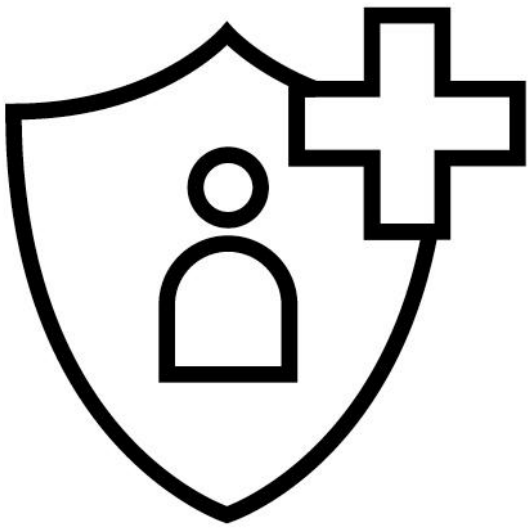

Sectoral Guide Consultation Version 1

# Health and wellbeing

GREEN CLIMATE FUND | Sectoral Guides

22 September 2022

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# Contents

# Abbreviations

| | |
|---|---|
| AE | Accredited Entity |
| BAR-HAP | Benefits of Actions to Reduce Household Air Pollution |
| BCM | Business continuity management |
| BCP | Business continuity planning |
| CaRBonH | Carbon Reduction Benefits on Health |
| CIEWS | Climate information and early warning systems |
| HNAP | Health component of a National Adaptation Plan |
| CIEWS | Climate information and early warning systems |
| GCF | Green Climate Fund |
| GHG | Greenhouse Gas |
| ICT | Information and communications technology |
| IDCOL-ICS | Infrastructure Development Company/Improved Cookstoves |
| IoT | Internet of Things |
| IRMF | Integrated Results Management Framework |
| MSME | Micro, Small, Medium Enterprises |
| NAP | National Adaptation Plan |
| NDA | National Designated Authorities |
| NDC | Nationally Determined Contribution to the Paris Agreement |
| PIC | Private Institutional and Commercial finance |
| MSME | Micro, Small and Medium-sized Enterprises |
| SDG | Sustainable Development Goal |
| TA | Technical Assistance |
| V&A | Vulnerability and adaptation assessment |
| WASH | Water, Sanitation, and hygiene |
| WHO | World Health Organization |
| WRI | World Resources Institute |
| UNFCCC | United Nations Framework Convention on Climate Change |

# Executive summary

The Green Climate Fund (GCF) is the world's largest dedicated fund helping developing countries respond to climate change. It was established by the United Nations Framework Convention on Climate Change (UNFCCC) in 2010 and has a crucial role in supporting the developing countries in achieving their commitments and ambitions towards meeting the goals of the Paris Agreement. GCF is dedicated to boosting climate finance for developing countries and has set an ambitious agenda with its Strategic Plan for 2020-2023. Despite the COVID-19 pandemic, GCF is providing increased support, helping developing countries build a low emission, climate-resilient recovery. The GCF Sectoral Guide series supports the progressive work programme approved for 2020-2023 providing evidence-based information for impactful projects in priority investment areas and giving further momentum to making GCF operations more efficient and more effective.

There are eight result areas that GCF has targeted because of their potential to deliver a substantial impact on mitigation and adaptation in response to climate change. Result areas provide the reference points that guide GCF and its stakeholders to ensure a strategic approach when developing programmes and projects, while respecting the needs and priorities of individual countries. The health and wellbeing sector is affected directly and indirectly by climate change actions in other sectors and these cross-sectoral issues are addressed through multiple result areas in a complementary manner, as shown in Table ES-1.

Table ES-1: Cross-references with other Sectoral Guides

| Sector | Cross-Sectoral issues addressed |
|---|---|
| Agriculture and food security | • Improve environmentally sustainable and climate-resilient agricultural production systems, supporting improved nutrition in poor and rural communities. |
| Cities, buildings, and urban systems | • Green and blue spaces as part of urban planning (i.e., increasing proximity to parks, woods, meadows, rivers, and lakes).<br>Reduce vehicle pollution in urban transport.<br>• Reduce urban heat islands. |
| Ecosystems and ecosystem services | • Ecosystem-based approaches that improve physical and mental wellbeing including reduce air pollution and temperature increases; maintenance and purification of freshwater supplies, including reducing saline intrusion from deforestation and land degradation (which affects worker productivity and can create breeding grounds for mosquitoes and other vectors); increase access to clean water; provide protection from extreme events; and increase access to clean water, protection against sea-level rise. |
| Forests and land use | • Ecosystem-based approaches that improve physical and mental wellbeing including reducing air pollution; reduce temperature increases reducing transmission of zoonotic disease from deforestation and forest/land degradation (which affects worker productivity and can create breeding grounds for mosquitoes); increase access to safe water; and provide protection from extreme events. |
| Energy access and power generation | • Energy access and energy security for rural health facilities; refrigeration to prevent foodborne diseases in rural populations; low-carbon energy for healthcare facilities. |
| Climate information and early warning systems | • Improve hydrometeorological services for various health-related climate services including early warning, preparedness, and response systems. |
| Health and wellbeing | • Low emission, climate resilient, and nature positive organisations, institutions, and resources that deliver public health and health care services to meet populations needs; building climate resilient health systems and services; climate-informed advisory and risk management services; community support and action for climate and health. |
| Water security | • Safe drinking water and improved sanitation for health; access to improved water supply sources and sanitation, including handwashing facilities. |
| Low emission transport | • Health co-benefits of reduced exposure to air pollutants. |
| Energy efficiency | Cold chains and storage for medicines and vaccine storage and transport.<br>Clean cooking initiatives that reduce indoor air pollution. |

| | |
|---|---|
| | • Low-carbon healthcare infrastructure, including waste management practices; lighting; cooling; thermal insulation; sustainable procurement of goods; natural ventilation. |

## GCF Health and wellbeing Sectoral Guide

There are multiple threats to health and wellbeing from climate change. At 1-1.5°C of warming above preindustrial temperatures, rising temperatures increase the frequency and intensity of extreme events; and exacerbate malnutrition, vector-, food-, and water-borne infections, zoonotic diseases, and occupational and mental health consequences. These can be direct (heat, cold, flood, wildfire, storms, and drought), ecosystem mediated (vector borne diseases, food and water borne infections; air quality), or human institution mediated (e.g., malnutrition, increase in gender-based violence, and loss of sexual and reproductive rights). Climate change also can jeopardize critical infrastructure (e.g., water and sanitation infrastructure); and destabilize systems that maintain population health (e.g., following floods or the effects of sea level risk in coastal cities). The impacts of climate change on desertification and biodiversity loss also have negative consequences for health and well-being. The complexity of the associations between climate change and health means there may be unintended consequences that can be challenging to project. Multisectoral systems-based understanding and risk management approaches increase the effectiveness and efficiency of adaptation and mitigation efforts.

To address these threats and continue to protect and promote human health and well-being in a changing climate, health systems, including healthcare services and supply chains, need to be climate adaptive, i.e., be prepared for and able to cope with changing climate-related hazards. Health systems consist of people, culture, organizations, institutions, and infrastructure necessary to provide health and wellbeing outcomes. The basic building blocks of health systems include service delivery, health workforce, health information systems, access to essential health services, financing, and leadership and governance. Building inclusive and resilient health systems requires strong political vision and leadership to ensure rights and quality of care for all. Priorities in this sector are understood and noted in many National Determined Contributions (NDCs), but rarely translated into action due to significant barriers. There is a lack of investment at scale, a lack of community action, and limited access to rights. Communities lack information on what needs to be done and lack capacity on how to act.

## Paradigm shifting pathways

For a transformation towards climate adaptive, low emissions health systems, GCF had identified the following two paradigm shifting pathways for advancing the highest climate impact projects and programmes and supporting country needs:

Promoting climate-resilient, nature-positive health systems and services – *anticipate, respond to, cope with, recover from, and adapt to climate-related shocks and stress.* Health systems need to adapt to a changing climate by preparing for the consequences of climate change, including malnutrition, heat and cold, extreme events, vector borne diseases and food and water borne infections. Climate resilient and nature positive health systems sustain improvements in population health, ensuring inclusivity and accessibility, despite an uncertain future climate. This pathway includes climate adaptive health systems as well as health services preparedness and risk management for extreme events.

Facilitating climate-informed advisory and risk management services and community action – *strengthening information and advisory systems and promoting community action.* This is key for managing current and emerging climate risks. Collection of climate change and health data is not sufficient – these data need to be integrated into useful climate-informed advisory and risk management services (e.g., decision-support models, techniques, and services) to facilitate cross-sectoral cooperation and policy coordination necessary for actions at the climate and health nexus. This pathway includes motivating and empowering individual and community level action to prevent climate-sensitive health outcomes and promote health; facilitate community engagement in climate resilient and nature positive health-promoting behaviours; eliminate climate-related health hazards from the community environment; and foster health promoting environment. In this pathway,

data security and privacy issues need to be considered, as well as the accessibility and affordability of related services This pathway includes two sub-components: climate informed advisory and risk management services; and community action in climate and health.

## Barriers and enablers to achieving paradigm shift

Impediments to a paradigm shift include limited awareness of the health risks of climate change outside of the health and wellbeing sector, or of the health benefits that can accrue from adaptation and mitigation actions in other sectors (information failures); limited capacity and human resources to proactively address the health risks of climate change, including how to assess and prevent health risks. These barriers hinder the effective implementation of mitigation and adaptation strategies, and limit ambition in the health and wellbeing sector; and insufficient monitoring of climate-sensitive health outcomes, and limited expertise data management and analysis. Further, climate-informed advisory and risk management services have limitations with the respect to the timeliness, quality, and completeness of data; and are not adapted to local needs in terms of accessibility, use of technology, and early management of existing and emerging diseases.

Key to GCF's role in scaling up finance is mobilising international private and public funding to systematically address barriers and reduce investment risks. These need to address financial and economic barriers, including market failures, and increasing the financing of mitigation and adaptation for the health sector. GCF can use a range of instruments for this, with technical assistance (TA) grants, loans, results-based grants, and potentially new public and private business models to engage the private sector, including private diagnostic providers and micro, small, medium enterprises (MSMEs). Blended finance opportunities exist for climate information services, and for private health service providers, for adaptation as well as mitigation, and the deployment of innovative instruments can be used to mobilise public and private sector financing. Piloting new business models and business continuity planning and management can promote resilient and low emissions health infrastructure.

Creating an enabling environment through institutional and community capacity development and coordination can improve the health and wellbeing sector, while supporting gender equality and women's empowerment. Other enablers include facilitating climate-informed policy development and implementation at national to local scales; mainstreaming climate-related policies and plans across health systems and services at national to local scales; facilitating strategic partnerships for the use of data-driven technologies and financing to enable their full application; and quantifying the benefits that health and wellbeing bring to society, the economy, and the environment, highlighting the potential to create synergies across projects, actors, and development objectives.

## Role of GCF in financing paradigm shifting pathways

GCF offers a four-pronged approach to drive implementation of the paradigm shifting pathways at scale. While business models, project development systems, financing structures, and ability to attract Private Institutional and Commercial finance (PIC) differ significantly across countries and regions, these approaches can support developing countries' efforts in the health and wellbeing sector. The four pillars are:

(1) Transformational planning and programming: priority activities are designed to build climate resilient, low-carbon, nature positive, sustainable, accessible, and inclusive health systems, services, and supply chains that anticipate, respond to, cope with, recover from, and adapt to climate-related shocks and stresses, to bring about sustained improvements in population health. Other priority activities include conducting comprehensive and integrated Health National Adaptation Plans (HNAPs) to identify adaptation and mitigation options to build climate-resilient and low emission health systems and infrastructure; mainstreaming climate-related policies and plans across health systems and linking HNAPs with other sectoral NAPs to deliver health co-benefits; strengthening information and advisory systems; and encouraging action at individual and community levels to prevent climate-sensitive adverse health outcomes and promote health, and foster health promoting environments.

(2) Catalyzing climate innovation: to build a project pipeline, GCF projects and programmes can focus on enhancing the capacities of people, communities, and institutions to engage in co-design, co-production,

and implementation of health advisory services; developing and implementing climate-informed integrated monitoring and surveillance systems; enhancing climate-related risk knowledge through risk assessment, risk mapping, and risk information sharing; piloting the use of technologies; promoting next generation integrated health surveillance systems; and implementing resilient, low emission, and sustainable plans, standards, policies, and procurement. Supply chain management needs to prepare for more and more intense extreme weather and climate events. There are also spill-overs from other sectors that provide low-carbon opportunities in health infrastructure (e.g., energy efficiency, renewables). Health adaptation also needs to be mainstreamed at the community level from, for example, in agriculture and food security, water, sanitation, and hygiene (WASH) and ecosystems services projects, where there are large health co-benefits. Interventions need to ensure effective inclusion and rights of under-served and climate vulnerable populations. Vulnerability will change over time with development choices, such as furthering efforts to achieve the SDGs.

(3) Mobilization of finance at scale: to build a track record, GCF can focus on piloting new public and potentially private business models, to promote climate resilient and nature positive health systems and services, and to deliver resilient and low-carbon health infrastructure. Funding can be through TA grants, loans, results-based grants, and potentially new public and private business models to engage the private sector, including private diagnostic providers and MSMEs. Blended finance for climate relevant information services, and for private health service providers, and the deployment of innovative instruments can be used to mobilise public and private sector financing.

