Climate Change and Health in Small Island Developing States

A WHO Special Initiative

Pacific Island Countries and Areas

This is the background document for the Meeting to Develop the Pacific Action Plan for the WHO Special Initiative on Climate Change and Health in Small Island Developing States (SIDS), 15–16 March, Nadi, Fiji.

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Abbreviations

CBA  community-based adaptation
CC&H  climate change and health
CCA  climate change adaptation
CFLI  Canada Fund for Local Initiatives
CO2  carbon dioxide
COP  Conference of the Parties
COP23  23rd Conference of the Parties
COSPPac  Climate and Oceans Support Programme in the Pacific
DFAT  Australian Department of Foreign Affairs and Trade
DRR  disaster risk reduction
FFEM  French Global Environment Facility
GCCA  Global Climate Change Alliance
GCF  Green Climate Fund
GDP  gross domestic product
GEF  Global Environment Facility
HNAPS  health national adaptation plans
JICA  Japan International Cooperation Association
KOICA  Korea International Cooperation Association
LDCF  Least Developed Countries Fund
LDC  least developed country
NAPA  national adaptation programme of action
NCCCHAP  national climate change and health action plan
NCD  noncommunicable disease
PiCs  Pacific island countries and areas
PIF  Pacific Islands Forum
SAMOA  SIDS Accelerated Modalities of Action
SCCF  Special Climate Change Fund
SDGs  Sustainable Development Goals
SIDS  Small Island Developing States
SPC  Pacific Community
SPREP  Secretariat of the Pacific Regional Environment Programme
UHC  universal health coverage
UNFCCC  United Nations Framework Convention on Climate Change
V&A  vulnerability, capacity and adaptation assessment
WASH  water, sanitation and hygiene
WB IDA  World Bank International Development Association
WHO  World Health Organization
Introduction

Humanity entered a new millennium with unprecedented challenges on a planetary scale. Carbon dioxide emissions, loss of biodiversity, loss of forests, water use and ocean acidification have all been rapidly increasing for the past 100 to 200 years. At the same time, we have never had so many options to steer the planet on a sustainable path of development and to eliminate poverty everywhere. The future will assess us, not just on what we did, but also on what we failed to do. One area where we must be judged by what we did well is in the protection – in particular, health protection – of people in Small Island Developing States (SIDS). Small islands are fragile ecosystems populated by resilient people who have been able to cope with environmental threats over millennia. However, the challenges that climate change brings today are unprecedented, and small islands are the places where the physical and social impacts of climate change are becoming most evident.

The Earth Summit in Rio de Janeiro in 1992 was the birthplace of the United Nations Framework Convention on Climate Change (UNFCCC). Since then, several global conferences and meetings have followed, with limited but steady progress made towards addressing our planetary challenges. The Rio+20 Conference in 2012 renewed national commitments and accelerated actions towards sustainable development. Importantly, the conference’s outcome document recognized that health is a precondition for and an outcome and indicator of all three dimensions of sustainable development, that is, the social, environmental and economic dimensions (UN, 2012). We must, therefore, put health at the centre of sustainable development in SIDS.

More recently, 2015 saw major national commitments to transition to more climate-resilient and sustainable societies, by preparing for the challenges and opportunities of additional climate change. These include the Paris Agreement under the UNFCCC; the 2030 Agenda for Sustainable Development; and the Sendai Framework for Disaster Risk Reduction 2015–2030 (Box 1).

1.1 Over 20 years of international health action

The World Health Organization (WHO) has played a key role for over 20 years in raising awareness of and implementing actions to manage the health risks of climate change within Member States. SIDS were among the first countries to become concerned about the health impacts of climate change. The first SIDS workshop on climate change and health in the Pacific was held by WHO in Apia, Samoa, in partnership with UN Environment and the World Meteorological Organization (WHO, 2000). This was followed by similar workshops for the Caribbean in Barbados in 2002 (WHO & PAHO, 2003) and in the Maldives in 2003 (WHO, 2004). Since then, evidence has continued to increase regarding the impacts of unhealthy environments, including climate change, on health.
Ministers of health and high-level representatives at the UNFCCC Conference of the Parties (COP) in November 2016 acknowledged that almost one quarter of the global burden of disease and approximately 12.6 million deaths annually are attributable to modifiable environmental factors, and that global, environmental and social changes, including climate change, are driving many of these health impacts (Prüss-Üstün et al., 2016).

Box 1. 2015, the year of three crucial global agendas

The Paris Agreement (UNFCC, 2015) acknowledged that “climate change is a common concern of humankind” that Parties to the Convention should address, considering “their respective obligations on human rights, the right to health ...” (p. 2). Further, the countries agreed to strengthen efforts to address climate change by “holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change” (p. 3). The Agreement also commits signatories to “increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development...” (p. 3) and to strengthen their ability to prepare for, cope with, respond to and recover from climate-related risks, even as they built less carbon-intensive, resilient futures.

The 2030 Agenda for Sustainable Development renews efforts to achieve sustainable development, calling on countries to begin efforts to achieve 17 Sustainable Development Goals (SDGs) and 169 targets over the next 15 years. The SDGs address the social, economic and environmental dimensions of sustainable development, as well as promoting peace, justice and effective institutions. Goal 3 (good health and well-being) aims to improve population health, with health embedded in multiple other goals, including no poverty, zero hunger, clean water and sanitation, gender equality, reduced inequalities and sustainable cities. Goal 13 calls for urgent action not only to combat climate change and its associated risks, but also to build resilience in preparing for and responding to climate-related hazards.

The Sendai Framework for Disaster Risk Reduction 2015–2030 outlines seven targets and four priorities for action to achieve substantial reductions in disaster risk and losses in lives, livelihoods and health, and in the economic, physical, social, cultural and environmental assets of persons, communities and countries. Health is a key element of the Framework.

1.2 A special initiative for climate change and health in SIDS

In 2017, at the 23rd COP (COP23) of the UNFCCC in Bonn, WHO launched a Special Initiative on Climate Change and Health in Small Island Developing States in collaboration with UNFCCC and the Fijian Presidency of the COP23. The Initiative recognizes that SIDS are on the front line facing a range of acute and long-term risks, including extreme floods, storms, drought and sea level rise; and increased risks of water-, vector- and food-borne diseases. The SIDS Initiative has a vision that by 2030 all health systems in SIDS will be resilient to climate variability and change. However, this must happen in parallel while countries around the world are reducing carbon emissions, both to...
protect the most vulnerable from climate risks and to gain the health co-benefits of mitigation policies.

The SIDS initiative has four component elements, as follows:

- **Empowerment**: Supporting health leadership in SIDS to engage nationally and internationally.
- **Evidence**: Building the business case for investment.
- **Implementation**: Preparedness for climate risks, and health-promoting mitigation policies.
- **Resources**: Facilitating access to climate and health finance.

These four components are interlinked as shown in Fig. 1 (WHO, 2017). *Evidence* leads both to *empowerment* and access to *resources*. Both *empowerment* and access to *resources* lead to successful *implementation* of actions. The four components aim at making health systems in SIDS resilient to climate variability and change.

**1.3 Relevance to Pacific island countries and areas**

The first Ministerial Conference on Health for the Pacific Island Countries in 1995 resulted in the Yanuca Island Declaration, with a vision of “Healthy Islands” as the unifying theme.
for health promotion and health protection. A working definition of the Healthy Islands concept since 1997 has been that it “involves continuously identifying and resolving priority issues related to health, development and well-being by advocating, facilitating and enabling these issues to be addressed in partnerships among communities, organizations and agencies at local, national and regional levels” (WHO Regional Office for the Western Pacific, 2015a, p. 2). Since then, health has improved in the Pacific, but at a slower pace than in other parts of the world, with a risk of the Pacific falling behind.

At the 11th Pacific Health Ministers Meeting in 2015, ministers renewed their commitment to this vision, declaring Healthy Islands as places where (WHO Regional Office for the Western Pacific, 2015a, p. 2):

- children are nurtured in body and mind;
- environments invite learning and leisure;
- people work and age with dignity;
- ecological balance is a source of pride; and
- the ocean which sustains us is protected.

