

MAURITIUS



HEALTH & CLIMATE CHANGE **COUNTRY PROFILE 2021**

Small Island Developing States Initiative



United Nations
Framework Convention on
Climate Change

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EXECUTIVE SUMMARY

Despite producing very little greenhouse gas emissions that cause climate change, people living in small island developing States (SIDS) are on the front line of climate change impacts. These countries face a range of acute to long-term risks, including extreme weather events such as floods, droughts and cyclones, increased average temperatures and rising sea levels. Many of these countries already have a high burden of climate-sensitive diseases that are then exacerbated by climate change. As is often the case, nations at greatest risk are often under-resourced and unprotected in the face of escalating climate and pollution threats. In recent years, the voice of the small island nation leaders has become a force in raising the alarm for urgent global action to safeguard populations everywhere, particularly those whose very existence is under threat.

Recognizing the unique and immediate threats faced by small islands, WHO has responded by introducing the WHO Special Initiative on Climate Change and Health in Small Island Developing States (SIDS). The initiative was launched in November 2017 in collaboration with the United Nations Framework Convention on Climate Change (UNFCCC) and the Fijian Presidency of the COP23 in Bonn, Germany, with the vision that by 2030 all health systems in SIDS will be resilient to climate variability and climate change. It is clear though that building resilience must happen in parallel with the reduction of carbon emissions by countries around the world in order to protect the most vulnerable from climate risks and to gain the health co-benefits of mitigation policies.

The WHO Special Initiative on Climate Change and Health in SIDS aims to provide national health authorities in SIDS with the political, technical and financial support required to better understand and address the effects of climate change on health.

A global action plan has been developed by WHO which outlines four pillars of action for achieving the vision of the initiative; empowerment of health leaders to engage nationally and internationally, evidence to build the investment case, implementation to strengthen climate resilience, and resources to facilitate access to climate finance. In March 2018, Ministers of Health gathered in Mauritius to develop a regional SIDS action plan to outline the implementation of the SIDS initiative locally and to identify national and regional indicators of progress.

As part of the regional action plan, small island nations have committed to developing a WHO UNFCCC health and climate change country profile to present evidence and monitor progress on health and climate change.

This WHO UNFCCC health and climate change country profile for Mauritius provides a summary of available evidence on climate hazards, health vulnerabilities, health impacts and progress to date in the health sector's efforts to realize a climate-resilient health system.

KEY RECOMMENDATIONS

1

DEVELOP AND IMPLEMENT A CLIMATE CHANGE AND HEALTH STRATEGIC ACTION PLAN FOR MAURITIUS

Develop a national health and climate change plan. Its full implementation will be supported by ensuring that adaptation priorities are specified; health co-benefits from mitigation and adaptation measures are considered; necessary budget requirements are allocated; and regular monitoring and review of progress.

2

CONDUCT A HEALTH VULNERABILITY, IMPACTS AND ADAPTATION ASSESSMENT

Conduct a national assessment of climate change impacts, vulnerability and adaptation for health. Ensure that results of the assessment are used for policy prioritization and the allocation of human and financial resources in the health sector.

3

ADDRESS BARRIERS TO ACCESSING INTERNATIONAL CLIMATE CHANGE FINANCE TO SUPPORT HEALTH ADAPTATION

No international funding is currently being accessed to aid with health and climate change initiatives. Additional funding would help to further the implementation of policies and to strengthen health system resilience to climate change.

4

BUILD CLIMATE-RESILIENT AND ENVIRONMENTALLY SUSTAINABLE HEALTH CARE FACILITIES

Measures can be taken to prevent the potentially devastating impacts of climate change on health service provision, including: conducting hazard assessments, climate-informed planning and costing, strengthening structural safety, contingency planning for essential systems (electricity, heating, cooling, ventilation, water supply, sanitation services, waste management and communications). A commitment towards low-emission, sustainable practices to improve system stability, promote a healing environment and to mitigate climate change impacts can also be taken.

