

CLIMATE CHANGE AND HEALTH IN SMALL ISLAND DEVELOPING STATES

A WHO SPECIAL INITIATIVE



Photo Credits: WHO / Yoshi Shimizu

Climate change and health in small island developing states. A WHO special initiative

ISBN 978-92-4-151499-6

© **World Health Organization 2018**

Some rights reserved. This work is available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; <https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Under the terms of this licence, you may copy, redistribute and adapt the work for non-commercial purposes, provided the work is appropriately cited, as indicated below. In any use of this work, there should be no suggestion that WHO endorses any specific organization, products or services. The use of the WHO logo is not permitted. If you adapt the work, then you must license your work under the same or equivalent Creative Commons licence. If you create a translation of this work, you should add the following disclaimer along with the suggested citation: "This translation was not created by the World Health Organization (WHO). WHO is not responsible for the content or accuracy of this translation. The original English edition shall be the binding and authentic edition".

Any mediation relating to disputes arising under the licence shall be conducted in accordance with the mediation rules of the World Intellectual Property Organization.

Suggested citation. Climate change and health in small island developing states. A WHO special initiative. Geneva: World Health Organization; 2018. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data are available at <http://apps.who.int/iris>.

To purchase WHO publications, see <http://apps.who.int/bookorders>. To submit requests for commercial use and queries on rights and licensing, see <http://www.who.int/about/licensing>.

If you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by WHO in preference to others of a similar nature that are not mentioned. Errors and omissions expected, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall WHO be liable for damages arising from its use.

Printed in Geneva, Switzerland

CLIMATE CHANGE AND HEALTH IN SMALL ISLAND DEVELOPING STATES

A WHO SPECIAL INITIATIVE



World Health
Organization

FOREWORD

The Small Island Developing States (SIDS) Initiative on Climate Change and Health was launched by the World Health Organization (WHO) at the 23rd Conference of the Parties (COP-23) of the United Nations Framework Convention on Climate Change (UNFCCC) in Bonn, Germany, in November 2017, in collaboration with UNFCCC and the Fijian Presidency of the COP-23.

In 2018, the WHO Geographically Dispersed 3rd Global Conference on Climate Change and Health was held in Nadi, Fiji, on 15–16 March, in Balaclava, Turtle Bay, Mauritius, on 21–22 March, and in St. George's, Grenada, on 16–17 October. Each of the conferences had as its main outcome the development of Regional Action Plans for the implementation of the SIDS Initiative on Climate Change and Health. The process also informed the development of a draft global action plan to support the actions at regional and national levels. This consolidated report is based on the information collected and plans discussed at the three conferences.

It is with pleasure that WHO presents this report on the Special Initiative on Climate Change and Health in Small Islands Developing States (SIDS), and the Global Action Plan for its implementation.

This report has been prepared in response to informal requests by SIDS Member States and territories for WHO assistance in confronting the stark and dire situation which climate change has created in their countries and the impact it is having on their peoples. It is also the joint vision of Dr Tedros Adhanom Ghebreyesus, WHO Director-General, Prime Minister Frank Bainamarama of Fiji and President of the 23rd Conference of the Parties to the UN Framework Convention on Climate Change (UNFCCC COP23), and Ms Patricia Espinosa, Executive Secretary of the UNFCCC, when they launched the SIDS Initiative at the COP in Bonn in November 2017.

WHO worked with the SIDS in developing the report and Action Plan by closely detailing not only their needs, but also their commitment to action during the months of March and October of 2018. These meetings constituted the Third Global Conference on Climate Change and Health, and entailed numerous missions crisscrossing the Atlantic, Indian and Pacific Oceans to experience at first-hand the SIDS unique environmental situations and national cultures.

What WHO learned is that, although there are many differing characteristics between the over 40 geographical entities, there is a commonality of need, a oneness of purpose, and an empowering level of political will to address the determinants of health affected by climate change.

The report and Global Action Plan bring together the unifying threads running through the outcomes of these meetings.

The approach aims to: strengthen health systems by capturing evidence revealing the impacts of climate change, and empower the health sector to understand, mitigate and adapt to climate change; implement the actions sanctioned by Member States that are needed to address the impacts of climate change on health; and triple the funding to implement them. The Global Action Plan addresses a lack of action in one of the most vulnerable groupings of Member States. Only two SIDS had previously received support to address the negative impacts of climate change on health. In the true spirit of WHO's new General Programme of Work the SIDS will not be left behind.

The process also enabled individual countries to identify specific needs, while regional action plans highlighted the support to be provided by WHO regional offices. Thus, with this Global Action Plan, all

three levels of WHO have now identified the technical support in neatly packaged forms that is their responsibility to lead, in partnership with others, and in the service of the countries.

Thus, WHO has a clear blueprint for producing maximum impact at country level, as defined by Member States. The linkages to the mandates of the UNFCCC, the Conference of Parties and the Paris Agreement, are defined, and this SIDS Initiative fulfils unmet needs of these other global climate initiatives.

WHO looks forward to the successful implementation of the Global Action Plan starting with supporting the most vulnerable countries to access climate change funding that will respond both to the needs of the SIDS and to the lack of specific climate change funding for health.

A handwritten signature in white ink on a dark blue background. The signature reads "Joy St John" in a cursive, flowing script.

Dr Joy St John

*Assistant Director-General for Climate
& other Determinants of Health, WHO*

ACKNOWLEDGEMENTS

This report has been produced by Carlos Corvalan (University of Sydney, Australia) and Kristie Ebi (University of Washington, the United States of America), under the overall coordination of Elena Villalobos Prats and Diarmid Campbell-Lendrum (WHO headquarters).

Inputs and comments were provided by Nasir Hassan and Rokho Kim (WHO Regional Office for the Western Pacific – WPRO), Ms Payden (WHO Regional Office for South-East Asia – SEARO), Sally Edwards and Magaran Bagayoko (WHO Regional Office for Africa – AFRO), Elida Vaught and Daniel Buss (Pan-American Health Organization – PAHO), Tara Neville, Maria Neira and Joy St John (WHO headquarters).

ABBREVIATIONS

CBA	community-based adaptation
CC&H	climate change and health
CCA	climate change adaptation
CFLI	Canada Fund for Local Initiatives
CO ₂	carbon dioxide
COP	Conference of the Parties
COP23	23rd Conference of the Parties
DRR	disaster risk reduction
GCCA	Global Climate Change Alliance
GCF	Green Climate Fund
GDP	gross domestic product
GEF	Global Environment Facility
HNAPS	health national adaptation plans
LDCF	Least Developed Countries Fund
LDCs	least developed countries
NAPA	national adaptation programmes of action
NCCHAPS	national climate change and health action plans
NCDs	noncommunicable diseases
PICs	Pacific island countries and areas
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

TABLE OF CONTENTS

Acknowledgements

List of abbreviations

1. Introduction	Pag. 10 - 11
1.1 Over 20 years of international health action.....	Pag. 11
1.2 A special initiative for climate change and health in SIDS	Pag. 12
1.3 WHO regional actions on climate change and health in SIDS.....	Pag. 13 - 14
1.3.1 Pacific Island Countries (PICs)	Pag. 13 - 14
1.3.2 SIDS in the WHO Africa Region.....	Pag. 15
1.3.3 SIDS in the WHO South-East Asia Region	Pag. 15 - 16
1.3.4 SIDS in the Pan American Health Organization Caribbean countries.....	Pag. 16 - 18

2. Health risks of climate change in SIDS	Pag. 19
2.1 A small contribution to the problem, a major impact on health	Pag. 19 - 20
2.2 SIDS uniquely vulnerable to climate change.....	Pag. 21 - 23
2.3 SIDS face unequal health impacts.....	Pag. 23 - 24
2.4 Current and projected health risks of climate variability and change in SIDS	Pag. 25 - 29

3. Taking action	Pag. 30
3.1 The SIDS Initiative is aligned to the WHO operational framework for building climate resilient health systems	Pag. 30 - 33
3.2 Status of the components proposed for strengthening the climate resilience of health systems in SIDS	Pag. 34 - 38

4. Measuring success	Pag. 37 - 41
-----------------------------------	--------------

5. Progressing the SIDS Initiative	Pag. 39 - 43
5.1 Progress on Empowerment	Pag. 44
5.2 Progress on Evidence	Pag. 45
5.3 Progress on Implementation.....	Pag. 45
5.4 Progress on Resources.....	Pag. 46 - 48

6. Conclusions: Draft Global Action for the implementation of the SIDS Initiative	Pag. 49
6.1 Vision	Pag. 50
6.2 Scope	Pag. 50
6.3 Strategic lines of action	Pag. 50
6.4 Monitoring and reporting of progress	Pag. 54
References	Pag. 55

LIST OF TABLES

Table 1. Healthy Island indicators relevant to the SIDS Initiative in the Pacific	Pag. 14
Table 2. Climate-related disasters in all SIDS between 1966 and 2015*	Pag. 21
Table 3. Examples of climate-informed health interventions	Pag. 32 - 33
Table 4. Climate-resilient health systems in SIDS: Empowerment	Pag. 34
Table 5. Climate-resilient health systems in SIDS: Evidence	Pag. 35
Table 6. Table 6. Climate-resilient health systems in SIDS: Implementation	Pag. 36 - 37
Table 7. Climate-resilient health systems in SIDS: Resources	Pag. 38
Table 8. SDG goals, targets and indicators relevant to the SIDS Initiative	Pag. 40 - 43
Table 9. Matrix of current and future funding opportunities for CC&H in SIDS	Pag. 46 - 47

LIST OF FIGURES

Fig. 1. Inter-linkages among the four components of the SIDS Initiative	Pag. 12
Fig. 2a. CO2 emissions (metric tons per capita) in Pacific Island Countries, 1970–2013	Pag. 19
Fig. 2b. CO2 emissions (metric tons per capita) in SIDS in WHO Africa and South-East Asia regions, 1970–2013	Pag. 20
Fig. 2c. CO2 emissions (metric tons per capita) in the Caribbean region, 1970–2013	Pag. 20
Fig. 3a. Total number of storms, floods and droughts, and total affected persons in Pacific Island Countries, 1966–2015	Pag. 20
Fig. 3b. Total number of storms, floods and droughts, and total affected persons in the African and South-East Asian regions, 1966–2015	Pag. 22
Fig. 3c. Total number of storms, floods and droughts, and total affected persons in the Caribbean region, 1966–2015	Pag. 23
Fig. 4. Climate change and health impact pathways relevant to SIDS	Pag. 25
Fig. 5. Conceptual model summarizing the pathways between climate change and NCDs*	Pag. 26
Fig. 6a. Age-standardized deaths from modifiable environmental risks per 100 000, in PICs, 2012	Pag. 27
Fig. 6b. Age-standardized deaths from modifiable environmental risks per 100 000, in SIDS in the African and South-East Asian regions, 2012	Pag. 28
Fig. 6c. Age-standardized deaths from modifiable environmental risks per 100 000, in the Caribbean region, 2012	Pag. 29
Fig. 7. SIDS Initiative components within the WHO operational framework for building climate resilient health systems	Pag. 31

1. INTRODUCTION



Humanity entered the new millennium with unprecedented challenges on a planetary scale. Carbon dioxide emissions, loss of biodiversity and forests, the often-careless use of water resources, and ocean acidification have all been rapidly increasing for the past 100–200 years. At the same time, there have never been so many options to steer the planet on a sustainable development path and to eliminate poverty everywhere. The future will assess our generation, 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 of people's health 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 centuries, and for some, over millennia. However, today, the challenges that climate change brings are exceptional, and the physical and social impacts on small islands are becoming increasingly 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 documents 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.

In 2014, the General Assembly adopted the SIDS Accelerated Modalities of Action (SAMOA) Pathway. Countries had expressed concerns that the impacts of climate change compound existing challenges, placing additional burdens on their national budgets and on their efforts to achieve sustainable development goals. Countries reaffirmed their commitment to support the efforts of SIDS, citing specifically "to develop and implement comprehensive, whole government, multisectorial 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, 2014:18). The SAMOA Pathway drives the actions of SIDS towards sustainable development.

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

For over 20 years, the World Health Organization (WHO) has played a key role in raising awareness of and implementing actions to manage the health risks of climate change within Member States. Governments in SIDS were among the first to become concerned about the health impacts of climate change. The first SIDS workshop on climate change and health (CC&H) 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, 2003) and in the Maldives in 2003 (WHO, 2004). Since then, evidence has continued to increase showing 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

The year of three crucial global agendas, 2015

The Paris Agreement

Acknowledges 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. SIDS have played a leading role in advocating for strong climate action. The Paris agreement, which entered into force on 4 November 2016, prioritizes climate actions in SIDS as vulnerable countries (UNFCCC, 2015).

The 2030 Agenda for Sustainable Development

Renews efforts to achieve sustainable development, calling on countries to begin actions 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, droughts and sea-level rise; and increased risks of water-, vector- and food-borne diseases. The SIDS Initiative's vision is that by 2030 all health systems in SIDS will be resilient to climate variability and change. This must happen in parallel with countries around the world reducing their carbon emissions, both to protect the most vulnerable from climate risks and to gain the health co-benefits of mitigation policies.

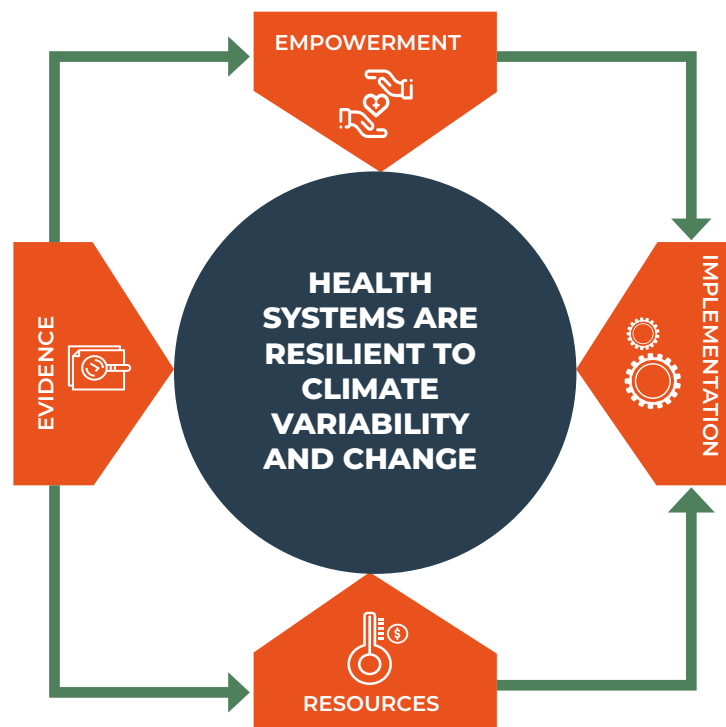
The SIDS initiative comprises four components:

- **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 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 to make health systems in SIDS resilient to climate variability and change.