At the 2015 meeting, participants acknowledged important progress in child survival and life expectancy, but with gains that are unequal among countries and with a significant gap between Pacific countries and the rest of the world. Ministers agreed to implement the Healthy Islands vision through four thematic areas: 1) Strengthening leadership, governance and accountability; 2) Nurturing children in body and mind; 3) Reducing avoidable disease burden and premature deaths; and 4) Promoting ecological balance.

In August 2017, the 12th Pacific Health Ministers Meeting noted that while many ministers of health actively voice their concerns regarding the health risks of climate change, projects to build resilience and strengthen health systems to prepare for and manage the health risks of climate change could not be pursued because of a lack of funding, due to the complexity of navigating the processes to access international and bilateral funds, including uncertainty in how to access them. National health sector budget allocations for climate change have been minimal, in part due to issues such as absence or inadequacy of data required for evidence-based interventions.

The SIDS Initiative and its implementation in the Pacific intends to support and strengthen current initiatives, such as the implementation of actions to achieve the SDGs and the Healthy Islands initiative. At the 12th Pacific Health Ministers Meeting, held in Rarotonga, Cook Islands on 28–30 August 2017, the Secretariat presented progress on the Healthy Islands monitoring framework, which proposes 48 indicators, of which 33 are core indicators to be updated every one or two years (WHO & WHO Regional Office for the Western Pacific, 2017). Some indicators already being collected can be linked to the four components of the SIDS Initiative (Table 1). This is important because it liberates important resources in data collection and analyses. However, because these 48 indicators are not sufficient to measure progress of implementation of the Initiative specifically, a set of additional indicators will be needed. Furthermore, there are several SDG indicators that are relevant to the SIDS Initiative, and these are discussed in Section 4.

The SIDS Accelerated Modalities of Action (SAMOA) Pathway was adopted by the General Assembly in 2014 (UN, 2014). Countries expressed concerns that the impacts of climate
change compound existing challenges, placing additional burdens on their national budgets and on their efforts to achieve SDGs. Countries reaffirmed their commitment to support the efforts of SIDS, citing specifically “to develop and implement comprehensive, whole-government, multisectoral policies and strategies for the prevention and management of diseases, including through the strengthening of health systems, the promotion of effective universal health coverage implementation, the distribution of medical and drug supplies, education and public awareness and incentivizing people to lead healthier lives through healthy diet, good nutrition, sports and education.” (UN, 2014, p. 18).

Table 1. Healthy Island indicators relevant to the SIDS Initiative in the Pacific

<table>
<thead>
<tr>
<th>SIDS Initiative component</th>
<th>Healthy Islands indicator component</th>
<th>Healthy Islands indicators</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Empowerment</strong></td>
<td>Strong leadership, governance and accountability</td>
<td>International Health Regulations core capacity score</td>
<td>Index based on 13 core capacities. A proxy for empowerment of the health sector.</td>
</tr>
<tr>
<td><strong>Evidence</strong></td>
<td>Avoidable diseases and reduced premature deaths</td>
<td>Life expectancy at birth, both sexes</td>
<td>Widely used and available indicators. They could be complemented with burden of disease attributed to the environment, which is available but not routinely obtained.</td>
</tr>
<tr>
<td></td>
<td>Children are nurtured in body and mind</td>
<td>Under-5 mortality rate</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Children who are stunted</td>
<td></td>
</tr>
<tr>
<td><strong>Implementation</strong></td>
<td>Ecological balance is promoted</td>
<td>Population using modern fuels for cooking, heating and lighting</td>
<td>Available indicators that measure health risks and that are indirectly related to (or modified by) climate change.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Population using improved drinking-water sources</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Population using improved sanitation facilities</td>
<td></td>
</tr>
<tr>
<td><strong>Resources</strong></td>
<td>Strong leadership, governance and accountability</td>
<td>Health worker density</td>
<td>Measures of human and financial resources. Relevant, but not linked to climate change.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Health expenditure per capita</td>
<td></td>
</tr>
</tbody>
</table>
Health Risks of Climate Change in SIDS

2.1 A small contribution to the problem, a major impact on health

Most SIDS have made a very small contribution to the overall global emissions that cause climate change and yet they are amongst the most affected countries. Fig. 2 shows carbon dioxide (CO2) emissions per capita comparing the global average with Pacific island countries and areas (PICs), noting that although there are slight increases in per capita emissions over time, these are mostly well below the world average.

![Fig. 2. CO2 emissions (metric tons per capita) in PICs, 1970–2013](source: EDGAR (2018)).

2.2 SIDS are uniquely vulnerable to climate change

Their geography, frequent exposure to extreme weather and climate events and sea level rise, and often small numbers of people and limited resources, make SIDS uniquely vulnerable to climate change. Many SIDS have weak health systems and constrained financial and human resources, limiting options for transitioning to climate-resilient and
sustainable health systems. Climate change is affecting not only the health and well-being of their citizens, but also their livelihoods and culture. Populations often depend on marine resources (fisheries, wildlife tourism) that are being affected by ocean acidification and coral bleaching, which may also compromise lifestyles.

Similarly, extreme weather and climate events can affect health, livelihoods and development. Because many islands depend on services linked with tourism, even if an extreme weather event does not cause extensive damage, it can affect the public’s perception of risk, reducing tourism. Higher ocean temperatures can initiate coral bleaching events, affecting tourism and reef survival.

Globally, there were 622 climate-related disasters (storms, floods and droughts) in all SIDS in the 40 years between 1976 and 2015. These resulted in over 14,000 deaths, 38.5 million affected persons (many of them more than once), and around US$ 33.3 billion in damages. Table 2 shows the breakdown by type of event (EM-DAT, 2018).

Table 2. Climate-related disasters in all SIDS between 1976 and 2015

<table>
<thead>
<tr>
<th>Type of event</th>
<th>Number of events</th>
<th>Deaths</th>
<th>Total affected</th>
<th>Damage (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storm</td>
<td>374</td>
<td>8990</td>
<td>24,280,081</td>
<td>30,812,408,000</td>
</tr>
<tr>
<td>Drought</td>
<td>52</td>
<td>84</td>
<td>8,087,764</td>
<td>501,839,000</td>
</tr>
<tr>
<td>Flood</td>
<td>196</td>
<td>5279</td>
<td>6,154,531</td>
<td>1,982,797,000</td>
</tr>
<tr>
<td>All</td>
<td>622</td>
<td>14,323</td>
<td>38,522,376</td>
<td>33,297,044,000</td>
</tr>
</tbody>
</table>


In PICs during the same period, there were 191 occurrences of storms, floods and drought, which resulted in 1140 deaths, close to 6.8 million affected persons, and over US$ 3.4 billion in damages (EM-DAT, 2018). Fig. 3 shows the number of climate-related events and total affected persons between 1976 and 2015.

2.3 SIDS face unequal health impacts

Climate change is and will continue to harm human health. WHO has estimated that between 2030 and 2050, around 250,000 extra deaths will occur as a result of climate change impacts on nutrition and due to malaria, diarrhoeal diseases and heat stress (WHO, 2014). Some health burdens have already changed due, at least in part, to changing weather patterns associated with climate change (Ebi et al., 2017). Risks can arise from direct exposures, indirect exposures and via economic and social disruption (Box 2; Smith et al., 2014). Climate change will likely benefit some health outcomes in some locations in the short term. However, the overall balance will be detrimental, particularly in SIDS that experience higher burdens of climate-sensitive health outcomes.

**Box 2. Sources of climate change risks**

**Direct exposures**: These include climate change–related alterations in the frequency, intensity and duration of extreme weather events (e.g. heatwaves, floods, droughts and windstorms). Each year, these events affect millions of people, damage critical public health infrastructure, and cause economic losses costing billions of dollars. The frequency and intensity of some types of extreme weather events are expected to continue to increase over coming decades as a consequence of climate change (IPCC, 2012), suggesting that the associated health impacts could increase without additional interventions, including impacts on mental wellness.

**Indirect exposures**: These are effects of climate change on natural and physical systems that, in turn, alter the number of people at risk of undernutrition; the geographic range and incidence of vector-borne, zoonotic, and food- and water-borne diseases; and the prevalence of diseases associated with air pollutants and aeroallergens. Further climate change is projected to significantly increase the number of people at risk of these major causes of ill health. In addition, sea level rise associated with climate change can result in, for example, larger and more destructive storm surges, and affect food and water security associated with saltwater intrusion into freshwater drinking sources.