WHO RESOURCES TO SUPPORT ACTION ON THESE KEY RECOMMENDATIONS:

<https://www.who.int/activities/building-capacity-on-climate-change-human-health/toolkit/>

BACKGROUND

Mauritius is an island state located in the Indian Ocean in Southern Africa. The climate is tropical, consisting of dry winters and humid summers. Mauritius' terrain consists of a central plateau surrounded by mountains, with the main island almost completely surrounded by coral reefs (1). Whilst absolute poverty is low in Mauritius, income inequality is an issue which could hinder socio-economic development (2).

Mauritius is considered a particularly vulnerable nation to the impacts of climate change (3,4). These impacts include: rising temperatures, altered precipitation patterns, sea level rise, coastal erosion, and increased extreme weather events. Such changes present health risks to the population of Mauritius, including increased risk

of vector-borne diseases, noncommunicable diseases, food insecurity and the destruction of marine habitats, with associated negative effects for human health (4).

Climate change adaptation and mitigation are top priorities of the Mauritius Government's Programme of 2015–2019, and include legislation such as the National Disaster Risk Reduction and Management Act (2016) and the National Climate Change Adaptation Policy Framework (2012) (4). Health sector adaptation is also recognized as a top adaptation priority in Mauritius' Nationally Determined Contribution (NDC) to the UNFCC, to enable the country to cope with its growing population and additional climate-related health burdens (5).



CLIMATE HAZARDS RELEVANT FOR HEALTH

Climate hazard projections for Mauritius

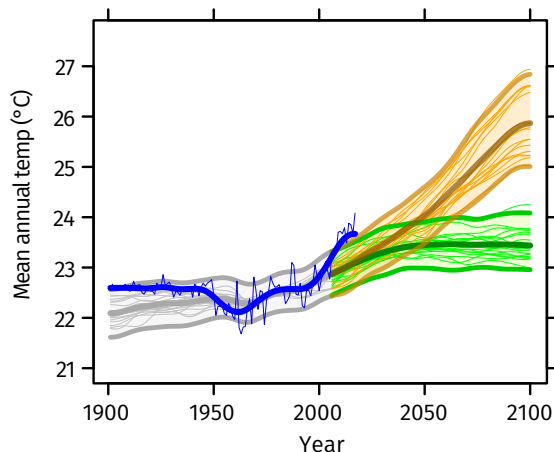
Country-specific projections are outlined up to the year 2100 for climate hazards under a 'business as usual' high emissions scenario compared to projections under a 'two-degree' scenario with rapidly decreasing global emissions (see Figures 1–5).

The climate model projections below present climate hazards under a high emissions scenario, Representative Concentration Pathway 8.5 (RCP8.5 – in orange) and a low emissions scenario (RCP2.6 – in green).^a The text describes the projected changes averaged across about 20 global climate models (thick line). The figures^b also show each model individually as well as the 90% model range (shaded) as a measure of uncertainty and the annual and smoothed observed record (in blue).^c In the following text the present-day baseline refers to the 30-year average for 1981–2010 and the end-of-century refers to the 30-year average for 2071–2100.

Modelling uncertainties associated with the relatively coarse spatial scale of the models compared with that of small island States are not explicitly represented. There are also issues associated with the availability and representativeness of observed data for such locations.

Rising temperature

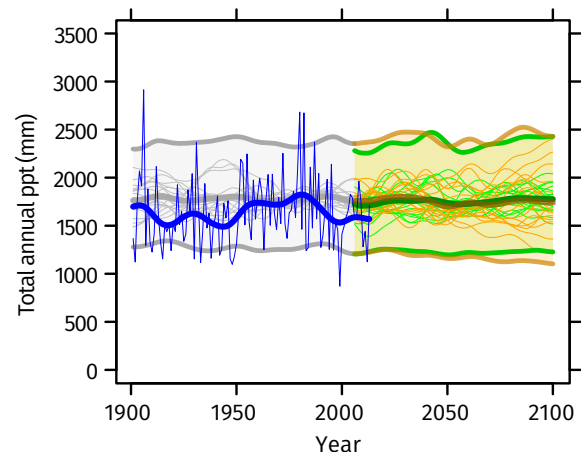
FIGURE 1: Mean annual temperature, 1900–2100