Figure 1 Inter-linkages among the four components of the SIDS Initiative

COUNTRIES AROUND THE WORLD REDUCE CARBON EMISSIONS



1.3 WHO regional actions on climate change and health in SIDS

1.3.1 Pacific Island Countries (PICs)

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” (WPRO, 2015a: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:

- 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.
- The ocean which sustains us is protected.

At the 2015 meeting, participants acknowledged important progress in child survival and life expectancy but noted that there were unequal gains from country to country 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. This was 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 the absence or inadequacy of data required for evidence-based interventions.

In implementing the Initiative in the Pacific, the SIDS intend 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 in Rarotonga, Cook Islands, on 28–30 August 2017, the Secretariat presented progress on the Healthy Islands monitoring framework, which proposes 48 indicators, 33 of which are core indicators that are updated every one or two years (WPRO, 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 specifically measure progress in the Initiative’s implementation, 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 Initiative is aligned with the Western Pacific Regional Framework for Action on Health and Environment on a Changing Planet, and its four areas of strategic actions: 1) enhancing governance and leadership for stronger environmental health capacity; 2) making scientific evidence easily accessible and available to the public through communications, advocacy and social mobilization; 3) establishing or strengthening existing regional, national and local networks, and communities of practice on health and the environment; and 4) ensuring adequate resources for environmental health.

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

SIDS INITIATIVE COMPONENT	HEALTHY ISLANDS INDICATOR COMPONENT	HEALTHY ISLANDS INDICATORS	JUSTIFICATION
EMPOWERMENT	Strong leadership, governance and accountability.	International Health Regulations 2005 (IHR) core capacity score.	Index based on 13 core capacities. A proxy for empowerment of the health sector.
	Avoidable diseases and reduced premature deaths.	Life expectancy at birth, both sexes.	
EVIDENCE	Children are nurtured in body and mind.	Under-5 mortality rate.	Widely used and available indicators. They could be complemented with burden of disease attributed to the environment, which is available but not routinely obtained.
		Children who are stunted.	
IMPLEMENTATION	Ecological balance is promoted.	Population using modern fuels for cooking, heating and lighting.	Available indicators that measure health risks and that are indirectly related to (or modified by) climate change.
		Population using improved drinking-water sources.	
		Population using improved sanitation facilities.	
RESOURCES	Strong leadership, governance and accountability.	Health worker density.	Measures of human and financial resources. Relevant, but not linked to climate change.
		Health expenditure per capita.	

1.3.2 SIDS in the WHO Africa Region

In 2006 ministers of health endorsed the creation of the SIDS Network to include five African countries (Cape Verde, Comoros, Mauritius, Sao Tome and Principe, and the Seychelles). The Network has since met biannually addressing several recurring themes, including health-system strengthening, noncommunicable diseases (NCDs), communicable diseases especially HIV/AIDS and malaria, health security and emergencies, and climate change (AFRO, 2017).

In the 2008 Libreville Declaration on Health and Environment in Africa, countries committed to acting jointly to manage threats to health from environmental factors (AFRO, 2008). During a meeting of African Health and Environment Ministers in Luanda, Angola, in 2010, participants agreed to accelerate the implementation of the Libreville Declaration, by addressing 10 priorities, of which one specifically refers to managing, “environmental and health risks related to climate variability and change including rises in sea levels particularly affecting Small Island Developing States” (AFRO, 2010).

In 2011, ministers of health met for the Sixty-first session of the WHO Regional Committee for Africa, and adopted Resolution AFR/RC61/R2 on the Framework for Public Health Adaptation to Climate Change in the region. It would be implemented by the health sector through a Plan of Action from 2012 to 2016. Although the target countries for the plan were all Member States of the WHO Africa Region, it is highly relevant to SIDS (AFRO, 2012).

In 2013, Clim-HEALTH Africa was established. An International Network for Climate and Health in Africa, its partners include United Nations (UN) organizations, academic, governmental and intergovernmental institutions, and national and international nongovernmental organizations (NGOs). Clim-HEALTH Africa’s goal is to strengthen the resilience of African countries and communities through improved management of the public health effects of climate variability and through resource planning for climate-sensitive health outcomes, moving from a reactive mode to a proactive mode (AFRO, 2018).

In 2017, the Regional Committee for Africa reviewed the Progress report on the implementation of the Regional Programme for Public Health Adaptation to Climate Change. In order to address the many challenges related to climate change, the following priority actions were identified: (a) conduct assessments of vulnerability and adaptation to climate

change; (b) develop and implement health national adaptation plans to climate change; (c) support capacity building for mainstreaming climate resilience in health programming so as to improve early warning and surveillance of climate sensitive diseases; (d) promote win-win partnerships, intersectoral collaboration, and advocacy to facilitate access by Member States to global multilateral financial mechanisms, including the Global Environment Facility (GEF) and the Green Climate Fund (GCF); and (e) support community engagement through awareness raising and social mobilization, and the development and implementation of community-based adaptation (CBA) programmes. It was planned that these actions would be implemented by 2019 (AFRO, 2017).

1.3.3 SIDS in the WHO South-East Asia Region

Following the 2008 World Health Assembly resolution on Climate Change and Health, in 2009, the South-East Asia Regional Committee on Climate Change and Human Health, was approved (SEARO, 2009). In 2012 WHO/SEARO published its Regional Strategy for protecting health from climate change (SEARO, 2012). The strategy has the overall objective of assisting Member States’ health sectors to assess the health vulnerability of both their populations and the sector itself.

In 2017, Member States of WHO South-East Asia Region endorsed the Malé Declaration with commitments to build resilient health systems able to anticipate, respond to, cope with, recover from and adapt to climate-related shocks and stresses (SEARO, 2017a). Ten actions at the national level were agreed, including raising public and policy awareness; encouraging the health sector to play a leading role in climate change research and implementation; working closely with other sectors; mainstreaming climate change into policies and plans, including for disaster risk management; strengthening national capacity to build climate-resilient health systems; enhancing health-system preparedness, including promoting climate-resilient health-care facilities; facilitate the greening of health care; and mobilizing human and financial resources. The Declaration makes reference to the Framework for Action to be implemented between 2017 and 2020. Its implementation requires commitment from several

stakeholders, and it calls on UN and other international agencies, development partners, academic and civil society to mobilize human, financial and technical resources for its implementation. One of the specific objectives proposes to “provide a platform for cross-sectoral collaboration, including to promote the engagement and contribution of global, regional and national development partners, ac-

ademic and civil society organizations in supporting Member States of the Region in their effort to build health systems resilience to climate change, as well as for financial and technical resource mobilization” (SEARO, 2017b). The SIDS initiative brings support to this objective in the implementation of actions in two SIDS in the region, Maldives and Timor-Leste.

1.3.4 SIDS in the Pan American Health Organization Caribbean countries

In 2002, the WHO and the Pan American Health Organization (PAHO), which is also the Regional Office of the Americas of WHO, convened the Climate Variability and Change and their Health Effects in the Caribbean conference. This was the first international CC&H conference in SIDS, with representatives from the health, climate, and environment sectors in the Caribbean, and country representatives from other regions. The workshop generated several recommendations, including strategies for: (1) awareness raising of CC&H; (2) the use of climate data by public health programmes; and (3) institutional and organizational arrangements, such as promoting synergies among existing regional and national institutional mechanisms for climate change adaptation (CCA; WHO/PAHO, 2003). These recommendations paved the way for PAHO’s regional initiatives to focus on CC&H in SIDS.

Given the susceptibility of the Caribbean region to a wide variety of natural hazards, such as hurricanes and flooding, PAHO launched the SMART Hospital Initiative, to ensure that hospitals continue operations during disasters. The initiative focuses on improving hospitals resilience, strengthening structural and operational aspects, and providing green technologies, therefore reducing their environmental footprint. Furthermore, it builds on the Guidelines for the evaluation of small and medium-sized health facilities, the Caribbean version of the Hospital Safety Index, the centerpiece of WHO’s disaster risk reduction (DRR) programme, which is now a global tool (PAHO, 2017). The first phase of the initiative was carried out from 2012 to 2014 in hospitals in Georgetown, Saint Vincent and the Grenadines, and St. Kitts and Nevis, and has since been scaled up to several other countries in the Caribbean and in other regions.

In 2011, Member States from the PAHO region adopted the 2012–2017 PAHO Strategy and Plan of Action on Climate Change, which was relevant to SIDS, as it was designed to prepare and strengthen national and local health systems to protect human health from risks related to climate change (PAHO, 2011).

In 2014, PAHO launched its Strategic Plan for 2014–2019. The plan recognizes that action is needed on climate change. This includes: support to capacity building and strengthening technical cooperation; and specific programmes that address current and emerging environmental threats with local health impacts, including climate change, loss of biodiversity, ecosystem depletion, water scarcity and desertification (PAHO, 2014).

In 2015, Caribbean countries and territories met for the Caribbean Environmental Health Conference, organized by PAHO and the Caribbean Community (CARICOM). The conference provided both an opportunity and a platform to review the impact of the Caribbean Cooperation in Health (CCH) Initiative, Phase III, and to plan and set priorities for the development and implementation of Phase IV. Climate change was identified as one of the top environmental health programmatic priority areas for CCH IV, with water and pollution as cross-cutting issues; taking into consideration the SDGs and the SAMOA Pathway as a framework (PAHO, 2015).

In 2016, PAHO, in collaboration with Secretariat of CARICOM, the Caribbean Public Health Agency, and the University of West Indies (Cave Hill Campus), commissioned an evaluation of Caribbean Cooperation in Health Phase III. During consultations,

safe, resilient and healthy environments to mitigate climate change were recommended as a priority, including using a strategic approach to the adaptation of the health sector to climate change. PAHO's Smart Hospitals Initiative was identified as one of the main advancements in regional cooperation on environmental health (PAHO, 2016a).

In 2016, the PAHO/WHO Subregional Cooperation Strategy 2016–2019 was published for the Caribbean region. The strategy sets out the issues, strategic priorities and outcomes that PAHO's technical cooperation programmes in the Caribbean will address. The strategic priorities and focus areas of the strategy are aligned with the CCH Phase IV strategic priorities, including safe, resilient and healthy environments to adapt to climate change and mitigate disasters (PAHO, 2016b).

In 2017, a joint effort between PAHO, the Caribbean Public Health Agency (CARPHA) and the Caribbean Institute for Meteorology and Hydrology produced the first issue of the *Caribbean Health-Climatic Bulletin*. This initiative aims to guide health professionals who manage health systems, to identify and pre-

pare health interventions for upcoming favourable or inclement climate conditions in the Caribbean. *The Bulletin* is published quarterly and provides quarterly climate projections. This information is for use in tandem with weather forecasts ranging from one to seven days (PAHO, CARPHA, and CIMH, 2017).

In 2017, PAHO conducted a country survey on health and climate change to understand the needs and challenges in the Americas region in order to plan appropriate actions. The findings are described in Box 2 below.

In 2018, high-level officials from Antigua and Barbuda, Barbados, Dominica, Grenada, St. Kitts and Nevis, Saint Lucia, and St. Vincent and the Grenadines signed the WHO/PAHO Multi-Country Cooperation Strategy for Barbados and Eastern Caribbean Countries 2018–2024. The strategy is a medium-term strategic vision that will guide PAHO and WHO's work with countries taking into consideration their health priorities, institutional resources and objectives. Capacity strengthening to address CC&H impacts is one of the cooperation strategy's priorities and focus areas (PAHO/WHO, 2018).

PAHO Country Survey on Health and Climate Change

In 2017, PAHO conducted a Country Survey on Health and Climate Change to understand needs and challenges in the region of the Americas. Responses from the Caribbean included 15 Member States and three Territories (hereinafter referred as “countries”). The current situation and challenges identified are:

Higher level of participation of the health sector in national climate change planning is necessary to reflect the situation and challenges of the sector.

Ministries of health continue to increase their participation in national climate change issues. Fourteen countries have established interministerial committees on climate change, and 12 countries included the ministry of health (MoH) as a member. The survey found that 10 countries have national strategies and plans on climate change, but only three included health indicators to evaluate the success of its implementation. Although direct and indirect health-related issues appear in all latest national communications and other official climate change documents (e.g. National Adaptation Plans – NAPs; Nationally Appropriate Mitigation Actions – NAMAs), the MoH was involved in the preparation of less than half of them.

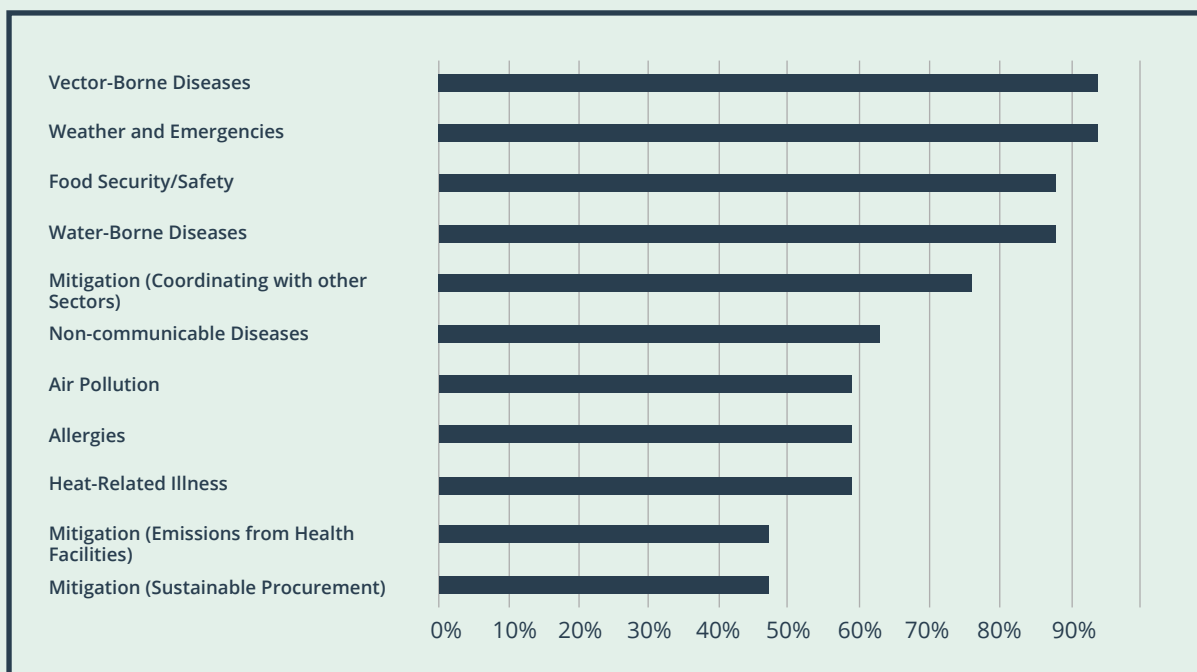
Having dedicated and trained personnel would increase actions and resource mobilization for the health sector.

