

EXECUTIVE SUMMARY

This is the fourth edition of the UN Environment Adaptation Gap Reports. Since 2014, these reports have focused on exploring adaptation gaps, characterized as the difference between the actual level of adaptation and the level required to achieve a societal goal. The adoption of the Paris Agreement established a global goal on adaptation of “enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal”. As the Paris Agreement is now being implemented, important decisions are about to be made on how to report on, and take stock of, progress towards this global goal. The Adaptation Gap Reports focus on providing policy-relevant information to support such efforts.

The focus of the 2018 report is dual: **The first part** examines the gaps that exist in a number of areas that are central to taking stock and assessing progress on adaptation, namely the enabling environment as expressed through laws and policies, key development aspects of adaptive capacity, and the costs of and finance needed for adaptation. **The second part** of the report focuses on the adaptation gap in one particular sector, namely **health**. Based on the available scientific evidence on climate impacts and health outcomes, the second part provides an overview of the global adaptation gap in health, followed by a specific focus on three key areas of climate-related health risks: heat and extreme events, climate-sensitive infectious diseases, and food and nutritional security.

PART ONE: STATUS AND TRENDS IN THE ENABLING ENVIRONMENT, ADAPTIVE CAPACITY AND FINANCING FOR ADAPTATION

ADAPTATION IS INCREASINGLY ADDRESSED IN LAWS AND POLICIES, BUT MORE NEEDS TO BE DONE TO ENABLE EFFECTIVE AND EFFICIENT ADAPTATION

There is a divergence between what countries report under the United Nations Framework Convention on Climate Change (UNFCCC) and what studies tell us about the laws and policy frameworks being

implemented at the national level. Under the UNFCCC, countries use multiple reporting instruments to provide information on how they enable adaptation, including information on their plans and policies. As at November 2018, adaptation information from developing countries included 132 adaptation components of NDCs and 11 National Adaptation Plans, whereas 40 developed countries reported on adaptation in their seventh National Communications. In comparison, independent studies show that at least 162 countries explicitly address adaptation at national level through a total of 110 laws and 330 policies. Although only 68 of these countries use legislation, nearly all of them have executive policies. However, several countries are in the process of developing adaptation legislation, which is more difficult to reverse than policies. Less than half of countries provide integrated frameworks to address climate change adaptation in a holistic way. Most address adaptation through development plans or sectoral policies alone, while a handful have been specifically designed to create financial instruments or to focus on disaster risk management.

Only 40 developing countries have quantifiable adaptation targets in their current NDCs, while 49 include quantifiable targets in their national laws and policies. Some countries include quantified adaptation targets in their international reporting, but have not yet codified them in national legislation, whereas others have targets codified in national law that are not currently reported to the UNFCCC. Most of the quantifiable targets in national laws and policies are relevant to adaptation in disaster risk management, coastal protection, flood-proofing, land preservation, water management, climate-resilient buildings and more. The low levels of quantifiable targets present a risk both to the signal that the NDCs provide to the required national policy-making efforts, and to the ability to measure progress and increase ambition over time. Furthermore, many existing targets are relatively short-term and do not look beyond 2020. This challenges the ability to address anticipated future climate impacts. Finally, lacking systematic recording at subnational levels, it is not possible to capture all adaptation-relevant actions and to assess status and progress on adaptation governance structures.

INDICATORS OF ADAPTIVE CAPACITY SHOW THAT THE GAP BETWEEN LOWER-INCOME AND HIGHER-INCOME COUNTRIES IS CLOSING, BUT PROGRESS IS GENERALLY TOO SLOW

Indicators of adaptive capacity, along with indicators of exposure and sensitivity, are central to assessing reduced vulnerability and enhanced resilience. Focusing on adaptive capacity, the report examines existing frameworks and indices of vulnerability and distilled common indicators of adaptive capacity across them for which sufficient data are available. Measures of progress in adaptive capacity have much in common with measures of progress in development more generally and are likely to yield benefits irrespective of future climate regimes while addressing aspects relevant to increased exposure to climate hazards. The emphasis has also been on selecting indicators relevant to health, as this is the focus of the second part of the report.