Under a high emissions scenario, the mean annual temperature is projected to rise by about 2.8°C on average by the end-of-century (i.e. 2071–2100 compared with 1981–2010). If emissions decrease rapidly, the temperature rise is limited to about 0.8°C.

Little change in total precipitation

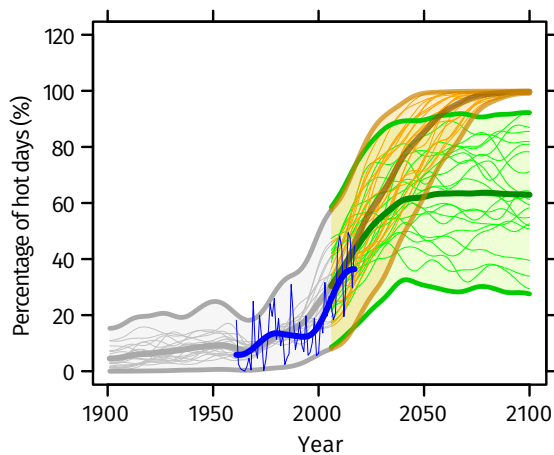
FIGURE 2: Total annual precipitation, 1900–2100



Total annual precipitation is projected to remain almost unchanged on average under a high emissions scenario, although the uncertainty range is large (-22% to +18%). If emissions decrease rapidly, there is little projected change on average, with an uncertainty range of -9% to +9%.

More high temperature extremes

FIGURE 3: Percentage of hot days ('heat stress'), 1900–2100



The percentage of hot days^d is projected to increase substantially from about 15% of all observed days on average in 1981–2010 (10% in 1961–1990). Under a high emissions scenario, almost 100% of days on average are defined as 'hot' by the end-of-century. If emissions decrease rapidly, about 65% of days on average are 'hot'. Note that the models tend to overestimate the observed increase in hot days (by about 4% on average for 1981–2010). Similar increases are seen in hot nights^d (not shown).

FIGURE 5: Standardized Precipitation Index ('drought'), 1900–2100

The Standardized Precipitation Index (SPI) is a widely used drought index which expresses rainfall deficits/excesses over timescales ranging from 1 to 36 months (here 12 months, i.e. SPI12).^f It shows how at the same time extremely dry and extremely wet conditions, relative to the average local conditions, change in frequency and/or intensity.

SPI12 values show little projected change from an average of about -0.4, indicating little change on average in the frequency and/or intensity of wet episodes and drought events. Year-to-year variability remains large with both wet and dry episodes of varying intensity continuing to occur into the future.^f

NOTES

^a Model projections are from CMIP5 for RCP8.5 (high emissions) and RCP2.6 (low emissions). Model anomalies are added to the historical mean and smoothed.

^b Observed historical record of mean temperature and total precipitation is from CRU-TSv3.26. Observed historical records of extremes are from JRA55 for temperature and from GPCC-FDD for precipitation.

^c Analysis by the Climatic Research Unit, University of East Anglia, 2018.

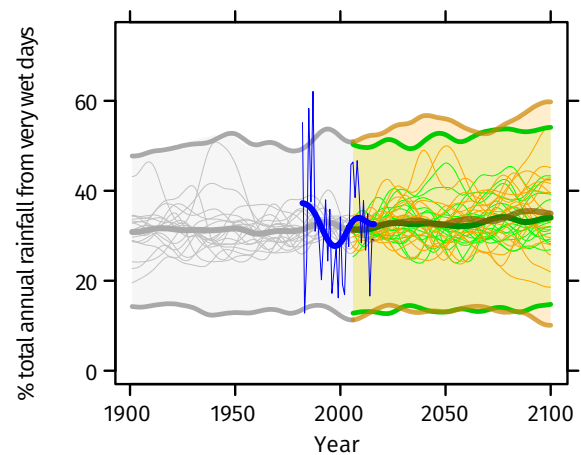
^d A 'hot day' ('hot night') is a day when maximum (minimum) temperature exceeds the 90th percentile threshold for that time of the year.