(4) Coalitions and knowledge to scale up success: ensuring access to knowledge and data for vulnerable people and regions, including through empowering Indigenous peoples, women, girls and youth, people living in poverty, and other marginalised groups, along with supporting knowledge transfer between vulnerable communities, health professionals, healthcare workers, science, and policy makers are powerful actions to facilitate scaling up of successes and learn from failures in the past. Knowledge platforms are needed to share pilots, plans, and business models between health and climate services communities of practice; technologies and practices; and best practices and lessons learned at local to national scales, and across sectors developing and implementing climate-informed integrated monitoring and surveillance systems, assessments, and policies. Supporting participatory monitoring, evaluation, and learning for sharing of evidence related to impact, potential solutions, and progress are crucial for overcoming risks and uncertainties, and for improving practices.

By making investments through these drivers across the investment pathways, GCF can support developing countries catalyse a paradigm shift in the health and wellbeing result area. Figure ES-1 shows potential investments along the four pillars of the GCF paradigm shifting pathways.

Section 5 features case studies that demonstrate how innovative approaches can make the difference in addressing the central elements of a successful paradigm shift in health systems and services, and in climate informed advisory and risk management services and community action in climate and health, and thus increasing legitimacy, providing adequate resources, and improving planning processes.

### GCF investment criteria

Proposals to GCF are assessed based on six GCF Board approved investment criteria:

(1) Impact potential: to what extent does the project or programme contribute to the achievement of GCF objectives and result areas.

(2) Paradigm shift potential: degree to which the proposed activity can catalyse impact beyond a one-off project or programme investment.

(3) Sustainable development potential: how do the actions align with national SDG priorities? What are expected environmental, social, gender, and economic co-benefits? Wider benefits and priorities.

(4) Recipient needs: vulnerability and financing needs of the beneficiary country and population

(5) Country ownership: beneficiary country ownership of, and capacity to implement, a funded project or programme, policies, climate strategies and institutions.

(6) Efficiency and effectiveness: economic and, if appropriate, financial soundness of the programme/project.

Section 6 provides examples of how these criteria could pertain to the health paradigm shifting pathways.

Figure ES-1: Possible actions for each pathway following the four pillars of the GCF Strategic Plan

| Sector | | Actions across the drivers of the GCF Strategic Plan | | | |
|---|---|---|---|---|---|
| **Health and wellbeing** | | **Transformational planning & programming** | **Catalyzing climate Innovation** | **Mobilization of finance at scale** | **Coalitions & knowledge to scale up success** |
| Paradigm shifting pathway | **Promoting climate-resilient, nature-positive health systems and services** | • HNAPs integrated V&A Assessments and link with other sectoral NAPs<br>• Mainstream climate related policies in health systems and services<br>• Enhance preparedness and risk management planning<br>• Scenario planning to manage risk in climate events<br>• Data needs, costs and benefits of interventions for health and environment<br>• Pipeline development | • Build capacity in individuals, communities, organizations and institutions<br>• Introduce resilient and low emission plans, standards, policies in procurement and critical services<br>• Introduce climate related issues in Business continunity planning (BCP) and Business continuity management (BCM)<br>• Promote tele-health / tele-medicine | • Resilient health service providers<br>• Low emission, resilient infrastructure and building design and construction (LT-LEDs)<br>• Sustainable supply chain management and private sector tele-health* | • Knowledge platforms for sharing pilots, plans, models<br>• Sharing best practices and lessons learned about health adaptation<br>• Sharing technologies, tools and practices for managing risks |
| | **Facilitating climate-informed advisory, risk management services and community action** | • Introduce climate issues into health advisory and risk management services<br>• Risk assessment, information for advisory and management<br>• Systems-based approaches to adaptation and mitigation efforts<br>• Community adaptation, particularly engaging vulnerable communities and poupulations<br>• Pipeline development | • Reduce exposure to climate related health hazards<br>• Prevent climate-sensitive health outcomes<br>• Include climate in advisory, risk management<br>• Integrate data-driven technology and financing in health surveillance<br>• Use technology to disseminate climate information<br>• Mainstream community agriculture and food security, WASH, biodiversity projects<br>• Support communities to finance local programmes | •Public and private health surveillance<br>•Health advisory<br>•Businesses in local community health adaptation actions<br>•Community inclusion in financial planning | • Sharing best practices and lessons learned<br>• Cross learning in health and climate<br>• Community and organizational level knowledge exchange<br>• Participatory M&E and learning |

* In consideration of data security and privacy issues, accessibility and affordability of related services

# 1 Introduction

The Green Climate Fund (GCF) is the world's largest dedicated fund helping developing countries reduce their greenhouse gas emissions and enhance their ability to respond to climate change in line with the Paris Agreement. Health and wellbeing are managed together with food, agriculture, and water in one GCF result area, and emphasises making health systems, services, and supply chains resilient to climate change effects.

There are eight result areas that GCF has targeted because of their potential to deliver a substantial impact on mitigation and adaptation in response to climate change. Result areas provide the reference points that guide GCF and its stakeholders to ensure a strategic approach when developing programmes and projects, while respecting the needs and priorities of individual countries. Health and wellbeing is a critical element of the work on both adaptation and mitigation and is often effected by actions taken by other sectors, such as agriculture, water, and biodiversity. Therefore, adaptation and mitigation actions in these sectors can have significant health co-benefits.

This Sectoral Guide has links to other guides. Cross-sectoral issues are addressed through multiple result areas in a complementary manner and presented in Table 1.

Table 1: Cross-references with other Sectoral Guides

| Sector | Cross-Sectoral issues addressed |
|---|---|
| Agriculture and food security | • Improve environmentally sustainable and climate-resilient agricultural production systems, supporting improved nutrition in poor and rural communities. |
| Cities, buildings, and urban systems | • Green and blue spaces as part of urban planning (i.e., increasing proximity to parks, woods, meadows, rivers and lakes).<br>• Reduce vehicle pollution in urban transport.<br>• Reduce urban heat islands. |
| Ecosystems and ecosystem services | • Ecosystem-based approaches that improve physical and mental wellbeing including reduce air pollution and temperature increases; maintenance and purification of freshwater supplies, including reducing saline intrusion from deforestation and land degradation (which affects worker productivity and can create breeding grounds for mosquitoes and other vectors); increase access to clean water; protection against sea level rise. |
| Forests and land use | • Ecosystem-based approaches that improve physical and mental wellbeing including reducing air pollution; reduce temperature increases reducing transmission of zoonotic disease from deforestation and forest/land degradation (which affects worker productivity and can create breeding grounds for mosquitoes); increase access to safe water; and provide protection from extreme events. |
| Energy generation and access | • Energy access and energy security for rural health facilities; refrigeration to prevent foodborne diseases in rural populations; low-carbon energy for healthcare facilities. |
| Climate information and early warning systems | • Improve hydrometeorological services for various health-related climate services including early warning, preparedness, and response systems. |
| Health and wellbeing | • Low emission, climate resilient, and nature positive organisations, institutions, and resources that deliver public health and health care services to meet populations needs; building climate resilient health systems and services; climate-informed advisory and risk management services; community support and action for climate and health. |
| Water security | • Safe drinking water and improved sanitation for health; access to improved water supply sources and sanitation, including handwashing facilities. |
| Low emission transport | • Health co-benefits of reduced exposure to air pollutants. |
| Energy efficiency | • Cold chains and storage for medicines and vaccine storage and transport.<br>• Clean cooking initiatives that reduce indoor air pollution. |

| | |
|---|---|
| | • Low-carbon healthcare infrastructure, including waste management practices; lighting; cooling; thermal insulation; sustainable procurement of goods; natural ventilation. |

## 1.1 Health and wellbeing context

There are multiple climate threats to health and wellbeing from climate change. At 1-1.5°C of warming above preindustrial temperatures, rising temperatures increase the frequency and intensity of extreme events; and exacerbate malnutrition, vector-, food-, and water-borne infections, zoonotic diseases, and occupational and mental health consequences. These can be direct (heat, cold, flood, wildfire, storms, and drought), ecosystem mediated (vector borne diseases, food and water borne infections; air quality), or human institution mediated (e.g., malnutrition, increase in gender-based violence, and loss of sexual and reproductive rights). Climate change also can jeopardize critical infrastructure (e.g., water and sanitation infrastructure); and destabilize systems that maintain population health (e.g., following floods or the effects of sea level risk in coastal cities). The impacts of climate change on desertification and biodiversity loss also have negative consequences for health and well-being. The complexity of the associations between climate change and health means there may be unintended consequences that can be challenging to project. Multisectoral systems-based understanding and risk management approaches increase the effectiveness and efficiency of adaptation and mitigation efforts.

To address these threats and continue to protect and promote human health and well-being in a changing climate, health systems, including healthcare services and supply chains, need to be climate adaptive, i.e., be prepared for and able to cope with climate-related hazards such as wildfires, flooding, or drought. Health systems consist of people, culture, organizations, institutions, and infrastructure necessary to provide health and wellbeing outcomes. The basic building blocks of health systems include service delivery, health workforce, health information systems, access to essential health services, financing, and leadership and governance. Building inclusive and resilient health systems requires strong political vision and leadership to ensure rights and quality of care for all. Priorities in this sector are understood and noted in many National Determined Contributions (NDCs), but rarely translated into action due to significant barriers. There is a lack of investment at scale, a lack of community action, and limited access to rights. Communities lack information on what needs to be done and lack capacity on how to act.

Health and wellbeing also are determined by actions taken by other sectors, such as agriculture, water, and biodiversity. Therefore, adaptation and mitigation actions in these sectors can have significant health co-benefits. Adding health co-benefits to other sectors projects would add beneficiaries, and not considering health in planning, projects, and programmes in these sectors can harm health and well-being, particularly to vulnerable communities, including but not limited to women, children and youth, Indigenous and marginalized populations, and people living in poverty. Vulnerability will change over time with development choices, such as furthering action to achieve the SDGs.

## 1.2 Organisation of the document

This Guide has seven sections. After this introduction, Section 2 provides an overview of the global context of the adaptation and mitigation context of the health and wellbeing sector; Section 3 highlights the barriers and opportunities to achieving a paradigm shift in the health and wellbeing result area; Section 4 provides guidance on how to scale up and catalyse public and private investment; Section 5 provides case studies that demonstrate paradigm shift potential; Section 6 provides specific guidance for the development of impactful projects and programmes based on GCF investment criteria; and Section 7 summarises the conclusions.

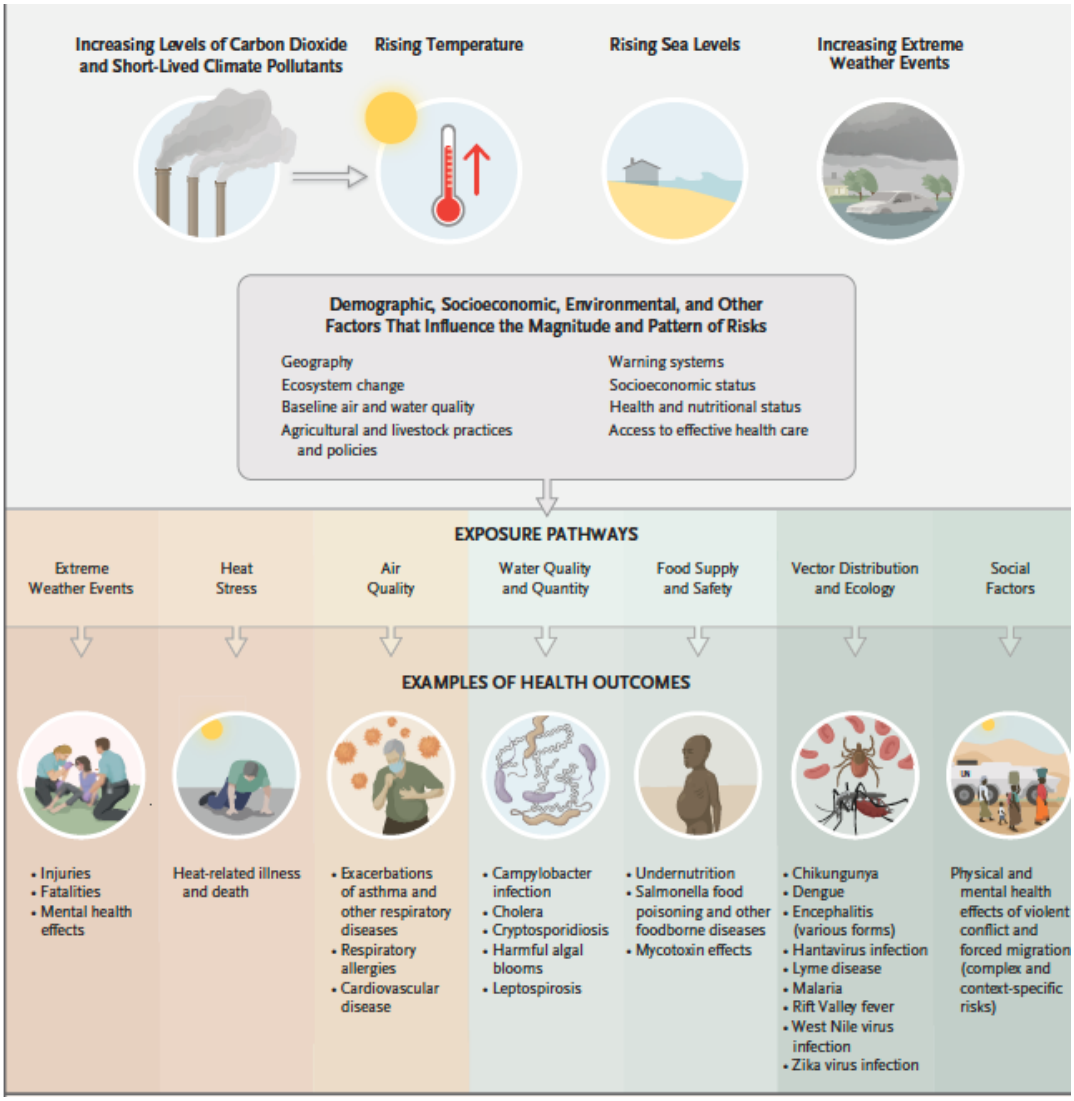
# 2 Global Context

## 2.1 Scientific basis: why is health and wellbeing relevant to climate action?

*Climate change presents multiple threats to human health and wellbeing*

Climate change-related alterations in temperature, precipitation, extreme weather and climate events, rising sea levels, and ocean acidification are negatively affecting physical, mental, and emotional health and wellbeing through multiple pathways. Figure 1 shows that the hazards created by a changing climate interact with demographic, socioeconomic, environmental, and other factors that then affect the exposure pathways of extreme weather and climate events; heat stress; air quality; water quality and quantity; food supply and safety; vector distribution and ecology; and social factors (Haines and Ebi 2019). Some exposure pathways directly act on health through heat waves, heavy precipitation events, wildfires, flooding, droughts, storms, and other events. Other exposure pathways act through climate change-altered ecosystems that can increase opportunities for infectious diseases to shift their geographic range, seasonality, and/or intensity of transmission, and for increased diseases due to poor air quality. Malnutrition can be exacerbated by climate change, compounding other economic, social, and institutional factors.