Higher participation of the health sector in national climate actions could be achieved by increasing the number of dedicated personnel in the MoH, the budget for actions, and the numbers of trained staff. Although 11 countries had a division or department responsible for health and climate change, they often addressed other environmental health issues as well. Although two countries had a budget for the topic, they identified that it was not enough to conduct all actions and programmes. Seven received specific training, five of which from PAHO (as of May 2017).

As a response to this scenario, in October 2017, PAHO and WHO provided training for health representatives of the Caribbean on the preparation of health chapters in National Adaptation Plans to Climate Change in St Lucia. Also, PAHO has been providing technical support for the writing of national documents, and has been working with CARICOM and other countries to prepare and submit projects to donors.

There are clear priority topics for action identified by ministries of health of the Caribbean

As a guidance for the next steps, Caribbean countries rated the following topics as “Extremely important” or “Important” to be addressed in a CC&H agenda (percentages based on 18 respondents).



2. HEALTH RISKS OF CLIMATE CHANGE IN SIDS

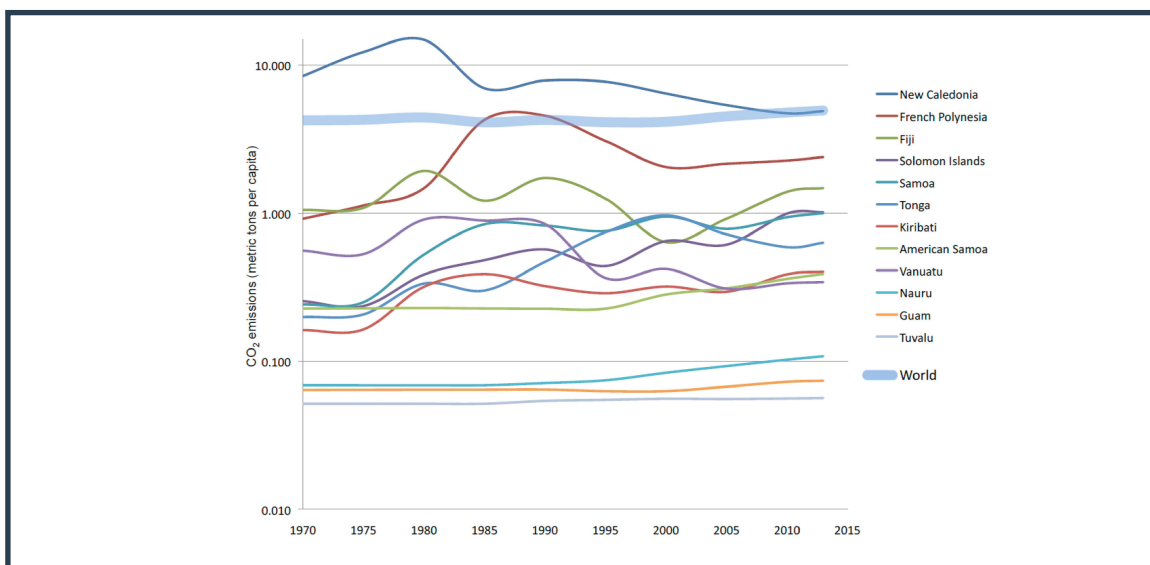


2.1 A small contribution to the problem, a major impact on health

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. Figs. 2a–c show carbon dioxide (CO₂) emissions per capita comparing the global average in: PICs (Fig. 2a); WHO regions in Africa and South-East Asia (Fig. 2b); and in the Caribbean region (Fig. 2c). Although there are slight increases in per capita emissions over time, these are mostly well below the world average.

FIGURE 2a

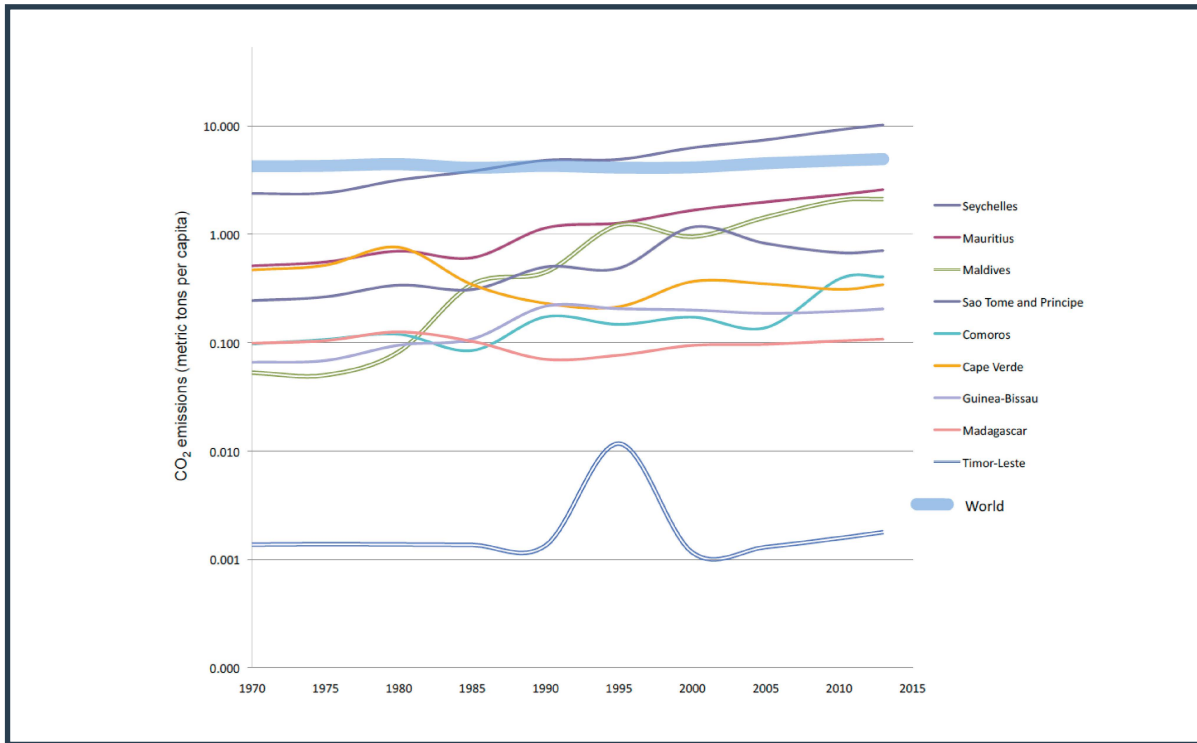
CO₂ emissions (metric tons per capita) in Pacific Island Countries, 1970–2013



Source: EDGAR (2018).

FIGURE 2b

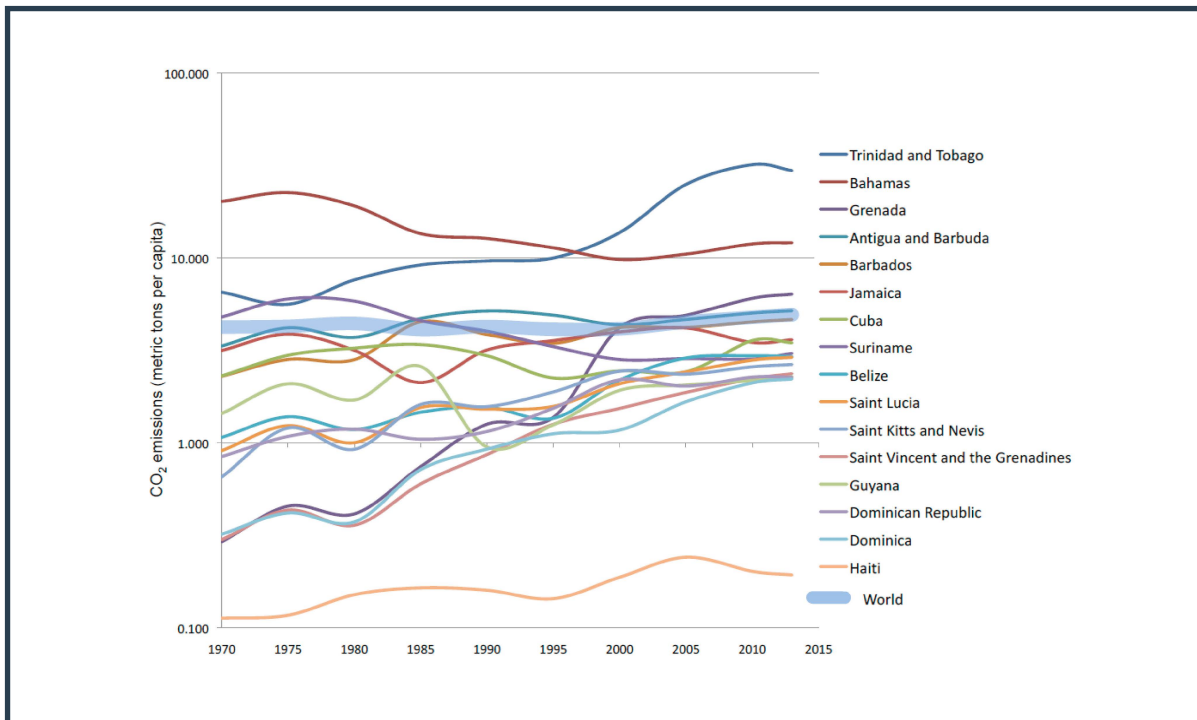
CO₂ emissions (metric tons per capita) in SIDS in WHO Africa and South-East Asia regions, 1970–2013



Source: EDGAR (2018).

FIGURE 2c

CO₂ emissions (metric tons per capita) in the Caribbean region, 1970–2013



Source: EDGAR (2018).

2.2 SIDS uniquely vulnerable to climate change

Geography, frequent exposure to extreme weather and climate events, sea-level rise, small population numbers 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, higher ocean temperatures, and coral bleaching, all of which may also compromise lifestyles.

Similarly, extreme weather and climate events can affect health, livelihoods and development. Many islands depend on services linked to tourism, and even if an extreme weather event does not cause extensive damage, it can affect the public's perception of risk, reducing tourism.

Globally, there were 782 climate-related disasters (storms, floods and droughts) in all SIDS in the 50 years between 1966 and 2015. These affected over 50 million people (many of them more than once), caused over 18 000 deaths, and amounted to around US\$43 billion worth of damage. Table 2 shows the breakdown by type of event (EM-DAT, 2018).

Table 2

Climate-related disasters in all SIDS between 1966 and 2015*

TYPE OF EVENT	NUMBER OF EVENTS	DEATHS	TOTAL AFFECTED	DAMAGE (US\$)
Storm	523	12 456	35 434 591	41 118 962 000
Flood	196	5 403	5 831 358	2 054 578 000
Drought	63	200	9 641 271	453 239 000
All	782	18 059	50 907 220	43 626 779 000

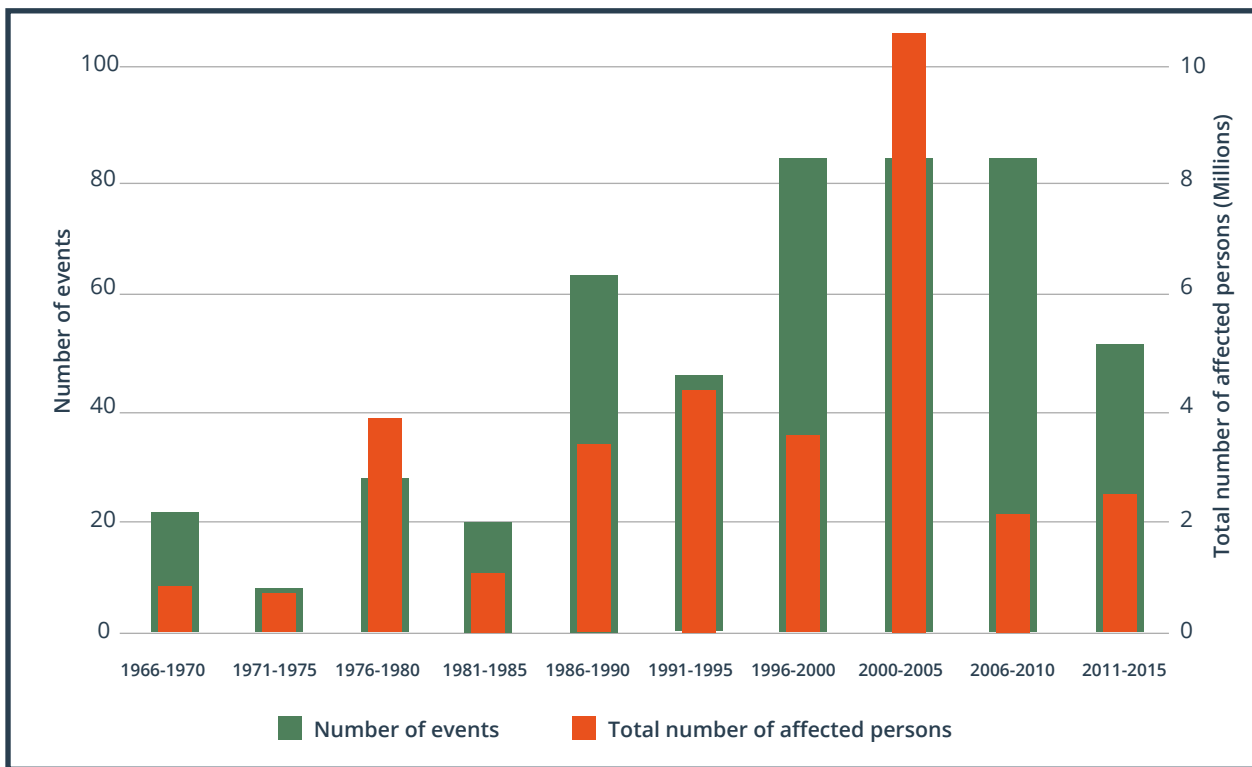
* Includes territories. In the WHO Africa region, SIDS include Madagascar.

Source: EM-DAT (2018).