^e The proportion (%) of annual rainfall totals that falls during very wet days, defined as days that are at least as wet as the historically 5% wettest of all days.

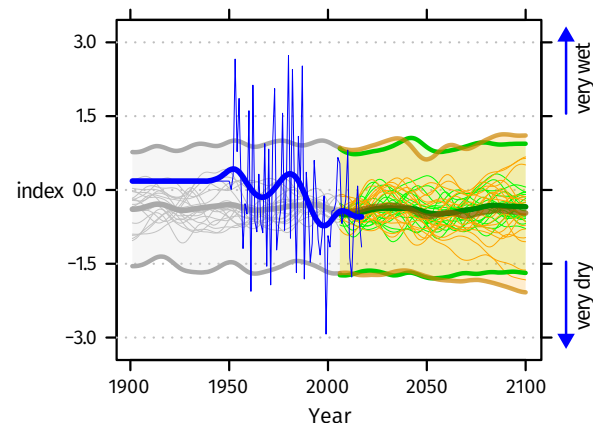
^f SPI is unitless but can be used to categorize different severities of drought (wet): above +2.0 extremely wet; +2.0 to +1.5 severely wet; +1.5 to +1.0 moderately wet; +1.0 to +0.5 slightly wet; -0.5 to -1.0 slight drought; -1.0 to -1.5 moderate drought; -1.5 to -2.0 severe drought; below -2.0 extreme drought.

Small increase in extreme rainfall

FIGURE 4: Contribution to total annual rainfall from very wet days ('extreme rainfall' and 'flood risk'), 1900–2100

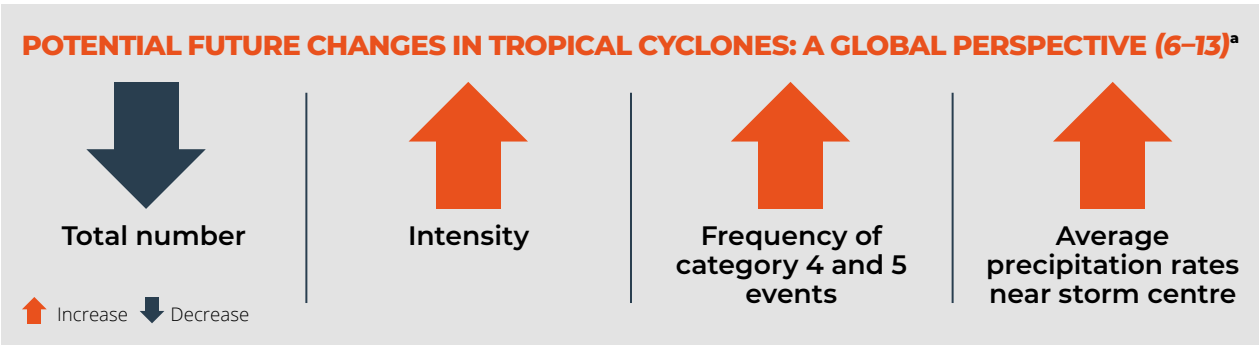


Under a high emissions scenario, the proportion of total annual rainfall from very wet days^e (about 32% for 1981–2010) could increase a little by the end-of-century (to about 35% of days on average with an uncertainty range of about 12% to 57%), with less change if emissions decrease rapidly. Total annual rainfall shows little projected change (see Figure 2).