Figure 1: Major health risks associated with climate change




*Source: Haines and Ebi 2019*

Figure 1 lists some of the potential health impacts of climatic change, including health outcomes such as heatstroke, injuries, and death from extreme events; increased risks of cardiovascular and respiratory diseases related to poor air quality; increased risk of infectious diseases transmission (e.g. vector-borne diseases such

as malaria, dengue, and water-borne diseases such as cholera); and, other indirect health effects including increased malnutrition, mental stress, and occupational health risks (e.g. heat stress and labour productivity), and migration. Pregnant women, unborn and new-born babies, and infants are particularly vulnerable to extremes of heat, to dehydration, malnutrition, and vector-borne diseases.

The health risks are unevenly distributed geographically, with poor and marginalised communities, indigenous peoples, women, and children at higher risk, exacerbating leading causes of morbidity and death. Table 2 illustrates the regions currently experiencing, and expected to continue experiencing, some of the largest climate-related health risks (World Bank 2017).

Table 2: Regions with the greatest climate-related health risks

| Temperature extremes | Floods and storms | Vector borne diseases | Food and water borne infections | Air quality | Malnutrition |
|---|---|---|---|---|---|
| Lower latitudes | Low-lying areas / flood plains | Tropics; variable by disease | Tropics | Southeast Asia | Sub-Saharan Africa |
| Cities | Coasts | Dengue: South American cities | Subtropics | Cities | East Asia and Pacific |
| South Asia | Tropics | Leishmaniasis: desert | Southeast Asia | India | Latin America |
| Sub-Saharan Africa | Asia | Encephalitis: Europe, Russia, Mongolia, China | Low-lying areas | China | Sahel |
| | Africa | Upland mountains with population pressure | Food insecure regions | Pakistan | Conflict zones |
| | Central / South Americas | | Cholera: Southeast Asia | Sub-Saharan Africa: household pollution | Upland mountains with population pressures |
| | Atolls | | | | |

*Source: World Bank 2017*

Risks are projected to increase for most climate-sensitive health outcomes with additional climate change. In a 1.5°C warmer world, the greatest impacts are projected to be on nutrition, heat, and vector-, food-, and water-borne infections, followed by impacts from extreme events, mental health, and occupational health (Smith et al. 2014). In a 1.5°C scenario, the world could experience heat waves that could lead to an additional 3 billion additional annual exposure events for elderly people, droughts that could lead to an additional annual 1.4 billion exposure events for vulnerable people, and annual extreme rainfall that could lead to 2 billion additional exposure events, affecting health and wellbeing of people globally, with the greatest impacts on poor and vulnerable populations and regions (Hoegh-Guldberg et al. 2018; Watts et al 2021).

Recent work synthesised multiple studies to estimate risks at various degrees of warming for six health outcomes (Ebi et al. 2021). Most included limited or no adaptation. Other health outcomes were not included because of limited numbers of projections. The results conclude:

- Heat-related morbidity and mortality: climate change-related increases in the frequency and intensity of heatwaves are already increasing the numbers of heat-related diseases and death. Risks are projected to become widespread and severe by 1.75°C above preindustrial temperatures.
- Ozone-related mortality: the numbers of deaths from exposure to higher concentrations of ozone are already increasing because of climate change. Risks are projected to become widespread and severe before 2°C increase above preindustrial temperatures (although this does not factor in existing and future air quality and mitigation policies).

- Malaria: climate change is projected to begin increasing the numbers of cases and deaths from climate change at about current levels of warming. Risks are projected to become widespread and severe at 2°C above preindustrial temperatures, although the level depends on future economic development pathways and investments in malaria control programmes.
- Dengue, chikungunya, Zika, and yellow fever: climate change is already increasing the numbers of cases of these vector-borne infectious diseases. Risks are projected to become widespread and severe before 2°C increase above preindustrial temperatures.
- Lyme disease: the numbers of cases are already increasing because of climate change. Risks are projected to become widespread and severe before 2°C increase above preindustrial temperatures.
- West Nile fever: the numbers of cases are already increasing because of climate change. Risks are projected to become widespread and severe above 2°C increase above preindustrial temperatures.

*Gender and youth*

Climate change affects girls and women disproportionately, including through greater impacts on girls and women (e.g., pregnant women and developing foetuses) and through the gendered division of labour in the health work force, and the gendered provision of formal and informal healthcare, in many countries. Climate change also can affect access to sexual and reproductive health and rights.

Adolescents and youth can be particularly vulnerable to the impacts of climate change on biological, emotional, and social development. Development can be altered by disruptions of the stability of young people's enabling environment (e.g., by altering the social support of family, friends, and community through forced migration; increasing the risk of displacement; and disrupting education and employment opportunities). Climate change can affect the mental health of young people in complex and diverse ways, especially the most marginalized and vulnerable. There are many opportunities for young people to act through advocacy and holding governments to account; and implementing adaptation and mitigation activities.

*Climate change impacts on healthcare infrastructure*

Healthcare facilities, laboratories, water and sanitation systems, and surveillance systems, are potentially vulnerable to extreme weather events, such as wildfires, floods, storm surges, and landslides that can cause physical damage (WHO 2020). In coastal areas, healthcare infrastructure, water quality, waste management, and sanitation are at potential risk by sea level rise. Wastewater management and sanitation can be adversely affected by sea level rise and storm surges. The delivery of health services, including sexual and reproductive health services such as family planning, maternal health care, and mental health services, is vulnerable to disruptions in the transport, energy, and communication networks from extreme weather events, because of inter-dependencies.

For example, rainfall and land management have the potential to affect health facilities through floods and landslides (e.g. physical damage) as well as other critical infrastructure, such as roads, reducing access to health facilities and disrupting critical supply chains; strong winds and wildfires can affect the power distribution network, leading to cascading risks on health facilities from disruption of electricity and affecting services; and strong winds, wildfires, rain, and floods could impact IT equipment and networks, affecting multiple operations and services.

## 2.2 Global baseline: where the sector is today?

### Health systems are not climate adaptive and not climate-resilient

Current global investments in adaptation and mitigation are insufficient to protect the health of populations and communities from most climate-sensitive risks, with large variability across and within countries and regions (UNEP 2018, WHO 2020). The recent outbreak of COVID-19 has shown the vulnerability and exposure to global threats and called for the need for a stronger, resilient health systems. The vulnerable populations are at higher risks posed by COVID-19, including the elderly, people with poverty, Indigenous peoples, and other minority groups. The magnitude of the disruption to the social, economic and health systems

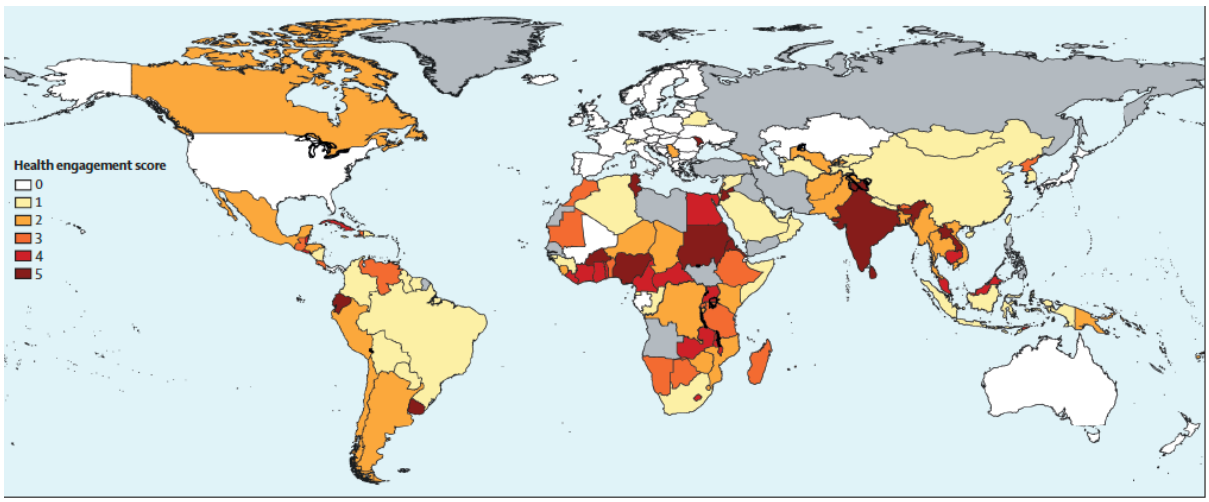
demonstrated the threats and risks posed by climate change and the varying degrees of preparedness to such threats.

There is therefore a large current adaptation deficit, defined as the adverse impacts of current climate variability and extremes, i.e., from periodic floods that already happen, that are not managed. This deficit is characterised by the magnitude of climate-induced mortality and morbidity. It is due in part to the level of finance allocated, as well as capacities and programmes, for prevention. Future climate change increases these issues, and unless adaptation efforts are strengthened considerably, a larger adaptation gap is projected, defined as the difference between the future costs of adaptation (also expressed in terms of financial needs) and the levels of public adaptation finance flows (UNEP, 2018: 2020). This adaptation gap will result in greater negative climate-sensitive health outcomes. While this is due to several factors, one issue is the availability of finance. This issue is exacerbated for the health sector because total public financial flows for climate adaptation to health are currently less than 1% of total international climate finance, despite health being a priority sector in 54% of NDCs featuring adaptation (UNEP 2018).

A moderate expansion of existing measures and the implementation of new public health initiatives based on current hazards are expected to be insufficient to manage projected risks (UNEP 2018). Any increase in warming, including under 1.5°C, is projected to pose significant risks to health that could disproportionately affect disadvantaged and vulnerable populations (Ebi et al. 2021).

Analyses of how health has been incorporated into NDCs, including impacts, adaptation, and co-benefits, concluded that many countries referred to health in their NDCs (Dasandi et al. 2021). Figure 2 shows the degree of health engagement based on a score based on the specificity and detail of health references. This analysis did not determine whether the ambitions expressed in the NDCs were sufficient to address the health adaptation needs. Countries in Africa, Asia, and Central and South America had higher priorities for health. Note that this analysis does not include the large number of updated NDCs submitted during 2021.

Figure 2: Health engagement score in NDCs by country




*Source: Dasandi et al. 2021*

The *Lancet Countdown* is an international collaboration that provides an independent, global monitoring system tracking four groups of indicators of health sector adaptation, planning, and resilience (Watts et al. 2021). Two indicators on adaptation and planning are from the WHO 2021 Health and Climate Change Survey, a voluntary national survey completed by ministry of health focal points. The main findings of the WHO survey, completed by 95 of 194 WHO member states, were:

- Approximately two thirds of surveyed countries (67%) have conducted a climate change and health vulnerability and adaptation assessment or are currently undertaking one.
- Assessment findings are informing health policies and programmes but continue to have limited influence on the allocation of human and financial resources.

- Over three quarters of surveyed countries (77%) have or are current developing national health and climate change plans or strategies.
- Implementation is impeded by insufficient financing, human resource constraints, and limited research, evidence, technologies, and tools.
- There is progress in developing multi-sectoral collaboration on policies and programmes related to health and climate change. Established coordination mechanisms most frequently (>75%) included representation from stakeholders or sectors addressing the environmental determinants of health, such as safe water, sanitation, and hygiene services, clean air, and meteorological services. Representation of stakeholders or sectors focused on the structural and social determinants of health, such as education, urban planning, housing, energy, and transportation systems, was less common (40–50% of coordination mechanisms).
- Only one third of surveyed countries have climate-informed health early warning systems for heat-related illness (33%) or injury and mortality from extreme weather events (30%) despite strong evidence that these risks are increasing around the world.
- A growing number of countries (27%) have conducted assessments of the climate resilience of their health care facilities.
- Only a small proportion of ministries of health in low-and lower-middle-income countries (28%) are receiving international funds to support climate change and health work.

### Few communities are protected from the health and wellbeing risks of climate change

Limited investment in health adaptation means that projects are often not implemented at scale to reach vulnerable communities, including Indigenous peoples, women and girls, people living in poverty, and other marginalised groups. Communities typically are not part of a project design and implementation team, which can result in projects with insufficient community engagement. This can result in reduced effectiveness because the needs and capacities of the community are not explicitly considered, resulting in limited uptake of project results and projects not achieving their potential. Active participation of communities and transparency is needed throughout projects. Including health in projects in sectors influencing the upstream drivers of health (e.g., agriculture, biodiversity, and water) can increase the overall project effectiveness by addressing priority community concerns and increasing the numbers of beneficiaries.