In PICs during the same period, there were 193 storms, floods and droughts, which affected 3.2 million people, resulted in 970 deaths, and caused close to US\$3.3 billion worth of damages (EM-DAT, 2018). In SIDS in WHO Africa and South-East Asia regions, during the same period, there were 138 storms, floods and droughts, which affected over 15 million people, resulted in 3153 deaths and caused US\$ 3.5 billion worth of damage (EM-DAT, 2018). During the

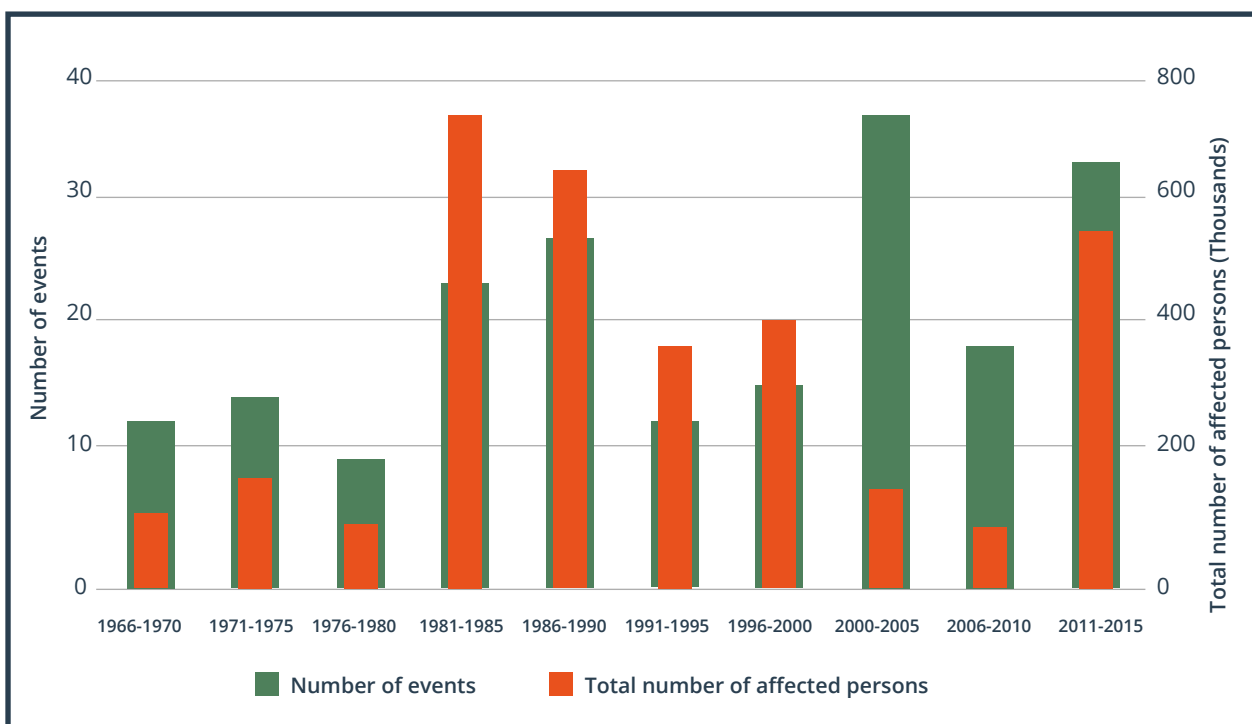
same period in SIDS of the Caribbean region there were 451 storms, floods and droughts, which affected over 32 million people, resulted in nearly 14 000 deaths, and caused more than US\$36.5 billion worth of damage (EM-DAT, 2018). Fig. 3 shows the number of climate-related events and total affected persons between 1966 and 2015, for PICs (Fig. 3a), WHO Africa and South-East Asia regions (Fig. 3b), and the Caribbean region (Fig. 3c).

FIGURE 3a Total number of storms, floods and droughts, and total affected persons in Pacific Island Countries, 1966–2015



Source: EM-DAT (2018).

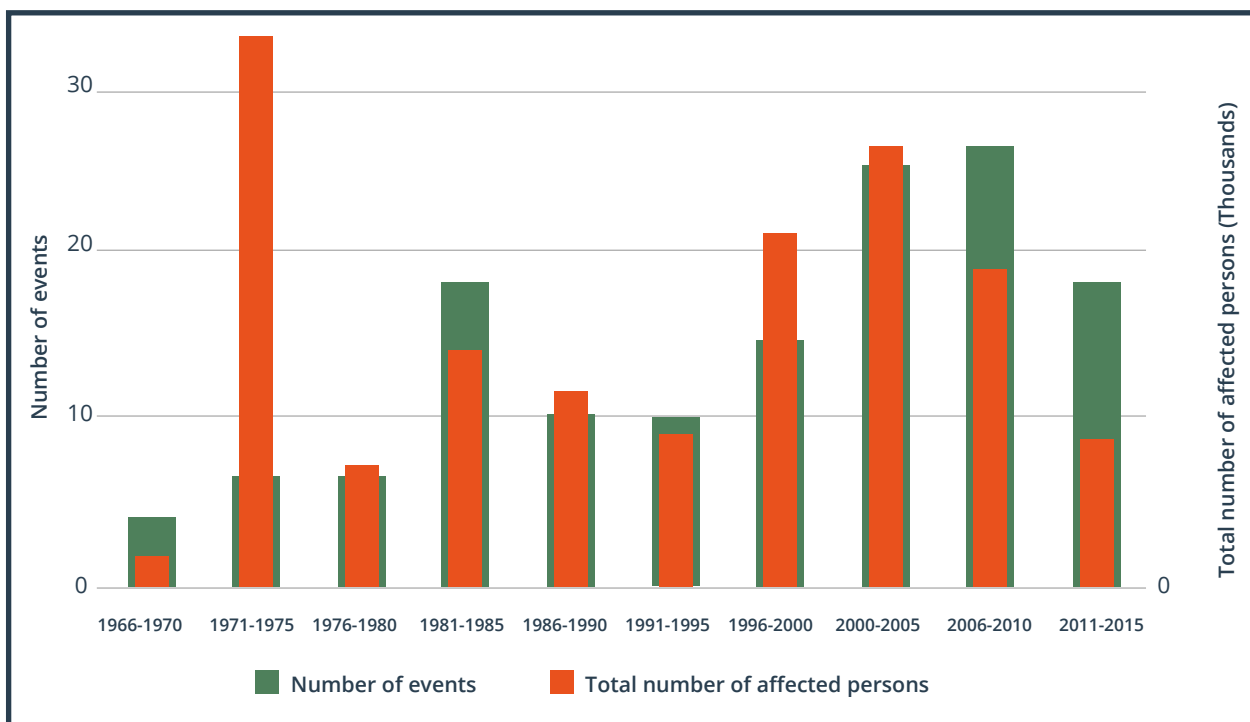
FIGURE 3b Total number of storms, floods and droughts, and total affected persons in the African and South-East Asian regions, 1966–2015



Source: EM-DAT (2018).

FIGURE 3c

Fig. 3c. Total number of storms, floods and droughts, and total affected persons in the Caribbean region, 1966–2015



Source: EM-DAT

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 per year will occur as a result of climate change impacts on nutrition and on health – 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 3; 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.

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 US dollars. The frequency and intensity of some types of extreme weather events are expected to continue to increase over the 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 the effects of climate change on natural and physical systems that, in turn, alter the number of people at risk of undernutrition; the geographical 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 safety and 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.

Source: Smith et al., 2014

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, storms and sea-level rise) on individuals, communities and health infrastructure; changes in the transmission of vector-borne and other infectious diseases; and the 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.

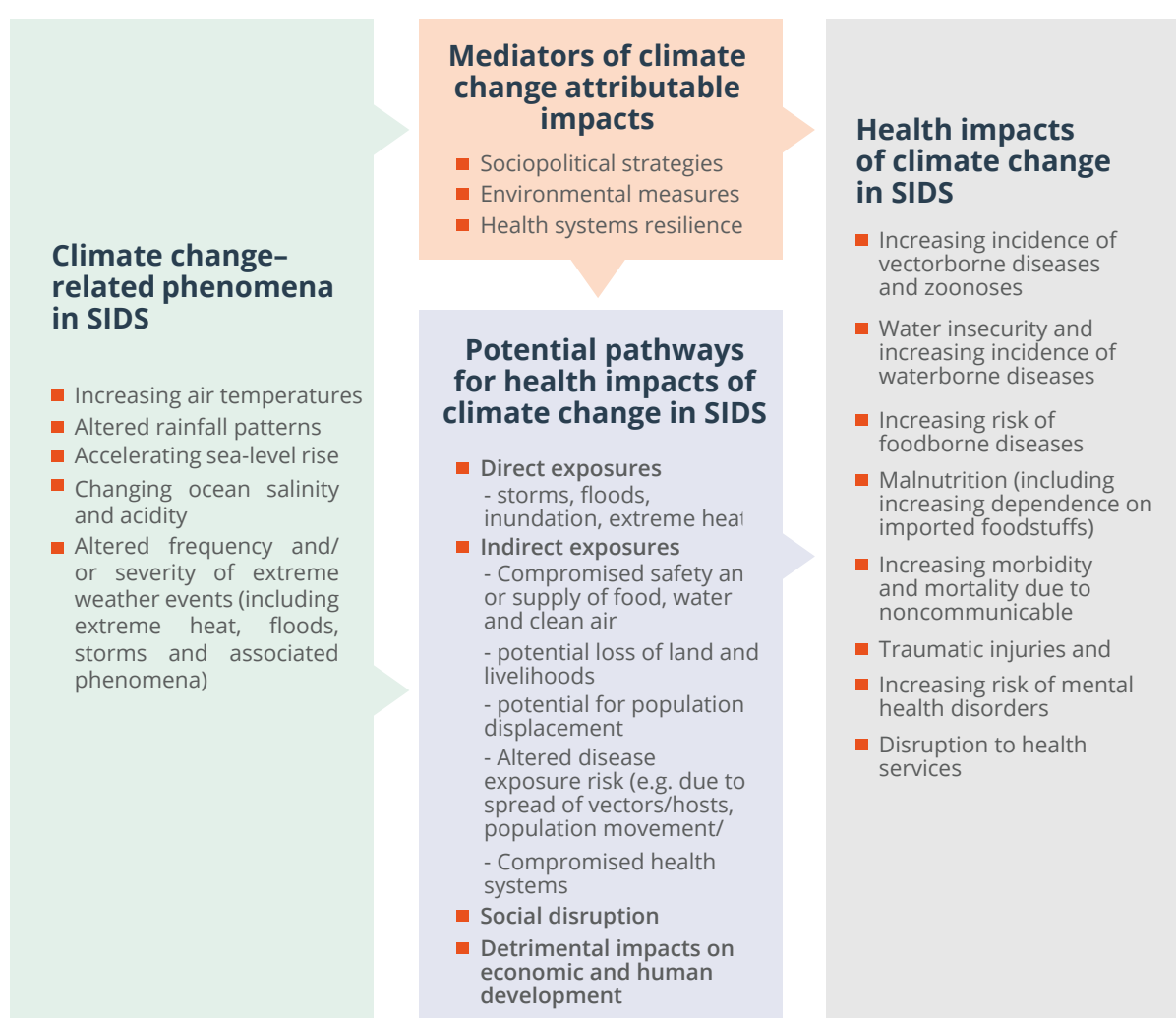
Storms, floods and sea-level rise will increasingly affect health-service delivery, particularly access to health care. The majority of SIDS populations and health-care facilities (hospitals and community health centres) are located in close proximity to low-lying coastal areas with high vulnerability to cyclones, floods, storm surges, sea-level rise, and disturbances in water supply caused by droughts 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 on structural, non-structural and functional safety. In emergencies, damage to buildings and essential supplies/amenities (including safe water and sanitation) affects their capacity to provide health services when they are most needed. Climate change will increase these problems.

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.

Figure 4 Climate change and health impact pathways relevant to SIDS

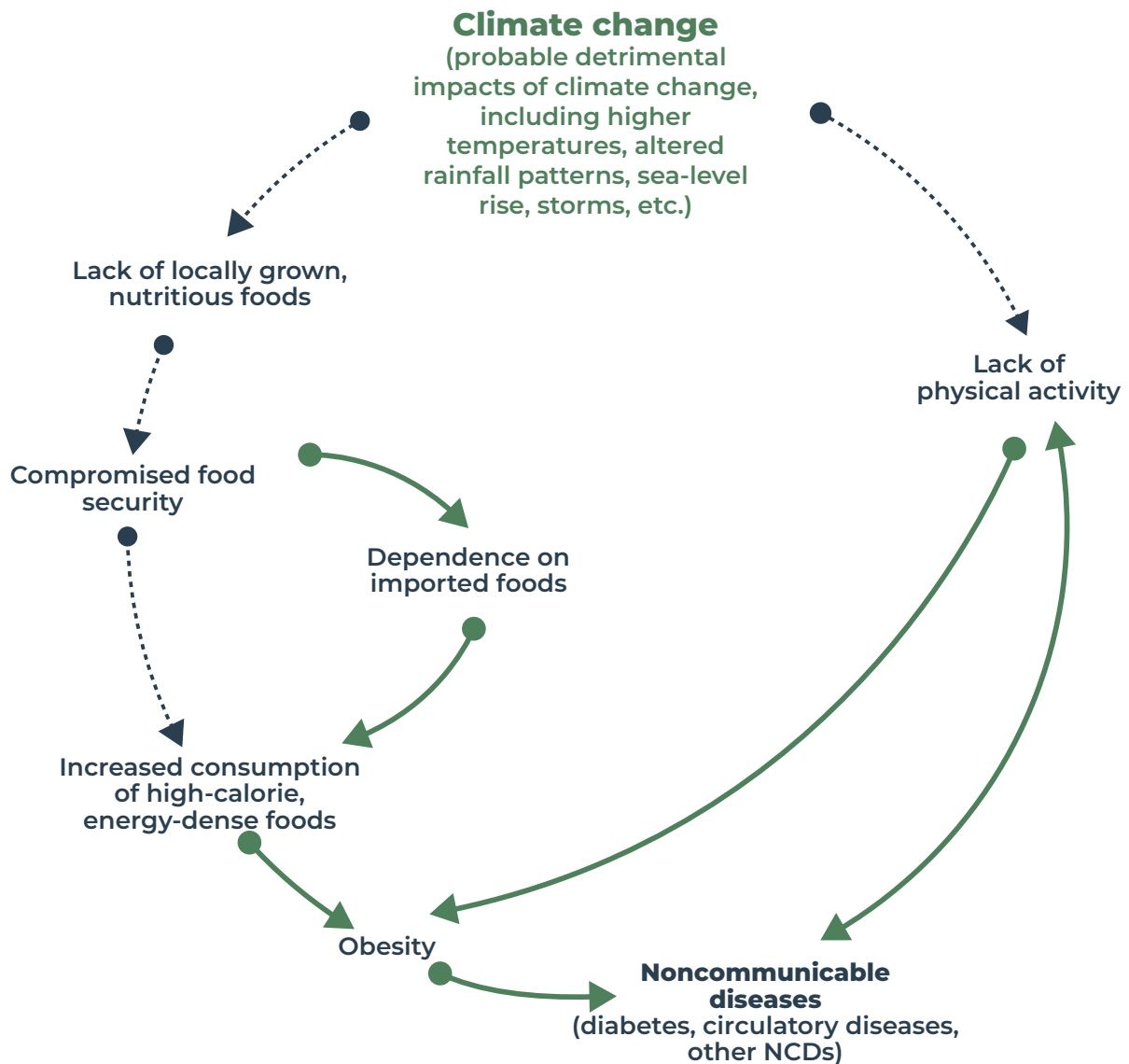


Source: Adapted from McIver et al. (2016).

