
| **Water:** Watershed & reservoir management; climate resilient water safety plans; diversifying water resources municipal services (water & sanitation); water and fecal waste effluent quality control; pricing water to encourage universal provision and careful use. | Mostly reduce climate-sensitive disease; water capture and storage may increase vector transmitted diseases. |
| **Transport:** Transport and road infrastructure improvements, clean rapid transport systems, transport corridors, waterways, ports. | Mostly reduces impacts through increased connectivity and production of pollution. Can guide population to climate disaster areas. |
| **Meteorological/Hydromet Services:** Data generation and sharing; systematic monitoring and remote sensing; development of climate services targeted to different sectors and the population; early warning systems. | If weather, climate data are used for decision making across different sectors, it can reduce climate-sensitive diseases. |
| **Social Protection and labor:** Social safety nets & social protection; insurance; migration. | |

## Box 3.3: Curbing the $CO_2$ Footprint of the Health Sector. Examples of Mitigation Interventions

The health sector's GHG/$CO_2$ footprint is smaller than some other sectors, such as energy, transport, and agriculture. It is however, energy-intensive, and often pays inadequate regard to energy efficiency. In low- and some middle-income countries, energy payments represent a substantial percentage of operating costs at health facilities (WHO and World Bank, 2014). A lack of forward thinking traps the health sector on a high carbon path that will be expensive to reverse later. At the same time, in many of those same countries, health facilities have very limited access to the minimum power they need to offer basic services, posing a barrier to achieving UHC.

Affordable, adequate, reliable and sustainable access to energy for health facilities is central to achieving UHC. Studies show that, in general, focusing on energy efficiency and clean power in the health sector results in essential savings that can be applied to clinics and hospitals (WHO and World Bank, 2014). Health facilities with electricity help attract skilled health workers, enable potentially more sustainable health care models, and introduce lifesaving technologies. In the private sector, pharmaceutical and medical device companies may lose competitiveness if dependent upon high fossil fuel needs in their technology investments. Finally, reducing GHG gases in any sector is a public good. The 2010 World Development Report pointed to the fact that "affordability hinges on mitigation being (achieved) cost-effectively."

Partners in Health (PIH) work in Mirebalais University Hospital, is an example of such a clean-energy, cost-saving approach taken by one hospital operator in Haiti. Since 2007, PIH has installed small-scale solar energy systems at five clinics in rural Rwanda, as well as in Malawi, Lesotho, and Haiti. After the devastating Haitian earthquake in 2010, PIH chose to use solar power as a cost-effective, reliable, and environmentally responsible means to help power the University Hospital at Mirebalais and avoid the disruption posed by Haiti's frequent blackouts. On most sunny days, the system's 1,800 solar panels will generate more electricity than the hospital consumes, allowing the surplus energy to feed back into the electrical grid.

In addition, the hospital minimizes energy needs through high-efficiency fluorescent light fixtures, motion sensors for lights that save up to 60 percent in energy usage, and natural ventilation that reduces both the spread of infection and the need for air conditioning. On the roof, reflective white coating keeps the building cooler and makes the solar panels up to 15 percent more efficient.

Other successful interventions across the world include the use of micro-dams to power hospitals, improved temperature controls, improved insulation, and staff behavior change such as turning off equipment when not in use.

For further expansion, please see the 2017 World Bank report, "Climate-smart healthcare: low carbon and resilience strategies for the health sector."

Source: http://www.pih.org/blog/mirebalais-hospital-construction

CHAPTER

# 4

# Operational Framework for WBG Approach to Health and Climate

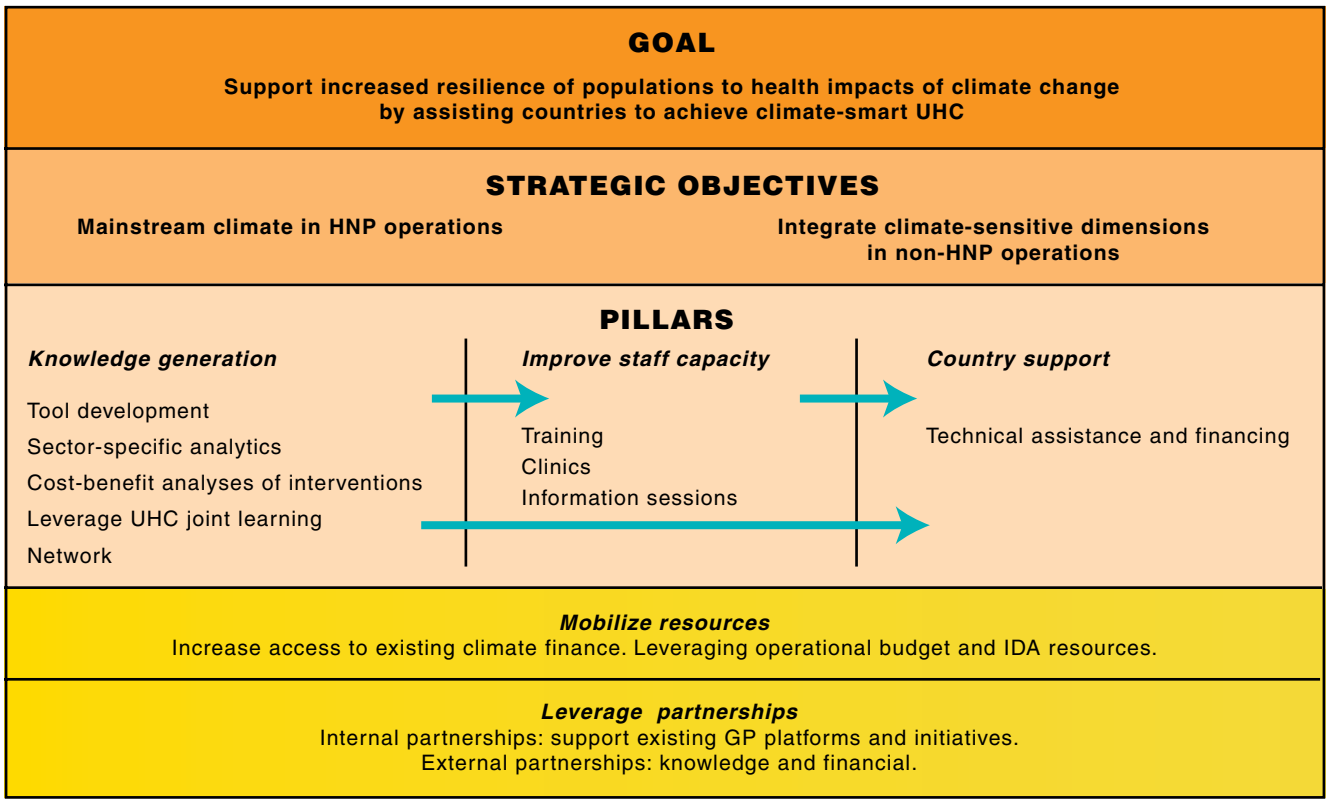
This Approach and Climate and Health Action Plan build upon the World Bank Group Climate Change Action Plan (CCAP) approved by the WBG Board in April 2016. The CCAP affirms the institution's commitment to strengthen action on climate and health, to increase its capacity to respond to countries eligible for World Bank support that have included health in their NDCs, and to integrate climate considerations within its support for UHC. It states that, subject to available resources: 1) by the end of FY2020, the WBG will have supported two countries in developing plans to reduce GHG emissions in the health sector; 2) by the end of FY2017, the WBG will have supported two countries to carry out vulnerability assessments; and 3) by the end of FY2018, the WBG will have supported two countries to develop climate smart surveillance and early warning systems. In addition, by the end of FY2019, 75 percent of HNP task team leaders will be trained in climate change and health; and by the end of FY2020, 20 percent of new HNP projects will consider climate in their design.

Those goals are seen as enough to show proof of concept (or "low scenario") for the climate change and health work. The proposed plan of action detailed in Annex C sets even more ambitious targets (see also Table 5.1), including defining and structuring, jointly with partners, the use of climate data for health planning, surveillance and early warning, the enhancement of existing urban energy efficiency planning tools to include impacts of clean air in health, and covering knowledge gaps in the economics of climate change and health.

To deliver on its commitment to support countries in their resilience path as regards to health and climate, the WBG needs to facilitate the expansion of climate-smart UHC. This implies mainstreaming climate considerations in HNP operations and ensuring that critical aspects of health and climate are integrated into climate-smart WBG activities in other sectors. It also would require significant efforts to increase its internal capacity. The operational framework described in Figure 4.1 proposes two strategic objectives, three activity pillars addressing the key systemic failures previously identified, and two transversal support areas.