Tropical cyclones

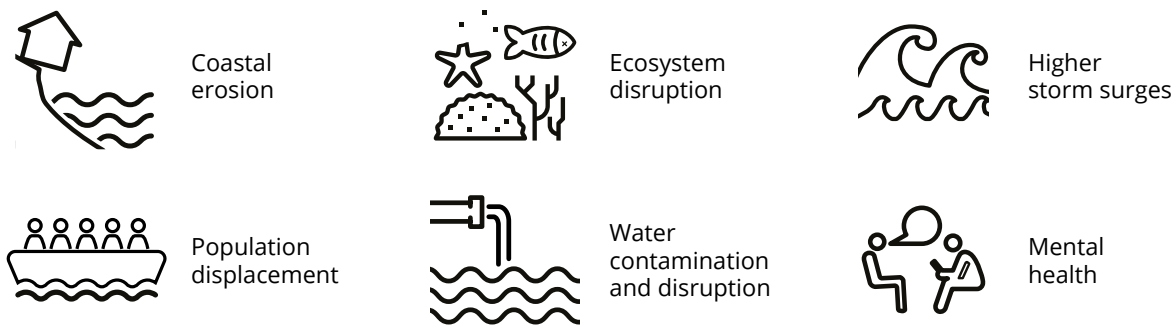
It is anticipated that the total number of tropical cyclones may decrease towards the end of the century. However, it is likely that human-induced warming will make cyclones more intense (an increase in wind speed of 2–11% for a mid-range scenario (i.e. RCP4.5 which lies between RCP2.6 and RCP8.5 – shown on pages 4–5) or about 5% for 2°C global warming). Projections suggest that the most intense events (category 4 and 5) will become more frequent (although these projections are particularly sensitive to the spatial resolution of the models). It is also likely that average precipitation rates within 100 km of the storm centre will increase – by a maximum of about 10% per degree of warming. Such increases in rainfall rate would be exacerbated if tropical cyclone translation speeds continue to slow (6–13).^a



Sea level rise

Sea level rise is one of the most significant threats to low-lying areas on small islands and atolls. Research indicates that rates of global mean sea level rise are almost certainly accelerating as a result of climate change. The relatively long response times to global warming mean that sea level will continue to rise for a considerable time after any reduction in emissions. The continuing rise in sea level means that higher storm surge levels can be expected regardless of any other changes in the characteristics of storm surges.

Potential impacts of sea level rise include



^a Information and understanding about tropical cyclones (including hurricane and typhoons) from observations, theory and climate models have improved in the past few years. It is difficult to make robust projections for specific ocean basins or for changes in storm tracks. Presented here is a synthesis of the expected changes at the global scale.

HEALTH VULNERABILITY AND ADAPTIVE CAPACITY

SDG indicators related to health and climate change

Many of the public health gains we have made in recent decades are at risk due to the direct and indirect impacts of climate variability and climate change. Sustainable development across sectors can strengthen health resilience to climate change.

1. NO POVERTY



Proportion of population living below the national poverty line (2012) (14)

7.9%

3. GOOD HEALTH AND WELL-BEING



63

Universal Health Coverage
Service Coverage Index (2017)^a (15)

5.7%

Current health expenditure as percentage of gross domestic product (GDP) (2016) (16)

13.1

Under-five mortality rate
(per 1000 live births) (2017) (17)

6. CLEAN WATER AND SANITATION



Proportion of total population using at least basic drinking-water services (2017)^b (18)

100%

Proportion of total population using at least basic sanitation services (2017)^b (18)

96%



13. CLIMATE ACTION

Total number of weather-related disasters recorded between 2000 and 2018^c (19)

4

Highest total number of persons affected by a single weather-related disaster between 2000 and 2018^c (19)