In addition to high burdens of infectious diseases, SIDS experience some of the highest worldwide rates of obesity, diabetes, hypertension and related NCDs. With climate change likely to increase the burden of NCDs, as shown in Fig. 5, the impacts of this double burden of disease will only grow unless additional interventions are designed and implemented.

FIGURE 5

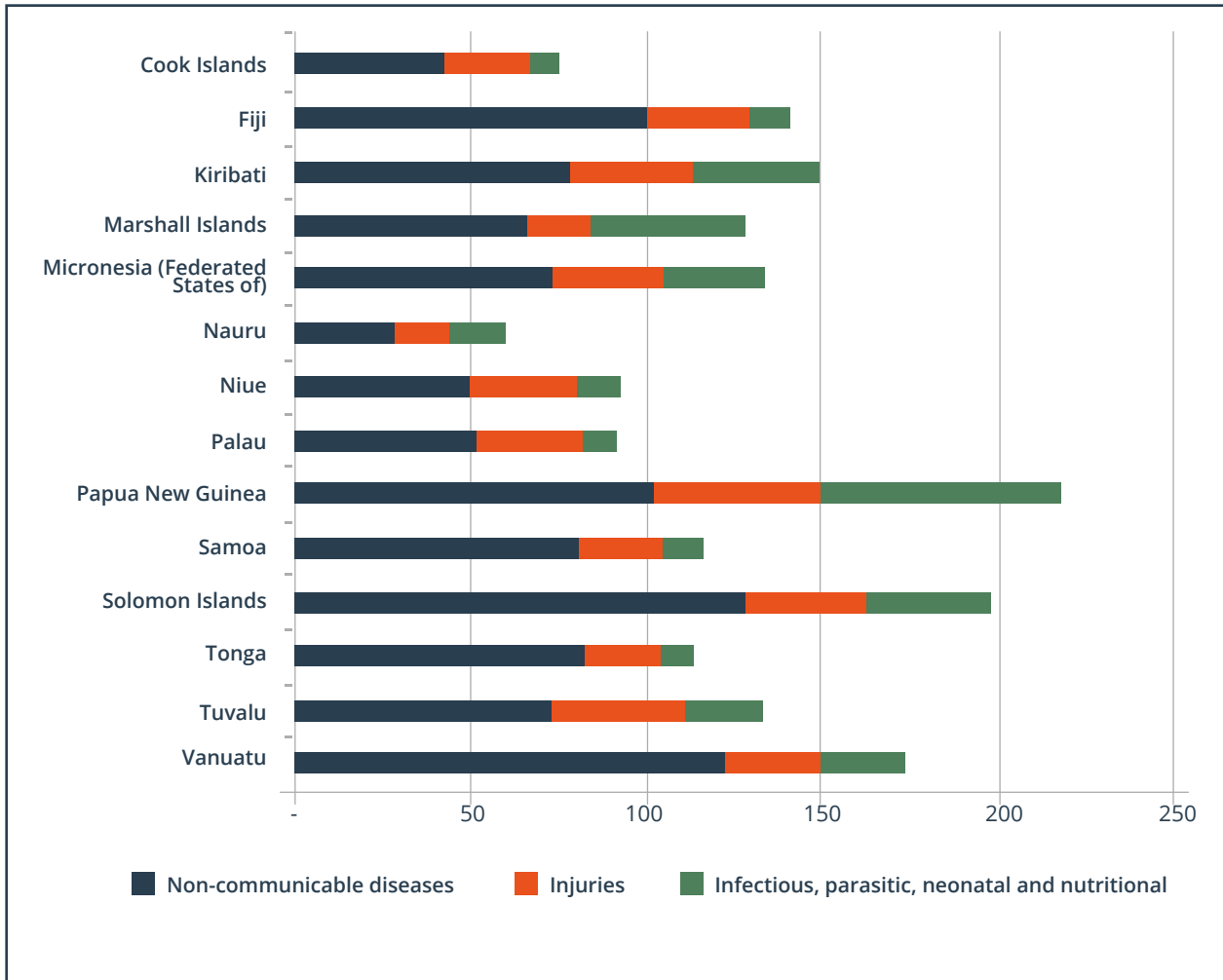
Conceptual model summarizing the pathways between climate change and NCDs*



* Dotted arrows are hypothetical links.
Source: WHO (2015).

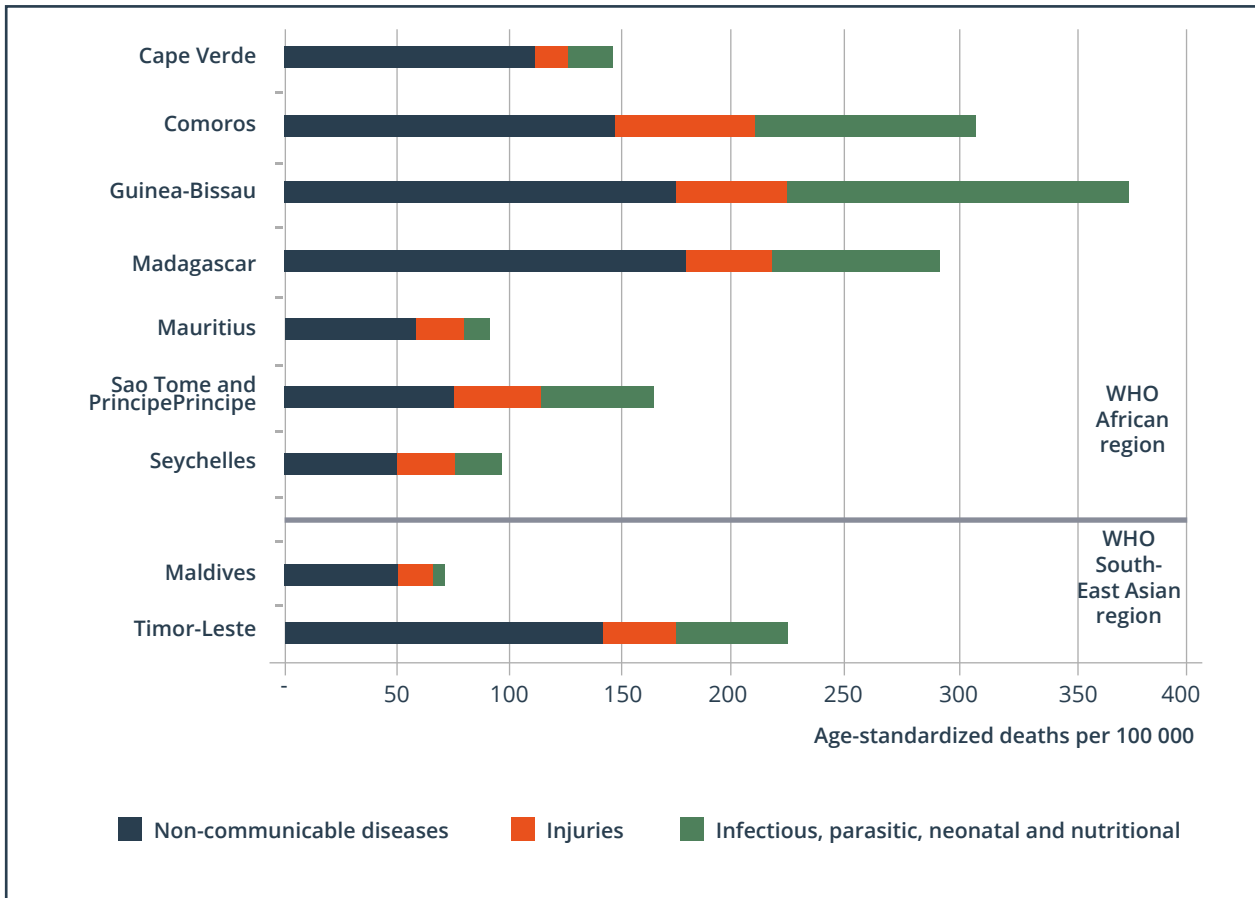
This is also observed in the case of burden of disease from modifiable environmental risk factors (Prüss-Üstün et al., 2016), which indicates that a large fraction of NCDs (age-standardized rates per 100 000) in most SIDS are environmentally related (see Figs. 6a-c). Among PICs, there are slightly more 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, PIC statistics range from 13% to 21%. Similarly, in the African and South-East Asian regions there are slightly more deaths in the “Infectious, parasitic, neonatal and nutritional” category (44.6%), than in the “Noncommunicable diseases” category (37.6%), with “Injuries” responsible for 17.8% of deaths. SIDS in the two regions have fractions ranging from 11% to 26%. In contrast to the other regions, in the Caribbean the “Noncommunicable diseases” category accounts for 62.6% of deaths, the “Infectious, parasitic, neonatal and nutritional” category 18.9%, with the “Injuries” category responsible for 18.5% of deaths. SIDS in the Caribbean region have fractions ranging from 8% to 23% (Figs. 6a-c).

FIGURE 6a Age-standardized deaths from modifiable environmental risks per 100 000, in PICs, 2012



Source: Prüss-Üstün et al. (2016).

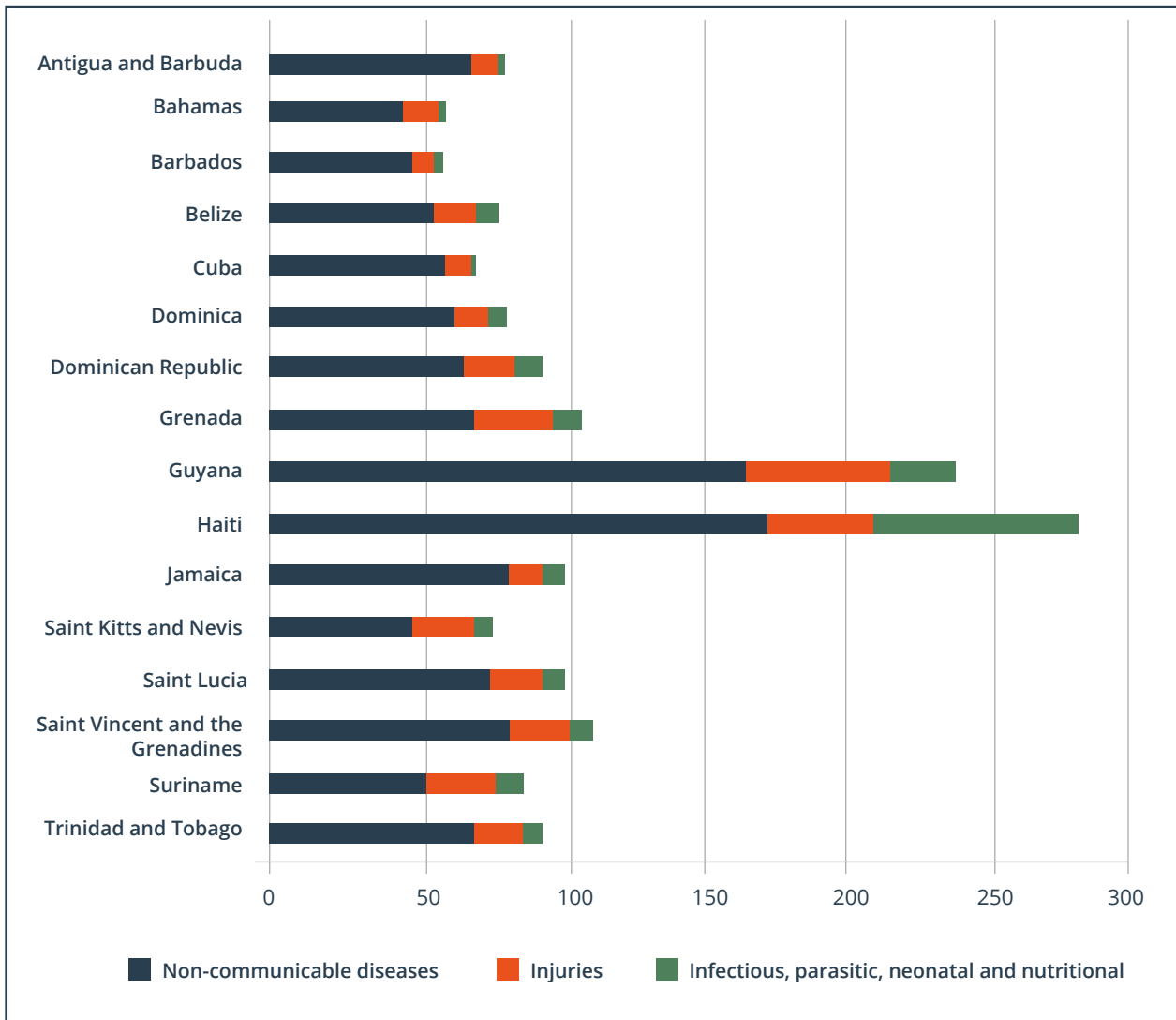
FIGURE 6b Age-standardized deaths from modifiable environmental risks per 100 000, in SIDS in the African and South-East Asian regions, 2012



Source: Prüss-Üstün et al. (2016).

FIGURE 6c

Age-standardized deaths from modifiable environmental risks per 100 000, in the Caribbean region, 2012



Source: Prüss-Üstün et al. (2016).

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 (MDGs), 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 post-2050.

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 (WHO, 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 given the challenges in providing water and sanitation services.

3. TAKING ACTION



Photo Credits: WHO / Yoshi Shimizu

3.1 The SIDS Initiative is aligned to the WHO operational framework for building climate resilient health systems

The core components or building blocks of health systems are: (1) leadership and governance; (2) health workforce; (3) health information systems; (4) essential medical products and technologies; (5) service delivery; and (6) financing (WHO, 2018). These building blocks are used to strengthen health systems and support the delivery of universal health coverage (UHC). 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 proposes 10 components around the six building blocks of health systems necessary for these 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 shown in Fig. 7.

FIGURE 7

SIDS Initiative components within the WHO operational framework for building climate resilient health systems



Source: WHO (2015).

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). It is important to consider five key health systems performance dimensions when building climate resilience: equity, quality, responsiveness, efficiency and resilience (WHO & World Bank, 2017).

Climate resilience reduces vulnerability, builds capacity to manage the 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 partnerships 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 GHG emissions in public health and health-care infrastructure and related operations.

SIDS differ in their specific climate-related exposures, vulnerabilities and capacities. However, many

of them share common needs when implementing actions to strengthen the resilience of health systems and achieving their SDG targets and goals. So, although a country's needs are dependent on its context, its underlying needs to manage the health risks of a changing climate are in line with the basic building blocks of health systems.