These pillars are of course interrelated. The knowledge being gathered and generated will increase World Bank staff's capacity as well as that of our clients, and both will result in improved investments and operations. The details of the activities envisaged under these pillars and cross-cutting areas are presented below, after discussing the strategic objectives. The theory of change on which the approach and plan of action are based, as well as the operating model and different sectors comparative advantages to implement the plan of action, are summarized in Chapter 5.

**Figure 4.1:** Institutional operational framework.




## Strategic Objectives: Integrating Climate and Health Considerations in WBG Operations

### Mainstreaming Climate in HNP Operations

The purpose of this strategic objective is to increase the resilience of the health systems in client countries. In addition to increasing knowledge and awareness of HNP staff on climate and health issues, key entry points would be operational reviews, project climate and disaster risk screening, and access to climate funds. According to local conditions, countries and teams would prioritize one or a combination of the following actions:

- Creation of a baseline of climate-sensitive existing conditions and potential emerging threats in different geographic/ecosystems, poverty levels, population characteristics, etc.
- Improve staff capacity to detect and respond to climate stress. Utilize weather forecasts to redeploy personnel prior to any emergency.
- Ensure adequacy of infrastructure and technology to current and trending climate variability and to climate shocks. This could embrace health facility access to clean and renewable energy and water, as well as alternative service delivery solutions, (i.e., telemedicine, satellite communications, etc.).
- Promote creation and deployment of disaster preparedness, response and recovery plans and implementation protocols, as well as coordination with relevant authorities.
- Upgrade surveillance, early warning and information systems, and encourage the use of climate data for decision making in different programs and at different levels.
- Encourage development of flexible and scalable financing systems to cover unexpected population needs in case of disaster or disease outbreak.
- Ensure mechanisms for coordination across sectors and advocacy from the health sector.

### Integrating Climate-Sensitive Dimensions in Non-HNP Operations

The purpose of this second strategic objective would be to maximize the potential of interventions in other sectors to reduce climate change risks and increase resilience while minimizing the potential negative health impacts of these activities (i.e., avoid maladaptation). As Table 3.1 shows, successful development investments in non-health sectors also have positive impacts—or co-benefits—in health. Climate sensitive health co-benefits may not be central to the original purpose of the project but their inclusion during project economic analysis or design may, at a minimum, make a project more desirable or assist in choosing between two technologies or interventions. Occasionally, such consideration of health co-benefits might substantially change the design of the intervention (see Box 3.3 in previous chapter).

Such changes in approach might be achieved through WBG processes such as SCDs/CPFs and project reviews, and would build on existing opportunities and programs in other sectors. Such an approach would ensure cooperation across sectors to address relevant knowledge gaps that might reduce their ability to incorporate climate and health considerations.

As discussed, climate effects on health outcomes are often mediated through natural and human systems (other than the health system), therefore activities to reduce those impacts and increase population resilience will need to be channeled through interventions in other sectors. Priority sectors that would assist in deepening the impact of climate-sensitive health measures are water and sanitation, urban development, energy, transport, agriculture, and environment. Most of these sectors have defined what the likely impact of climate in their investments is and, since many of those have a substantive $CO_2$ footprint, they have also assessed what impact those investments will have on GHG emissions and defined their strategies to incorporate climate in their operations. Communication around these interventions and coordination between those sectors and the health system is likely to increase the developmental impact of World Bank investments.

### Prioritizing Activities

Under the approach outlined here, country support and other activities would be prioritized on the bases of risk and country demand. On the basis of risk, we propose to focus intervention on specific countries or "hotspots" where World Bank operations can maximize positive health outcomes in the face of climate change and its drivers. Within a country, support would also be prioritized on the basis of vulnerability and exposure. Another consideration is country demand, as reflected in NDCs and NAPAS. The CCSA, jointly with HNP, has recently finalized a hotspot analysis to identify countries where climate change, or exposure to drivers of climate change (i.e., kinds of air pollution), are expected to most significantly alter the burden of disease and expose vulnerabilities in existing health systems. We propose to use the results of this analysis, in conjunction with the lists of countries that have included health as a focus area in their NDCs, to guide WBG priorities for interventions. While we recognize that the hotspots analysis has some shortcomings, it is based on internationally recognized data and indexes, allowing for a good first approximation of the issues. Likewise, NDCs and NAPAS are not necessarily completed or the issues and interventions may not be clearly defined. However, they represent the best proxy of country commitment and, as such, a first measure of political willingness necessary to achieve progress. Likewise, they are a tool to generate donor support. Once a country is identified, further in-depth analysis will be needed to identify specific risks, vulnerabilities and interventions, as well as the costs of implementing proposed interventions.

In terms of health systems strengthening, the proposed areas of focus (in collaboration with HNP) would be climate and health vulnerability analysis, climate smart early warning and surveillance systems, costing of interventions to achieve NDC commitments, and energy access and efficiency for health facilities. The specific activities would be shaped by the two operational guidance notes for HNP operations currently under preparation (see the following section on knowledge generation). For dialogue with sectors other than HNP, we will continue to prepare a series of sector notes to assess entry points, opportunities, existing tools, and knowledge gaps.

The remainder of this chapter discusses in more detail each of the three operational pillars and two transversal support areas that can drive WBG efforts to achieve the overarching goal of helping populations become more resilient to the health impacts of climate change by making health systems climate smart.

## Operational Pillars

### Knowledge Generation and Management

Preparation of this approach and action plan has identified knowledge gaps and barriers to access existing knowledge. There is also a need for tools to help teams operationalize the climate-health angle, both in HNP and other sectors. Some of the products of this work will have an internal focus, while others will benefit the World Bank's work but also have a global good aspect.

As such, the emphasis would be on the continued synthesis and dissemination of knowledge for WBG purposes and the development

of appropriate tools for country clients. Indeed, such activities are already in motion, and tool development is being phased according to available financing. In terms of global goods, we will aim at leveraging existing public knowledge platforms to include health and CC. Including health tools in the Climate Smart Planning Platform will entail only minor additional cost and introducing a climate and health chapter in the UHC Joint Learning Network will similarly require some additional funding; we are evaluating the possibilities with HNP. Additionally, resources will be needed to support the development of guidance for the climate services for health work, and for the economic analysis in health and CC. Additional details on these activities follow.

- **Synthesize knowledge for World Bank purposes:** This largely addresses global risk identification and the packaging and "translation" of existing operational knowledge for WBG teams. As noted above, the CCSA—with HNP support—has identified climate and climate driver hotspots for health outcomes. An additional report on "climate-smart healthcare" has been published in this series. Other knowledge notes are under preparation jointly with WBG teams from transport and agriculture to launch the dialogue with those sectors and identify knowledge gaps. Additional notes will be jointly drafted on climate change and health with various GPs and teams across the Bank group.
- **Tool development:** The aim is to help operationalize the climate-health dimension in HNP and other sectors. The CCSA is working with HNP and the urban team to enhance the existing Climate Action for URBan Sustainability tool (CURB) to include air pollution and its effects on health outcomes (CURB+) and possibly add indoor air pollution. This tool targets both internal and external audiences, and development is being phased according to funding availability.
- **Inclusion of climate change and health in relevant public knowledge platforms:** These include the Climate-Smart Planning Platform, the UHC learning network, etc.
- **New knowledge generation:** The Bank will work with WHO, WMO and potentially other partners to develop tools (e.g., case studies, guidance, etc.) to meet the current gap on guidance for and implementation of climate services in the health sector. In addition, with our Agriculture and Transport colleagues we have identified two such entry points, respectively: 1) the impact of climate variability in the health of agricultural labor/farmers; and 2) guidance on the impact of fuel emissions on pollution and health in the context of climate change. Discussion with ESMAP and the International Finance Corporation (IFC) have also helped identify energy efficiency in hospitals as an area ripe for joint work. We expect to prepare three more notes in the coming fiscal years with the Urban Development team, Energy and Water GPs. We are also identifying jointly with academia and other external partners, opportunities for economic analysis related to health and CC in order to develop a potential global research agenda on this topic.

## Improve Staff Capacity

There is an opportunity to customize interventions to optimize World Bank investments for climate-sensitive impacts—both in HNP and other sector operations—by more explicitly recognizing the nature of climate-sensitive diseases. Over the next four fiscal years the goal is to increase HNP staff awareness of CC impacts in health and the potential for vulnerability assessments, interventions, and the use of climate data for early warning, surveillance and planning. The target is that by FY2020 at least 80 percent of HNP staff would be conversant across these issues. Similarly, there will be efforts made to increase the awareness of staff in other sectors of the issues linked to climate and health in their areas of expertise. Some of this work will be performed by using WB processes as entry points to initiate a dialogue with GPs and CMUs. This approach aims to focus on those countries identified as high risk and/or high demand, as outlined in the prioritization chapter.