Over the past twenty years low- and middle-income countries have shown consistent progress in many indicators relevant to adaptive capacity. Most of these indicators, identified on the basis of existing frameworks and indices of vulnerability, overlap with development indicators. They include access to basic sanitation, clean water and electricity, as well as immunization rates, child mortality, food deficits and the prevalence of stunting. However, progress has been slow and there is no sign of acceleration, so that catching up with wealthier countries to bridge the gap in adaptive capacity will take many decades under current rates of improvement. For example, average access to basic sanitation in low-income countries is currently at around 30 percent, but at rates of between 2 and 8 percent increase in access per year it will take several decades to reach lower-middle income country levels.

Progress in other indicators of adaptive capacity is mixed. For instance, the number of physicians in low-income countries has been stagnating at very low levels (less than 0.5 per 1,000 people), whereas in upper-middle to high-income countries numbers have continued to climb and are currently between 2 and 3 per 1,000 people. On the other hand, access to mobile phone technology in low and lower-middle income countries is catching up quickly with the rest of the world and will have attained full coverage within a decade, providing many opportunities for development and income generation, as well as access to information that can be important for adaptation.

Access to resources and information, technological capacity and a conducive enabling environment are necessary elements of building adaptive capacity. A good example where this has been shown to be successful is the reduction of deaths from tropical cyclones in Bangladesh. Storm risk hazards have been strongly mitigated since the 1990s by adopting an integrated approach that coordinates actions across ministries and other stakeholders at the national to local levels, empowers communities, and provides effective early warning and access to protective infrastructure.

THERE IS A CONSIDERABLE ADAPTATION FINANCE GAP TODAY, WHICH IS ESTIMATED TO INCREASE SIGNIFICANTLY IN THE FUTURE

The 2016 Adaptation Finance Gap Report significantly increased previous estimates of adaptation costs. The annual costs of adaptation could range from US\$140 billion to US\$300 billion by 2030 and from US\$280 billion to US\$500 billion by 2050. However, major information gaps continue to persist across sectors and for different impacts, most notably with the omission of adaptation cost estimates for biodiversity and ecosystem services, which are likely to raise the costs of adaptation further. New information strengthens and adds detail to the previous findings:

Climate-risk screening by the multilateral development banks suggests that including costs to build resilience to future climate risks over the lifetime of a given investment will significantly increase costs. In the road sector, for example, the uplift required to deliver resilience varies from 0.5 to 10 percent of the total project investment cost. Given the latest estimates of the global investments in new infrastructure, which range from US\$57 trillion to US\$95 trillion between now and 2030, cost uplifts of this level imply very large global adaptation costs.

The programming and implementation costs of adaptation are significant. For international climate finance, the additional costs of design (including safeguards) and implementation (capacity building, project management, reporting, monitoring and evaluation, and oversight) typically range between 10 and 20 percent of the total costs. These need to be included in adaptation cost estimates and financing needs to reflect the realistic costs of delivering adaptation.

There is also more evidence of the short-term economic and financial costs of extreme events, which are poorly captured. Economic losses from weather events were the highest on record in 2017. Total estimated economic losses stood at US\$330 billion in 2017, of which US\$136 billion was insured losses. Climate attribution is starting to tease out the influence of climate change on large weather extremes, and these indicate earlier and larger impacts than previously estimated.

Overall, a major adaptation finance gap persists. New information shows that global public finance flows have remained stable and were estimated at US\$23 billion in 2016. Approximately 64 percent of this went to developing countries via bilateral climate finance, multilateral climate funds and multilateral development banks. Other sources of adaptation finance, such as through development finance institutions, domestic public finance and private-sector finance, are available but difficult to assess. While substantial, the available adaptation finance is significantly lower than the needs expressed in the NDCs, which have been estimated at over US\$50 billion per year for fifty non-Annex I countries for the period 2020 to 2030, and much lower than the estimated costs of adaptation.

PART TWO: THE ADAPTATION GAP IN HEALTH

The adaptation gap in health can be characterized as the difference between the climate-related health outcomes under actual adaptation efforts and the climate-related health outcomes that would occur under desirable levels of health adaptation efforts, consistent with the societally set goal for adaptation.