SIDS can broadly be grouped into the following three categories:

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

Given the risk multiplier characteristic of climate change, there is a range of interventions in different areas that can address the additional risk contribution of climate change (Table 3).

Table 3 Examples of climate-informed health interventions

CLIMATE-RELATED HEALTH RISKS AND MECHANISMS	EXAMPLES OF INTERVENTIONS
Extreme heat and thermal stress	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Enhance disease surveillance systems during high-risk seasons/ periods. ■ Strengthen food and water quality control.

<p>Zoonotic and vector-borne diseases</p>	<ul style="list-style-type: none"> ■ Expand the scope of diseases monitored, and monitor at the margins of current geographical distributions. ■ Establish climate-informed health early warning systems when there are sufficient data, and a robust 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.
<p>Allergic diseases and cardiopulmonary health</p>	<ul style="list-style-type: none"> ■ Develop exposure forecasts for air quality, allergens, and dust. ■ Enforce stricter air quality standards for pollution. ■ Establish allergen management. ■ Plan for increased demand for treatment during high-risk seasons or weather conditions.
<p>Nutrition</p>	<ul style="list-style-type: none"> ■ Perform seasonal nutritional screening in high-risk communities. ■ Scale up integrated food security, nutrition security and health programming in fragile zones. ■ Promote public education and food hygiene.
<p>Storms and floods</p>	<ul style="list-style-type: none"> ■ 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. ■ Implementation of risk assessment and management approaches that ensure water quality and security in the face of climate change (such as climate resilient Water Safety Plans (CR-WSPs) so as to protect health.
<p>Mental health and disability</p>	<ul style="list-style-type: none"> ■ 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.

Source: WHO (2015).

3.2 Status of the components proposed for strengthening the climate resilience of health systems in SIDS

SIDS Initiative components in relation to the 10 components included in the operational framework for building climate-resilient health systems are described in Tables 4 to 7.

Table 4 Climate-resilient health systems in SIDS: Empowerment

Empowerment: Supporting health leadership in SIDS to engage nationally and internationally	
COMPONENT	STATUS IN SIDS
Leadership and governance	<p>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 ministries of health in many countries. 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 being drafted to achieve this.</p> <p>Close collaboration is needed between ministries of health and ministries of the 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.</p>
Health workforce	<p>Limited efforts are underway to train and build the capacity of health workforces in SIDS to ensure public health and health-care professionals have the knowledge and tools necessary to build climate-resilient health systems.</p> <p>Overall, health workforces need further understanding of: the risks of climate change to individuals, communities and health-care facilities; approaches to protect and promote health in the face of uncertainty about the magnitude and pattern of future climate change; the methods and tools that can be used to reduce current and projected impacts; and 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.</p>

Table 5

Climate-resilient health systems in SIDS: Evidence

Evidence: Building the business case for investment	
COMPONENT	STATUS IN SIDS
Vulnerability, capacity and adaptation (V&A) assessment	<p>V&A assessments are the first step required for any country or smaller administrative division to understand their health vulnerability to climate variability and change, and are an important component in developing health national adaptation plans (HNAPs). Such assessments are underway or have been conducted in many SIDS.</p> <p>Once initial V&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.</p> <p>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.</p>
Integrated risk monitoring and early warning	<p>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 and other infectious diseases such as cholera. 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.</p>
Health and climate research	<p>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.</p> <p>National and regional research is needed to: increase understanding of the health risks of climate variability and change at local to national levels identify additional adaptation policies and programmes to prepare for and manage changing risk profiles; and evaluate the effectiveness of implemented interventions. The precise research needs will vary from country to country, and could be coordinated across countries to maximum results to ensure they are useful in multiple contexts, such as by furthering the understanding of outbreaks of vector-borne diseases across a region.</p>

Table 6

Climate-resilient health systems in SIDS: Implementation

Implementation: Preparedness for climate risks, and health-promoting mitigation policies	
COMPONENT	STATUS IN SIDS
Climate-resilient and sustainable technologies and infrastructure	<p>Critical components of climate-resilient health-care facilities include:</p> <ul style="list-style-type: none"> ■ Structural safety in the face of increases in the frequency and intensity of extreme weather and climate events (e.g. building regulations). For many SIDS, health-care facilities are often located in low-lying areas subject to flooding and storm surges. Further climate change will decrease access to some facilities when floods and storm surges limit access, and will decrease their ability to offer services. ■ Nonstructural safety issues such as ensuring access to safe water and improved sanitation, and providing access to energy for all. Extreme weather and climate events, including floods and droughts, can compromise water availability and safety. Energy access is an important component in maintaining and improving population health. ■ Decreasing the carbon footprint of health care. Health-care facilities are often a significant proportion of a country's GHG emissions, so reducing these emissions will both show the health-systems leadership and also reduce the magnitude and pattern of health risks that will need to be addressed in the future. A programme of safe and green hospitals (also known as smart hospitals) in the Caribbean region is an example of how to reduce both vulnerabilities to extreme weather and climate events, and GHG emissions, which could be scaled up in other countries and regions. <p>SIDS in other regions have requested support for the implementation of the SMART Hospitals Initiative or other initiative aiming to strengthen climate resiliency and the greening of health-care facilities.</p>
Management of environmental determinants of health	<p>Weather and climate are not the only drivers of climate-sensitive health outcomes. Travel and tourism can facilitate the introduction of vectors and pathogens. Increasing temperatures and health precipitation events can compound the health burdens associated with limited access to safe water and improved sanitation. Other environmental determinants of health where joint action is needed with other ministries and departments are air quality, water quantity and quality, food and nutrition security, and housing. Few SIDS have institutionalized the coordinated management needed to ensure health in all policies.</p>

<p>Climate-informed health programmes</p>	<p>With climate change increasing in geographical range, seasonality and incidence of climate-sensitive vector-, food-, and water-borne diseases in some SIDS, health programmes need to be modified to explicitly consider the adjustments needed to manage the potential impacts of a changing climate. Similarly, adjustments may be needed to programmes concerned with: maternal and child health; water, sanitation and hygiene (WASH); nutrition; occupational health; emergency management; and mental health.</p> <p>The health risks of climate variability and change can affect nearly all programmes within a ministry of health, requiring consideration of policies, regulations, standard operating procedures and contingency plans. While there has been progress in increasing climate resilience in some SIDS, these efforts urgently need to be improved and expanded as risks increase. Furthermore, many SIDS would benefit from closer integration of policies and programmes to address adaptation, disaster-risk management and WASH, to increase resilience to a range of climate-related stresses.</p>
<p>Emergency preparedness and management</p>	<p>SIDS frequently experience extreme weather and climate events that can result in disasters because of high underlying geographical 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 CCA and disaster risk management programmes; doing so can help protect communities in high-risk regions.</p>

Source: WHO (2015).

Table 7

Climate-resilient health systems in SIDS: Resources

Resources: Facilitating access to climate and health finance	
COMPONENT	STATUS IN SIDS
Climate and health financing	<p>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 predict where and when infectious disease outbreaks could occur.</p> <p>While much can be accomplished by mainstreaming climate change into policies and programmes, the extent of the changes required goes beyond the capacity of health systems in SIDS. Additional investment is needed to provide the human and financial resources to ensure that all the building blocks of health systems are climate resilient.</p> <p>The WHO/United Nations Development Programme (UNDP) Global Pilot project on health adaptation to climate change was funded by the Special Climate Change Fund (SCCF) of the GEF and implemented in six countries from 2010–2015, including two SIDS (Barbados and Fiji). Activities included: V&A assessments; the development of the health component of a national adaptation plan; the strengthening of surveillance systems of priority climate-sensitive diseases; the development of climate-informed health early warning systems; and the piloting of climate-informed health interventions.</p> <p>After the concept note for a project on CC&H in Least Developed Countries in the Pacific was approved by the Least Developed Countries Fund (LDCF)/GEF, WHO, in partnership with UNDP, submitted in 2018 the full proposal for strengthening health systems in Kiribati, the Solomon Islands, Tuvalu and Vanuatu.</p> <p>More ministries of health in SIDS are requesting support from WHO to access funds that will enable them to tackle the health impacts of climate variability and change. Scaling-up access to funds is a key priority of the Initiative on Climate Change and Health in SIDS.</p>

4. MEASURING SUCCESS



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

1 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.

3 Implementation

Transformational change occurs in health systems, by promoting a culture of disease prevention, building the climate resilience of health systems and maximizing the health co-benefits of climate change mitigation policies.

2 Evidence

SIDS health ministries have the necessary health, environment and economic evidence to support scaled-up investment in CC&H, identify priority investments, and monitor their success.

4 Resources

The current level of financial investment in CC&H in SIDS is tripled.

Success will also be measured by the contribution the SIDS Initiative can make 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 8.

Table 8

SDG goals, targets and indicators relevant to the SIDS Initiative

SDG 1	<p>End poverty in all its forms everywhere. The SIDS Initiative contributes to target 1.5 – 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.</p>
SDG 2	<p>End hunger, achieve food security and improved nutrition and promote sustainable agriculture. Climate change in SIDS could impact food production, leading to nutritional problems, particularly in children. Indirectly, the SIDS Initiative contributes to target 2.4 – By 2030, ensure sustainable food production systems and implement resilient agricultural practices that: increase productivity and production; help maintain ecosystems; strengthen capacity for adaptation to climate change, extreme weather, droughts, flooding and other disasters; and progressively improve land and soil quality. More specifically, the SIDS Initiative will support the health sector with regard to target 2.2 – 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.</p>
SDG 3	<p>Ensure healthy lives and promote well-being for all at all ages. The SIDS Initiative directly contributes to this goal, in particular to target 3.9 – By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination. WHO monitors indicators, and produces data in support of Indicators 3.9.1 (Mortality rate attributed to household and ambient air pollution) and 3.9.2 (Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene – exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services). There is a key resource-related target 3.C, which proposes to substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries (LDCs) and SIDS. One proposed indicator is 3.c.1 (Health worker density and distribution).</p>
SDG 4	<p>Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. Education is an important element of resilience, and a well-educated and informed society can make better choices regarding improving adaptation and resilience to climate change. Although indirectly, the Initiative supports target 4.C – By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially LDCs and SIDS.</p>
SDG 5	<p>Achieve gender equality and empower all women and girls. Women have a key role in building adaptation and resilience. Empowering women, and women leaders, at every level, is essential to the success of the SIDS Initiative. Therefore, the Initiative supports target 5.5 – Ensure women’s full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life.</p>

<p>SDG 6</p>	<p>Ensure availability and sustainable management of water and sanitation for all. Safe drinking water and adequate sanitation are current problems in many SIDS, which climate change will worsen without urgent action. The Initiative therefore supports target 6.1 – By 2030, achieve universal and equitable access to safe and affordable drinking water for all, and its indicator 6.1.1 – Proportion of population using safely managed drinking-water services. The Initiative also supports target 6.2 – By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations – to be measured by indicator 6.2.1 – Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water. A separate, although related, issue for many SIDS is water scarcity. Relevant to the Initiative is target 6.4 – By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity. Similarly, indicator 6.4.2 – Level of water stress: freshwater withdrawal as a proportion of available freshwater resources. Community participation is indispensable for implementation; therefore, also relevant is target 6.B – Support and strengthen the participation of local communities in improving water and sanitation management.</p>
<p>SDG 7</p>	<p>Ensure access to affordable, reliable, sustainable and modern energy for all. Renewable energy, including for health-care facilities, is supported by the Initiative, therefore, highly relevant is target 7.1 – By 2030, ensure universal access to affordable, reliable and modern energy services; and indicator 7.1.2 – Proportion of population with primary reliance on clean fuels and technology.</p>
<p>SDG 8</p>	<p>Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. Safe and secure working environments, including health-care work, are also threatened by climate change. Thus, relevant to the Initiative is target 8.8 – Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment.</p>
<p>SDG 9</p>	<p>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.</p>
<p>SDG 10</p>	<p>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% 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.</p>

<p>SDG 11</p>	<p>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.</p>
<p>SDG 12</p>	<p>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, 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.</p>
<p>SDG 13</p>	<p>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.</p>
<p>SDG 14</p>	<p>Conserve and sustainably use the oceans, seas and marine resources for sustainable development. Relevant to the Initiative is target 14.7 – 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.</p>

<p>SDG 15</p>	<p><i>Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.</i> Many SIDS are periodically affected by droughts and floods, and suffer from land degradation. Relevant to the Initiative is target 15.3 – 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.</p>
<p>SDG 16</p>	<p><i>Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.</i> Relevant to the Initiative are target 16.6 – Develop effective, accountable and transparent institutions at all levels; and target 16.7 – 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 target 16.8 – Broaden and strengthen the participation of developing countries in the institutions of global governance.</p>
<p>SDG 17</p>	<p><i>Strengthen the means of implementation and revitalize the global partnership for sustainable development.</i> Partnerships are a fundamental element of the SIDS Initiative. Particularly relevant to the Initiative is target 17.18 – 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.</p>

5. PROGRESSING THE SIDS INITIATIVE



During 2018, regional action plans to implement the SIDS Initiative were developed by countries gathered at the three conferences that formed the Third Global Conference on Health and Climate Change. Building on the regional action plans, a comprehensive global action plan for the implementation of the SIDS Initiative will be submitted to the World Health Assembly in 2019. The aim of this global plan is to provide the overarching support needed to deliver on regional action plans.

There are increasing levels of awareness and evidence of the health impacts linked to climate variability and change. But SIDS face important limitations in carrying out health resilience activities and in promoting the implementation of climate change mitigation programmes in the most polluting sectors (e.g. transport, energy, food and agriculture). The action plans will address these limitations in order to maximize the health co-benefits both within and outside SIDS.

5.1 Progress 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 Adhanom Ghebreyesus, WHO Director-General, identified climate change as one out of four WHO's priorities for 2019–2023. Climate and environmental changes will affect other priorities by altering food and water security and safety, air quality, water and sanitation systems, and livelihoods.

With regards to the other WHO priorities, 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. Gathered at the Third Global Conference on Climate Change and Health, ministers of health and environment and other champions in SIDS committed to ensuring that climate change-related health considerations are properly represented in climate change and other relevant processes and fora as a way of advancing the SIDS Initiative. Similar champions are needed at national and subnational levels.

5.2 Progress 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 in 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 2019, WHO-UNFCCC climate and health country profiles will be developed for all SIDS through direct consultation with government/health authority focal points. Data for the SIDS country profiles will in part be generated by the WHO Climate and Health Country Surveys 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.

Also, efforts to develop new evidence on the health impacts of climate change and the opportunity to implement mitigation actions that maximize health co-benefits will be scaled-up as part of the SIDS Initiative.