To increase WBG staff capacity in integrating climate sensitive considerations across operations, the action plan proposes three types of activities:

- **Information sessions:** These would aim to increase WBG staff awareness of CC and health issues and interventions. Most activities would be targeted to HNP staff but certain products also should target other sectors and CMUs. Content would include impacts of CC in health outcomes, applications of climate services and health, and health sector interventions to reduce health impact. Such sessions would also serve to review and share experiences from the CCSA (specifically the Pilot Program for Climate Resilience, or PPCR, and disaster risk management) and Environment and Natural Resources GP (ENR), as well as knowledge generated jointly with other sectors, especially tools that can be used to make the link between GHG, health, and air pollution. Information sessions would also present knowledge from external partners, such as WHO and WMO. Finally, these sessions would disseminate the joint work of HNP and the CCSA, including the hotspots analysis and the operational guidance notes, to increase adaptation capacity and reduce the $CO_2$ footprint in the health sector.

- **Formal training:** We propose to work with the HNP and CCSA knowledge teams, as well as ENR, to develop a course on health and CC, which could be conducted online followed by some in-person sessions.
- **Clinics/problem solving:** We will work with the CCSA Knowledge and Partnerships Team to develop HNP-specific project screening clinics as well as clinics on preparing proposals to access climate funds for climate and health adaptation and mitigation interventions.

## Country Assistance

Country support is central to mainstreaming climate and health considerations in World Bank operations. There are substantial knowledge gaps that hamper resilience to the health impacts of climate change at the country and subnational levels. Accordingly, countries will require technical assistance and financial support to design and implement policies and interventions across several sectors to assess the population's vulnerability to climate sensitive health conditions in specific geographic areas. This assistance also will be essential as they subsequently progress to introducing climate-smart interventions, such as early warning and surveillance systems and the inclusion of climate considerations in their planning processes.

The approach outlined in this note proposes a concerted effort to create incentives for World Bank teams to engage and help meet client demand for assistance. The approach suggested here also recognizes the important role World Bank staff can play in encouraging demand, internally through systematic project and SCD/CPFs reviews, followed by knowledge sharing and offers of technical assistance in areas such as climate services. The World Bank also should seek to augment its investments and Development Policy Operations (DPOs) with trust fund resources.

As we have seen in other initiatives, financial incentives linked to operations, especially IDA, are likely to catalyze the embrace of a new concept, helping create a critical mass of countries and experience that can be tapped to create a movement.

To this end, we propose activities to be financed under this pillar be divided into three groups:

- **Review of Operations, SCDs and CPFs.** The goal would be to utilize these World Bank processes to introduce data on country health vulnerabilities to climate impacts. Climate and disaster risk assessment processes and tools offer good entry points. In high-risk countries or those with strong demand, the CCSA could offer formal presentations to the CMUs and relevant GP teams on this topic.
- **Increasing country knowledge around climate and health, with a focus on climate services for health.** Jointly with our external partners (chiefly WHO and WMO) we propose synthesizing and crystalizing the concept of climate services for health through knowledge pieces and a "massive open online course" (MOOC) on climate services for the health sector. In addition, we will explore the interest of UHC Joint Learning Network partners in developing a climate and health technical stream.
- **Supplementing World Bank investments and DPOs (especially IDA operations) with trust fund and or climate fund resources[8] to support activities in 10 countries over the next four fiscal years.** We estimate that between US$1–2 million per country could catalyze adaptation and mitigation actions in low-income countries, principally in health but also across other sectors. These resources could finance technical assistance for new projects for, among other things, country vulnerability diagnostics, intervention design (including the development of climate-smart early warning and surveillance systems), as well as limited goods and services for implementation, especially in low-income countries. This could supplement lending for project preparation or investment projects in HNP, ENR, and other sectors. It could also supplement DPOs (especially 'green growth' DPOs that include climate) to finance TA or investments to fulfill a health and CC target (e.g., Mozambique Box 4.1).

In the health sector, key opportunities for support include technical assistance and financing for: 1) assessing vulnerabilities at both the national and subnational levels as well as developing plans and implementing interventions; 2) implementing climate-informed surveillance and early warning systems; 3) costing the interventions to increase resilience; and 4) determining the costs of inaction.

In other sectors, the emphasis will be on support for integrated approaches to project resilience that maximizes development outcomes. It may be possible to pilot such an approach in two or three projects. Alternatively, we might seek to increase the overall resilience in one geographic area through concentrated efforts by multiple sectors under a common plan. We will explore alternatives during FY2017.

8 Climate funding includes among others, the Global Environmental Facility (GEF), the Green Climate Fund (GCF), climate investments funds, etc.

## Box 4.1: Climate Change and Health Knowledge in Operations: Mozambique Example

The explosion of new knowledge and information on the linkages between climate change and health only has relevance to our clients on the ground when we put that knowledge into practice. The recent Technical Assistance (TA) project in Mozambique is a good example of this.

Since 2011, the World Bank has been working with the Government of Mozambique to design and deliver a comprehensive program of support on climate change. This includes a programmatic Climate Change Development Policy Operation (DPO) series. Piloting extreme weather protocols for the Ministry of Health in at least 10 districts across the country is one of the finance triggers.

A collaboration between the Environment and Natural Resources and the Health, Nutrition and Population (HNP) Global Practices is enabling the Ministry of Health in Mozambique to develop, adopt and operationalize those disaster preparedness, response, and recovery protocols to address the increasingly frequent extreme weather events occurring there.

At the same time—through a Health Service Delivery project—the World Bank is helping the Ministry of Health (MOH) to improve service delivery through expansion of health facilities, ensuring access to facilities—whether conditions are extreme or not—and taking steps to improve malaria control.

An NDF-supported TA grant leverages these two ongoing programs in that it has helped establish a participatory process, engaging MOH staff to help them to develop the mentioned protocols, to ensure health care access in support of the MOH and the World Bank supported HNP health delivery goals while also meeting the climate DPO targets.

Building on these protocols, the TA will also establish an Action Plan for piloting and rolling out these protocols at the provincial and district level. The work will also help identify and prioritize which districts are most vulnerable to climate-sensitive health risks.

By working together, these three efforts are delivering more than the sum of their parts. They are ensuring that the linkages between climate and health are recognized and prioritized in regions that are most vulnerable, that solutions are deployed as quickly as possible, and that the Government of Mozambique takes ownership of the results. These accomplishments that are being seen in Mozambique right now, serve as a model for replication in other countries.

A relatively small financial leverage for ongoing operations—targeted at those linkages between climate change and health—will ensure that the full complement of environmental health issues a country faces are addressed in the context of a changing climate.

Source: Sanjay Srivastava, task team leader (TTL), Mozambique Technical Assistance Health and Climate Change. Personal communication.

## Box 4.2: Can Tho Urban Development and Resilience Project

Can Tho City, Vietnam's fourth-largest city, is susceptible to flooding because of its location in the Mekong delta. Seasonal flooding typically impacts 30 percent of the city area but has recently increased to 50 percent. A recent study of the economic losses of urban flooding shows that the largest share of economic loss is in the form of indirect costs, such as missed work, lost revenue, and additional health costs (Vo T. Danh, 2014).

Transport infrastructure in Can Tho depends on roads that are vulnerable to disruptions caused by seasonal flooding. While the city has proactively assessed transport investments based on flood risks, the link between transport and urban land-use planning is not fully considered. Road investments in Can Tho have tended to focus on providing improved access to existing communities or providing access to large-scale economic development sites. The scale and nature of land use along the roadways has not been sufficiently monitored or planned, and the result has been sprawling growth into low-lying areas.

Transport can play a major role in inducing and guiding urbanization and transport investments. A World Bank study revealed that pursuing road upgrades outside the city center, as originally envisaged, would attract new settlement to flood plains, increasing the vulnerability of the population. Instead the city chose to strengthen the city center, which is also the highest elevation in the area, guiding growth to low-risk areas near the heart of the city while improving connectivity. A combined system of an elevated road, embankments, and tidal gates/valves along the line will be a "ring embankment" to protect the core urban area from flooding. In addition to benefiting the urban population in general by improving its health and sanitation conditions, the project may benefit urban businesses and commuting grocers from neighboring districts by reducing risk of economic loss and prolonged travel-work time caused by flooding.