30 000

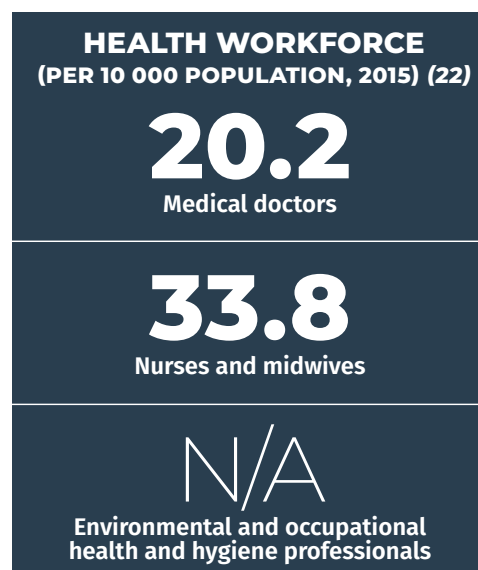
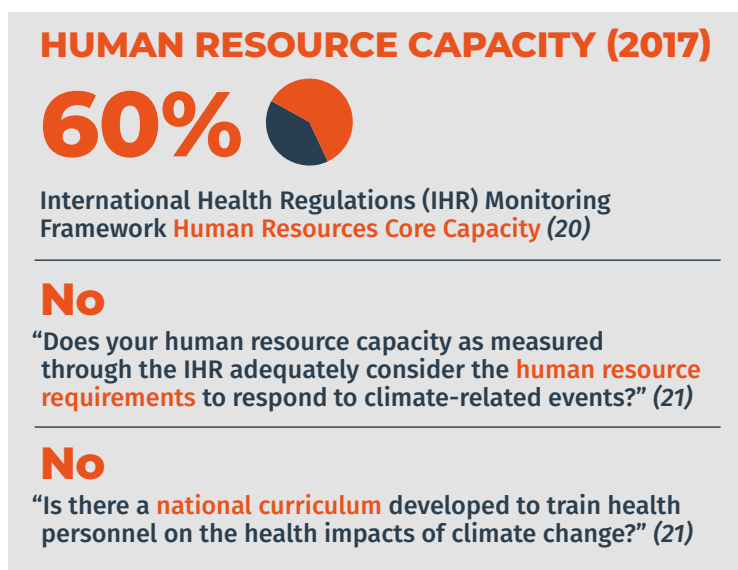
^a The index is based on 'medium' data availability. Values greater than or equal to 80 are presented as ≥80 as the index does not provide fine resolution at high values; 80 should not be considered a target.

^b Data for safely managed drinking-water and sanitation services are not consistently available for all SIDS at this time, therefore 'at least basic services' has been reported on for comparability.

^c Data for SDG13.1 are currently not available. Alternative indicators and data sources are presented.

Health workforce

Public health and health care professionals require training and capacity-building to have the knowledge and tools necessary to build climate resilient health systems. This includes an understanding of climate risks to individuals, communities and health care facilities, and approaches to protect and promote health given the current and projected impacts of climate change.



While there are no specific WHO recommendations on national health workforce densities, the 'Workload Indicators of Staffing Need' (WISN) is a human resource management tool that can be used to provide insights into staffing needs and decision-making. Additionally, the National Health Workforce Accounts (NHWA) is a system by which countries can progressively improve the availability, quality and use of health workforce data through monitoring of a set of indicators to support achievement of universal health coverage (UHC), SDGs and other health objectives. The purpose of the NHWA is to facilitate the standardization and interoperability of health workforce information. More details about these two resources can be found at: <https://www.who.int/activities/improving-health-workforce-data-and-evidence>.

Health care facilities

Climate change poses a serious threat to the functioning of health care facilities. Extreme weather events increase the demand for emergency health services but can also damage health care facility infrastructure and disrupt service provision. Increased risks of climate-sensitive diseases will also require greater capacity from often already strained health services. In SIDS, health care facilities are often in low-lying areas, subject to flooding and storm surges making them particularly vulnerable.