5.3 Progress on Implementation

As science continually progresses, information and awareness raising of the risks of a changing climate within and outside health systems will be required. When there is insufficient awareness, choices may be made that are unlikely to be sufficiently 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. The SIDS Initiative will enable SIDS to scale-up the implementation of risk management approaches that build health resiliency to climate variability and

change both by the health sector (including health-care facilities) and other health-determining sectors (e.g. water, sanitation, food and agriculture).

Periodic reviews of best practices and lessons learnt on health adaptation would be valuable in informing scaling-up efforts.

Furthermore, the Initiative also aims to strengthen the role of the health sector by promoting health co-benefits of mitigation policies and measures being implemented by the most polluting sectors both within and outside SIDS.

5.4 Progress on Resources

Increased investments, capacity building and training to support the implementation of the Initiative on CC&H 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. SIDS contribute only around 1% to global GHG emissions driving anthropogenic climate change (UN-OHRLLS, 2015). 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 Table 9 (WPRO, 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 so that SIDS can access the international finance necessary to make adaptations, including from the GCF and the GEF. The Paris Agreement and supporting decisions include provisions on adaptation finance, which 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 9 Matrix of current and future funding opportunities for CC&H in SIDS

FUNDER	DESCRIPTION
<p>Green Climate Fund (GCF)</p> <p>http://www.greenclimate.fund/gcf101/empowering-countries/readiness-support</p>	<p>The GCF 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. GCF helps developing countries limit or reduce their GHG 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.</p>
<p>GEF Special Climate Change Fund (SCCF)</p> <p>http://www.who.int/globalchange/projects/adaptation/en/</p>	<p>SCCF is a special grants programme established by GEF to provide support for CC&H adaptation to LDCs.</p> <p>Two types of grants are provided:</p> <ol style="list-style-type: none"> 1. SCCF-A for adaptation 2. SCCF-B for technology transfer.
<p>GEF Least Developed Countries Fund (LDCF)</p> <p>https://www.thegef.org/project/building-resilience-health-systems-pacific-island-lDCs-climate-change</p>	<p>The GEF fund is a grant to support climate and health adaptation in LDCs in support of national adaptation programme of action (NAPA) implementation, if health is identified as a priority, or via other priority sectors.</p>

<p>GEF Adaptation Fund (AF)</p> <p>https://www.thegef.org/news/gef-and-adaptation-fund</p>	<p>This GEF fund supports “concrete” projects on climate adaptation. For health, this fund supports climate change monitoring of disease vectors, early warning systems, DRR, and establishing regional centres in response to these events.</p>
<p>World Bank Pilot Programme for Climate Resilience</p> <p>https://www.climateinvestmentfunds.org/fund/pilot-program-climate-resilience</p>	<p>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.</p>
<p>EU Global Climate Change Alliance (EU GCCA)</p> <p>http://www.gcca.eu/regional-programmes/gcca-pacific-small-island-states</p>	<p>The EU Global Climate Change Alliance 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.</p> <p>It also provides support on DRR, including climate monitoring and forecasting, and data-based preparedness measures.</p>
<p>World Bank International Development Association (WB IDA)</p> <p>http://documents.worldbank.org/curated/en/672261468771858006/The-World-Bank-strategy-for-health-nutrition-and-population-in-the-East-Asia-and-Pacific-region</p>	<p>The WB IDA provides grants, loans and technical assistance for CCA to reduce poverty, promote growth, reduce inequalities, and improve living conditions.</p> <p>It also supports works on adaptation and mitigation for water and energy.</p>
<p>Global Facility for Disaster Reduction and Recovery (GFDRR)</p> <p>https://www.gfdr.org/acp-eu/building-climate-and-disaster-resilience-in-the-pacific-with-risk-data</p>	<p>The GFDRR provides grants for CCA, DRR, recovery, risk financing and insurance, and capacity building.</p>

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 need to focus 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 (GHG; World Bank, 2018). This approach aligns health development and delivery with global and national goals for reducing GHG emissions, to reduce the magnitude and pattern of health risks that health systems will need to manage in the future. 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 in practice it remains elusive. However, dealing with the looming health challenges brought about by climate change requires not only an understanding of the health risks, but also of the dedication needed to work across departments within ministries of health and across ministries, whilst recognizing that the many drivers of greatest relevance to population health are not under the direct control of the health sector. 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.

6. CONCLUSIONS: DRAFT GLOBAL ACTION FOR THE IMPLEMENTATION OF THE SIDS INITIATIVE



The information gathered and the discussions held at the three meetings resulted in the development of individual reports, and regional action plans, which are presented separately (WPRO, 2018). They also provided the input to a draft global action plan, to support the regional and national activities. Building on the regional action plans for the implementation of the SIDS Initiative, a draft global action plan was developed in November 2018 and its final version will be submitted to the World Health Assembly in 2019. This takes stock of the progress made in advancing the different components of the SIDS Initiative and proposes strategic lines of action for each of those.

Included below is the vision, scope of the action plan as well as key actions and proposed indicators for each of those. Lastly, information on how implementation will could be monitored and measured is provided. This draft global action plan will be further considered and revised by Member States through the WHO Executive Board and the World Health Assembly.

6.1 Vision

This draft Global plan of action has a vision that by 2030, all health systems in small island developing States will be resilient to climate variability and change.

This vision must be realized in parallel with the steps taken by countries around the world to reduce carbon emissions, both to protect the most vulnerable from climate risks and to gain the health co-benefits of mitigation policies.

6.2 Scope

The draft Global plan of action aims to provide national health authorities in small island developing States with the political, technical and financial support and the evidence needed to:

- a** Better understand and address the effects of climate change on health, including those mediated via climate change impacts on the main determinants of health (e.g. food, air, water and sanitation).
- b** Improve the climate resilience and environmental sustainability of health services.
- c** Promote the implementation of climate change mitigation actions by the most polluting sectors (e.g. transport, energy, food and agriculture) that will maximize health co-benefits, both within and outside small island developing States.

The draft Global plan of action also aims to lead the way in transforming health services in small island developing States away from a model of curative services with escalating costs and towards a model based on disease prevention, climate resilience and sustainability. In addition, it aims to promote working in a more integrated way across different health programmes (e.g. environmental health, worker's health, health systems strengthening, emergency preparedness and response, food security and nutrition), and with other partners.

The Global plan of action is designed to support the special initiative on climate change and health in small island developing States, which is a voluntary grouping that includes small islands irrespective of their constitutional status, i.e. it includes the participation of independent States, overseas departments, dependencies and territories.

6.3 Strategic lines of action

The Global plan of action has four interlinked and mutually reinforcing strategic lines of action; each has two associated actions and two indicators for monitoring progress.

Strategic line of action 1

Empowerment:

Supporting health leadership in small island developing States to engage nationally and internationally

Health is increasingly recognized in climate discussions; nevertheless, it is still not routinely and formally identified as a priority, resulting in missed opportunities both to protect health and to promote health as an argument and success measure for climate action.

There is a need to ensure that connections between health and climate change are effectively incorporated into the official positions of relevant small island developing States groupings in global negotiations of the United Nations Framework Convention on Climate Change and other relevant sustainable development processes.

Small island developing States constitute about one fifth of United Nations and WHO Member States and could leverage their strength in numbers to advocate more effectively for global action. The strategic line of action on empowerment aims to ensure that the voice of health leaders, on behalf of the most vulnerable populations, becomes a driving force for adaptation in small island developing States and for mitigation by countries around the world.

Action 1.1

Establish at WHO a small island developing States hub or alternative coordination mechanism on small island developing States to provide support to climate change, environment and other priority health issues

This action will address the request from countries to identify and promote mechanisms that support an open process of engagement between small island developing States and WHO, and between small island developing States and other development partners. This action will support: building capacity among policy-makers on climate change; and health diplomacy and negotiations. The hub will

also work with other partners to connect the issue of climate change to other health and development priorities, including tourism, environment, waste management, agriculture, fisheries and industry. Progress will be monitored against the following indicator:

Indicator 1.1

Small island developing States coordination mechanism established in WHO for climate change, environment and other priority health issues

Action 1.2

Provide health sector inputs to the United Nations Framework Convention on Climate Change and to stakeholders leading relevant national climate change processes (e.g. national adaptation plans, national communications, nationally determined contributions)

To implement this action, WHO will work to strengthen the monitoring of health issues within international conventions and agreements on the environment, and will put in place regional risk assessment and risk communication mechanisms. Through the platform to address the health effects of climate change in small island developing States, WHO will work to ensure that health leaders in small island developing States are well informed by the latest evidence regarding the relationship between climate change and health and are empowered to highlight the threats and opportunities for action in national contexts during high-level engagements and international negotiations.

The Secretariat will also work to promote high-level engagement by working with Member States to include the small island developing States initiative in ongoing global and regional agendas and in small island developing States groupings within the United Nations Framework Convention on Climate Change, including the Alliance of Small Island States and the Group of 77 and the People's Republic of China. Progress will be monitored against the following indicator:

Indicator 1.2

Number of small island developing States that include health as a priority in their most recent national communications, national adaptation plans or nationally determined contributions to the United Nations Framework Convention on Climate Change

Strategic line of action 2

Evidence:

Building the business case for investment

The global evidence base for the impacts of climate change on health is comparable to that for any other climate-sensitive outcome (e.g. agriculture and water resources). However, this information is often not presented in an easily accessible form at the national or subnational levels where most policy decisions are made. It also often lacks the systematic economic evidence base that is necessary to make the case to potential investors, such as international climate finance institutions, development banks and national finance ministries. Finally, there is a lack of operational research on the implementation of climate change and health programmes in small island developing States and elsewhere.

In addition, the relatively small human resources and research capacity in most individual small island developing States presents a challenge in generating new, locally relevant research. There is therefore a need to ensure that existing evidence is connected as directly as possible to policy and to build capacity and strengthen the connections of national research institutions in small island developing States with each other, with research institutions outside such States and with policy-makers. This strategic line of action therefore aims to ensure that health ministries have the necessary health, environment and economic evidence to support scaled up investment in climate change and health, identify priority investments and monitor their impact.

Action 2.1

In collaboration with the United Nations Framework Convention on Climate Change, develop or update national climate change and health country profiles for every small island developing State

In collaboration with the United Nations Framework Convention on Climate Change, WHO has already produced country profiles for 45 countries, including six small island developing States. The platform to address the health effects of climate change in small island developing States will work with partners to conduct new or updated climate change and health vulnerability and adaptation assessments, and will explore with the Intergovernmental Panel on Climate Change the possibility of preparing a health and climate change report for small island developing States. Progress will be monitored against the following indicator:

Indicator 2.1

Number of countries that have completed climate and health country profiles supported by WHO and the United Nations Framework Convention on Climate Change

Action 2.2

Identify, support and build on existing centres of excellence for increasing capacity, conducting assessments, data analysis, research and implementation of actions, including with organizations and universities that have regional mandates

This action will include estimating the cost of climate change impacts on health in small island developing States; developing detailed investment plans, informed by sound economic analyses of costs and gaps, to increase the resilience of health-care systems, including health care facilities; conducting operational research in parallel with implementation and developing and implementing a research agenda, including by providing support to build research capacity in countries. It will also make better use of information on small island developing States to sensitize large emitting countries to take actions to reduce emissions. Progress will be monitored against the following indicator:

Indicator 2.2

Number of collaborating centres actively engaged in supporting the platform to address the health effects of climate change in small island developing States

Strategic line of action 3

**Implementation:
Preparedness for climate risks, adaptation, and health-promoting mitigation policies**

The Global plan of action will build on the experience gained in climate and health adaptation projects around the world, increasing coverage of evidence-based interventions within a comprehensive approach based on WHO's operational framework for building climate resilient health systems. It also aims to strengthen the role of the health sector in promoting health co-benefits of climate change

mitigation actions implemented by those sectors more responsible for global warming, both within and outside small island developing States.

This strategic line of action aims to bring about transformational change in health systems by promoting and supporting a culture of disease prevention, building the climate resilience of health systems and maximizing the health co-benefits of climate change mitigation policies.

Action 3.1

Support countries through regional frameworks to build climate resilient health systems

This action includes preventive measures, such as integrating into the implementation of universal health coverage the protection of the environmental determinants of health (e.g. water and food security) and the strengthening of the surveillance and control of climate-sensitive diseases. It also includes a specific focused effort on climate resilient and environmentally sustainable health care facilities (i.e. building or retrofitting health infrastructure to become resilient to extreme weather events and ongoing climate change; ensuring reliable access to, and efficient use of, energy and water; and reducing emissions of greenhouse gases. It will also entail baseline assessments and the development and implementation of climate mitigation plans for the health sector to reduce greenhouse gas emissions from energy, food, transportation and procurement. Progress will be monitored against the following indicator:

Indicator 3.1

Number of small island developing States that have initiated actions for climate resilient, environmentally sustainable health care facilities

Action 3.2

Develop and implement programmes to raise awareness and build capacity for adaptation and disease prevention both by people and by the health system

To implement this action, WHO will support small island developing States to implement national health adaptation plans and facilitate information-sharing, stocktaking and research, and will conduct advocacy and awareness campaigns for health

leaders, policy-makers, key stakeholders and the general public. This action will also require strengthening environmental health programmes to make a full contribution to preventive health services and primary health care (including disaster risk management) and the control of communicable and noncommunicable diseases (including mental health). Progress will be monitored against the following indicator:

Indicator 3.2

Number of countries that have begun implementation of climate change and health national adaptation plans or actions to achieve health co-benefits described in their nationally determined contributions to the United Nations Framework Convention on Climate Change

Strategic line of action 4

Resources:

Facilitating access to climate and health finance

A significant change in the current health vulnerability of the populations of small island developing States will not be possible without access to sufficient financial resources. Health ministers have prioritized the need to expand and diversify the funding streams potentially available to build health resilience to climate change. They have identified specific challenges, including the complexity of accessing the main climate finance mechanisms; the fact that no health agencies are currently accredited to these agencies; and that eligibility of countries for some funding streams is linked to overall measures of economic development without due account being taken of the particular challenges of small island developing States, such as high per capita costs of providing health care and high economic vulnerability to extreme weather events.

This strategic line of action aims to facilitate access to climate finance, development assistance and domestic resources so as to triple the current level of investment in climate change and health in small island developing States over the period 2019–2023.