Adapted from: Transport & ICT. 2015. Moving Toward Climate-Resilient Transport. *The World Bank's Experience from Building Adaptation into Programs.* Washington DC. World Bank.

## Transversal Support Areas

### Resource Mobilization

Many of the proposed activities such as knowledge generation in health and climate change, and tool development, are new to the WBG and, given current operational budget constraints, additional external financial resources will be needed to carry them out. This also holds true to support country operations.

Some of the countries that are at higher risk for climate impacts on health are among the poorest in the world. They will need to assess their vulnerability and to build their capacity to add climate to their national health plans. In these countries IDA will be the major source of financing to implement climate-smart/sustainable programs to achieve UHC. However, experience suggests that a modest amount of catalytic grant resources is needed to stimulate the uptake of "green field" activities, and interventions to scale in the early years.[9] Accordingly, we propose a two pronged approach to mobilize non-IDA resources. On the one hand, as indicated in the knowledge generation and management pillar, the CCSA will organize information sessions on the types and characteristics of existing climate funds—with a focus on health examples—to increase the capacity of World Bank staff, especially in HNP. The CCSA will also provide technical support to World Bank teams to prepare financing proposals for said funds. In addition, it will work with GPs to tap into existing financing initiatives to support operations and research; examples include ESMAP and PMEH. Finally, it will explore with donors the possibility of creating a trust fund to address health and climate change. It is as yet too early to specify the operating structures and funding amounts. Possible structures include: a health and climate change window in existing climate funds; a multi-agency multi-donor facility; and a more modest WBG-managed multi-donor trust fund to launch activities at the country level and to finance proof-of-concept activities.

## Expanding Strategic Partnerships

There are two types of partnerships for this work:

- **Internal partnerships:** We will prioritize the leveraging of existing initiatives, programs and tools across GPs and the CCSA. This is envisioned to include collaboration on knowledge products, operational support and lending, and corporate work, including donor relations and reporting.
- **External partnerships:** We are proposing activities to expand and deepen strategic partnerships to further this agenda. There are both current/near-term collaborations as well as longer term collaborations on the horizon. WHO, WMO and universities have been gathering knowledge around climate change and health for years. We believe we can amplify the impact of this work by bringing it to new audiences while also adding operational and economic perspectives. One particular area with immediate potential is climate services for health, where we have recently teamed with Columbia University, WMO, and WHO to host a symposium on the topic—bringing together front-line field staff with academics and policy makers. We are also working with WHO on the development of climate change and health country profiles, which can be used to guide our clients in the understanding and implementation of climate and health programming. In addition, the Bank has relationships with other institutions working on climate change such as the United Nations Framework Convention on Climate Change (UNFCCC), the Climate and Clean Air Coalition (CCAC), and various other academic, policy, and civil society organizations where collaborations can both contribute to our needs and drive global action. In the future, it is likely we will work more closely with the WHO and/or LSHTM on global-level economic studies, ClimateWorks Foundation on climate and health tool development, and various other development agencies and MDBs on enabling and activating climate change and health finance. We will also work to support the inclusion of climate and health considerations in key global events such as Conferences of the Parties of the UNFCCC, and (as we have already done with the World Health Assembly), in WHO conferences on health and climate. We will co-sponsor knowledge sharing events to consolidate this partnership. WBG will also cooperate with other multilateral agencies to share lessons learned from implementation and to harmonize approaches when appropriate.

9 Examples include the Multi-Country AIDS Program (MAP) resources early in the process of mainstreaming AIDS control in Bank projects, both in HNP and across other sectors, and the ongoing safe school initiative to strengthen school resilience to disasters.

CHAPTER

# 5

# The Climate Change and Health Plan of Action FY2017–2020

While we are confident that most of the targets stated in the WBG overall Climate Action Plan can be achieved within existing World Bank budgets, the proposed scope of this Climate and Health Plan of Action requires substantial additional financing. Accordingly, the plan of action presents scenarios consistent with the level of available financing.

This chapter summarizes proposed activities in support of the Climate Change and Health Plan of Action for the next four fiscal years, including a road map with financing needs, and general metrics and targets.

## The Theory of Change

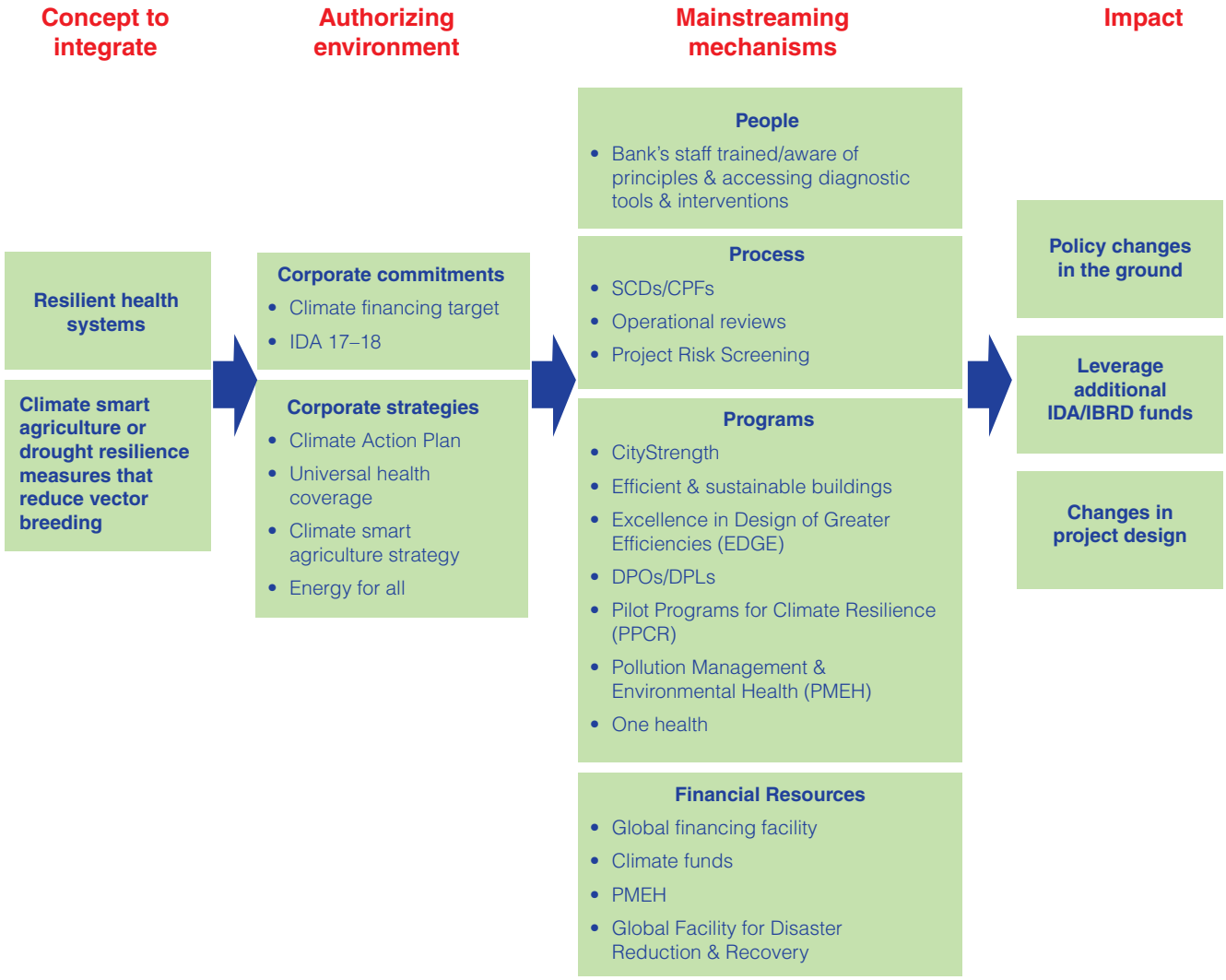
What is being proposed here ultimately implies integrating climate in both HNP and non-HNP operations. Successful experience mainstreaming other concepts and actions across WBG operations and policy dialogues suggests the need for an authorizing environment, such as corporate commitments and strategies. Mainstreaming mechanisms include people, processes and programs, and financial resources, as these serve to catalyze changes in the policy discussions and investments.