**Via economic and social disruption**: Climate change can affect population health through climate-induced economic dislocation and environmental decline, as well as through development setbacks incurred by damage to critical public health infrastructure and livelihoods by extreme events.

Climate change acts as a health risk multiplier by affecting the social and environmental determinants of health, including safe drinking water, clean air, sufficient food and safe shelter. Health risks of climate change will not occur in isolation. Many communities will experience multiple adverse consequences simultaneously or closely spaced in time. For example, common challenges across SIDS include the impacts of extreme weather and climate events (including floods, droughts and storms) and of sea level rise on individuals, communities and health infrastructure; changes in the transmission of vector-borne and other infectious diseases; and impacts of climate change on marine ecosystems, affecting tourism and marine production. Combined with high vulnerability, these challenges affect the ability of health systems to promote and protect population health.
As the climate continues to change, risks will continue to emerge, such as increases in the number of cases of ciguatera fish poisoning and psychosocial stress. Surveillance and monitoring programmes will need to be extra vigilant to identify when diseases emerge or re-emerge, particularly as travel, tourism and trade provide opportunities for vectors and pathogens to quickly move from one country to another.

Health service delivery – particularly access to health care – will be increasingly affected by storms, floods and sea level rise. The majority of populations and health-care facilities (hospitals and community health centres) in SIDS are located in close proximity to low-lying coastal areas with high vulnerability to cyclones, floods, storm surges, sea level rise, and disturbances in water supply caused by drought or salinization of aquifers. Due to the lack of capacity and resources in health systems, the majority of facilities are not resilient to climate-induced pressures with respect to structural, nonstructural and functional safety. Damage to buildings and essential supplies/amenities affects their capacity to provide health services when they are most needed in emergency situations. These problems will increase with additional climate change.

2.4 Current and projected health risks of climate variability and change in SIDS

Although additional data are needed to provide robust estimates, it is clear that SIDS are already experiencing high burdens of many climate-sensitive health outcomes, with burdens expected to increase unless additional adaptation programmes are implemented.

Fig. 4 shows the range of pathways by which climate change could threaten health in SIDS.

![Fig. 4. Climate change and health impact pathways relevant to SIDS](source)

**Mediators of climate change attributable impacts**
- socio-political strategies
- environmental measures
- health systems resilience

**Potential pathways for health impacts of climate change in SIDS**
- Direct exposures
  - storms, floods, inundation, extreme heat
- Indirect exposures
  - compromised safety and/or supply of food, water & clean air
  - potential loss of land & livelihoods
  - potential for population displacement
  - altered disease exposure risk (e.g. due to spread of vectors/hosts, population movement/overcrowding)
  - compromised health systems
- Social disruption
- Detrimental impacts on economic and human development

**Health impacts of climate change in SIDS**
- Increasing incidence of vectorborne disease & zoonoses
- Water insecurity & increasing incidence of water-borne diseases
- Increasing risk of food-borne diseases (including ciguatera)
- Malnutrition (including increasing dependence on imported foodstuffs)
- Increasing morbidity and mortality due to noncommunicable diseases
- Traumatic injuries and deaths
- Increasing risk of mental health disorders
- Disruption to health services

*Source: Adapted from McIver et al. (2016).*
In addition to high burdens of infectious diseases, SIDS experience some of the highest worldwide rates of obesity, diabetes, hypertension and related noncommunicable diseases (NCDs). With climate change likely to increase the burden of NCDs in SIDS, as shown in Fig. 5, the impacts of this double burden of disease will only grow unless additional interventions are designed and implemented.

*Fig. 5. Conceptual model summarizing the pathways* between climate change and NCDs

- Climate change (probable detrimental impacts of climate change, including higher temperatures, altered rainfall patterns, sea-level rise, storms, etc.)
  - Lack of locally grown, nutritious foods
  - Compromised food security
  - Dependence on imported foods
  - Increased consumption of high-calorie, energy-dense foods
  - Obesity
  - Lack of physical activity

Noncommunicable diseases (diabetes, circulatory diseases, other NCDs)

* Dotted arrows are hypothetical links.


This is also observed in the case of burden of disease from modifiable environmental risk factors (Prüss-Üstün et al., 2016), which indicates that a large fraction of NCDs (age-standardized rates per 100 000) in most PICs are environmentally related (see Fig. 6). In absolute numbers, however, there are slightly more deaths in the “Infectious, parasitic, neonatal and nutritional” categories (38.5%) than in the “Noncommunicable diseases” category (36.7%), with “Injuries” responsible for 24.8% of deaths. While approximately 23% of all deaths globally can be attributed to environmental factors, PICs have statistics ranging from 13% to 21%.
Between 2010 and 2012, the WHO Division of Pacific Technical Support led a regional climate change and health vulnerability assessment and adaptation planning project, in collaboration with health sector partners, in 13 PICs – Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu (WHO Regional Office for the Western Pacific, 2015b). The vulnerabilities of PICs were assessed against the health impacts of climate change and planned adaptation strategies to minimize such threats to health. Vulnerabilities were ranked using a “likelihood versus impact” matrix, and adaptation strategies were prioritized and planned accordingly. Table 3 shows the highest-priority climate-sensitive health risks.
### Table 3. Highest-priority climate-sensitive health risks in selected PICs

<table>
<thead>
<tr>
<th>Climate-sensitive health risk</th>
<th>Cook Islands</th>
<th>Fiji</th>
<th>Kiribati</th>
<th>Marshall Islands</th>
<th>Micronesia (Federated States of)</th>
<th>Nauru</th>
<th>Niue</th>
<th>Palau</th>
<th>Samoa</th>
<th>Solomon Islands</th>
<th>Tonga</th>
<th>Tuvalu</th>
<th>Vanuatu</th>
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<tbody>
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<td><strong>Direct effects</strong></td>
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<tr>
<td>Health impacts of extreme weather events&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>Heat-related illness&lt;sup&gt;b&lt;/sup&gt;</td>
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<td><strong>Indirect effects</strong></td>
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<td>Water security and safety (including waterborne diseases)&lt;sup&gt;c&lt;/sup&gt;</td>
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<td>Food security and safety (including malnutrition and food-borne diseases)&lt;sup&gt;d&lt;/sup&gt;</td>
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<td>Vector-borne diseases&lt;sup&gt;e&lt;/sup&gt;</td>
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<td>Zoonoses&lt;sup&gt;f&lt;/sup&gt;</td>
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<tr>
<td>Respiratory illness&lt;sup&gt;g&lt;/sup&gt;</td>
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<tr>
<td>Disorders of the eyes, ears, skin and other body systems&lt;sup&gt;h&lt;/sup&gt;</td>
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<td>☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒</td>
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<td><strong>Diffuse effects</strong></td>
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<tr>
<td>Disorders of mental/psychosocial health&lt;sup&gt;i&lt;/sup&gt;</td>
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<td>NCDs&lt;sup&gt;j&lt;/sup&gt;</td>
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<td>Health systems problems&lt;sup&gt;k&lt;/sup&gt;</td>
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<td>Population pressures&lt;sup&gt;l&lt;/sup&gt;</td>
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Notes:

a. While this was typically taken to mean traumatic injuries and deaths, it may also be assumed to include the psychosocial impacts of extreme events.
b. Including occupational exposure to hotter working conditions.
c. This category encompasses waterborne infections causing diarrhoeal illness, as well as typhoid fever, and also includes problems such as sea-level rise–induced salination of potable water supplies.
d. Including food insecurity, foodborne diseases causing diarrhoeal illness and ciguatera (“fish poisoning”).
e. Including, but not limited to, dengue fever and malaria; noting that these two diseases occur in some, but not all, PICs (e.g. malaria is currently limited to Solomon Islands and Vanuatu).
f. The primary zoonosis of concern in most PICs is leptospirosis.
g. Including infections, obstructive airways disease (e.g. asthma) and the pulmonary effects of heat and air pollution.
h. This category includes a range of health problems – from skin infections and cataracts to sexually transmitted infections – that were of concern in various PICs in the context of climate change.
i. Includes the unspecified detrimental effects of social disruption, e.g. loss of life, land or livelihoods due to climate change–related phenomena; this category may include, inter alia, depression, anxiety and post-traumatic stress disorder.
j. While “NCD” is a nonspecific term, in this context it primarily refers to circulatory diseases (e.g. cardiovascular disease, cerebrovascular disease, hypertension, etc.) as well as endocrine disorders such as diabetes; in some PICs, this was also taken to include cancers and mental health disorders.
k. Including compromised access to health services, damage to health infrastructure and additional strain on scarce resources (e.g. for climate-sensitive disease surveillance).
l. Includes the possibility of climate change–induced sea-level rise in exacerbating overcrowding.