### Greenhouse gas (GHG) emissions are significant

Health care services (e.g., health facilities) themselves contribute to climate change through greenhouse gas emission footprints. The health care industry is among the most carbon-intensive service sector in high income countries; it is responsible for about 4.4-4.6% of worldwide emissions (Healthcare Without Harm 2019). Emissions result from, for example, the energy consumption to run equipment and from emissions associated with supply chains.

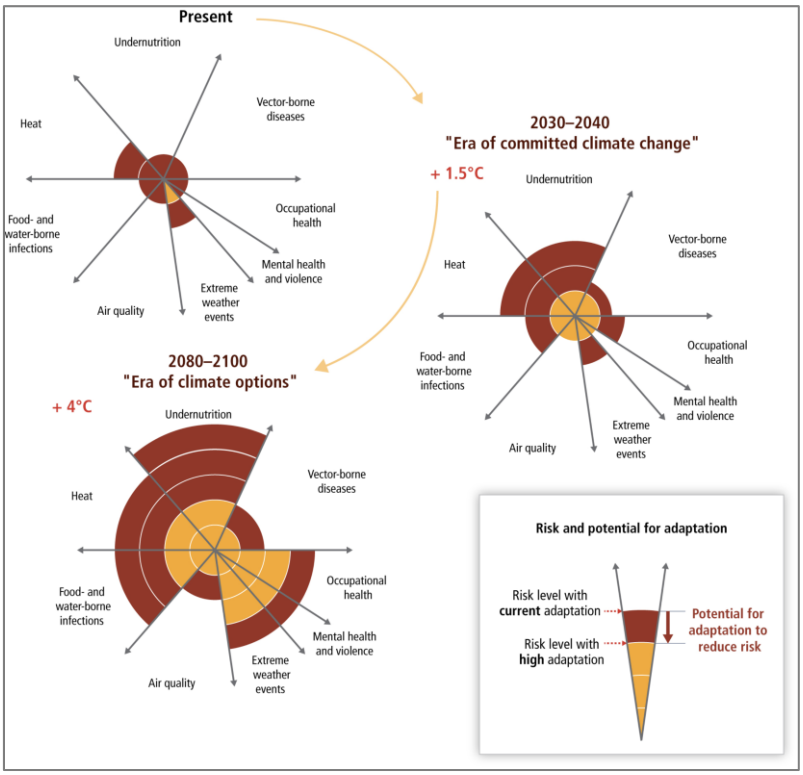
Energy consumption is high in health infrastructure and buildings from the energy use in heating, cooling, lighting, hot water, cooking and for running various types of equipment. The energy consumed, especially from carbon intensive solid fuels, generates GHG emissions and leads to air pollution that can directly impact human health via air pollution. More generally, health care causes global environmental impacts, including through the generation of medical waste, that, depending on which indicator is considered, range between 1% and 5% of total global impacts, and are more than 5% for some national impacts (Health Care Without Harm 2019; Lenzen et al. 2020; Pichler et al. 2019).

## 2.3 Global adaptation and mitigation potential: where does the sector need to be?

Investing in health adaptation and mitigation would benefit health systems and vulnerable communities, including Indigenous communities, women and girls, people living in poverty, and other marginalised groups. Figure 3 shows the extent of health risks today; in the near-term “era of committed climate change” (2030–2040), in which projected levels of global mean temperature increase do not diverge substantially across emissions scenarios; and for the longer-term “era of climate options” (2080–2100), for global mean temperature increase of 4°C above preindustrial levels (Smith et al. 2014). The red colours indicate the risk

level with the current level of adaptation and the gold colours indicate the risk level with high adaptation. The width of the slices indicates in a qualitative way the relative importance in terms of burden of ill health globally at present. The figure illustrates how risks could increase with additional climate change and the extent to which adaptation could reduce those risks. The figure also illustrates that residual risks are expected to continue even with adaptation.

Figure 3: Extent of health risks today and in the future, by level of adaptation




*Source: Smith et al. 2014*

Investing in adaptive solutions in other sectors also would build resilience in the health and wellbeing sector, especially from: integrated adaptation approaches (e.g. agriculture, food security, and forests and land use); integrated water resources management (e.g. ecosystems, and water supply and sanitation); and transformative resilience approaches (resilient integrated infrastructure, resilient cities).

The health sector – like all sectors – needs to play its part in the low-carbon transition, and there are many opportunities to deliver ambitious mitigation (see result areas for energy, energy efficiency and infrastructure).

Mitigation policies and technologies have substantial health benefits from changes in air quality that reduce greenhouse gas emissions from point and mobile sources (e.g., coal-fired power plants and transportation) and from dietary changes that reduce consumption of red meat, increase consumption of healthy foods, and reduce food waste; these would reduce the burden of noncommunicable diseases (Chang et al. 2017; Hess et al. 2020). In economic terms, the health co-benefits of tackling many of the most common air pollutants outweigh the incremental mitigation cost of a 2°C target (Hamilton et al. 2021). Further, reducing household air pollution can correlate closely with GCF mitigation projects. However, mitigation implemented without considering health and wellbeing (e.g., switching from growing crops to growing biofuels in food insecure regions) can have negative consequences on population health (e.g., increases in food prices from switching to biofuels, leading to food insecurity, particularly for children and pregnant women), particularly poor and marginalized communities, Indigenous peoples, women, and children.

## 2.4 Barriers to adaptation and mitigation in the health and wellbeing sector

There are barriers or constraints that make it difficult for governments, individuals, and businesses to plan and implement adaptation actions (Klein et al., 2014). These make it difficult to make decisions or act. These can be considered in terms of limits (physical and ecological, technological, financial, information and cognitive barriers, and social and cultural barriers, Adger et al., 2008), or in terms of the economic literature, in terms of market and policy failures

While these apply to all areas, specific challenges for health adaptation include:

- Awareness and information on the health risks of climate change and the benefits of adaptation, within the health and wellbeing sector, but also outside of it. There is also low awareness of the health benefits that can accrue from adaptation actions in other sectors (information failures).
- Insufficient surveillance and monitoring of climate-sensitive health outcomes, and limited expertise data management and analysis.
- Limited human resources and capacity to proactively address the health risks of climate change, including how to prevent health risks, hindering the effective implementation of adaptation strategies, and limiting ambition in the health and wellbeing sector.
- Limited engagement of vulnerable populations and communities, marginalized groups such as women, in the design, implementation, and evaluation of health adaptation projects.
- Inequalities in access to quality healthcare and rights for vulnerable populations and marginalized groups.
- Siloed interventions with limited coordination or cooperation across ministries and/or sectors for projects that affect health outcomes.
- Financial and economic barriers that include the availability of baseline resources available to the health sector, and financing levels for mitigation and adaptation, as well as market failures that make adaptation challenging (UNEP, 2016).

There are also barriers to mitigation, which apply to all sectors, and are documented in the result areas for energy, energy efficiency and transport. The health sector can contribute to breaking down barriers/providing more rationale for mitigation actions by providing evidence on health co-benefits (including economic gains) of some mitigation actions.

## 2.5 Financing adaptation and mitigation: how much will it cost to achieve a paradigm shift in the health and wellbeing sector?

Mitigation and adaptation in health services and systems deliver high economic benefits but also involve additional costs. These costs are not well understood, although some indicative estimates are available. Globally, healthcare's climate footprint is estimated to account for approximately 4% of the world's net $CO_2$ emissions (Healthcare Without Harm 2019). It is therefore possible to estimate the costs of mitigation, either based on the cost per tonne abated or as % of aggregate costs for ambitious mitigation pathways in line with the Paris Agreement. This implies very high costs (in billions of US dollars). The global costs of adaptation for developing countries have been estimated at USD 140 billion to USD 300 billion annually by 2030, rising to USD 280 billion to USD 500 billion by 2050 (UNEP 2015), depending on the future greenhouse gas emission pathway. Health adaptation costs are a proportion of these: there are no robust estimates of exactly how much, although most studies estimate health adaptation costs of billions of US dollars per year this decade, depending on assumptions of how the burden of climate-sensitive health outcomes could change over coming decades independent of climate change (UNEP 2018).

# 3 Paradigm shifting pathways: health and wellbeing

## 3.1 Drivers of change across paradigm shifting pathways

All countries must commit to long-term processes to achieve a paradigm shift in the health and wellbeing sector to effectively managing the risks of a changing climate and increasing resilience of health systems. The term paradigm shift refers to the degree to which the proposed investment can catalyse impact into medium or long-term sectoral change, beyond a one-off project investment (GCF 2020). Through the 2020-2023 Strategic Plan, GCF seeks to help countries and implementing partners support paradigm shifts to significantly improve the design and quality of projects, and to achieve sustainable results.

Three dimensions commonly define transformational change: depth, scale, and speed. Depth is the essence of a transformational shift; without depth there is little transformation. Deep transformations cut across sectors, levels, and generations, and are needed to change cultures, power dynamics, and structures (markets, laws, institutions). Scale refers to defining what is scalable, and the numbers of people affected, or the geographical extent of change achieved with the scaling. Speed indicates how quickly transformations can be achieved; the urgency of the climate crisis puts an emphasis on early outcomes achievable in 5-10 years (the 2030 goal) over those achievable in 30 years (the 2050 goal), because each 'missed year' increases the size and complexity of the tasks ahead.

To maximise impact and paradigm shift, GCF adopted a four pillars approach of the GCF Strategic Plan based on transformational planning, catalysing innovation, mobilising finance at scale, and knowledge replication (GCF 2020). Four elements identified in the academic literature (Atmadja et al. 2021) as important for transformational change are: processes, norms and values, resources, and legitimacy. Mapping these onto the four pillars of the GCF Strategic Plan (Figure 4) facilitates action towards a paradigm shift across different stakeholders, rights holders, institutions, geographies, and processes, as follows:

(1) Transformational planning and programming: climate compatible processes for planning and policy frameworks, ensuing transparency, access to information, participation, equity, and sustainability, to guide and bring legitimacy to process.
(2) Catalyzing climate innovation: enabling policy, institutional, and technological innovations for policies, projects, and practices to protect and promote human health and wellbeing in a changing climate.
(3) Mobilization of finance at scale: using a range of financial instruments to reduce risks and barriers to investment in the health and wellbeing sector, countries can unlock local capital (resources) and improve access to commercial or other markets.
(4) Expansion and replication of knowledge: resources needed to shift finance flows include strengthened capacity of institutions and people, and the available and accessible information (data, maps, and best practices). By sharing lessons learned, methods (traditional and scientific), and standards, projects and programmes can contribute to global finance flows for transformational pathways towards low emissions and climate-resilient development. Information generated should consider data security and privacy issues.

## 3.2 Two paradigm shifting pathways in the health and wellbeing sector

The following sub-sections articulate the vision, barriers, and pathways to paradigm shifts in two interlinked investment pathways: build health systems and services resilient to a changing climate; and facilitate climate-informed health advisory and risk management services and community action. Considering that very few health and wellbeing projects have been submitted to GCF, all components should include project pipeline development.

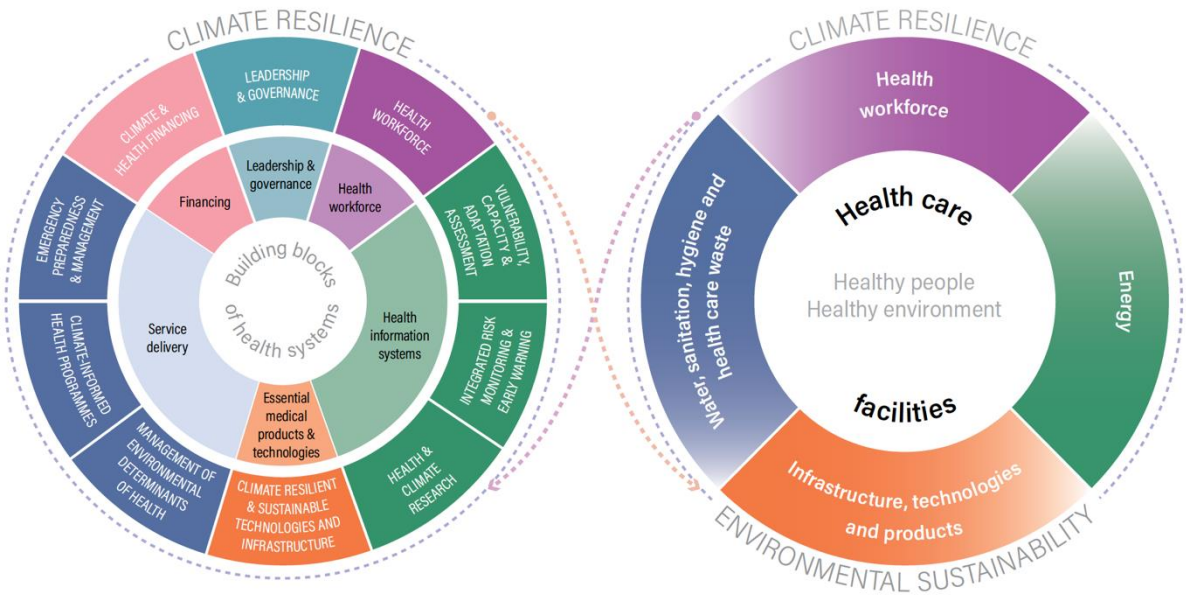
### 3.2.1 Pathway 1: promoting climate-resilient, nature-positive health systems and services

Vision: *(anticipate, respond to, cope with, recover from, and adapt to climate-related shocks and stress)* This paradigm shifting pathway would alter health systems to become climate resilient, low-carbon, accessible and inclusive, nature positive, and sustainable. Climate resilient health systems anticipate, respond to, cope with, recover from and adapt to climate-related shocks and stresses, to bring about sustained improvements in

population health, despite an uncertain future climate. As dramatically highlighted by the Covid-19 pandemic, many health systems in low- and middle-income countries are poorly resourced, with limited capacity to effectively manage shifts in the numbers of cases of health outcomes, with limited surge capacity, and with unequal access to vaccines and other critical medications. These vulnerabilities are indicative of the challenges of managing the health risks of climate change.