Figure 5.1 describes the proposed elements that need to be in place to facilitate the successful mainstreaming of climate change considerations in HNP, and of climate and health consideration in selected operations in the rest of the World Bank portfolio. Experience suggests that a conducive authorizing environment greatly facilitates integrating new concepts or ideas into World Bank operations. Using existing corporate processes also helps. However, to be sustainable, such top-down support needs to be complemented by bottom-up buy-in, which is generally best achieved through increased awareness of staff, especially "champions" who are already leading innovative products. Working with staff across sectors who are leading such initiatives, and finding ways to leverage existing tools and resources, adds value to such platforms to reduce the burden on teams. For instance, in the case of climate change and health, we propose to leverage ESMAP's knowledge and technical resources from the Efficient and Sustainable Buildings initiative, and IFC's Excellence in Designs for Greater Efficiency tool, to increase the energy access and efficiency of health facilities in the public and private sectors, respectively. This is more efficient and much more likely to be successful than having the CCSA or HNP develop energy efficiency standards for health facilities.

As indicated, this Climate and Health Plan of Action builds upon the World Bank Group CCAP. In its low scenario it proposes activities to fulfil the CCAP targets.[10] In addition the proposed plan of action, detailed in Annex C, proposes two medium and high resource scenarios that set even more ambitious

10 In a nutshell before 2020 the WBG would have supported at least six countries to develop plans to reduce GHG emissions in the health sector, or carry out vulnerability assessments or develop climate smart surveillance and early warning systems. It would have trained 75 percent of HNP task team leaders in climate change and health and 20 percent of new HNP projects will consider climate in their design.

**Figure 5.1:** Integrating CC and health in WBG operations. Theory of change (examples).




targets (see also Table 5.1), requiring substantial additional financing. Accordingly, the plan of action presents scenarios consistent with the level of available financing.

It is important to note that the plan of action builds on ongoing no-regret actions by focusing on additional activities. For instance, we do not mention HNP ongoing efforts to achieve UHC (without taking into consideration climate), or ENR efforts to reduce air pollution and improve air quality. Although both are at the core of increasing a population's resilience to CC and reduce GHG emissions, respectively, they are at the core of HNP and ENR activities, with or without climate change, and no additional resources are required to sustain these initiatives. The plan of action focuses on new efforts, often requiring additional resources, which would increase the developmental impact of existing interventions. In the two examples listed above, this would require the inclusion of climate considerations in ongoing interventions to achieve UHC, or placing SLCPs more centrally in pollution control efforts, as well as including GHG reduction in the cost scenarios for pollution abatement.

## Implementation Roles and Arrangements

Implementation arrangements for the proposed Climate Change and Health Approach and its associated plan of action take into consideration the different institutional and topical comparative

**Table 5.1:** Climate and health plan of action: targets/indicators FY2017–2020.

| PILLARS/ CROSSCUTTING AREAS | TARGETS/INDICATORS |
|---|---|
| **Knowledge generation** | • By June 30, 2017 Sector notes on Energy, Urban and Water elaborated and knowledge gaps and opportunities for collaboration identified |
| *Scenario 1* | • By June 30, 2017 CURB+ developed |
| **Improve staff capacity** | • By June 30, 2017, 50 percent of HNP projects in last FY have benefited from training or a clinic on climate and disaster risk management<br>• By June 30, 2020:<br>  • 75 percent of HNP TTLs have received training<br>  • 20 percent of HNP projects consider climate in their design |
| **Country support** | • By June 30, 2020, 80 percent of new SCDs and CPFs in high-risk countries identified in the hotspots analysis and those in which NDCs identify health as an area of focus, include discussion of CC and health<br>• By June 30, 2020, all HNP teams in PMEH countries are engaged in its implementation<br>• By June 30, 2018, notes on the health of farmers and fuel policies completed and results applied in project design |
| *Scenario 1*<br>*(Low-resource scenario + additional activities)* | • By June 30, 2020:<br>  • Two countries have carried out a climate and health vulnerability diagnostic and work plan<br>  • Two countries have developed and implemented a climate smart early warning system and surveillance systems<br>  • Two countries have developed action plans to reduce GHG emissions in the health sector<br>• By June 30 2018, CURB+ applied in at least 10 cities<br>• By June 30 2020, CURB++ applied in at least 20 cities |
| *Scenario 2*<br>*(Low-resources + Scenario 1 + additional activities)* | • By June 30, 2018, a MOOC on climate services for health has been developed jointly with partners<br>• By June 30, 2020, technical staff from ministries of health, meteorological agencies and other relevant institutions from 20 countries have taken the MOOC |
| **Resource mobilization**<br>*(Relevant to all scenarios)* | • By June 30, 2020, at least 10 health and CC proposals have been submitted to climate investment funds for financing |
| **Expand strategic partnerships**<br>*(Relevant to all scenarios)* | • Joint products and programs with some potential partners developed |

advantages of the CCSA and the relevant GPs, while recognizing these are constantly evolving. For example, at the country level HNP would lead the dialogue with health ministries while ENR would take the lead on engaging ministries of environment. The CCSA is often best placed to engage the hydrological and meteorological agencies. In addition, one of the key goals is to increase GP capacity, with the ultimate aim of having them take on most activities.

Resource mobilization (internal and external), and maintaining or deepening strategic engagements with external partners in support of the plan of action, will be conducted jointly and led by the appropriate GP or the CCSA. For instance, HNP would lead the dialogue with Part 1 countries who are most interested in supporting the health agenda, and with health agencies, such as the WHO, while ENR would take the lead with Part 1 countries interested in the pollution agenda, and the CCSA would facilitate the dialogue with WMO, climate agencies, and traditional Part 1 climate donors and foundations. The arrangements proposed here have been discussed and agreed upon at a technical level.

### *Climate Change CCSA—Would Lead the Global Dialogue and Facilitate Dialogue on This Topic across GPs*

The plan of action proposed the CCSA's engagement in: 1) awareness-raising across the institution, including country management units; 2) knowledge generation and synthesis; 3) capacity building and TA for operational teams; 4) convening capacity across multiple GPs; 5) resource mobilization among traditional climate donors, including foundations for operations; and 6) facilitating the achievement of corporate mandates through reviewing and

providing comments and information during SCD/CPF processes and project preparation. The CCSA would also use existing platforms as entry points to include health in the policy dialogue as it relates to hydrological/meteorological agencies or services. The CCSA could also facilitate links with partners in climate change and disaster management fields, such as the UNFCCC, CCAC, WMO, climate financing institutions such as GEF, GCF and other climate funds, as well as any multilateral bank teams working on climate. The relationship with the UNFCCC is particularly important as it convenes the Conferences of Parties (CoPs) that are the main mechanisms that define the global agenda on climate and (after the Paris accord) country public commitments though the NDCs. This role would be carried out in close collaboration with the corresponding GPs, with attention to phasing out technical assistance, training and awareness-raising activities as climate and health activities are successfully mainstreamed across the World Bank.

### *HNP—Would Lead the Health, Nutrition and Population Policy Dialogue with Our Clients and Relevant Partners*

As such, HNP's central role is creating the opportunity for country policy dialogue for this agenda and supporting government efforts to implement it. Specifically, HNP would play a pivotal role in convening health authorities, identifying country-specific needs, coordinating activities with local partners in the sector, and assisting in raising resources for country efforts. Based on country demand, it would lead the work on identifying and responding to country operational and Advisory Services and Analytics requests, with the CCSA providing support as deemed necessary. Equally important, HNP would guide the CCSA's awareness-raising efforts in the health sector and with CMUs. HNP would ensure that projects are screened for climate and disaster risks and follow through with any remedial measures, identify projects or clients that want to include climate considerations in their national plans and strategies and modernize their early warning systems. Further, and in close collaboration with the CCSA, HNP would co-organize trainings for HNP staff (particularly task team leaders) on climate and health issues and programing.

### *ENR—Would Lead the Pollution Management and Its Associated Health Impacts Portfolio and Related Budget Support Instruments*

Through this work, ENR would coordinate efforts to reduce the impact of SLCPs in health while also ensuring that, whenever possible, countries consider including GHG reduction in the cost scenarios for pollution abatement. In the context of the pollution, management and environmental health program, ENR and HNP have agreed to coordinate efforts at the country level. ENR already leads the majority of the Green Growth agenda and DPOs. In this context, ENR would explore including CC and health disbursement triggers in those operations, as well as work with HNP and the CCSA to mobilize parallel investment financing that may be needed to fulfill those triggers.

### *Other GPs in Key Roles*

The Urban Development team will be leading the work on CURB, and—jointly with the Global Facility for Disaster Reduction and Recovery (GFDRR)—any potential collaboration efforts around CityStrength. The Agriculture and Transport GPs would work jointly with the CCSA in developing respective knowledge notes on the health of farmers and on fuel policy. All those joint products would be reviewed by HNP and ENR. The specific role of other GPs such as Water, Energy and others will be examined in the coming fiscal year.