While a global societal goal for adaptation in health does not exist, an implicit objective is to avoid the highest possible proportion of climate-related health impacts now and in the future by increasing adaptation efforts implemented in the highest-quality manner that knowledge can support. Because even successfully implemented full adaptation cannot be a hundred percent effective in protecting health from climate impacts, there will still be some residual health impacts on populations.

THERE IS A SIGNIFICANT GLOBAL ADAPTATION GAP IN HEALTH, AS EFFORTS ARE WELL BELOW THE LEVEL REQUIRED TO MINIMIZE NEGATIVE HEALTH OUTCOMES

There is a significant global health adaptation gap today. While progress has been made in reducing climate-sensitive diseases and injuries, current adaptation efforts are well below the level required to avoid or minimize negative health impacts. Acknowledging the diversity of national circumstances with great variation both across and within countries and regions, a substantial proportion of the current climate-related impacts on mortality, illness and decrements in the quality of life is preventable. However, current funding for climate change adaptation in health is negligible and, while health is a priority sector in 54 percent of NDCs featuring adaptation, there are few quantitative targets against which progress can be measured.

Unless adaptation efforts are strengthened considerably, heat and extreme event-related morbidity and mortality will continue to rise. The impacts of heatwaves and extreme events on human health are significant. Current climate variability already threatens vulnerable populations in many regions. Projected increases in heat and extreme weather events and changing socio-demographic trends will further increase exposure and risks. Thus, while largely preventable with appropriate adaptation measures, heat-related annual mortality of the elderly could rise by over 90,000 in 2030 and over 250,000 by 2050, particularly in sub-Saharan Africa, Latin America and Southeast Asia.

Without appropriate action, infectious diseases will rise significantly due to climate change, particularly in Africa and Asia. Infectious diseases are climate-sensitive and represent a large share of the current global burden of disease, mainly through water- and foodborne diseases and vector-borne diseases. For instance, as heavy rains and floods increase with climate change, outbreaks of water-borne diseases will rise due to the contamination of drinking water supplies, which typically hit people living in precarious conditions,

especially women, children and the elderly, the hardest. Without adaptation, 48,000 additional deaths in children aged under fifteen are projected due to diarrheal disease for 2030, as well as 60,000 additional deaths from malaria.

Unabated, nutrition-related morbidity and mortality are expected to rise significantly in the future, even under moderate warming scenarios. Sub-Saharan Africa and southern Asia remain the regions that are most vulnerable to chronic and acute undernutrition, which typically hits the rural poor, women and children the hardest. For instance, stunting in children, a key indicator of food insecurity and nutrition, shows slow rates of decline and is expected to miss the target of a 40 percent reduction by 2025 compared with 2012 by a significant margin. As a risk multiplier, climate change will increasingly threaten health related to food and nutritional security through its direct and indirect impacts on food systems. Without adaptation, climate change will cause 7.5 million additional cases of stunted children by 2030, and 10.1 million by 2050.

There are few robust global estimates of the health impacts caused by weather extremes, climate-sensitive infectious diseases and undernutrition. Estimates of the health burden of climate change probably underestimate the actual impacts due to the complexity of the causal pathways between exposure and attributable health outcomes, and the inability of existing monitoring and surveillance systems to capture accurate information. For instance, studies reveal substantial gaps in knowledge and data coverage that need to be overcome in order to improve assessments of progress on adaptation efforts, although improvements can be expected as tracking the SDG and Sendai Framework targets gets underway.

There is limited information on the costs of adaptation in health. A lack of global studies on the costs of the health impacts of climate change and the costs of health adaptation is hindering better global estimates of current and future costs and the financial needs of health adaptation. Ill health and premature mortality related to climate variability and change incur significant economic costs to health systems and society, which are expected to rise in the future. While the costs of climate-related health impacts, particularly weather extremes, vary considerably, the benefits of preventing impacts can be high. For instance, the benefit-to-cost ratios for heatwave warning systems have been estimated at 11 for London, 308 for Prague, and 913 for Madrid, with increasing benefits under a changing climate.