WHO proposed an operational framework for building climate-resilient health systems (WHO, 2015), that describes ten key functions to be strengthened for health systems to become resilient to climate change. This approach was further developed to guide health care facilities to become climate resilient and environmentally sustainable. Environmentally sustainable health systems improve, maintain, and restore health, while minimising negative impacts on the environment and leveraging opportunities to restore and improve it, for the benefit of the health and wellbeing of current and future generations (WHO 2017). These related but different approaches to health systems and facilities are depicted in Figure 4 below. In addition to the elements highlighted in the figure, there are strong interactions between human health and wellbeing and nature services, including biodiversity loss, as highlighted in the COVID-19 pandemic.

Figure 4: Climate resilience and environmental sustainability in health systems and health care facilities




*Source: WHO, 2020.*

The pathway enhances the resilient capacities of people, institutions, and resources involved in public health and health care delivery, including civil society organizations; identifies best practices and lesson learned about health adaptation; and implements resilient, low emission, and sustainable standards, policies, and procurement in health facilities and critical services (e.g., laboratories). This pathway includes two sub-components: climate resilient health systems and services, and health services resilient to extreme weather and climate events.

Table 3: Selected barriers to paradigm shift in health and wellbeing

| Barrier | Description |
|---|---|
| Lack of strong national leadership on climate change and health | The health sector is focused on basic health systems strengthening such as through Universal Health Coverage (UHC) to protect population health and deliver essential health services. Competing health priorities leave limited human and financial resources to prioritize climate change and health. |
| Insufficient technical knowledge and capacity | Limited technical knowledge, competencies, and capacity to conduct vulnerability and adaptation assessments, to develop health components of national adaptation plans, and to mainstream climate-informed policies and plans across health systems and services. Lack of sharing of technology and innovation across countries. |
| Siloed health solutions | Ministries and departments tend to propose siloed solutions; without systems-based approaches, these proposals may insufficiently protect human health and well-being. Ministries of health generally focus on risks and solutions in the health systems, although the root cause arising from another sector. There also are siloes within ministries of health. |
| Insufficient interest in preventive measures | The upstream drivers of health are key causes of ill-health. Ignoring health in adaptation and mitigation planning can result in significant health damages with associated costs that are transferred to the health sector. |
| Limited local solutions | Climate-informed advisory and risk management services are often not adapted to local needs in terms of accessibility, use of technology, and early management of existing and emerging diseases. The timeliness, quality, and completeness of data are often limited. |
| Health co-benefits of adaptation in other sectors | Climate mitigation and adaptation investments outside the health sector do not consider health outcomes that, if included, would generate significant benefits. |
| Limited private investment and market failures | Information failures (incomplete or asymmetric information), uncertain long-term risk profile (and lack of longer-term investment modalities and products), positive externalities (benefits which do not generate additional cash flows and are not captured by the financial return), lack of incentives and enabling conditions. |

Table 4: possible actions for paradigm shifts in health and wellbeing

| Outcomes | Possible actions and transformational potential |
|---|---|
| **Transformational planning and programming** | • Facilitate climate-informed policy development and implementation at national to local scales, including through conducting comprehensive Health National Adaptation Plans (HNAPs); by linking HNAPs with other sectoral NAPs to deliver health co-benefits; and by incorporating health into NDCs. Estimate the data needs, costs, and benefits of interventic for health and the environment. Invest in monitoring, evaluation, learning, and adaptive management.<br>• Support all components of a climate-resilient and environmentally sustainable health systems, including health workforce development, health information systems, service delivery, and long-term low emission development strategies.<br>• Mainstream climate-related policies and plans across health systems and services.<br>• Operationalise existing efforts to support project design, using Readiness funds, and advar country frameworks.<br>• Systematically evaluate, for proposed mitigation or adaptation interventions in other sectors, the trade-offs, unintended effects, costs, and benefits for health and climate.<br>• Promote the use of those tools that support countries assess and promote the health co-benefits of mitigation in other sectors (e.g., Carbon Reduction Benefits on Health (CaRBon tool and Benefits of Action to Reduce Household Air Pollution<br>• (BAR-HAP) tool).<br>• Assess vulnerability of health care facilities and supply chains in the face of climate change and their climate footprint.<br>• Project pipeline development. |
| **Catalyzing climate innovation** | • Enhance resilient capacities of people, institutions, organizations, and resources involved i health systems and services. |

| | |
|---|---|
| | • Emphasise the role of sustained, robust health information systems in delivering positive outcomes for the health and wellbeing sector.<br>• Facilitate strategic partnerships for the use of data-driven technologies and financing to enable their full application, considering data security and privacy issues, accessibility, and affordability of related services.<br>• Pilot new business models and business continuity planning and management.<br>• Develop and pilot business models to promote resilient and low carbon emissions health care facilities around four key components: health workforce; water, sanitation hygiene ar waste management; energy; and infrastructure, technologies, and products. Interventions strengthen the climate resilience and environmental sustainability of health care facilities will not only ensure health care can be delivered in the face of climate change but will also reduce energy dependence, promote energy efficiency, infrastructure resilience, and improve spatial planning for health facilities to reduce climate-related hazardous exposure and vulnerabilities.<br>• Implement resilient and low emission policies and standards in health facilities and critical services (e.g., laboratories), and by low-carbon and sustainable procurement policies and supply chains, and building design and construction, including long-term low emissions development strategies (LT-LEDs). |
| Mobilization of finance at scale | • Address information failures and access needs of the most vulnerable.<br>• Ensure increased supply of finance for adaptation and resilience investments that reduce vulnerability and build sustainability.<br>• Address market and policy failures, creating the policy and institutional environment.<br>• Use of public finance to recognise public good provision / positive externalities (e.g., blend finance for private health service providers, including MSMEs).<br>• Innovative instruments to mobilise public and private financing, de-risk private finance, consideration of public-private partnerships, to scale up low-carbon, climate-resilient heal infrastructure. |
| Expansion and replication of knowledge | • Facilitate gathering and sharing lessons learned, failure factors and best practices.<br>• Systematically monitor and evaluate, for every proposed mitigation or adaptation intervention, the trade-offs, unintended effects (including on disproportionately adversely affected groups), costs, and benefits for health and climate.<br>• Quantify the benefits that health and wellbeing bring to society, the economy, and the environment, highlighting the potential to create synergies across projects and developme objectives.<br>• Create strategic partnerships, leading to shared understanding and vision when HNAPs are developed, and a health-impact assessment (HIA)-equivalent process is implemented at th project level (with emphasis on inclusivity and equity). |

### 3.2.2 Pathway 2: facilitating climate-informed health advisory and risk management services and community action

Vision: (*strengthening information and advisory systems and promoting community action)*

Strengthening information and health advisory systems are key for managing current and emerging climate risks. Collection of climate change and health data is not sufficient – it is their integration into useful climate-informed advisory and risk management services (e.g. decision-support models, techniques, and services), designed in collaboration with communities, that are critically needed for understanding seasonality, building evidence on the climate sensitivity of health risks, projecting future health risks of climate change, informing health service delivery, and facilitating the cross-sectoral cooperation and policy coordination necessary for actions at the climate and health nexus. This pathway includes encouraging actions at individual and community levels to prevent climate-sensitive health outcomes and promote health; facilitating and empowering community engagement in climate resilient and nature positive health-promoting behaviours; eliminating climate-related health hazards from the community environment; and fostering health promoting environments. In this pathway, data security and privacy issues need to be considered, as well as the accessibility and affordability of related services. This pathway includes two sub-components: climate informed advisory and risk management services; and community action in climate and health.

Table 5: Selected barriers to paradigm shift in health and wellbeing

| Barrier | Description |
|---|---|
| Insufficient technical knowledge and capacity | Few health professionals have the technical knowledge and capacity to use weather and climate data to quantify exposure-response relationships, establish thresholds for action, and to co-design and implement climate informed advisory and risk management services in collaboration with vulnerable populations and regions. |
| Insufficient surveillance systems | Very few health surveillance systems collect and integrate weather and climate data with data on climate-sensitive health outcomes. This needs to be done at least on a weekly basis to support climate-informed advisory and risk management services. |
| Limited efforts to build capacity and partnership with local communities | Limited uptake and effectiveness of climate informed advisory and risk management services facilitated by partnerships with local communities and organizations, including civil society organizations. |
| Insufficient collaborative mechanisms with hydrometeorological services and other ministries | Few collaborations developed between the health sector and hydrometeorological services, and with upstream drivers of health, such as agriculture and biodiversity, at local to national scales. |
| Barriers to private sector financing and delivery of adaptation | Market and policy failures, including information and positive externalities (economic versus finance), as well as challenges around revenue generation, risk perceptions and timing. |
| Limited private investment and market failures | Limited due to information failures, uncertain long-term risk profile and longer-term investment modalities, positive externalities, lack of incentives and enabling conditions. |

Table 6: Possible actions for paradigm shift in health and wellbeing

| Outcome | Possible actions and transformational potential |
|---|---|
| **Transformational planning and programming** | • Promote conducting vulnerability and adaptation assessments, and developing health national adaptation plans<br>• Promote systems-based approaches to adaptation and mitigation projects, including by using planetary health and one health approaches<br>• Integrate climate/weather data in health surveillance and early warning systems.<br>• Co-design and implement climate informed advisory and risk management services, ensuring engagement with particularly vulnerable communities and populations, including women and youth.<br>• Promote alternative service delivery approaches where appropriate and effective.<br>• Develop projects that enable community engagement.<br>• Support infrastructure development and the delivery of multi-hazard systems that cover a range of health outcomes.<br>• Promote the uptake of low emission technologies. |
| **Catalyzing climate innovation** | • Enhance capacities of people, communities, organizations, and institutions to engage in co-production of activities to prevent/reduce climate-sensitive health outcomes.<br>• Pilot the use of technologies (e.g., internet of things (IoT), cloud computing) and implement appropriate and robust health advisory systems.<br>• Pilot community interventions to mainstream climate-related health impacts in other sectors with large health co-benefits.<br>• Promote and empower individual and community level interventions. |
| **Mobilization of finance at scale** | • Addressing information failures, increasing awareness for business in health interventions.<br>• Ensuring increased supply of finance for adaptation and resilience investments, including local financial institutions.<br>• Address market and policy failures, creating the policy and institutional environment. |

| | |
|---|---|
| | • Use of public finance to recognise public good provision / positive externalities.<br>• Innovative instruments and business models to mobilise public and private financing, de-risk private finance, investigate public-private and private partnerships. |
| Expansion and replication of knowledge | • Establish knowledge platforms for sharing best practices and lessons learned, and for cross learning between health and climate advisory services and organizations.<br>• Establish community and organization level knowledge exchanges.<br>• Develop and empower participatory monitoring, evaluation, and learning. |

## 3.3 Role of the GCF in financing paradigm shifting pathways

Key actions for each of the paradigm shifting pathways, across the four pillars of the GCF Strategic Plan, are outlined in Figure 6, followed by a detailed description of each driver.

1

Figure 6: Possible actions for each pathway following the four pillars of the GCF Strategic Plan

| Sector | | Actions across the drivers of the GCF Strategic Plan | | | |
|---|---|---|---|---|---|
| | **Health and wellbeing** | **Transformational planning & programming** | **Catalyzing climate Innovation** | **Mobilization of finance at scale** | **Coalitions & knowledge to scale up success** |
| Paradigm shifting pathway | **Promoting climate-resilient, nature-positive health systems and services** | • HNAPs integrated V&A Assessments and link with other sectoral NAPs<br>• Mainstream climate related policies in health systems and services<br>• Enhance preparedness and risk management planning<br>• Scenario planning to manage risk in climate events<br>• Data needs, costs and benefits of interventions for health and environment<br>• Pipeline development | • Build capacity in individuals, communities, organizations and institutions<br>• Introduce resilient and low emission plans, standards, policies in procurement and critical services<br>• Introduce climate related issues in Business continunity planning (BCP) and Business continuity management (BCM)<br>• Promote tele-health / tele-medicine | • Resilient health service providers<br>• Low emission, resilient infrastructure and building design and construction (LT-LEDs)<br>• Sustainable supply chain management and private sector tele-health* | • Knowledge platforms for sharing pilots, plans, models<br>• Sharing best practices and lessons learned about health adaptation<br>• Sharing technologies, tools and practices for managing risks |
| | **Facilitating climate-informed advisory, risk management services and community action** | • Introduce climate issues into health advisory and risk management services<br>• Risk assessment, information for advisory and management<br>• Systems-based approaches to adaptation and mitigation efforts<br>• Community adaptation, particularly engaging vulnerable communities and poupulations<br>• Pipeline development | • Reduce exposure to climate related health hazards<br>• Prevent climate-sensitive health outcomes<br>• Include climate in advisory, risk management<br>• Integrate data-driven technology and financing in health surveillance<br>• Use technology to disseminate climate information<br>• Mainstream community agriculture and food security, WASH, biodiversity projects<br>• Support communities to finance local programmes | •Public and private health surveillance<br>•Health advisory<br>•Businesses in local community health adaptation actions<br>•Community inclusion in financial planning | • Sharing best practices and lessons learned<br>• Cross learning in health and climate<br>• Community and organizational level knowledge exchange<br>• Participatory M&E and learning |

* In consideration of data security and privacy issues, accessibility and affordability of related services

Transformational planning and programming: GCF supports developing countries to create integrated climate and sustainable development strategies and policies. This fosters an environment conducive to green, resilient investment, including climate compatible processes for planning and policy frameworks, ensuring transparency, access to information, participation, equity, and sustainability, which guides and brings legitimacy to processes.