## Road Map

Figure 5.2 below presents a roadmap for the implementation of activities included in the plan of action (Annex C). The low resources scenario assumes some World Bank funding and increased resources from successful applications to existing climate investment funds. Figure 5.3 presents activities requiring substantial additional resources that will allow for full mainstreaming of climate in HNP operations, as well as increased dialogue and inclusion of climate and health considerations in other sectors.

**Figure 5.2:** Climate change and health action plan FY2017–2020. Road map (low-resource scenario).

| Activities | Year 1 | Year 2 | Year 3 | Year 4 | Specific Objectives |
|---|---|---|---|---|---|
| Three sector knowledge notes (water, urban and energy)<br>Five joint knowledge products (transport, agriculture, water, urban and energy) | Carry out sector KPs | Finalize KPs<br>Carry out sector KPs | Finalize KPs | | Cover jointly identified knowledge gaps on effects of CC in health mediated through agriculture, transport, water, urban and energy |
| Develop internal course on CC and health adaptation and mitigation and train staff | Develop the course | Training | Training | Training | Increase bank HNP staff awareness of the effects of CC in health and their knowledge to incorporate climate operations, SCDs and CPFs |
| Train HNP teams on climate and disaster screening | Clinics | Clinics | Clinics | Clinics | |
| Train HNP teams on access to climate funds | | | | | Increase transport, agriculture, water, urban and energy staff awareness of effects of CC in health mediated through their sectors |
| Organize information sessions for WB staff on effects in CC in health mediated through different sectors | | | | | |
| Support 7 HNP teams (1–2/year) to include CC considerations in operational design | | | | | Increase number of HNP projects including climate considerations<br>Integrate HNP teams in PPCR, and PMEH teams |
| Support agriculture, transport, water, urban and energy teams to introduce CC and health considerations in operations | | | | | Increase number of agriculture, transport, water urban and energy projects that take into consideration the effects of CC in health as mediated through their sectors |
| Comment on SCD/CPFs and engage with SCD/CPF teams in hotspot countries | | | | | Increase number of SCD/CPFs that include CC and health considerations |
| Prepare funding proposals and engage donors | | | | | Create MDTF to support the inclusion of CC and health consideration in WB operations |
| Engage partners and participate in key events | | | | | Increase banks presence in global area on the subject to keep abreast of new knowledge, tools and opportunities |
| Total | $125,000 | $200,000 | $110,000 | $200,000 | |

Note: Resource requirements reflected in this table refer exclusively to variable costs. Detail costs including staff time needs/fixed costs are reflected in the more detailed Plan of Action (Annex C).

**Figure 5.3:** Climate change and health action plan FY2017–2020. Road map (additional resources scenario).

| Activities | Year 1 | Year 2 | Year 3 | Year 4 | Specific Objectives | Total |
|---|---|---|---|---|---|---|
| Develop clean ambient air and health module of CURB and implement it in multiple cities (CURB+)<br>Develop clean air and health module of CURB incorporating the ambient air pollution fraction due to household combustion and implement it in multiple cities (CURB++) | Develop CURB+ | CURB++ in 20 cities | Deploy CURB++ cities | Deploy CURB++ in more cities<br>Develop CURB++ | Increase the number of cities in client countries that take steps to reduce the health impact of pollution and reduce GHG emissions (in the planning?) | $3.5 million |
| Climate services for health materials developed with WHO and WMO<br>Develop a MOCC on climate services for health outcomes | Start | End<br>Start | Launch | Maintain | | $275,000 |
| Leverage IDA and IBRD resources to have at least 1–2 operations/year that integrate CC and health through:<br>• CC & H vulnerability diagnostic & action plan<br>• Climate smart early warning & surveillance<br>• Health sector greening plan | **1–2 countries/year** | **1–2 countries/year** | | **1–2 countries/year** | Increase number of clients implementing measures to increase the population's resilience to the effects of CC in health | $1 million/ country |
| Launch UHC JLN technical stream on CC & H (scenario 3) | Start | Deploy | Maintain | Maintain | UC JLN CC platform maintained (scenario 3) | $1 million |
| Economic analysis | | Start | | End | Increase global knowledge | $500,000 |

Note: Resource requirements reflected in this table refer exclusively to variable costs. Activities reflected in this table are additional to those in Figure 5.2. Detail costs including staff time needs/fixed costs are reflected in the more detailed Plan of Action (Annex C). These additional activities will be carried out according to resource availability.

# Conclusion and Next Steps

The health impacts of climate change demand an immediate response, and there are many opportunities to confront these new health-related climate realities across the numerous dimensions of World Bank work. The CCSA and the HNP, and ENR GPs are central to this effort but so too are other sectors and GPs, including Agriculture, Transport, Urban Development, Energy and Water, among others, as each has a stake in considering the health impacts and opportunities of climate change. If we recognize and act upon this challenge, we will be prepared for a substantially altered burden of health conditions; the impacts of extreme weather events will be anticipated and managed, and low-carbon cities will provide mobility while addressing pollution and related noncommunicable diseases. Recognition of health costs will reinforce the economic case for shifting to low-carbon growth.

Regions and countries also need to address these near-term and long-term impacts, drawing upon the tools of many of the involved sectors. Through a strengthened coalition of international actors, the potential for health impacts to undermine the international community's goals for the post-2015 development agenda will be recognized and addressed.

International actors bring different mandates and resources to this issue and the World Bank can play a role in line with its comparative advantages that includes its convening power, knowledge resources, and finance. As a convener, the World Bank can help mobilize coalitions for action from a broad sector base, such as those in public health, environment, and—importantly—finance. As a knowledge bank, it can use analytical resources to strengthen the evidence base for action. As a financing institution, it can respond to growing demand to deliver responses at scale.

Success requires that investment and lending operations be informed by sector strategies that recognize the climate exposure pathways that lead to health impacts, and integrate responses (both for adaptation and mitigation) that lessen the burden of disease over time, particularly in the areas that are currently being—and will be—most affected.

Despite substantial efforts over the last 25 years, both by the World Bank and others in the international community, the health sector is yet to embrace the need to increase its resilience to climate change to improve health outcomes. Given that achieving UHC is the core goal and strategic framework for the global health community, this paper has selected UHC as the entry point for climate engagement as it relates to health outcomes. It illustrates the ways in which climate can hamper progress to this objective as well as pointing to ways the health sector can counter those effects. For the WBG, viewing climate change through the lens of this framework also highlights the central role of other sectors in increasing community resilience to climate-related health effects.

The imperative for the World Bank climate change and health plan of action, summarized above and detailed in Annex C, is to upgrade and expand its own capacity and define new priorities to place health and climate change prominently within its own programs; not only in health, nutrition and population but also in other areas of activity, such as environment, agriculture, energy, and

infrastructure. In addition to close internal coordination, the WBG will also need to collaborate with outside partners to tap the knowledge and financial resources available and leverage these to gain the greatest impact in safeguarding health outcomes from climate impacts.

If approved, this action plan and approach will be presented to partners and donors at a meeting to evolve funding. Priority will be given to country assistance, development of climate services for health guidance documentation, and the massive open online course on climate services for health. In parallel, the team will continue building internal partnerships to identify opportunities for collaboration and joint work, and will identify opportunities for cooperation and for influencing investments under preparation. We will also work with the CCSA communications and knowledge teams to develop a learning series on CC and health, as well as a course on CC and health.

ANNEX

# A References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ANNEX

B

# Health Sector Interventions in Response to Climate Change

For full details, please see "Climate-smart healthcare: low carbon and resilience strategies for the health sector, 2017."