Source: WHO Regional Office for the Western Pacific (2015b).
Considerable progress has been made in recent decades to reduce the burden of major climate-sensitive health outcomes, at least partly through efforts to achieve the Millennium Development Goals, SDGs and other goals. These trends are expected to continue depending on the development pathways followed (Ebi et al., 2014).

The balance of increased health risks associated with a changing climate and decreased health risks from socioeconomic development will vary from location to location, depending on the local context. Climate change may not be the most important driver of climate-sensitive health risks over the next few decades, but is expected to be significant past mid-century.

Current estimates of global coverage of access to safe drinking water and improved sanitation do not take climate resilience into account. The world is off-track to meet water supply and sanitation targets when climate change is taken into consideration. A global assessment concluded that by 2020, climate change has the potential to undermine investments to improve access to safe drinking water and sanitation (Howard & Bartram, 2010). A reduction in coverage can be expected unless actions are taken to increase the resilience of water and sanitation services to climate change over the short and medium terms. This is particularly problematic in SIDS with challenges in providing water and sanitation services.
Taking Action

3.1 The SIDS Initiative is aligned to the Operational Framework for Climate Resilient Health Systems

To support the delivery of universal health coverage (UHC), WHO has identified six common “building blocks”: 1) Leadership and governance; 2) Health workforce; 3) Health information systems; 4) Essential medical products and technologies; 6) Service delivery; and 6) Financing (WHO, 2015). For an entire health system to be resilient to climate change, each of the six common building blocks should also be climate resilient. The WHO Operational Framework for Climate Resilient Health Systems builds on this approach by focusing on 10 components necessary for health systems to prepare for, cope with, respond to, and recover from climate-related risks of current climate variability and change. These, in turn, will orient actions that contribute to the four components of the SIDS Initiative, as depicted in Fig. 7.

Fig. 7. SIDS Initiative components within the framework of the WHO Operational Framework for Building Climate Resilient Health Systems (WHO, 2015)

In addition to these six building blocks and 10 components of climate-resilient health systems, consideration must be given to five key health systems performance dimensions:
equity, quality, responsiveness, efficiency and resilience (WHO & World Bank, 2017). A climate-resilient health system is one that can anticipate, respond to, cope with, recover from, and adapt to climate-related shocks and stress, to bring sustained improvements in population health, despite an unstable climate (WHO, 2015). Climate resilience reduces vulnerability, builds capacity to manage health risks of climate change, considers shorter-to longer-term perspectives, implements adaptive management approaches, enables community-based partnerships and participation, and promotes collaboration across sectors (Bowen & Ebi, 2015). Key factors for supporting multisectoral collaboration and partnerships are systems-based approaches that explicitly acknowledge the intersections across health and other sectors. These approaches will be more effective when they incorporate partnership with all relevant sectors and structural supports, including effective leadership, sufficient resources and responsive governments. Another critical factor for building longer-term climate resilience is reducing greenhouse gas emissions within public health and health-care infrastructure.

SIDS differ among each other in terms of their specific climate-related exposures, vulnerabilities and capacities. However, many SIDS share common needs to implement the operational framework for climate-resilient health systems and achieve their SDG targets and goals. Although the particular needs of a country depend on its context, underlying needs to manage the health risks of a changing climate align with the basic building blocks of health systems.

SIDS can broadly be categorized into the following three categories:

- Countries with the capacity to undertake building climate-resilient health systems with a minimal level of external financial and technical support within the next decade.
- Countries that can undertake building climate-resilient health systems with a moderate level of external financial and technical support within the next decade.
- Countries requiring a high level of external capacity supplementation for an indefinite period.

Given the risk multiplier characteristic of climate change, there are a range of interventions in different areas that can address the additional risk contribution of climate change (Table 4).
Table 4. Examples of climate-informed health interventions

<table>
<thead>
<tr>
<th>Climate-related health risks and mechanisms</th>
<th>Examples of interventions</th>
</tr>
</thead>
</table>
| **Extreme heat and thermal stress**        | - Establish occupational health exposure standards.  
- Improve health facility design, energy-efficient cooling and heating systems.  
- Ensure public education to promote behaviour change (e.g. in relation to clothing, ventilation, etc.).  
- Develop heat-health action plans, including early warning, public communication, and responses, such as cooling centres for high-risk populations. |
| **Waterborne and foodborne diseases**      | - Enhance disease surveillance systems during high-risk seasons/periods.  
- Strengthen food and water quality control. |
| **Zoonotic and vector-borne diseases**     | - Expand the scope of diseases monitored, and monitor at the margins of current geographic distributions.  
- Establish early warning systems when there are sufficient data and a robust enough association between environmental variables and health outcomes.  
- Establish vector/pest control programmes.  
- Enhance diagnostic and treatment options in high-risk regions/ periods.  
- Ensure adequate animal and human vaccination coverage. |
| **Allergic diseases and cardiopulmonary health** | - Develop exposure forecasts for air quality, allergens, dust.  
- Enforce stricter air quality standards for pollution.  
- Establish allergen management.  
- Plan for increased demand for treatment during high-risk seasons or weather conditions. |
| **Nutrition**                              | - Perform seasonal nutritional screening in high-risk communities.  
- Scale up integrated food security, nutrition and health programming in fragile zones.  
- Promote public education and food hygiene. |
| **Storms and floods**                      | - Include climate risks in siting, designing, or retrofitting health infrastructure.  
- Establish early warning and early action systems, including education and community mobilization.  
- Assess and retrofit or construct public health infrastructure (e.g. health facilities in flood-prone areas) to be resilient to increased extreme weather conditions, warmer temperatures and environmental changes. |
| **Mental health and disability**           | - Address special needs of patients with mental health conditions (as well as other disabilities) by developing emergency preparedness plans.  
- Address mental health needs of disaster- and trauma-exposed populations.  
- Establish community watch for people with mental illness during extreme weather conditions. |

3.2 Status of the building blocks of climate-resilient health systems in SIDS

SIDS Initiative components in relation to the building blocks for climate-resilient health systems are described in Tables 5 to 8.

Table 5. Climate-resilient health systems in SIDS: Empowerment

<table>
<thead>
<tr>
<th>Building block</th>
<th>Status in SIDS</th>
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<tbody>
<tr>
<td>Leadership and governance</td>
<td>There is high political awareness within the SIDS national governments of the risks that climate change presents today and in the future, with awareness of the health risks in many countries within ministries of health. SIDS countries recognize the critical need for national coordination and collaboration across ministries in order to manage the upstream drivers of the health risks of climate change. Memoranda of understanding and other mechanisms are under development to achieve this. Close collaboration is needed between ministries of health and ministries of environment, to ensure access and utilization of the latest understanding of environmental factors that can influence the burden of climate-sensitive health outcomes. There are multiple international organizations that can provide technical and/or financial support for political engagement, technical programmes, raising awareness, and mobilization of financial resources. Examples in the Pacific include the Pacific Islands Forum (PIF), Secretariat of the Pacific Regional Environment Programme (SPREP) and the Pacific Community (SPC).</td>
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<tr>
<td>Health workforce</td>
<td>Limited efforts are underway for training and capacity-building of health workforces in SIDS to make sure public health and health-care professionals have the knowledge and tools necessary to build climate-resilient health systems. Overall, health workforces need further understanding of the risks that climate change presents to individuals, communities and health-care facilities; of approaches to protect and promote health in the face of uncertainty about the magnitude and pattern of future climate change; of the methods and tools that can be used to reduce current and projected impacts; and of best practices and lessons learnt from efforts undertaken elsewhere. Training and awareness raising are needed in ministries of health and educational institutions at all levels, and in community groups and the media.</td>
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</tbody>
</table>
Table 6. Climate-resilient health systems in SIDS: Evidence