In the health and wellbeing sector, transformational planning and programming supports building climate resilient, accessible and inclusive, low-carbon, nature positive, and sustainable health systems and services. Climate resilient health systems anticipate, respond to, cope with, recover from, and adapt to climate-related shocks and stresses, to bring about sustained improvements in population health, despite an uncertain future climate. This includes climate resilient health systems and services, and health services preparedness and climate risk management.

Building climate-resilient health systems includes health workforce capacity building; integration of weather and climate data in health surveillance systems; integrating health into NDCs and long-term low emission development strategies; assessments of health co-benefits of mitigation and adaptation to drive climate action in other sectors. Comprehensive and integrated Health National Adaptation Plans (HNAPs) identify adaptation and mitigation options to build climate-resilient and low emission health systems. This pathway includes mainstreaming climate-related policies and plans across health systems and organizations, and linking HNAPs with other sectoral NAPs to deliver health co-benefits. Strengthening information and advisory systems is key for managing current and emerging climate risks to protect and promote the population health at the community level. Collection of climate change and health data is not sufficient – it is their integration into useful climate-informed advisory and risk management services (e.g., decision-support models, techniques, and services) that are critically needed to facilitate the cross-sectoral cooperation and policy coordination necessary for actions at the climate and health nexus. This pathway includes actions that encourage action at individual, community, and organization levels to prevent climate-sensitive health outcomes and promote health; empower community engagement in climate resilient and nature positive health-promoting behaviours; eliminate climate-related health hazards from the community environment; and foster health promoting environment. This pathway includes climate informed advisory and risk management services, and community action in climate and health.

Catalyzing climate innovation: GCF encourages innovation in policy, institutions, business, technology, and finance by supporting enabling environments that harness multiple benefits. Enabling environments rely on norms and values, for example shared concerns, economic and political interests, narratives, vision, and cultural acceptance.

To build a project pipeline, GCF projects and programmes can focus on enhancing the capacities of people, communities, organizations, and institutions to engage in co-production and implementation of health advisory services; developing and implementing climate-informed integrated monitoring and surveillance systems; enhancing climate-related risk knowledge through risk assessment, risk mapping, and risk information sharing; piloting the use of technologies (e.g. internet of things (IoT), cloud computing, AI, eHealth); promoting next generation integrated health surveillance systems, in collaboration with hydrometeorological services, the media, and possibly ICT, mobile services, and private health service providers and organizations; and implementing resilient and low emission and sustainable plans, standards, policies, and procurement. Supply chain management needs to prepare for more and more intense extreme weather and climate events. Effective health adaptation requires focusing on particularly vulnerable regions and populations, including pregnant women, children, disabled people, and marginalized groups.

Health adaptation needs to be mainstreamed at the community level from, for example, agriculture and food security projects. Planetary health and one health approaches can identify where there are large co-benefits. Other activities can include preparing, managing, and reducing climate-related health hazards from the community environment; fostering health-promoting environments; and supporting communities to develop self-organised groups to finance local health programmes. Empower low-income and marginalized communities, including Indigenous peoples, to implement local health programmes. Local businesses can be

engaged in local community level health adaptation actions and climate integration. This also includes business continuity planning and management to address climate-related health risks.

**Mobilization of finance at scale:** key to GCF's role in scaling up finance is addressing information and other market failures and supporting the enabling environment, and to help mobilise international and domestic private and public funding to increase financial flows and reduce investment risks. This can include long-term and concessionary public finance, leveraging domestic funding sources, de-risking private finance (blended finance, etc.), encouraging public-private partnership (PPP) initiatives, and increasing non-market and market-based finance. These are in line with the GCF Private Sector Advisory Group (GCF 2018) recommendations[1].

To build a track record, GCF can focus on piloting de-risking as well as new instruments that include new public and potentially private business models to promote resilient and low emissions health investment. Funding can be through TA grants, loans, results-based grants (where appropriate and robust), and potentially new public and private business models that engage the private sector, including private diagnostic providers and MSMEs. Blended finance for information services, and for private health service providers, and the deployment of innovative instruments can be used to mobilise financing.

**Coalitions and knowledge to scale up success:** GCF creates and shares knowledge to harmonise valuation methods and incorporate climate risks into financial decisions to align finance with sustainable development. Resources needed to shift financial flows include strengthened organizational, institutional, and individual capacity, and available and accessible information (data and best practices). By sharing lessons, methods (traditional and scientific), and standards, global finance flows can contribute to projects and programmes that follow transformational pathways towards low emissions and climate-resilient development.

Ensuring access to knowledge and data for vulnerable people and regions, including Indigenous peoples, women, and youth, along with supporting knowledge transfer between vulnerable communities, organizations, science, and policy makers are powerful actions to facilitate scaling up of successes. Knowledge platforms are needed to share pilots, plans, and business models between health and climate services communities of practice; technologies and practices; and best practices and lessons learned at local to national scales, and across sectors developing and implementing climate-informed integrated monitoring and surveillance systems, assessments, and policies. Supporting and empowering participatory monitoring, evaluation, and learning for sharing of evidence related to impact, potential solutions, and progress will be crucial for overcoming risks and uncertainties, and for improving practices.

[1] These were to: Support the conception, production and dissemination of consistent and relevant climate data and projections; Support a broader enabling framework; Involve the private sector in the development and implementation of national adaptation plans; Facilitate blended finance and public–private partnerships (PPP); Consider focusing on risk transfer instruments, which includes insurance as a financing modality; Identify and partner with existing financial intermediaries that are expanding their businesses; Request the Secretariat to undertake deeper analysis of the business models of private sector concept notes and funding proposals related to adaptation; Focus efforts on developing funding proposals that target specific gaps in private sector adaptation investment.

# 4 Financing paradigm shifting pathways

GCF has a role in delivering transformative changes, strategically leveraging its competitive advantage (country driven approach, open collaboration, flexibility of financing instruments), and is designed to take more risks than other public and private investors, i.e., to accept some failures, to test and demonstrate innovative solutions, and so unlock projects that would not otherwise have happened. GCF has a broad mandate to support the health and wellbeing sector through a mix of approaches and instruments. This section provides an overview of these and sets out how to catalyse and scale up public and private investment in support of the paradigm shifting pathways identified in Section 3. It is highlighted that some health specific elements are included in other Guides on Climate Information and Early Warning Systems, Water (including WASH), and Agriculture and Food Security, and these are not duplicated in this section. Furthermore, health service delivery is responsible for significant levels of greenhouse gas emissions, and there are new and innovative financing for mitigation, covered in Sectoral Guides on Energy and Energy Efficiency.

This section focuses, therefore, on the financing of adaptation for health and wellbeing. In general, it is more challenging to attract investment for adaptation from the private sector (UNEP 2020). The World Resources Institute (WRI) conducted an analysis of GCF and found that, overall, *health and wellbeing is particularly underrepresented in country programmes/briefs and the GCF portfolio*, despite being a priority focus area in over 50% of NDC submitted (World Resources Institute 2018). This was attributed to various barriers (see Tables 3 and 5), but notably market failures and barriers to finance. These are a particular issue for the health and wellbeing result area, because of public goods characteristics, or low or lack of financial returns or revenue streams, leading to a difference between the high societal benefits of adaptation in this area (the economic return) as compared to the private rate of return.

GCF grants and readiness support therefore remain critical for this result area. This includes for institutional capacity building and technical assistance to strengthen health governance, as well as for monitoring capacity, recognising the current gap in planning. Grant funds, including full cost financing, can be used to provide support in pipeline development, project identification, and project preparation. A further core value addition for GCF is to promote awareness of the health risks of climate change outside of the sector, to support transformative planning that is integrated and inclusive of climate change and health, including in national strategies such as NDCs. There is the potential for concessionary loans to leverage public sources, and opportunities to encourage or co-finance with impact investors, including philanthropic funding. Complementing this, there is the opportunity to attract private investment with blended finance, to help to bridge the viability gap and improve the bankability of projects via de-risking strategies or subsidies, which is a key role for GCF. These offer potential lines of new business for GCF and could help address key climate sensitive health outcomes with innovation.

## 4.1 Financial barriers

Section 2 discussed the key barriers to health adaptation. These include barriers around information (incomplete or asymmetric information), underdeveloped or non-existent markets, imperfect capital markets (which are unable to efficiently allocate capital, or transfer risk for longer-term impacts) and positive externalities (benefits to society that do not generate additional cash flows and thus a financial return) (UNEP 2016: GCF, 2018). This has meant that there are few investment-ready (bankable) adaptation projects (Mortimer et al. 2020), an issue replicated in the GCF portfolio (Stoll et al. 2021). These are exacerbated for the health and wellbeing sector due to domestic budget gaps for health more generally, although these differ between countries. There is also a challenge to finance adaptation for the most vulnerable, due to lack of finance (or access to credit) and viable revenue streams, and high transaction costs. Therefore, to deliver a paradigm shift, GCF needs to employ its financial resources not just as a source of grant funding, but also to address financial and other barriers in a systemic way. This includes consideration of innovative approaches and instruments to de-risk, blend, leverage and scale up financing, and taking advantage of opportunities (Stoll et al., 2021) to identify forces that innovate, engage, and direct investments towards adaptation. Any GCF support to the private sector needs to align with core principles in this area (GCF, 2018), ensuring it is

appropriate and builds resilience of vulnerable populations and communities, to demonstrate a climate rationale and additionality, not to finance investment that could otherwise be financed by the market at commercial terms, to minimise concessionary elements, and to ensure (commercial) sustainability.

## 4.2 Co-financing

GCF projects seek to incorporate co-financing where possible to maximise the impact of GCF funds, although there is no minimum amount of co-financing required. There are opportunities to use GCF finance for technical assistance grants, as well for concessional lending. GCF finance can also support public-private sector partnerships or unlock investment from the private sector for adaptation, strategically using public or philanthropic development capital to de-risk or mobilise private finance. It is possible to use such approaches for multi-purpose health systems or services, or innovative structuring to reduce upfront costs to the private sector for resilient health systems provision, ensuring financing is appropriate and builds resilience of vulnerable populations and communities.

### 4.2.1 Public Domestic Finance

Health systems and services are often under-resourced, and there can be a role for GCF to provide grants or concessionary lending for adaptation. Public domestic budgets are an important source of adaptation co-finance in such cases. There is an opportunity to mainstream (integrate) climate adaptation into health system strengthening, development policy, medium term planning and budgetary cycles in the health sector. This can leverage funding from development budgets and can encourage climate-smart sector development plans. This can also cascade down through sub-national development plans and budgets. Health benefits can also accrue from adaptation actions in other sectors. This means that there may be wider health co-benefit opportunities from integrated and cross-sectoral climate mainstreaming in public financial management, medium-term development plans, and budgeting across government.

### 4.2.2 Private and Blended Finance Opportunities

It is possible to use public funds to offer concessional lending to advance pilot projects, to cover first-losses, or to provide guarantees or equity. These de-risking approaches could allow GCF to potentially harness significant transformative potential at these stages of financing, which tend to be prior to scaling up, that would attract institutional investors and other sources of market-rate capital.

There are health opportunities for private sector adaptation (UNEP, 2016). Public finance can help develop ideas or attract private investment at early stages (with research and development (R&D), challenge funds or seed funding) for large companies as well as MSMEs. This includes funding R&D or development for vaccines or innovative control measures for climate-sensitive vector borne diseases. It also includes innovative monitoring, user information and tools for health-related burdens, including but not limited to early warning (see also Climate information and early warning systems (CIEWS) Guide), especially around digital. There are potentially opportunities for pay-as-you go services, with some early examples for cooling services that could have health sector relevance.

GCF, with its mandated risk appetite, can contribute first loss equity or other high concessional instruments in blended finance arrangements.

Fund managers can blend public and private finance and invest at scale to reduce transaction costs, seeking “aggregators” such as project developers, micro-finance organisations or large companies – supporting aggregation is an appropriate role for GCF investment. Increasing scale helps with improving governance and investment frameworks, a key feature of paradigm shift. There is also potential to blend portfolios which merge projects with higher and lower revenues or returns together, including potentially mitigation and adaptation. There are opportunities for public–private partnerships (PPPs), which are already used in the health sector, notably for health infrastructure, but also for health services. There is a need to integrate climate into PPPs and some early work is being undertaken on this (e.g., Frisari et al. 2020) has relevance for health

sector PPPs. PPPs need to be transparent, enhance accessibility and affordability, and reduce fiscal liabilities, for low-income and marginalized communities.