**Table B.1:** Mitigation strategies applicable to the health care sector.

| MITIGATION STRATEGY | ACTIONS | GHG IMPACT | HEALTH CO-BENEFITS |
|---|---|---|---|
| Improve energy supply and distribution efficiency | Fuel switching; Energy recovery; Distributed generation; Combined heat & power | Reduced transmission losses; Reduced emissions from energy use, fuel production and transport | Immediate energy savings and operational resilience/ reliability<br>Reduced air pollution exposures<br>Improved access to reliable health care |
| On-site renewable energy sources | Solar photovoltaics Thermal solar energy Other renewable energies | Reduced emissions from energy use, fuel production and transport | Improved operational resilience/reliability<br>Long-term energy savings<br>Reduced ambient air emissions |
| Reduced-energy devices | Non-electric medical devices Direct-current devices Energy efficient appliances | Reduced emissions from energy use, fuel production and transport | Energy and operations savings and energy security<br>Improved functionality at night and device reliability<br>Improved diagnosis of tuberculosis with low-energy LED microscopes<br>Increased access to health care and energy security |
| Passive cooling, heating and ventilation strategies | Natural ventilation in health care settings<br>Evaporative cooling<br>Desiccant dehumidification<br>Underground earth-pipe cooling | Reduced direct emissions from on-site energy production; reduced emissions from energy use, fuel production and transport | Energy and operations savings and energy security<br>Improved indoor air quality<br>Decreased transmission of airborne infections<br>Improved social welfare, productivity and patient health |

*(continued)*

**Table B.1:** Continued

| MITIGATION STRATEGY | ACTIONS | GHG IMPACT | HEALTH CO-BENEFITS |
|---|---|---|---|
| Facility wastewater and solid waste management | Advanced autoclaving of infectious health care waste<br>On-site wastewater pre-treatment and sanitation improvements<br>High-heat incineration of pharmaceuticals with pollution scrubbers | Reduced energy emissions for waste and water treatment<br>Reduced greenhouse gas (GHG) footprint from waste treatment processes in some settings<br>Reduced aquifer and ecosystem damage | Savings in waste/water disposal fees<br>Reduced waste volumes<br>Improved compliance with local air quality regulations/ guidelines<br>Improved hygiene around facility<br>Reduced methane and other emissions<br>Reduced risks of exposure to infectious agents, and to diarrhea and other water-borne diseases |
| Reduced GHG emissions from anaesthesia gas use and disposal | Waste anaesthetic gas recapture and scavenging | Reduced direct emissions from anaesthesia gas waste | Anaesthesia cost savings with reuse<br>Reduced health risks for health workers exposed to gas<br>Improved health worker productivity |
| Reduced procurement carbon footprint | Better-managed procurement of pharmaceuticals, medical devices, business products and services, food/catering and other facility inputs | Reduced energy footprint in production and transport of unused pharmaceuticals and products | Resource savings on unused/ wasted products, Reduced risks from use of outdated/ expired products |
| Telehealth/ telemedicine | Home patient telemonitoring and guidance<br>Emergency response<br>Health worker advice collaboration via mobile phones | Reduced emissions from health care-related travel | More cost-effective health care<br>Reduced risk of travel-related injuries,<br>Improved management of chronic conditions, such as diabetes and heart disease, as well as emergency response<br>Better access to health care advice in poorly-resourced remote locations |

| MITIGATION STRATEGY | ACTIONS | GHG IMPACT | HEALTH CO-BENEFITS |
|---|---|---|---|
| Health facilities in proximity to public transport and safe walking/cycling | Public transport options mapped during planning of buildings to locate new facilities nearby<br>Employee incentives for public active transport use and facilities | Reduced transport-related emissions from health worker and hospital visitor travel | Reduced traffic injury risk for health workers and hospital/ clinic visitors travelling to health facilities<br>Potential for active transport by health care workers to reduce risks of hypertension, cardiac disease and diabetes<br>Improved facility access for health workers and visitors who do not have cars |
| Conserve and maintain water resources | Water-efficient fixtures, leakage management, water safety<br>Onsite water treatment and safe water storage in health facilities<br>Rainwater harvesting, gray water recapture/ recycling | Reduced energy use for water extraction from surface/aquifer sources<br>Reduced truck transit of water resources<br>Reduced aquifer and ecosystem damage from water extraction | Improved performance due to better access to safe water<br>Savings in water fees<br>Reduced water contamination from health facility activities<br>Reduced disease transmission from unsafe water and drinking water<br>Improved access to safe, potable water in poorly resourced health facilities |

Source: Adapted from the World Health Organization.

**Table B.2:** Health sector interventions for adapting to and building resilience to climate-sensitive health impacts.

| VECTOR-BORNE DISEASE | WATER-BORNE DISEASE | UNDERNUTRITION | HEAT STRESS | RESPIRATORY AND CARDIOVASCULAR HEALTH | MENTAL HEALTH |
|---|---|---|---|---|---|
| **Cross-cutting medical and public health measures**<br>Medical personnel training and capacity buildings<br>Public health awareness campaigns for climate-sensitive health impacts<br>Climate awareness in-built to Universal Health Coverage<br>Mapping of hospitals and clinics in relation to climate-sensitive geographies | | | | | |
| Preventative interventions: vaccinations, bednets, insecticides | Preventative interventions: vaccinations, water purification | Education of pregnant women, mothers and supply of PNVs. | Medical guidance to vulnerable workers—e.g., outdoor laborers and factory workers | Implementation of early-warning systems associated with poor air quality associated with climate pollutants or other biologic aero-allergens | Increased mental-health workforce |
| Implementation of early-warning systems associated with disease-correlated weather events, such as high temperature or precipitation | Implementation of early-warning systems associated with flooding events or drought | Supply of nutritional supplements ahead of extreme weather | Implementation of early-warning systems associated with extreme heat | Improved diagnostics for allergic reactions | Improved storage and access to mental health treatments |
| Improved laboratory and on-site diagnostic facilities | Improved laboratory and on-site diagnostic facilities | Improved pediatric facilities in climate-sensitive areas | Stockpiling and distribution of emergency oral rehydration solution | | |
| Trainings for medical staff to recognize symptoms | Trainings for medical staff to recognize symptoms | | | | |
| Stockpiles of antiviral and antiparasitic medications | Stockpiles of antivirals, antiparasitics, and antibiotics | | | | |

ANNEX

# C

# Mainstreaming/Integrating Climate-Health Dimensions across World Bank Operations

**Table C.1:** CC and health action plan FY2017.

| OBJECTIVES/TARGETS | ACTIVITIES | STAFF WEEKS | LOW SCEN. | SCEN. 1 | SCEN. 2 |
|---|---|---|---|---|---|
| **Pillar 1. Objective: Knowledge generation**<br>• Water, Urban and Energy knowledge gaps and opportunities identified<br>• KPs in agriculture and transport launched | • Develop Water, Urban and Energy knowledge notes to identify gaps and opportunities<br>• KP on Impact of CC in agricultural labor<br>• Expand *Reducing Air Pollution from Urban Transport* report with health, pollution & CC | CCSA: 15<br>HNP: 4 | $30 k | $30 k | $30 k |
| • CURB+ developed | • Hire consultant to develop clean air and health module | HNP, URBAN, CCSA, ENR: 10 | | $250 k | $250 k |
| **Pillar 2. Objective: Improve WB staff capacity**<br>• 25% of teams preparing new HNP projects in last FY have benefited from training on climate and disaster risk screening<br>• 6 training events on CC and health delivered<br>• Develop internal course | • Clinics for HNP teams on CC and disasters project screening CCSA's KM<br>• Organize a CC and health series (BBL)<br>• Develop jointly with (CCSA, HNP, ENR) KM, an online internal course for World Bank staff on impacts and actions on CC and health | CCSA FP: 3<br>CCSA KMT: 4<br>HNP: 6<br>ENR: 4<br>CCSA: 20 | $55 k | $55 k | $55 k |

*(continued)*

**Table C.1:** Continued.

| OBJECTIVES/TARGETS | ACTIVITIES | STAFF WEEKS | LOW SCEN. | SCEN. 1 | SCEN. 2 |
|---|---|---|---|---|---|
| **Pillar 3. Objectives: Increase number of upcoming SCDs/CPFs and HNP operations incorporating CC & H**<br>• A percentage of HNP operations include CC & H activities, e.g.: CC & H vulnerability assessment & work plan, climate smart early warning & surveillance, reduction of GHG emission in the health sector<br>• All new SCDs/CPFs in high risk countries include CC &H<br>• 20% of HNP new projects consider CC in their design | • TA from CCSA to HNP teams<br>• Engage country partners, ministries of environment, disaster authorities, meteorological authorities, WMO/ WHO.<br>• SCD/CSA review and engaging with teams | CCSA: 10<br>HNP: 1 | $20 k | $20 k | $20 k<br>+ 50 k |
| • MOOC on climate services for health launched | • Develop MOOC on climate services for health jointly with WHO, WMO, USAID | CCSA: 15<br>LLI: 20 | | $250 k | $250 k |
| • UHC JLN technical stream on CC & H launched | • Proposal, web development, 2 learning events | CCSA: 6<br>HNP: 8 | | | $1 m/ 3 years |
| **Crosscutting area 1. Objective: Leverage WB resources**<br>• # of HNP operations accessing climate funds<br>• Explore external funding opportunities | • Training and TA to HNP teams to prepare proposals for GEF and CIFs<br>• Prepare funding proposals | CCSA: 3 SW<br>HNP: 3 SW | $20 k | $20 k | |
| **Crosscutting area 2. Objective: Influence investments internally & influence global dialogue** | • Participate co-sponsor international events | CCSA: 6 | $25 k | $25 k | $25 k |
| **Total** | | | $100 k | $650 k | $1.7 m |