International climate finance for health has been negligible. In principle, most of the financing mechanisms and funds for adaptation apply to health adaptation as well. However, so far the overall presence of health-sector activities in international climate adaptation finance stands at less than one percent. Additional resources are needed to increase the resilience of health systems, including health facilities, and to build the

capacities of health professionals to deal with climate-related impacts, particularly in developing countries.

BRIDGING THE ADAPTATION GAP IN HEALTH

Many of the actions that can contribute to bridging the adaptation gap in health are low or no-regret measures that provide immediate health benefits, reduce the risks from future climate change and support the SDGs.

Among these actions three categories are key: 1) efforts to enhance the climate resilience of health systems; 2) efforts related to broader development action; and 3) efforts related to early warning, monitoring and building the evidence base.

Efforts related to enhancing the climate resilience of health systems are fundamental if health systems are to perform their core functions and maintain their structures under climate-related shocks and stresses, thus creating sustained improvements in population health, even in a changing climate. Important efforts include:

- **Climate proofing health systems.** This includes inter-sectoral actions to enhance the climate resilience of health facilities, as well as organizational measures to maintain essential functions and structure of health systems after extreme weather events, both currently and under the more frequent and severe events that are expected from climate change.
- **Investing in capacity-building and preparedness.** Carrying out climate change health vulnerability and adaptation assessments, developing climate change and health action plans and enhancing health workforce preparedness to climate impacts would deliver immediate and long-lasting results that would improve adaptive capacity in health and strengthen the resilience of health systems.
- **Integration of health into broader policy frameworks.** Health adaptation is most effective when it is integrated into broader national policies and programmes, notably by evaluating and ensuring the health benefits of sectoral adaptation activities in agriculture, water and sanitation, infrastructure, transport, energy and urban planning, as well as by creating synergies with complementary initiatives such as the Sendai Framework and the SDGs, the Paris Agreement and the International Health Regulations, among others.

Efforts related to broader development action. The prevention of many of the climate-related impacts on health will depend greatly on development efforts that address key social and environmental determinants of health such as basic sanitation, clean water supply, and food and nutritional security. Important efforts include:

- **Improving basic measures in water, sanitation and hygiene.** Development-related measures in water, sanitation and hygiene, as well as in food safety, can

prevent many of the additional deaths due to climate-sensitive infectious diseases.

- **Scaling up proven interventions to avoid malnutrition.** Prevention, early detection and treatment of malnutrition in all its forms can be achieved by scaling up proven interventions that build capacity and knowledge in women and by providing food supplements to overcome deficiencies, particularly in the areas of food insecure climate hotspots.

Efforts related to early warning, monitoring and building the evidence base. Early warning, monitoring and improved scientific understanding are key to reducing the impacts of weather extremes and enhancing the prediction and management of future burdens of climate-sensitive health impacts. Important efforts include:

- **Building effective early warning and monitoring systems.** This includes the development and implementation of multi-hazard early warning systems along with effective planning and risk management in line with the global targets of the Sendai Framework and the SDGs. However, progress is hindered by several factors, including widely varying surveillance capacity among countries and regions, and a lack of clear, standardized definitions of extreme events.
- **Expanding the evidence base for climate-related health risks.** Better models are crucial to our understanding and management of climate-related risks. For instance, challenges exist in quantifying the magnitude of weather extremes and in predicting the occurrence, distribution and incidence, at different spatial scales, of the future burden of infectious diseases and undernutrition due to their often extremely complex causal pathways.

HOW WELL ARE WE DOING OVERALL?

Overall, we need more efforts and resources to scale up actions to narrow the gap. Based on what we know, there is a significant global adaptation gap in health, current efforts being well below the level required to significantly reduce negative health outcomes. We also know that health impacts will strongly increase in the future due to climate change unless adaptation action is scaled up and accelerated. At the same time, there has been progress in bridging the gap in some areas, although with great variability both within and across countries and regions. For instance, the average death toll from floods and droughts has declined compared with similar events in the past. What is urgently needed to further narrow the adaptation gap in health, both today and in the future, is mainly political will and the necessary financial resources to implement the most important actions related to climate resilient health systems, early warning systems and a broader development agenda aimed at reducing vulnerability to climate-sensitive health risks, particularly infectious diseases and food and nutritional insecurity.