There are opportunities to raise finance. One option is bonds, noting these are debt instruments and so need funding streams or significant returns on investments from financed activities. There is an established green bond market financing mitigation (covered in other Guides) and growing application to adaptation, e.g., the climate resilience bond issued by the European Bank for Reconstruction and Development (EBRD) (2019) and catastrophe bonds (discussed in the CIEWS Guide). These all involve innovative characters, whereby proceeds are earmarked and measured/monitoring, and funds are often supplemented with technical assistance. There are also examples of health bonds, including Clean Air Bonds and Breathe Better Bonds (e.g., World Bank, 2020), which target air quality, and the GAVI vaccine alliance (GAVI, 2020) that issues vaccine bonds through the International Finance Facility for Immunisation based on long-term donor pledges to frontload funds for quick rollout. This could be a blueprint for bonds for climate-sensitive health outcomes. There also is some potential for debt re-structuring, with health-to-debt swaps or debt-for-climate swaps. These involve the cancellation of debt obligations on the agreement that earmarked funds (for debt servicing) are invested into projects in a particular sector, and the Global Fund has run a Debt2Health programme that applied debt swaps to fund health projects.

## 4.3 Complementarity and coherence

The health and climate change agendas do not always systematically overlap. Improving complementarity and coherence in implementation requires NDAs, NAPs, Accredited Entities (Aes), National Biodiversity Strategies and Action Plans, and others to identify barriers, norms and processes for design and implementation, resources to invest in, and legitimacy. NDAs and Aes can work with GCF to align objectives with other international climate finance to support countries in identifying existing domestic financial mechanisms that can be leveraged for climate and aligning to climate change goals. GCF, NDAs and Aes can contribute by strengthening local development institutions, establishing standards and systems, and developing guidance within the context of planetary and one health approaches. Finally, while there is undoubtably a need to leverage public domestic flows and private finance, there are broader political issues around the international commitments for adaptation finance, and the potential disconnect between the 'adaptation finance criteria' and the private sector reality, thus some care is needed in developing these pathways, to ensure activities align to the UNFCCC goals and that finance flows to the poorest and most vulnerable.

## 4.4 GCF portfolio and financing structures

To date, grants have been the predominant financing mechanism in the health and wellbeing result area. However, GCF has extended multiple financial instruments to projects that have transferability to this sector, including loans, equity, guarantees, and results-based payments. This wider variety of financial instruments, as well as the more creative use of existing instruments, can help to catalyse scaled-up public and private funding. Table 7 shows how financial instruments in the result area may be characterised. Note there is also a set of portfolio and financing options for low-carbon infrastructure, covered in the Energy generation and access, Energy Efficiency, and Cities, buildings and urban systems Sectoral Guides.

1

Table 7: Taxonomy of financial instruments in the Health and Wellbeing result area

| Goal of structure | Instrument | Transformational Potential | Examples |
|---|---|---|---|
| Increase likelihood of social impacts | Grants | Many core barriers to a paradigm shift in Health and Wellbeing are best addressed via grant finance, including readiness support, grants, revolving grants, and results-based grants, to support planning and pipeline development, institutional capacity building, technical assistance, monitoring and surveillance, and knowledge sharing.<br>GCF's difficulty in reaching community organisations, MSMEs and "bottom of the pyramid" organisations (GCF B.23/12/Add.01) can be addressed through dedicated facilities for small grants such as its Enhanced Direct Access Facility or EDA, plus grant (alongside equity) support for business incubation facilities.<br>Micro to large scale1. | GCF readiness grants for HNAPs and health related outcomes in Lao PDR.<br>GCF grants for health NAPSGCF grant finance alongside co-finance (Fiji Urban Water Supply and Wastewater Management Project).<br>Bangladesh's Global Clean Cooking Programme fosters health-promotion in the community by creating a market-based approach towards adoption of higher efficiency cook stoves, reducing household air pollution, which disproportionally affects women and children (pathway 2). |
| Improving the risk/reward profile | Loans | The long tenures available with GCF lending may match the long-term nature of public health-based investments.<br>GCF also has the flexibility to offer significant concessionality on private sector loans. At smaller and micro scale, loans providing working capital to MSMEs could enhance supply chain sustainability or health services. As part of enhanced direct access, revolving loan funds can achieve financial inclusion of community enterprises.<br>GCF could further emphasise loan facilities over project-based lending. It can also take on subordinated (junior) debt (i.e. the riskiest loan tranches), to catalyse private investors by reducing their risk exposure.<br>Micro to large scale. | Antigua and Barbuda's Resilience to Hurricanes in the Building Sector leverages grant funding to climate-proof critical public services and infrastructures including hospitals and clinics (pathway 1), as well as mainstreaming climate resilience into the building and financial sector. |
| | Guarantees | GCF can issue partial (first loss) risk guarantees backing loans and bond issuance including debt-for-climate swaps. Small to large scale.2 Guarantees catalyse finance by reducing the level of risk taken on by public or private investors. | |
| | Equity | Anchor investor in equity funds, often in combination with other instruments Equity funds can catalyse impact investment to stimulate investing in support for social entrepreneurs and incubating early-stage businesses. GCF might also develop mezzanine financing, which is a hybrid of debt and equity that gives lenders the right to convert to an equity interest in case of default. | |

| Goal of structure | Instrument | Transformational Potential | Examples |
|---|---|---|---|
| | | Micro to large scale. | |
| | Bonds (Green, Resilience, Health, Social Impact) | Provide partial credit guarantees to de-risk bond issuance, or support capacity building for the creation of green bond facilities. Targeted bonds can help overcome financing barriers to both public and private investment. Accredited multilateral development banks are well placed to issue green bonds at scale, with the added value of GCF support likely focused on partial credit guarantees to de-risk issuance in new markets and sectors. Small to large scale. | Resilience bonds (EBRD).<br>Vaccine bonds (GAVI).<br>Pandemic Emergency Financing Facility (WB).<br>Breathe Better Bonds (IFC). |
| | Insurance and climate risk finance | Insurance products can play a supplementary role, de- risking private investment as well as protecting livelihoods in the face of climate-related disasters. GCF could also play a role in market development, including financing technical assistance. | See CIEWS Guide. |
| | Public-private partnerships | PPPs are used to leverage private investment for the provision of public goods. Public-private collaboration as part of multistakeholder dialogue is an important component in planning for transformational impacts.<br>PPPs are often used to address budget constraints, but this can involve fiscal risks and can be expensive. Climate change poses some threats to PPP models, as there may be difficulties in allocating climate risks, with implications for financing models.<br>GCF could play a role in technical assistance and institutional strengthening for climate-targeted or climate proofing PPP infrastructure. | Relevant for health Infrastructure (e.g. hospitals) and potentially health services.<br>Senegal's ASER Solar Rural Electrification Project invests in solar-powered mini-grids development in isolated villages using a PPP business model. GCF concessional finance is used to engage private sector operators with acceptable risk-reward conditions. This has health co-benefits from reducing indoor kerosene use (air pollution) and potentially could have co-benefits from providing energy supply for cold storage of medicines, and power for health centers (pathway 1). |

1 The scale of supported projects uses GCF project size categories: Micro: <USD 10m; Small: USD 10-50m; Medium: USD 50-250m; Large: >USD 250m. See Annex I to decision B.08/02

2 Guarantees are unlikely to be large-scale but are often used in conjunction with debt financing (loans or bonds) for large-scale projects and programmes.

# 5 Case studies

The GCF identifies health and wellbeing as a strategic result area within the adaptation domain, however it recognises that significant health gains arise from health implications and potential benefits of activities in all strategic result areas. The current GCF portfolio has limited number of proposals that directly targets health as a result area, and most that include health are often related to mitigation health co-benefits. The ratio of beneficiaries to investment indicates that there is high impact potential in the health and wellbeing sector. This section provides an example for each of the GCF drivers, and some cases are currently under development, not yet approved for GCF funding.

## 5.1 Bangladesh: Global Clean Cooking Programme

### Transformational planning and programming

| | | | |
|---|---|---|---|
| Theme | Removing barriers in the development of a sustainable market for the adoption of improved cook stoves in Bangladesh | | |
| Country | Bangladesh | Project size | Medium |
| Adaptation | 17.6 m beneficiaries | GCF financing | Grants: USD 20m |
| EES category | B | Co-finance | Loan: USD 20m |
| Accredited entity | IBRD | Co-finance ratio | 50% |
| Approved | Mar 2018 (B19) | Completion | Mar 2023 |
| Information | https://www.greenclimate.fund/project/fp070 | | |

**Impact potential.** The project's direct result will be 4 million of ICS adopted by households over the 3.5 years of the project implementation. The estimated GHG emission reduction for the lifetime of 2 to 3 years, depending on the type of device, will be about 2.89 MtCO2eq15. Given that the project will build a sustainable market for cleaner cooking solutions, which will continue after the project's closure, the project's longer term outcome can be quantified as 7.63 MtCO2eq avoided over 10 years (assuming a conservative annual 1% market growth). Therefore, the total lifetime emissions reductions are expected to be 10.52 MtCO2eq.

**Country ambition.** The Infrastructure Development Company/Improved Cookstoves (IDCOL-ICS) programme clearly contributes to the national priorities, in particular to the CAP as it will permit reaching five million rural households with ICS by 2022 and it is estimated that this market seeding will catalyse a commercial market estimated at more than 29 million households.

**Barriers addressed.** The project address paradigm shifting pathway 2 and the following barriers:

- The lack of consumers' ability or willingness to pay premiums on more efficient cookstoves – which have been /are being developed – due to absence of wide-spread awareness campaigns.
- The availability of the right models of the ICS that are acceptable to the rural households and cater to the unique cooking needs and preferences of rural population.
- The cost-revenue shortfall preventing the development of commercial enterprises to promote clean cooking solutions.
- The limited funding to support scale-up activities.

**Approach to paradigm shift.** This project aims to shift to low emission sustainable development pathways. This programme is designed to transform the market for cookstoves in Bangladesh from one wherein low-quality, inefficient cookstoves dominate the market to one where progressively higher quality, higher efficiency cookstoves dominate the market resulting in lower emissions of GHGs. The project had health benefits depending on the HAP emission reductions by creating safe indoors environments, which primarily benefit women and children.

## 5.2 Micronesia: Climate change adaptation solutions for local authorities

Catalyzing climate innovation

| | | | |
|---|---|---|---|
| Theme | Improving food and water security, enhancing disaster risk reduction and recovery, and building local adaptive capacity to respond to climate change. | | |
| Country | Micronesia | Project size | Small (TBC) |
| Adaptation | 21k beneficiaries (TBC) | GCF financing | TBC |
| EES category | B (TBC) | Co-finance | TBC |
| Accredited entity | Pacific Community | Co-finance ratio | TBC |
| Approved | TBC | Completion | TBC |
| Information | TBC | | |

**Impact potential.** The project will contribute to increased climate-resilient sustainable development by directly increasing the climate resilience of an estimated 21,000 people among the most vulnerable people and communities, and by increasing the climate resilience of the health system of the Federated States of Micronesia (FSM), protecting and promoting population health and well-being, and contributing to water safety, food safety and vector control. The project will do so by: (i) strengthening knowledge, institutions, and collaboration; (ii) reducing injuries, illnesses, and deaths from climate-sensitive health outcomes through early warning systems; and (iii) implementing tangible actions in vulnerable communities to better cope with vector-, water- and food-borne diseases as the main climate-sensitive health risks.

**Country ambition.** The project aligns with Micronesia's national climate strategy and priorities since the Joint State Action Plans (2016) designates human health as one of the most vulnerable sectors of the country, with a focus on climate-induced disease preventions, improved resilience of the population, including special protection measures for vulnerable groups.

**Barriers addressed.**

- Insufficient current policies, programmes, and regulations, both within the Ministry of Health and other Ministries to manage those climate change-related health risks.
- Inefficient process of health data recording, collection, and analysis, in particular with respect to integrating health and climate information systems.
- Lack of financial and human resources dedicated to health and climate information systems, biostatistics, epidemiology, and public health related to climate change.
- Lack of high-level buy-in, cross-sectoral cooperation and inter-agency support for effective project management and implementation of climate change and health projects.
- Low technical /organisational /financial capacities to operate and maintain resilient and safe water supply systems.
- Lack of knowledge and capacities in the management of mosquitoes breeding zones.
- Lack of public understanding on vector-, water- and food-borne diseases (risks of transmissions, prevention measures).

**Approach to paradigm shift.** This project represents a paradigm shift, reorienting the health system towards prevention and empowerment, and strengthening action between stakeholders within and external to the health system itself.

## 5.3 Nine countries: Cooling Facility

Mobilization of finance at scale

| | | | |
|---|---|---|---|
| **Theme** | **Mitigation** | | |
| **Country** | Bangladesh, El Salvador, Kenya, Malawi, North Macedonia, Panama, Sao Tome and Principe, Somalia, Sri Lanka | **Project size** | USD 879.8 million |
| **Emission reduction** | 16.24 million tonnes of carbon dioxide equivalent (Mt CO2eq) mitigated | **GCF financing** | Loans: USD 125 million |

| | | | |
|---|---|---|---|
| | | | Grants: USD 32 million |
| EES category | Intermediation 2 | Co-financing | Loans: USD 563.4 million<br>Guarantees: USD 50 million<br>Grants: USD 109.4 million |
| Accredited entity | World Bank | Co-finance ratio | 7% |
| Approval | October 2021 | Completion | N/A |
| Information | www.greenclimate.fund/project/fp177 | | |

Impact potential. The Cooling Facility provides key solutions to cooling from multiple angles, including regulation and policy, technical assistance, and most importantly, financing to address barriers inhibiting the broader adoption of clean cooling solutions that are energy efficient and rely on low-GWP refrigerants. The Facility includes health sector in three countries, Sao Tome and Principe, Somalia and El Salvador, to provide sustainable cooling solutions in response to the need to proper cooling and ventilation in health facilities as well as efficient cold chains to safely store vaccines.