**Table C.2:** CC and health action plan FY2018.

| OBJECTIVES/TARGETS | ACTIVITIES | STAFF WEEKS | LOW SCEN. | SCEN. 1 | SCEN. 2 |
|---|---|---|---|---|---|
| **Pillar 1. Objective: Knowledge generation**<br>• Water, Urban and Energy KPs launched | • KP on issues identified by water, urban & energy | CCSA: 3<br>ENR: 3<br>Urban: 15 | Urban $100 k | $130 k | $210 k |
| • CURB++ developed | • Consultant to develop household pollution contribution to outdoor air pollution & health module | HNP/URBAN, CCSA/ENR: 10 | | $250 k | $250 k |
| **Pillar 2. Objective: Improve WB staff capacity**<br>• 50% of HNP new projects in last FY benefited from training/clinic on CC & disaster risk screening<br>• 10% of HNP new projects consider CC<br>• 40% of staff trained on CC impact on HNP | • Clinics for HNP teams on CC and disasters project screening CCSA's KM<br>• Organize a CC and health series (BBL) (HNP/CCSA/ENR)<br>• Course maintenance | CCSA FP: 3<br>CCSA KMT: 4<br>HNP: 2<br>ENR: 2<br>AG: 1<br>Transport: 1 | $10 k | $10 k | $10 k |
| **Pillar 3. Objectives: Increase number of upcoming SCDs/CPFs and HNP operations incorporating CC & H**<br>• At least one Transport operation and one Agriculture operation incorporate the results of respective KPs<br>• All new SCDs/CPFs in high risk countries include CC and health considerations | • TA from CCSA to HNP teams<br>• Engage country partners, ministries of environment, disaster authorities, meteorological authorities, WMO/WHO | CCSA: 6<br>HNP: 4<br>Transport:2<br>Agriculture: 2<br>Energy, Urban, Water: 12 | $20 k | $60 k | $80 k |
| • UHC JLN CC platform maintained<br>• One or two additional HNP operations include CC & H activities | • TA from CCSA to HNP teams<br>• Support countries to hire TA | CCSA: 22<br>HNP: 10 | $20 k | $1 m | $2 m |
| • MOOC on climate services for health implemented | • Develop MOOC on climate services for health jointly with WHO, WMO, USAID | CCSA: 15<br>LLI: 20 | | $100 k | $100 k |
| • CURB+ applied to 10 cities | • Support country teams to apply CURB | HNP/URBAN, CCSA/ENR: 10 | | | $1 m |
| **Crosscutting area 1. Objective: Leverage WB resources**<br>• # of HNP operations accessing climate funds<br>• Explore MDTF or similar funding architecture for CC & H work | • Training and TA to HNP teams to prepare proposals for GEF and CIFs<br>• Engage donors and foundations and World Bank's financial team | CCSA: 12 SW<br>HNP: 10 SW | $30 k | $30 k | $30 k |
| **Crosscutting area 2. Objective: Influence investments internally & influence global dialogue** | • Participate cosponsor international events | CCSA: 3 SW<br>HNP: 3 SW | $20 k | $20 k | $20 k |
| **Total** | | | $200 k | $1.6 m | $3.7 m |

**Table C.3:** CC and health action plan FY2019.

| OBJECTIVES/TARGETS | ACTIVITIES | STAFF WEEKS | LOW SCEN. | SCEN. 1 | SCEN. 2 |
|---|---|---|---|---|---|
| **Pillar 1. Objective: Knowledge generation**<br>• Launch CC & health economic analysis | • Define TORs and contract | CCSA: 8<br>HNP: 8 | | $200 k | $200 k |
| **Pillar 2. Objective: Improve WB staff capacity**<br>• 65% of HNP new projects in last FY benefited from training/clinic on CC & disaster risk screening<br>• 15% of HNP new projects consider CC<br>• 60% of staff trained on CC impact on HNP | • Clinics to HNP teams on CC and disasters project screening CCSA's KM<br>• Organize a CC and health series (BBL) (HNP/CCSA/ENR)<br>• Course maintenance | CCSA FP: 3<br>CCSA KMT: 4<br>HNP: 2<br>ENR: 2<br>AG, Transport, Water, Urban, Energy: 5 | $10 k | $10 k | $10 k |
| **Pillar 3. Objectives: Increase number of upcoming SCDs/CPFs and HNP operations incorporating CC & H**<br>At least five non-HNP operations incorporate CC and H angle, the results of respective KPs<br>All new SCDs/CPFs in high risk countries include CC and health considerations<br>• UHC JLN CC platform maintained | • TA from CCSA to HNP teams<br>• Engage country partners, ministries of environment, disaster authorities, meteorological authorities, WMO/WHO | CCSA: 8<br>HNP: 8<br>Transport, AG, Energy, Urban, Water: 20 | $20 k | $30 k | $80 k |
| • One or two additional HNP or other sector operations include CC & H activities | • TA from CCSA to HNP teams<br>• Support countries to hire TA | CCSA: 20<br>HNP: 2 | $20 k | $1 m | $2 m |
| • CURB++ applied to 10 cities | • Support country teams to apply CURB++ | CCSA: 3<br>ENR: 3<br>Urban: 15 | | | $1 m |
| **Crosscutting area 1. Objective: Leverage WB resources**<br>• # of HNP operations accessing climate funds<br>• Architecture for MTF set | • Negotiate with donors a MDTF for health & CC<br>• Prepare funding proposals | CCSA: 15 SW<br>HNP: 8 SW | $30 k | $30 k | $30 k |
| **Crosscutting area 2. Objective: Influence investments internally & influence global dialogue** | • Participate cosponsor international events<br>• Publish work | CCSA: 3 SW<br>HNP: 3 SW | $30 k | $30 k | $30 k |
| **Total** | | | $110 k | $1.3 m | $3.3 m |

**Table C.4:** CC and health action plan FY2020.

| OBJECTIVES/TARGETS | ACTIVITIES | STAFF WEEKS | LOW SCEN. | SCEN. 1 | SCEN. 2 |
|---|---|---|---|---|---|
| **Pillar 1. Objective: Knowledge generation**<br>• Evaluation of the Plan of Action | • Contract evaluation | | $100 k | $100 k | $100 k |
| **Pillar 2. Objective: Improve WB staff capacity**<br>• 80% of HNP new projects in last FY benefited from training/clinic on CC & disaster risk screening<br>• 20% of HNP new projects consider CC<br>• 75% of HNP staff trained on CC impact on HNP | • Clinics to HNP teams on CC and disasters project screening CCSA's KM<br>• Organize a CC and health series (BBL) (HNP/CCSA/ENR)<br>• Course maintenance | CCSA FP: 3<br>CCSA KMT: 4<br>HNP: 2<br>ENR: 2<br>AG, Transport, Water, Urban, Energy: 5 | $10 k | $10 k | $10 k |
| **Pillar 3. Objectives: Increase number of upcoming SCDs/CPFs and HNP operations incorporating CC & H**<br>At least five non-HNP operations incorporate CC and H angle/ the results of respective KPs<br>All new SCDs/CPFs high risk countries include CC and health considerations<br>• UHC JLN CC platform maintained | • TA from CCSA to HNP teams<br>• Engage country partners, ministries of environment, disaster authorities, meteorological authorities, WMO/WHO | CCSA: 8<br>HNP: 8<br>Transport, AG, Energy, Urban, Water: 20 | $20 k | $50 k | $80 k |
| • One or two more HNP or other sectors operations include CC & H activities | • TA from CCSA to HNP teams<br>• Support countries to hire TA | CCSA: 20<br>HNP: 2 | $20 k | $1 m | $2 m |
| • CURB++ applied to 10 new cities | • Support country teams to apply CURB++ | CCSA: 3<br>ENR: 3<br>Urban: 15 | | | $1 m |
| **Crosscutting area 1. Objective: Leverage WB resources**<br>• # of HNP operations accessing climate funds<br>• Functioning MDTF | • Training and TA to HNP teams to prepare proposals for GEF and CIFs<br>• Prepare funding proposals | CCSA: 3 SW<br>HNP: 3 SW | $30 k | $30 k | $30 k |
| **Crosscutting area 2. Objective: Influence investments internally & influence global dialogue** | • Participate cosponsor international events<br>• Publish work | CCSA: 3 SW<br>HNP: 3 SW | $30 k | $30 k | $30 k |
| **Total** | | | $200 k | $1.22 m | $3.25 m |

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