<table>
<thead>
<tr>
<th>Evidence: Building the business case for investment</th>
<th>Status in SIDS</th>
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<tbody>
<tr>
<td>Vulnerability, capacity and adaptation (V&amp;A) assessment</td>
<td>V&amp;A assessments are an important component of developing health national adaptation plans (HNAPS). Such assessments are underway or were conducted in many SIDS. For example, 13 PICs (Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu) and three Caribbean countries (Belize, Dominica and Grenada) identified priority risks, including trauma from extreme events, heat-related illnesses, compromised safety and security of water and food, vector-borne diseases, respiratory illnesses, mental wellness, NCDs, population pressures and health system deficiencies. Once initial V&amp;A assessments are undertaken, iterative processes need to be established to ensure appropriate policies and programmes to manage risks as they change with climate and with development choices; more efforts are required in many ministries of health. HNAPs provide the overall strategic direction for strengthening health systems to protect health from climate change. They identify and address medium- and long-term adaptation needs, including upstream drivers of health risks, taking into consideration the physical, social and biological determinants of health. The latter is particularly important in SIDS, where many countries are experiencing high burdens of NCDs and poverty, with many populations living in low-lying areas susceptible to sea level rise.</td>
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<tr>
<td>Integrated risk monitoring and early warning</td>
<td>Integrated risk monitoring brings together, at a minimum, health and environmental information to provide real-time perspectives of health risks. When there are sufficient data and strong enough associations, this information can be used to develop early warning and response systems that can provide timely warnings to save lives from heat-related illnesses and deaths; extreme events such as droughts and floods; and vector-borne diseases. For example, El Niño events can affect the burden of infectious diseases in the Pacific. Increased skill in forecasting El Niño events can inform health system preparedness and surveillance.</td>
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<tr>
<td>Health and climate research</td>
<td>Significant efforts are needed in SIDS to build the integrated surveillance and monitoring systems that are a foundation for understanding the associations between weather patterns and climate-sensitive health outcomes, projecting how risks could change with additional climate change, and developing early warning and response systems where possible. In situations where there are limited data, exposure–response relationships may need to be estimated based on analyses conducted in other regions. National and regional research is needed to increase understanding of the health risks of climate variability and change at local to national scales; to identify additional adaptation policies and programmes to prepare for and manage changing risk profiles; and to evaluate the effectiveness of implemented interventions. The precise research needs will vary across countries, and could be coordinated across countries to maximum results to ensure they are useful in multiple contexts, such as furthering understanding of outbreaks of vector-borne diseases across a region.</td>
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Table 7. Climate-resilient health systems in SIDS: Implementation

<table>
<thead>
<tr>
<th>Implementation: Preparedness for climate risks, and health-promoting mitigation policies</th>
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<tbody>
<tr>
<td><strong>Building block</strong></td>
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<tr>
<td>Climate-resilient and sustainable technologies and infrastructure</td>
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<tr>
<td>Management of environmental determinants of health</td>
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<tr>
<td>Climate-informed health programmes</td>
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</tbody>
</table>
Table 7. Climate-resilient health systems in SIDS: Implementation (Con’t.)

<table>
<thead>
<tr>
<th>Building block</th>
<th>Status in SIDS</th>
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<tr>
<td>Emergency preparedness and management</td>
<td>SIDS frequently experience extreme weather and climate events that can result in disasters because of high underlying geographic and socioeconomic vulnerabilities. Disaster risk management is a priority for most SIDS, although the extent to which health systems are integrated into national committees under the Sendai Framework and related activities varies. Further efforts are required to integrate climate change adaptation and disaster risk management programmes; doing so can help protect communities in high-risk regions.</td>
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Table 8. Climate-resilient health systems in SIDS: Resources

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<th>Building block</th>
<th>Status in SIDS</th>
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<tr>
<td>Climate and health financing</td>
<td>Achieving a climate-resilient health system requires additional financing. Health systems do not have the resources to make all the adjustments necessary to increase resilience to a changing climate, such as building integrated surveillance systems that include health and weather data to identify where and when infectious disease outbreaks could occur. While much can be accomplished by mainstreaming climate change into policies and programmes, the extent of changes required goes beyond the capacity of health systems in SIDS. Additional investment is needed to have the human and financial resources needed to ensure that all the building blocks of health systems are climate resilient. An adaptation project under the Global Environment Facility (GEF) funded two countries (Barbados and Fiji) to undertake V&amp;A assessments, initiate development of the health component of a national adaptation plan, and develop health early warning systems and pilot climate-informed health interventions. A proposal to the Least Developed Countries Fund would provide additional funding for selected SIDS to develop comprehensive HNAPS.</td>
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Measuring Success

Success will be measured based on the attainment of the goals designed for each of the four components of the initiative, namely:

- **Empowerment**: The voice of health leaders, on behalf of the most vulnerable populations, becomes a driving force for adaptation in SIDS, and for mitigation by countries around the world.
- **Evidence**: Health ministries of SIDS have the necessary health, environment and economic evidence to support scaled-up investment in climate change and health, identify priority investments, and monitor their success.
- **Implementation**: Transformational change occurs in health systems, through promoting a culture of disease prevention, building the climate resilience of health systems and maximizing the health co-benefits of climate change mitigation policies.
- **Resources**: The current level of investment of climate finance for health in SIDS is tripled.

Success will also be measured by the contribution the SIDS Initiative can provide to relevant SDG goals, targets and indicators. Specifically, contributions to achieving SDG targets 13.1 (strengthening resilience and adaptive capacity to climate change) and 13.A (climate financing), and where appropriate, indicators 3.9.2 (mortality from unsafe WASH), 6.1.1 (safe drinking water), 6.2.1 (sanitation) and 7.1.2 (clean household energy). There are other relevant goals, targets and indicators to which the initiative may directly or indirectly contribute. These are listed in Table 9.

**Table 9. SDG goals, targets and indicators relevant to the SIDS Initiative**

<table>
<thead>
<tr>
<th>SDG 1</th>
<th><strong>End poverty in all its forms everywhere.</strong> The SIDS Initiative contributes to <strong>target 1.5</strong> – By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters. Proposed indicators are 1.5.1 – Number of deaths, missing persons and persons affected by disaster per 100 000 people; 1.5.2 – Direct disaster economic loss in relation to global gross domestic product (GDP); and 1.5.3 – Number of countries with national and local disaster risk reduction strategies.</th>
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<tr>
<td>SDG 2</td>
<td><strong>End hunger, achieve food security and improved nutrition and promote sustainable agriculture.</strong> Climate change in SIDS could impact food production, leading to nutritional problems, particularly in children. Indirectly, the SIDS Initiative contributes to <strong>target 2.4</strong> – By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters, and that progressively improve land and soil quality. More specifically, the SIDS Initiative will support the health sector with regard to <strong>target 2.2</strong> – By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women, and older persons. WHO programmes monitor the prevalence of stunting, wasting and overweight.</td>
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<tr>
<td>SDG</td>
<td>Goal</td>
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<tr>
<td>SDG 3</td>
<td>Ensure healthy lives and promote well-being for all at all ages.</td>
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<tr>
<td>SDG 4</td>
<td>Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.</td>
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<tr>
<td>SDG 5</td>
<td>Achieve gender equality and empower all women and girls.</td>
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<tr>
<td>SDG 6</td>
<td>Ensure availability and sustainable management of water and sanitation for all.</td>
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<tr>
<td>SDG 7</td>
<td>Ensure access to affordable, reliable, sustainable and modern energy for all.</td>
</tr>
<tr>
<td>SDG 8</td>
<td>Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.</td>
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</table>
### SDG 9
**Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.** Resilient health infrastructure is urgently required in many SIDS. The SIDS Initiative contributes to **target 9.A** – Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, LDCs, landlocked developing countries and SIDS.

### SDG 10
**Reduce inequalities within and among countries.** There are two targets relevant to the Initiative. The first addresses poverty, a key vulnerability in the face of climate change. **Target 10.1** proposes – By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average. The second focuses on economic and financial institutions. **Target 10.6** aims to – Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions.