Action 4.1

Lead a process to identify new and innovative forms of funding and resource mobilization mechanisms

This action will entail advocacy to facilitate equity and transparency in accessing funds, including supporting simplified funding mechanisms. Countries have also requested WHO to support the establishment of a special fund for small island developing States on climate and health (Small Island Developing States Climate and Health Fund). Progress will be monitored against the following indicator:

Indicator 4.1

Special fund on climate and health for small island developing States established (Small Island Developing States Climate and Health Fund)

Action 4.2

WHO will pursue the process to become an accredited agency for the Green Climate Fund and facilitate support to small island developing States

Small island developing States have advocated for WHO to facilitate mechanisms and overcome current complexities in obtaining funding for adaptation and mitigation in the health sector. The Secretariat will also continue to support countries by strengthening national leadership, advocacy and instruments to establish a clear process to access climate change and health financing. Progress will be monitored against the following indicator:

Indicator 4.2

Total funds received for the health sector as a percentage of total climate funds

6.4 Monitoring and reporting of progress

Progress in implementation of the Global plan of action will be monitored against the indicators defined above, based primarily on survey information collected in consultation with countries, which also form the basis of the climate and health country profiles supported by WHO and the United Nations Framework Convention on Climate Change. It is proposed that progress be reported biennially to the World Health Assembly. ¹

¹ WHO regional committees may wish to consider separate monitoring arrangements for individual regional action plans.

REFERENCES

- AFRO (2008). Brazzaville: WHO Regional Office for Africa. Libreville declaration on health and environment in Africa. Libreville, 29 August, 2008. <https://afro.who.int/publications/libreville-declaration>
- AFRO (2010). Brazzaville: WHO Regional Office for Africa. Implementation of the Libreville declaration on health and environment in Africa. Luanda commitment. Luanda, 26 November 2010.
- AFRO (2012). Brazzaville: WHO Regional Office for Africa. Adaptation to climate change in Africa- Plan of action for the health sector, 2012-2016.
- AFRO (2017) – Brazzaville: WHO Regional Office for Africa. Opening Remarks of Dr. Matshidiso Moeti, WHO Regional Director for Africa, at the 6th Meeting of Small Island Developing States (SIDS) in the African Region, Victoria, Seychelles. <http://www.afro.who.int/regional-director/speeches-messages/opening-remarks-dr-matshidiso-moeti-who-regional-director>
- AFRO (2018). Brazzaville: WHO Regional Office for Africa. Clim-HEALTH Africa International Network. <http://www.climhealthafrica.org>
- Bowen KJ, Ebi KL (2015). Governing the health risks of climate change: towards multi-sector responses. *Curr Opin Environ Sustain.* 12:80–5.
- CARPHA, PAHO, CIMH (2017). Health-Climatic Bulletin. Caribbean Regional Climate Centre, Pan-American Health Organization, Caribbean Institute for Meteorology and Hydrology (<https://rcc.cimh.edu.bb/caribbean-health-climatic-bulletin/>, accessed 21 November 2018).
- Ebi KL, Hallegatte S, Kram T, Arnell NW, Carter TR, Edmonds J et al. (2014). A new scenario framework for climate change research: background, process, and future directions. *Climatic Change.* 122:363–72. doi.org/10.1007/s10584-013-0912-3
- Ebi KL, Ogden NH, Semenza JC, Woodward A (2017). Detecting and attributing health burdens to climate change. *Environ Health Perspect.* 125:085004. [doi: 10.1289/EHP1509](https://doi.org/10.1289/EHP1509)
- EDGAR (2018). Emissions Database for Global Atmospheric Research [online database]. Fossil CO₂ & GHG emissions of all world countries, 2017. In: European Commission Joint Research Centre [website] (<http://edgar.jrc.ec.europa.eu/overview.php?v=CO2andGHG1970-2016&dst=CO2pc>, accessed 18 November 2018).
- EM-DAT (2018). The International Disaster Database [online database]. Brussels: Centre for Research on the Epidemiology of Disasters (CRED) (<https://www.emdat.be>, accessed 21 November 2018).
- IPCC (2012). Managing the risks of extreme events and disasters to advance climate change adaptation: special report of the Intergovernmental Panel on Climate Change. Cambridge: Cambridge University Press.
- McIver L, Kim R, Woodward A, Hales S, Spickett J, Katscherian D et al. (2016). Health impacts of climate change in Pacific island countries: a regional assessment of vulnerabilities and adaptation priorities. *Environ Health Perspect.* 124:1707–14. doi.org/10.1289/ehp.1509756
- PAHO (2011). Strategy and Plan of Action on Climate Change, Washington DC: Pan American Health Organization, WHO Regional Office for the Americas (<http://iris.paho.org/xmlui/handle/123456789/1717>, accessed 21 November 2018).
- PAHO (2014). Strategic Plan of the Pan American Health Organization, 2014–2019. Washington DC: Pan American Health Organization, WHO Regional Office for the Americas (<https://www.paho.org/hq/dmdocuments/2017/paho-strategic-plan-eng-2014-2019.pdf>, accessed 21 November 2018).
- PAHO (2015). Caribbean Environmental Health Conference. CCH III Review and CCH IV Planning Workshop Report. Washington DC: Pan American Health Organization, WHO Regional Office for the Americas https://www.paho.org/ocpc/index.php?option=com_docman&view=document&slug=2015-caribbean-environmental-health-conference-7&layout=default&alias=77-2015-caribbean-environmental-health-conference-7&category_slug=workshops&Itemid=490 (accessed 21 November 2018).
- PAHO (2016a). Advancing the Caribbean cooperation in health: review of CCH III and preparation for CCH IV. Caribbean Regional Consultation. Washington DC: Pan American Health Organization, WHO Regional Office for the Americas https://www.paho.org/ocpc/index.php?option=com_docman&view=download&alias=157-advancing-the-caribbean-cooperation-in-health-review-of-cch-iii-and-preparation-for-cch-iv&category_slug=cch-iii-caribbean-cooperation-in-health&Itemid=490 (accessed 21 November 2018).
- PAHO (2016b). Working for health in the Caribbean. Subregional Cooperation strategy 2016–2019.

Washington DC: Pan American Health Organization, WHO Regional Office for the Americas (https://www.paho.org/ocpc/index.php?option=com_docman&view=download&alias=79-paho-who-subregional-cooperation-strategy-9&category_slug=paho-who-subregional-cooperation-strategy-2016-2019-796&Itemid=490 (accessed 21 November 2018)).

PAHO (2017). Smart Hospitals Toolkit. Washington DC: Pan American Health Organization, WHO Regional Office for the Americas MIGHT BE LINK BELOW (http://iris.paho.org/xmlui/bitstream/handle/123456789/34977/9789275119396_eng.pdf?sequence=1&isAllowed=y (accessed 21 November 2018)).

PAHO/WHO (2018). PAHO/WHO Multi-country cooperation strategy for Barbados and Eastern Caribbean countries, 2018–2024. Washington DC: Pan American Health Organization, World Health Organization Regional Office for the Americas (https://www.paho.org/ecc/index.php?option=com_docman&view=download&alias=88-paho-who-multi-country-cooperation-strategy-for-barbados-and-eastern-caribbean-countries&category_slug=publications&Itemid=154, accessed 21 November 2018).

Prüss-Üstün A, Wolf J, Corvalán C, Bos R, Neira M (2016). Preventing disease through healthy environments: a global assessment of the burden of disease from environmental risks. Geneva: World Health Organization (http://apps.who.int/iris/bitstream/10665/204585/1/9789241565196_eng.pdf, accessed 18 November 2018).

SEARO (2009). Delhi: WHO Regional Office for South-East Asia. South-East Asia Regional Committee: Climate Change and Human Health, (SEA/RC62/R2).

SEARO (2012). Regional strategy for protecting health from climate change. New Delhi: WHO Regional Office for South-East Asia (SEA/EHC-575 (R.1); http://apps.searo.who.int/PDS_DOCS/B4845.pdf?ua=1 (accessed 21 November 2018)).

SEARO (2017). WHO South-East Asia Region commits to building health systems resilience to climate change [website]. New Delhi: WHO Regional Office for South-East Asia (<http://www.searo.who.int/mediacentre/releases/2017/1656/en/>, accessed 21 November 2018).

Smith KR, Woodward A, Campbell-Lendrum D, Chadee DD, Honda Y et al. (2014). Human health: impacts, adaptation, and co-benefits. In: Field CD, Barros VR, Kokken DJ, et al., editors. Climate change 2014: impacts, adaptation, and vulnerability. Part A: global and sectoral aspects. Working Group II contribution to the Fifth Assessment Report of

the Intergovernmental Panel on Climate Change. Cambridge and New York: Cambridge University Press: 709–54.

UN (2012). The future we want. Outcome document of the United Nations Conference on Sustainable Development Rio de Janeiro, Brazil, 20–22 June. New York: United Nations (<https://sustainabledevelopment.un.org/content/documents/733FutureWeWant.pdf> accessed 18 November 2018).

UN (2014). Resolution adopted by the General Assembly on 14 November 2014. 69/15. SIDS Accelerated Modalities of Action (SAMOA) Pathway. Outcome of the Third International Conference on Small Island Developing States (SIDS Conference), 1–4 September 2014, Samoa. New York: United Nations, 2014 (A/RES/69/15, https://unctad.org/meetings/en/SessionalDocuments/ares69d15_en.pdf, accessed 18 November 2018).

UNFCCC (2015). Paris Agreement. Paris: United Nations Framework Convention on Climate Change. (http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf, accessed 13 August 2018).

UN-OHRLLS (2015). Small Island Developing States in Numbers. Climate change edition 2015. New York, NY: United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States. (https://sustainabledevelopment.un.org/content/documents/2189SIDS-IN-NUMBERS-CLIMATE-CHANGE-EDITION_2015.pdf, accessed 26 October 2018).

WHO (2000). Workshop report: Climate variability and change and their health effects in Pacific island countries. Apia, Samoa, 25–28 July 2000. Geneva: World Health Organization (http://apps.who.int/iris/bitstream/10665/66777/1/WHO_SDE_OEH_01.1.pdf, accessed 18 November 2018).

WHO (2003). Climate variability and change and their health effects in the Caribbean: Information for adaptation planning in the health sector. Conference May 21–22, 2002. Workshop May 23–25, 2002. St. Philip, Barbados, West Indies. Geneva: World Health Organization (<http://apps.who.int/iris/bitstream/handle/10665/42722/9241590718.pdf?sequence=1&isAllowed=y>, accessed 21 November 2018).

WHO (2004). Synthesis Workshop on Climate Variability, Climate Change and Health in Small-Island States. Bandos Island Resort, Maldives, 1–4 December 2003. Geneva: World Health Organization (<http://www.who.int/globalchange/climate/en/oeh0402.pdf>, accessed 18 November 2018).

WHO (2010). Vision 2030. The resilience of water supply and sanitation in the face of climate change. Technical report. Geneva: World Health Organization (http://apps.who.int/iris/bitstream/handle/10665/70462/WHO_HSE_WSH_10.01_eng.pdf, accessed 18 November 2018).

WHO (2014). Quantitative risk assessment of the effects of climate change on selected causes of death, 2030s and 2050s. Geneva: World Health Organization (http://apps.who.int/iris/bitstream/10665/134014/1/9789241507691_eng.pdf, accessed 18 November 2018).

WHO (2015). Operational framework for building climate resilient health systems. Geneva: World Health Organization (http://apps.who.int/iris/bitstream/10665/189951/1/9789241565073_eng.pdf, accessed 18 November 2018).

WHO (2017). Climate change and health in Small Island Developing States: WHO Special Initiative in collaboration with UNFCCC Secretariat and Fijian Presidency of COP-23 (draft). Geneva: World Health Organization (https://www.who.int/globalchange/sids-initiative/180612_global_initiative_sids_clean_v2.pdf, accessed 18 November 2018).

WHO (2018). Health systems strengthening glossary [website]. Geneva: World Health Organization (http://www.who.int/healthsystems/hss_glossary/en/index5.html, accessed 19 November 2018).

WHO/PAHO (2003). Climate Variability and Change and their Health Effects in the Caribbean: Information for Adaptation Planning in the Health Sector. Conference, 21–22 May 2002. Workshop 23–25 May 2002. St. Philip, Barbados. Washington DC: Pan American Health Organization, WHO Regional Office for the Americas (<http://apps.who.int/iris/handle/10665/42722>, accessed 21 November 2018).

WHO, World Bank (2017). Healthy systems for universal health coverage – a joint vision for healthy lives. Geneva and Washington DC: World Health Organization, International Bank for Reconstruction and Development, World Bank (https://www.uhc2030.org/fileadmin/uploads/uhc2030/Documents/About_UHC2030/mgt_arrangemts___docs/UHC2030_Official_documents/UHC2030_vision_paper_WEB2.pdf, accessed 18 November 2018).

World Bank (2018). Madagascar climate change and health diagnostic. Risks and opportunities for climate-smart health and nutrition investment. Washington, DC: World Bank (<http://documents.worldbank.org/curated/en/936661516004441146/pdf/121945-12-1-2018-11-21-5-WorldBankMadagascarClimateChangeandHealthDiagnosticJan.pdf>, accessed 18 November 2018).

WPRO (2015a). 2015 Yanuca Island Declaration on health in Pacific island countries and territories. Manila: World Health Organization Regional Office for the Western Pacific (http://www.wpro.who.int/southpacific/pic_meeting/2015/phmmdeclaration2015_english_final_nov3.pdf, accessed 18 November 2018).

WPRO (2015b). Human health and climate change in Pacific island countries. Manila: World Health Organization Regional Office for the Western Pacific (http://iris.wpro.who.int/bitstream/handle/10665.1/12399/9789290617303_eng.pdf, accessed 18 November 2018).

WPRO (2017). Report on the progress of the Healthy Islands Monitoring Framework. Twelfth Pacific Health Ministers Meeting. PIC12/1. Rarotonga, Cook Islands, 28–30 August 2017. Manila: World Health Organization Regional Office for the Western Pacific (http://www.wpro.who.int/southpacific/pic_meeting/2017/documents/12thphmm_session01_himf_16aug.pdf, accessed 18 November 2018).

WPRO (2018). Climate change and health in Small Islands Developing States: a WHO special initiative, Pacific islands countries and areas. Manila: World Health Organization Regional Office for the Western Pacific (<http://iris.wpro.who.int/handle/10665.1/14273>; accessed 26 November 2018).

CLIMATE CHANGE AND HEALTH IN SMALL ISLAND DEVELOPING STATES

A WHO SPECIAL INITIATIVE

With this report, the World Health Organization presents the Special Initiative on Climate Change and Health in Small Islands Developing States (SIDS), and the Global Action Plan for its implementation.

The special initiative aims to strengthen health systems by capturing evidence revealing the impacts of climate change, and to empower the health sector to understand, mitigate and adapt to climate change, as well as to implement the actions sanctioned by Member States that are needed to address the impacts of climate change on health; and triple the funding to implement them.

The Global Action Plan addresses a lack of action in one of the most vulnerable groupings of Member States. Building on the regional action plans for the implementation of the SIDS Initiative, the global action plan takes stock of the progress made in advancing the different components of the SIDS Initiative and proposes strategic lines of action for each of those.