Country ambition. Given the still early-stage focus on cooling globally, to address both development and climate change purposes, the Cooling Facility seeks to cater to different country contexts, efforts, and priorities in response to the Covid-19 pandemic. This includes cooling-related products and services required for buildings, cold chains (e.g., vaccine supply chains), and health facilities.

Barriers addressed. The facility supports activities that address and help remove regulatory/policy-related, institutional, market and behavioural barriers to the development of sustainable cooling investments by (a) providing technical assistance and building capacity among state and non-state actors (such as commercial banks, private investors, and technical companies, and end-user beneficiaries); (b) supporting the design of sustainable implementation mechanisms and business models; (c) increasing end-user awareness of the benefits of low-carbon cooling solutions; (d) facilitating access to affordable sources of financing; and I providing credit lines to financial intermediaries.

Pathway to paradigm shift. The Cooling Facility will be one of the world's first cooling-focused facilities with the aim of providing cooling solutions in Bangladesh, El Salvador, Kenya, Malawi, North Macedonia, Panama, Sao Tome and Principe, Somalia, and Sri Lanka. The injection of USD 157 million from GCF, channelled in the form of grants and loans, will be tailored to the needs of projects in the nine countries through various financing modalities, such as public financing to sovereign or sub-sovereign entities and credit lines to commercial banks, loans or subsidies to households, municipalities, and small, medium and large enterprises. Supported projects will propose activities, technology, and applications that aim to achieve market transformation, create new markets and business activities at local, national, or international levels, and can potentially be replicated in other sectors or geographic areas.

Expected impact. Over 25 years, the programme is estimated to contribute to addressing climate change by mitigating16.24 million tonnes of carbon dioxide equivalent (Mt CO2eq). An estimated 4.22 million people will benefit as direct beneficiaries from the investments and 16.86 million people as indirect beneficiaries (i.e., risk reduction from heatwaves and other extreme events). The programme estimates to target 172 health facilities (clinics, hospitals) with improved cooling and refrigeration operations and equipment in three countries.

## 5.4 Africa: Solar for health

### Coalitions and knowledge to scale up success

| | | | |
|---|---|---|---|
| **Theme** | Installing solar panels in health facilities in the poorest and most remote areas of Zimbabwe, Zambia, Libya, Namibia, Sudan, and South Sudan | | |
| **Country** | Senegal | **Project size** | Small |
| **Adaptation** | 6.5 Mwh capacity<br>43m beneficiaries | **GCF financing** | NA |
| **EES category** | | **Co-finance** | unavailable |
| **Accredited entity** | UNDP, Global Fund, Innovation Norway, Norwegian Solar for Health, WHO, UNICEF, UN Foundation | **Co-finance ratio** | 100% |
| **Approved** | 2017 | **Completion** | Oct 2028 |
| **Information** | https://stories.undp.org/solar-for-health | | |

Approximately 25% of health facilities in Sub-Saharan Africa (SSA) have no access to electricity while a further 28% do not have reliable access to power and experience frequent outages that affect the continuity and quality of care. Many facilities are compelled to rely on fossil-fuel generators, either as the primary on-site energy source or as a back-up measure for unreliable grids. Further, climate change is increasing climate-sensitive diseases. It is therefore important to increase access to sustainable, renewable energy in such health care facilities using cost-effective, rapidly deployable, and reliable solar energy solutions to support a reduction in GHG emissions and strengthen the quality and resilience of health care.

This Programme aims to (1) increase access to clean, reliable and affordable sustainable renewable energy in over 3,000 rural and urban public health facilities in five target countries in SSA (Pathway 1); (ii) enhance surveillance and information systems for enhancing adaptive capacities against climate induced diseases (Pathway 2); and (iii) strengthen capacities, policies and institutional systems for enabling private and public sector investments in climate responsive and low-emission planning and development (Pathway 1). The Programme will also provide a platform for knowledge sharing and replication.

# 6 GCF Investment criteria for impactful proposals

Proposals to the GCF need to align with GCF result areas and are assessed based on six GCF investment criteria[2], summarised here along with examples of how these criteria could pertain to the health and wellbeing paradigm shifting pathways. GCF supported actions can refer to individual projects at a site or to broader programmatic responses. Human health and wellbeing is central to a country's socioeconomic development. Strengthening health systems and mainstreaming health into other health determining sectors, such as water, agriculture, and energy, to protect and promote population health in an uncertain future can build overall societal resilience and amplify the numbers of beneficiaries beyond an individual project.

Health and wellbeing projects are far-reaching and affect directly or indirectly a variety of beneficiaries, including households, companies, and government. If the values of health outcomes and health co-benefits for these beneficiaries are made explicit, recognised, and possibly monetised, the financial viability of the project would improve, and the potential for private investment increased. Most investments in the health sector, in relation to climate change, are innovative, with the potential to trigger innovation in many other areas, and ecosystem-based approaches that could re-shape the way infrastructure projects are designed and selected.

Health and wellbeing projects have the potential to effectively support each investment criteria. Further, health and wellbeing projects highlight how these investment criteria are interconnected with one another, due to the systemic nature of health and wellbeing, being impacted by various drivers of change and impacting all sectors and actors.

[2] https://www.greenclimate.fund/projects/criteria

Table 8: Investment criteria examples (not inclusive) for the two health and wellbeing paradigm shifting pathways

| Health and Wellbeing Sector | Promoting climate-resilient health systems and services. | Facilitating climate-informed health advisory and risk management services and community action. |
|---|---|---|
| Investment criteria examples | | |
| Impact | Quantify effective management of short- and longer-term climate-related shocks and stresses.<br>Comprehensiveness of the national HNAP and the national and regional V&A assessments.<br>Number / proportion of health personnel demonstrating core competencies in climate change and health.<br>Proportion of standard operating procedures that explicitly incorporate climate change.<br>The extent to which emergency preparedness and management guidance and plans address climate change.<br>Percentage of healthcare facilities that include climate change in contingency planning, emergency response plans, and specifications for siting, construction, and maintenance (including supply chains). | Operational integrated health surveillance systems for key climate-sensitive health risks, including monitoring of progress over time.<br>Operational climate-informed health early warning systems for key climate-sensitive health risks developed, implemented, and updated, in collaboration with affected communities.<br>Proportion of health authorities with policies and programmes to address populations of concern. |
| Paradigm shift | Document progress to building climate-resilient, low-carbon, and sustainable health systems and services.<br>Quantify the health co-benefits of policies and technologies, and the extent to which these estimates are used to inform mitigation policy.<br>Significant reductions in greenhouse gas emissions from healthcare facilities. | Promote collective learning, with opportunities for innovation, trial and error, and flexibility in project design and implementation. |
| Sustainable development | Health and wellbeing projects impact all dimensions of development and all SDGs.<br>Quantify how the pathway activities help achieve or contribute to relevant SDGs.<br>Shift to low emission sustainable development pathways, including reduction in greenhouse gas emissions from healthcare facilities. | |
| Recipient needs | Identify barriers and interventions to overcome these barriers and assess how the project could create new drivers for sustained change. | Document the extent to which particularly vulnerable groups, including women, youth, and Indigenous Peoples, and other marginalized groups, participate in activities. |
| Country ownership | Build on other national projects and actions to mainstream health and wellbeing risks. | Document the commitment of key stakeholders to building climate-informed advisory and risk management services. |
| Efficiency & effectiveness | Expand GCF projects and programmes to replicate knowledge by promoting collective learning, with opportunities for innovation, trial and error, and flexibility in project design and implementation.<br>Explicitly describe path for scaling-up, recognising different knowledge systems.<br>Developing knowledge-sharing platforms would benefit other countries and regions as they begin to adapt to the health risks of climate change. | |

A major barrier to paradigm shifts in human health and wellbeing relates to the marginal potential for financial returns. Grants and readiness support therefore remain central to success. The following linkages with the GCFs investment criteria also need to also be aligned with the recently adopted Integrated Results Management Framework (IRMF).

## 6.1 Impact potential

A strong proposal includes baseline climate and health information, including current impacts and projections. Associations are quantified between climate-sensitive health outcomes and weather variables. Outcomes of V&A assessments and the status of the development of the health component of a national adaptation plan (HNAP) are documented. Memoranda of understanding are signed between health and key health-determining sectors or ministries (e.g., hydro-meteorological services). Proposals should contribute to the shift to low emission sustainable development pathways and reduce the pressure of climate change on the health and wellbeing sector, improve service delivery, and create co-benefits for socio-economic development. Systems-based approaches, such as planetary health or one health, can facilitate cooperation and collaboration across sectors and disciplines.

## 6.2 Paradigm shift potential

GCF projects and programmes facilitate transformative adaptation by integrating health and wellbeing into investments in other health-determining sectors, ensuring, for example, that projects focused on food-security include considerations of nutritional security; those focused on water-security include considerations of sufficient access to safe water; and those focused on ecosystem-based adaptation catalyses positive health outcomes. Bringing together public and private actors, including households, projects in the health and wellbeing sector and in health determining sectors have the potential to create a lasting impact on national / regional climate change and contribute effectively to development objectives. Strong collaborations are needed at local to national scales, across ministries, institutions, and civil society, in partnership with vulnerable communities. Access to information and capacity building of individuals, households, health professionals, and others support the paradigm shifting pathways.

## 6.3 Sustainable development potential

Health and wellbeing projects impact all dimensions of development (and all Sustainable Development Goals). The sustainable development potential is very high for mitigation and adaptation projects that target health outcomes and create co-benefits for health, biodiversity, land management, and pollution reduction. Proposals should trigger wider environmental and social co-benefits.

## 6.4 Needs of the recipient

Health and wellbeing projects are far-reaching and affect directly or indirectly a variety of beneficiaries, including households, companies, and government. Health and wellbeing projects developed bottom up can directly address the needs of the recipient, for outcomes and investments. Using a multistakeholder approach creates capacity and supports the improvement of institutions to work across sectors and thematic areas.

## 6.5 Country ownership

Most NDCs identified health and wellbeing as priority issues and all countries that submitted a NAP by December 2020 identified health as a priority sector. What is missing is the conceptualisation of health projects; GCF can build capacity to increase its project portfolio. Ownership in relation to health and climate action will increase with GCF support, but efforts must be strategic because ownership is already very strong in the context of national development planning. It is possible to build on the ongoing and existing development planning exercises and use health and wellbeing as an entry point for the GCF, given that health is an integral part of any development plan. Project approval and evaluation should ensure compliance with relevant national laws and regulations, and international laws.

## 6.6 Efficiency and effectiveness

Proposals should calculate the expected tons of carbon dioxide equivalent ($tCO_{2eq}$) to be reduced or avoided for every USD of GCF contribution. The analysis can be extended to indirect and induced emission reduction.

## 6.7 Coalitions and networks to multiply GCF health portfolio impact

Challenging the status quo to achieve change can be approached by forming "change coalitions", although the effectiveness of such coalitions depends on pre-existing conditions and how the platforms are implemented (Brockhaus et al. 2017). Multistakeholder processes are part of a wider interest in participatory spaces also known as multistakeholder initiatives, forums, coalitions, networks, and platforms[3] – bringing all stakeholders together for joint problem-solving. Coalitions are purposely organised networks of stakeholders interacting in dialogue and coordination, knowledge sharing, and implementation. Such processes can expand and replicate knowledge, disseminate good practices and methods, and support systemic change.

These collaborative spaces are becoming widespread and include such initiatives as the Local Communities and Indigenous Peoples Platform of the UNFCCC, and the Dedicated Grants Mechanism. Such platforms can involve community level associations, knowledge hubs and co-management bodies, and support local organisations to build legitimacy and share lessons (traditional and scientific) to contribute to understanding of applicable methods and standards. Successful multistakeholder processes have participants that are deeply engaged and the time and resources to accompany or govern change (Sarmiento Barletti et al. 2020).

When enhancing complementarity and coherence, it remains important to avoid top heavy coalitions that may not represent Indigenous peoples, women, disabled people, and other under-represented groups and that may not reflect their experiences, knowledge, and priorities. Knowledge sharing is key, and usually done through central meetings or through online resources. Creating alliances and synergies amongst participants, for example through working groups and with other already existing platforms is an effective way to strengthen coalitions. Under-represented groups should be more than mere 'observers' and participate in management and decision making.

# 7 Conclusion

Protecting and promoting health and wellbeing is a critical component of meeting the Paris Agreement, the 2030 Sustainable Development Goals, and the post 2020 biodiversity framework (once adopted). The Health and Wellbeing Sectoral Guide presents these critical objectives as two paradigm shifting investment pathways. For paradigm shifts to be achieved, barriers need to be removed relating to knowledge and capacities, risks, and financing. Transformative pathways require climate compatible policy frameworks and strengthening of institutional capacity across local, subnational, and national levels, and actors, including different sectoral ministries, such as agriculture and water, the private sector, and civil society.

This Guide supports stakeholders in developing robust funding proposals based on the two strategic investment pathways in connection to the four key drivers of transformational change. The case studies highlight approaches that build climate-resilient health systems and services, and that encourage action at individual and community levels to prevent climate-sensitive health outcomes and promote health, facilitate community engagement in climate resilient and nature positive health-promoting behaviours, and foster health promoting environments. They demonstrate how innovative approaches and broad participation in decision-making processes can promote a successful paradigm shift.

[3] For example, UNDP hosts a network of organizations under the name Sustainable Procurement in the Health Sector (SPHS) and also has a "Sustainable Health in Procurement Project" (SHiPP) that among other topics aims to reduce carbon emissions from the health sector. https://savinglivesustainably.org/ and https://savinglivesustainably.org/shipp/shipp.html

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