### SDG 11
**Make cities and human settlements inclusive, safe, resilient and sustainable.** Climate-related disasters severely affect SIDS, and climate change threatens to make the problem worse. The SIDS Initiative supports **target 11.5** – By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations. Indicators to measure this target are **11.5.1** – Number of deaths, missing persons and persons affected by disaster per 100,000 people, and **11.5.2** – Direct disaster economic loss in relation to global GDP, including disaster damage to critical infrastructure and disruption of basic services. Importantly, the Initiative also supports **target 11.B** – By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels.

### SDG 12
**Ensure sustainable consumption and production patterns.** Environmentally sound technologies, including in the health sector, are an important contribution to mitigation. Relevant to the Initiative is **target 12.A** – Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production. A second concern is health-harming financial incentives such as fossil fuel subsidies, and that remove funding for other needed initiatives such as UHC. The Initiative supports **target 12.C** – Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities.

### SDG 13
**Take urgent action to combat climate change and its impacts.** The SIDS Initiative supports **target 13.1** – Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries, to be measured as **13.1.1** – Number of countries with national and local disaster risk reduction strategies; and **13.1.2** – Number of deaths, missing persons and persons affected by disaster per 100,000 people. Highly relevant to the Initiative is **target 13.2** – Integrate climate change measures into national policies, strategies and planning; **target 13.3** – Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning; and **target 13.B** – Promote mechanisms for raising capacity for effective climate change–related planning and management in LDCs and SIDS, including focusing on women, youth and local and marginalized communities.

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**Table 9. SDG goals, targets and indicators relevant to the SIDS Initiative (Con’t.)**

<table>
<thead>
<tr>
<th>SDG</th>
<th>Description</th>
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<tbody>
<tr>
<td>9</td>
<td>Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. Resilient health infrastructure is urgently required in many SIDS. The SIDS Initiative contributes to <strong>target 9.A</strong> – Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, LDCs, landlocked developing countries and SIDS.</td>
</tr>
<tr>
<td>10</td>
<td>Reduce inequalities within and among countries. There are two targets relevant to the Initiative. The first addresses poverty, a key vulnerability in the face of climate change. <strong>Target 10.1</strong> proposes – By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average. The second focuses on economic and financial institutions. <strong>Target 10.6</strong> aims to – Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions.</td>
</tr>
<tr>
<td>11</td>
<td>Make cities and human settlements inclusive, safe, resilient and sustainable. Climate-related disasters severely affect SIDS, and climate change threatens to make the problem worse. The SIDS Initiative supports <strong>target 11.5</strong> – By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations. Indicators to measure this target are <strong>11.5.1</strong> – Number of deaths, missing persons and persons affected by disaster per 100,000 people, and <strong>11.5.2</strong> – Direct disaster economic loss in relation to global GDP, including disaster damage to critical infrastructure and disruption of basic services. Importantly, the Initiative also supports <strong>target 11.B</strong> – By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels.</td>
</tr>
<tr>
<td>12</td>
<td>Ensure sustainable consumption and production patterns. Environmentally sound technologies, including in the health sector, are an important contribution to mitigation. Relevant to the Initiative is <strong>target 12.A</strong> – Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production. A second concern is health-harming financial incentives such as fossil fuel subsidies, and that remove funding for other needed initiatives such as UHC. The Initiative supports <strong>target 12.C</strong> – Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities.</td>
</tr>
<tr>
<td>13</td>
<td>Take urgent action to combat climate change and its impacts. The SIDS Initiative supports <strong>target 13.1</strong> – Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries, to be measured as <strong>13.1.1</strong> – Number of countries with national and local disaster risk reduction strategies; and <strong>13.1.2</strong> – Number of deaths, missing persons and persons affected by disaster per 100,000 people. Highly relevant to the Initiative is <strong>target 13.2</strong> – Integrate climate change measures into national policies, strategies and planning; <strong>target 13.3</strong> – Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning; and <strong>target 13.B</strong> – Promote mechanisms for raising capacity for effective climate change–related planning and management in LDCs and SIDS, including focusing on women, youth and local and marginalized communities.</td>
</tr>
<tr>
<td>SDG 14</td>
<td>Conserve and sustainably use the oceans, seas and marine resources for sustainable development. Relevant to the Initiative is <strong>target 14.7</strong> – By 2030, increase the economic benefits to SIDS and LDCs from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.</td>
</tr>
<tr>
<td>SDG 15</td>
<td>Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss. Many SIDS are periodically affected by drought and floods, and suffer from land degradation. Relevant to the Initiative is <strong>target 15.3</strong> – By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.</td>
</tr>
<tr>
<td>SDG 16</td>
<td>Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels. Relevant to the Initiative are <strong>target 16.6</strong> – Develop effective, accountable and transparent institutions at all levels; and <strong>target 16.7</strong> – Ensure responsive, inclusive, participatory and representative decision-making at all levels. The voice of SIDS in influencing global actions are important to the Initiative; therefore, highly relevant is <strong>target 16.8</strong> – Broaden and strengthen the participation of developing countries in the institutions of global governance.</td>
</tr>
<tr>
<td>SDG 17</td>
<td>Strengthen the means of implementation and revitalize the global partnership for sustainable development. Partnerships are a fundamental element of the SIDS Initiative. Particularly relevant to the Initiative is <strong>target 17.18</strong> – By 2020, enhance capacity-building support to developing countries, including for LDCs and SIDS, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts.</td>
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</table>
Progressing the SIDS Initiative

During 2018, regional action plans to implement the SIDS Initiative will be developed in consultation with countries and in regional workshops as part of the overall Plan of Action to be submitted to the World Health Assembly in 2019. Although there is increasing level of awareness and evidence of health impacts, there are important limitations in SIDS to carry out actions for resilience and adaptation to health and of the health sector.

5.1 Progressing on Empowerment

There are champions in SIDS, but many more are needed among health system leaders to address the risks of climate change, and to promote priority investments and interventions within and outside the health sector. Dr Tedros Ghebreyesus identified climate change as one of WHO’s priorities – climate and environmental change will affect the other priorities by altering food and water security and safety, air quality, water and sanitation systems, and livelihoods. As a stress multiplier, climate change will increasingly lead to health emergencies; affect the health of women, children and adolescents; and affect access to and the effectiveness of UHC. WHO is committed to playing a key role in advancing adaptation and mitigation strategies for climate and other environmental changes, working in close partnership with other United Nations agencies and stakeholders. Similar champions are needed at national and subnational scales.

5.2 Progressing on Evidence

Health systems need to build consensus around indicators to track, evidence to assemble, and partnerships to enact the transformative changes needed. Metrics are essential to clarifying the scope of the problems and to monitoring progress. WHO is monitoring the health impacts of climate change and progress in building climate-resilient health systems mainly through the WHO-UNFCCC Climate and Health Country Profile project. The project aims to raise awareness of the health impacts of climate change, support evidence-based decision-making to strengthen the climate resilience of health systems, and promote actions that improve health while reducing carbon emissions. The profiles provide country-specific estimates of current and future climate hazards and the expected burden of climate change on human health; identify opportunities for health co-benefits from climate mitigation actions; and track current policy responses at the national level.

National progress on climate action in the health sector is tracked through a biennial WHO climate and health country survey completed by ministries of health, in collaboration with other relevant ministries. Findings from the survey are reflected in the country profiles with indicators in the following key areas: leadership and governance, national vulnerability and adaptation assessments, emergency preparedness, disease surveillance, adaptation and resilience measures, climate and health finance, and mitigation action in the health sector.
In 2018, the WHO-UNFCCC climate and health country profiles will be developed for all SIDS through direct consultation with government/health authority focal points. Collection of data for the SIDS country profiles will in part be generated through the WHO Climate and Health Country Survey (2017/2018) currently being conducted. WHO global monitoring efforts aim to be aligned with other global monitoring frameworks, including the SDGs, the Sendai Framework for Disaster Risk Reduction, and the Lancet 2030 Countdown on Climate and Health.

5.3 Progressing on Implementation

Science is continuously progressing; therefore, information and awareness raising of the risks of a changing climate within and outside health systems will always be required. When there is insufficient awareness, choices may be made that are unlikely to be robust to climate variability and change, increasing the vulnerability of population health.

Additional support is required for mainstreaming climate variability and change into policies and plans to manage the burdens of climate-sensitive health outcomes. Specific needs vary by country, with common challenges across the SIDS related to WASH, extreme weather and climate events, undernutrition, and emerging and re-emerging infectious diseases. Periodic reviews of best practices and lessons learnt on health adaptation would be valuable to inform scaling up of adaptation efforts.

5.4 Progressing on Resources

Increased investments, capacity-building and training to support the implementation of the Initiative on climate change and health in SIDS is required. Compared with other sectors, international investment has been limited in health adaptation programmes and projects under the UNFCCC adaptation funds or through development partners. This means the health risks of climate change are an additional draw on scarce human and financial resources in SIDS that can ill-afford the additional health impacts and costs. With their greater vulnerability to climate change, human and financial resources for health adaptation in many SIDS are urgently needed. Because SIDS contribute very little to the greenhouse gas emissions driving anthropogenic climate change (on average, SIDS emit just a fraction – 1.5% – of the amount of greenhouse gases emitted by high-income countries), international development funds and development partners have the responsibility under the UNFCCC to support SIDS in their transition to resilient and sustainable societies. Funding opportunities are described in Tables 10 and 11 (WHO Regional Office for the Western Pacific, 2015b).

Financing needs to be increased to ensure sufficient human and financial resources to adapt and mitigate the impacts of climate change and to promote climate-resilient health systems. Global, regional and national guidance is needed for accessing international finance by SIDS for adaptation, including from the Green Climate Fund (GCF) and the adaptation funds accessed through the GEF. The Paris Agreement and supporting decisions include provisions on adaptation finance; these emphasize the GCF’s role as a key provider of predictable financial resources in the post-2020 framework. Funding is to
be balanced between adaptation and mitigation initiatives, acknowledging the importance of sustainable development co-benefits and prioritizing action in LDCs and SIDS.

Table 10. Matrix of current and future funding opportunities for climate change in the Pacific – international agencies

<table>
<thead>
<tr>
<th>Funder</th>
<th>Description</th>
<th>Pacific Island Country Exemplar</th>
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<tbody>
<tr>
<td><strong>Green Climate Fund (GCF)</strong></td>
<td>This is the newest of the UNFCCC financial mechanisms, established in 2010. Created to support the efforts of developing countries to respond to the challenge of climate change. The GCF helps developing countries limit or reduce their greenhouse gas emissions and adapt to climate change, with equal amounts of funding to mitigation and adaptation. LDCs and SIDS are special priorities. GCF investments can be in the form of grants, loans, equity or guarantees.</td>
<td>Though there are no formal GCF-funded climate change and health (CC&amp;H) projects in the Pacific at present, the GCF represents an important potential CC&amp;H funding source for LDCs and SIDS in the Pacific, particularly in the context of multicountry proposals.</td>
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<tr>
<td><strong>GEF Special Climate Change Fund (SCCF)</strong></td>
<td>SCCF is a special grants programme established by GEF to provide support for climate change and health adaptation to LDCs. Two types of grants are provided: 1. SCCF-A for adaptation 2. SCCF-B for technology transfer</td>
<td>The project, entitled Piloting Climate Change Adaptation to Protect Human Health, was to strengthen the resilience of health systems to climate-sensitive health risks, and to develop and strengthen health-care delivery to deal with vector-borne diseases, water and sanitation and diarrhoeal diseases, and food-related issues due to climate change impacts.</td>
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<tr>
<td><strong>GEF Least Developed Countries Fund (LDCF)</strong></td>
<td>This GEF Fund is a grant to support climate and health adaptation in LDCs in support of national adaptation programmes of action (NAPA) implementation, if health is identified as a priority, or via other priority sectors.</td>
<td>In early 2017, GEF approved a project entitled Building Resilience of Health Systems in Pacific Island LDCs to Climate Change. The long-term goal of the project is to develop national health systems and institutions with climate change resilience.</td>
</tr>
<tr>
<td><strong>GEF Adaptation Fund</strong></td>
<td>This GEF Fund supports “concrete” projects on climate adaptation. For health, this fund supports climate change monitoring of disease vectors, early warning systems, disaster risk reduction (DRR), and establishing regional centres for response to these events.</td>
<td>A project called Strengthening the Resilience of our Islands and our Communities to Climate Change was carried out in this region to: 1. strengthen climate change adaptation (CCA) and DRR at the national level; 2. build CCA and DRR capacity at the local level; and 3. introduce health support and vector-borne disease control techniques to address climate-induced health risks.</td>
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**Table 10.** Matrix of current and future funding opportunities for climate change in the Pacific – international agencies
Table 10. Matrix of current and future funding opportunities for climate change in the Pacific – international agencies (Con’t.)

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<tr>
<td><strong>World Bank Pilot Programme for Climate Resilience</strong>&lt;br&gt;<a href="https://www.climateinvestmentfunds.org/fund/pilot-program-climate-resilience">https://www.climateinvestmentfunds.org/fund/pilot-program-climate-resilience</a></td>
<td>The World Bank provides CCA grants and highly concessional financing for investments (near 0% interest with up to 75% grant component) for mainstreaming climate-resilience development in all sectors.</td>
<td>The World Bank has provided funds under the Risk Reduction and Resilient Investments component, which involves financing the retrofitting of public buildings such as health centres. Health is listed as part of the sectoral and institutional context of the project, along with food and water security, economic development, and coastal zone management.</td>
</tr>
<tr>
<td><strong>European Union Global Climate Change Alliance (GCCA)</strong>&lt;br&gt;<a href="http://www.gcca.eu/regional-programmes/gcca-pacific-small-island-states">http://www.gcca.eu/regional-programmes/gcca-pacific-small-island-states</a></td>
<td>The GCCA provides grants and overseas development assistance, as well as adaptation plan technical assistance in non-LDCs, NAPA implementation in LDCs, and adaptation in the water sector. It also provides support for DRR, including climate monitoring and forecasting, and data-based preparedness measures.</td>
<td>The GCCA has supported the preparation of adaptation roadmaps, financed the implementation of concrete actions in participating countries, and implemented activities that strengthen capacities and institutions with a view to a more effective response to climate change. The project also supported the revision of public health ordinances, taking into account national climate change and health action plans (NCCHAPs).</td>
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<tr>
<td><strong>World Bank International Development Association (WB IDA)</strong>&lt;br&gt;<a href="http://documents.worldbank.org/curated/en/672261468771858006/The-World-Bank-strategy-for-health-nutrition-and-population-in-the-East-Asia-and-Pacific-region">http://documents.worldbank.org/curated/en/672261468771858006/The-World-Bank-strategy-for-health-nutrition-and-population-in-the-East-Asia-and-Pacific-region</a></td>
<td>The WB IDA provides grants, loans and technical assistance for CCA to reduce poverty, promote growth, reduce inequalities, and improve living conditions. It also supports works on adaptation and mitigation for water and energy.</td>
<td>The WB IDA has supported a project called the Health Sector Management Programme Support Project. The project initially solely included components on health systems strengthening with no mention of climate change, but later added an outcome area for improved risk management and response to disasters, emergencies and climate change, as well as “Climate Change Indicators” as part of the results framework.</td>
</tr>
<tr>
<td><strong>Global Facility for Disaster Reduction and Recovery</strong>&lt;br&gt;<a href="https://www.gfdr.org/acp-eu/building-climate-and-disaster-resilience-in-the-pacific-with-risk-data">https://www.gfdr.org/acp-eu/building-climate-and-disaster-resilience-in-the-pacific-with-risk-data</a></td>
<td>This Facility provides grants for CCA, DRR, recovery, risk financing and insurance, and capacity-building.</td>
<td>The Building Climate and Disaster Resilience in the Pacific with Risk Data project aims to develop tools and methodologies to increase the capacity in PICs for disaster early warning, preparedness and response, as well as for resilient infrastructure/sector investments and development planning.</td>
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Table 11. Matrix of current and future funding opportunities for climate change in the Pacific – bilateral agencies

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| **New Zealand Partnerships for International Development Fund**  
https://www.mfat.govt.nz/assets/Aid-Prog-docs/Partnerships/PPSW-promotional-material-small-file-for-website.pdf | This Fund provides grants on sustainable economic development, which focuses on improved access to social and development services – health, education, water, sanitation, DRR and safe communities. Projects that promote gender equity, environmental protection and human rights are prioritized. | The aim of this funding window is to support New Zealand businesses to create economic and/or social benefits in PICs through commercially sustainable ventures, and to encourage private sector investment in targeted areas where the New Zealand Ministry of Foreign Affairs and Trade sees potential economic and/or social opportunities in regard to agriculture, tourism, fisheries, information and communications technology, energy, trade, and labour mobility. Previously approved projects include:  
- Improving Learning Environments: WASH in Schools;  
- Enhancing Community Resilience through Agriculture and Food Security and Habitat Training for Disaster Risk Reduction; and  
- Healthy Water, Healthy People Project. |
| **Australian Aid Asia Pacific Community-based Adaptation Small Grants Programme**  
https://sgp.undp.org/index.php?option=com_content&view=article&id=273&Itemid=234 | This Programme provides grants for priority adaptation measures to improve the adaptive capacity of communities and to reduce their vulnerability to the impacts of climate change. Community-based adaptation (CBA) programme goals are threefold:  
- To reduce the vulnerability and improve the adaptive capacity of local communities to the adverse effects of climate change and its variability;  
- Provide countries with concrete ground-level experience with local CCA;  
- Provide clear policy lessons and mainstreaming of CBA within national processes. | This Programme has funded the Regional Small Island Developing States Community-Based Adaption, which has as its goals improving the adaptive capacity of communities, providing countries with concrete CCA experience and providing policy lessons and mainstreaming of CBA within national processes. |
### Funder Description Pacific Island Exemplar

**Australia Bureau of Meteorology – Climate and Oceans Support Programme in the Pacific (COSPPac)**

COSPPac provides meteorological information partnerships and technical assistance to enhance the capacity of PICs to manage and mitigate the impacts of climate variability and tidal events. It works with stakeholders in the Pacific to build tools that can forecast and report on climate, tides and the ocean. COSPPac works with stakeholders to determine how best to communicate this information to communities, businesses and governments.

COSPPac works with Pacific island stakeholders to analyse and interpret climate, oceans and tidal data to produce valuable services for island communities. This information helps island communities to prepare for, and mitigates, the impacts of severe climate, tidal and oceanographic events. COSPPac has collaborated with vector-borne disease control programmes and national-level meteorological services to develop a Malaria Early Warning System based on rainfall, temperature and other environmental data.

**Australia Department of Foreign Affairs and Trade (DFAT)**

DFAT offers development assistance grants contributing to sustainable economic growth and poverty reduction focusing on two development outcomes: supporting private sector development and strengthening human development.

In the health sector, DFAT prioritizes investments in five areas:
- core public health systems and capacities in key partner countries;
- combating health threats that cross national borders;
- more effective global health response;
- investments in improved access to WASH and nutrition; and
- investments to promote innovations in health.

DFAT has also provided support to the health sector for a tropical cyclone recovery programme, which includes funds for rebuilding health facilities.

**Korea International Cooperation Agency (KOICA)**
http://www.koica.go.kr/dev/download.jsp?strFileSavePath=/ICSFiles/afieldfile/2017/02/13/4.docx&strFileName=%BA%B0%C3%B73-2.%2B%BB%E7%BE%F7%BF%E4%C3%BB%BC%AD.docx

KOICA provides development assistance grants and technical assistance. It prioritizes poverty eradication, sustainable economic growth, and the establishment and strengthening of ties with developing countries.

KOICA has provided support through WHO to the Climate Change and Health Adaptation in Pacific Island Countries project, with a three-pronged goal:
- improved governance and policy;
- capacity development; and
- information and early warning systems.
Table 11. Matrix of current and future funding opportunities for climate change in the Pacific – bilateral agencies (Con’t.)

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<td><strong>Canada Fund for Local Initiatives (CFLI)</strong></td>
<td>CFLI provides support to small-scale, short-term projects in the Pacific by working with local, national and international nongovernmental and other organizations. The CFLI focuses on funding projects with long-term, sustainable goals that support and strengthen communities at the local level. Recipient organizations are expected to make a contribution in cash or in kind. The programme is managed by the High Commission of Canada in Wellington, New Zealand for projects in Fiji, Kiribati, Samoa, Tonga and Tuvalu.</td>
<td>CLFI has provided support under six thematic priorities, including: ■ promoting human development, specifically in the areas of health, nutrition and education; and ■ promoting action on the environment, including water and climate change.</td>
</tr>
<tr>
<td><strong>Fonds Français pour l’Environnement Mondial (French Global Environment Facility [FFEM])</strong></td>
<td>This is a public fund for the protection of the global environment in developing countries. The FFEM contributes to the financing of development projects with a significant and lasting impact on one of the major challenges of the global environment: biodiversity; climate change; international waters; land degradation, including desertification and deforestation; persistent organic pollutants; and the ozone layer.</td>
<td>FFEM funded the SPC to administer the RESCCUE project, which aims to increase the resilience of PICs to climate change, especially through maintenance of ecosystem services and integrated coastal management. Includes initiatives on food security, WASH and ciguatera.</td>
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### Table 11. Matrix of current and future funding opportunities for climate change in the Pacific – bilateral agencies (Con’t.)

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<tr>
<td><strong>Japan International Cooperation Agency (JICA)</strong></td>
<td>JICA’s organizational vision emphasizes human security and quality growth. Key thematic issues include: education, health, water resources, governance, peace-building, social security, transportation, information and communications technology, energy and mining, economic policy, private sector development, agricultural/rural development, natural environment, fisheries, gender and development, urban/regional development, poverty reduction, environmental management, DRR, and South–South/triangular cooperation. Assistance takes the form of technical cooperation, official development assistance loans and grants, citizen participation, public–private partnerships and emergency disaster relief.</td>
<td>There are no formal CC&amp;H projects in PICs at present, but individual projects on CCA have been implemented in some PICs.</td>
</tr>
<tr>
<td><strong>United States Agency for International Development – Global Climate Change Initiative</strong></td>
<td>This Initiative prioritizes climate change and disaster mitigation efforts. It provides support via technical cooperation and grants for: low-emission development, adaptation, clean energy, sustainable landscapes and climate integration.</td>
<td>There are no formal CC&amp;H projects in PICs at present, but CCA and DRR capacity-building and/or food security projects have been implemented in some PICs.</td>
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Increasing resilience is likely to be achieved through longer-term, multifaceted and collaborative approaches, with supporting activities (and funding) for capacity-building, communication, and institutionalized monitoring and evaluation. Adaptation projects would succeed by focusing not just on shorter-term outputs to address climate variability, but also on establishing processes to address longer-term climate change challenges. Opportunities for capacity development can be created, identified and reinforced.

Health co-benefits of mitigation policies and technologies represent selected near-term, positive consequences of climate policies that can offset mitigation costs in the short term before the beneficial impacts of those policies on the magnitude of climate change are evident. Low-carbon development is an approach for designing, building, operating and investing in health systems and facilities that generate minimal amounts of greenhouse gases (World Bank, 2018). This approach aligns health development and delivery with global and national goals for reducing greenhouse gas emissions, to reduce the magnitude and pattern of health risks that health systems will need to manage later.
in the century. Low-carbon development saves money by reducing energy and resource costs. Furthermore, it can improve the quality of care by increasing the resilience of health-care facilities to extreme weather and climate events and other disasters. In low-resource, energy-poor settings, powering health care with low-carbon solutions can enhance access to care, with particular benefits for the poor and most vulnerable. Co-benefits of low-carbon development include improved health through reductions in environmental pollution and climate change, and more efficient and effective health systems.

The need to work across sectors is well understood by all but it remains elusive in practice. Addressing the looming health challenges brought about by climate change requires not only understanding health risks, but also working across departments within ministries of health and across ministries, in recognition that many of the drivers of greatest relevance to population health are not under direct health sector control. Ministries of health in SIDS therefore have the opportunity to shift conceptualizations of problems, partnerships and practice in strengthening health systems, moving from disease-oriented vertical approaches to system-wide transformation, emphasizing the fundamental role of learning.
References