0.16
Health centres*
(20)

0.96
Hospitals* (20)

* Total density per 100 000 population (2013)

HEALTH IMPACTS OF CLIMATE CHANGE

Heat stress

Climate change is expected to increase the mean annual temperature and the intensity and frequency of heat waves, resulting in a greater number of people at risk of heat-related medical conditions. Heat waves, i.e. prolonged periods of excessive heat, can pose a particular threat to human, animal and even plant health, resulting in loss of life, livelihoods, socioeconomic output, reduced labour productivity, rising demand for and cost of cooling options, as well as contribute to the deterioration of environmental determinants of health (air quality, soil, water supply).

Heat stress impacts include:

- heat rash/heat cramps
- dehydration
- heat exhaustion/heat stroke
- death.

Particularly vulnerable groups are:

- the elderly
- children
- individuals with pre-existing conditions (e.g. diabetes)
- the socially isolated.

Infectious and vector-borne diseases

Some of the world's most virulent infections are also highly sensitive to climate: temperature, precipitation and humidity have a strong influence on the life-cycles of the vectors and the infectious agents they carry and influence the transmission of water- and foodborne diseases (23,24).

Small island developing States (SIDS) are vulnerable to disease outbreaks. Climate change could affect the seasonality of such outbreaks, as well as the transmission of vector-borne diseases (25–28).



Noncommunicable diseases, food and nutrition security

Small Island Developing States (SIDS) face distinct challenges that render them particularly vulnerable to the impacts of climate change on food and nutrition security including: small, and widely dispersed, land masses and population; large rural populations; fragile natural environments and lack of arable land; high vulnerability to climate change, external economic shocks, and natural disasters; high dependence on food imports; dependence on a limited number of economic sectors; and distance from global markets. The majority of SIDS also face a “triple-burden” of malnutrition whereby undernutrition, micronutrient deficiencies and overweight and obesity exist simultaneously within a population alongside increasing rates of diet-related NCDs.

Climate change is likely to exacerbate the triple-burden of malnutrition and the metabolic and lifestyle risk factors for diet-related NCDs. It is expected to reduce short- and long-term food and nutrition security both directly, through its effects on agriculture and fisheries, and indirectly, by contributing to underlying risk factors such as water insecurity, dependency on imported foods, urbanization and migration and health service disruption. These impacts represent a significant health risk for SIDS, with their particular susceptibility to climate change impacts and already over-burdened health systems, and this risk is distributed unevenly, with some population groups experiencing greater vulnerability.

NONCOMMUNICABLE DISEASES IN MAURITIUS^a

65.8

Healthy life expectancy
(2016) (29)

5.8%

Adult population considered
undernourished (2015–2017,
3-year average) (30)

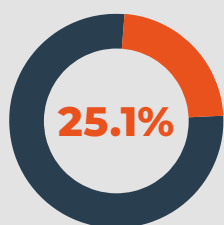
11.5%

Adult population considered
obese (2016) (31)

14.2%

Prevalence of **diabetes**
in the adult population (2014) (32)

MOTHER AND CHILD HEALTH



**Iron deficiency
anaemia in
women of reproduc-
tive age (2016) (33)**



**Wasting in children
under five years
of age (34)**



**Stunting in children
under five years
of age (34)**



**Overweight in
children under five
years of age (34)**

^a National estimates may be available. Please see Ministry of Health and Quality of Life, 2015. The Trends in Diabetes and Cardiovascular Disease Risk in Mauritius The Mauritius Non Communicable Diseases Survey 2015.

HEALTH SECTOR RESPONSE: MEASURING PROGRESS

The following section measures progress in the health sector in responding to climate threats based on country reported data collected in the 2018 WHO Climate and Health Country Survey (21). Key indicators are aligned with those identified in the Small Island Developing State Action Plan.

Empowerment: Progress in leadership and governance

National planning for health and climate change

Has a national health and climate change strategy or plan been developed? ^a	X
Title: N/A	
Year: N/A	
Content and implementation	
Are health adaptation priorities identified in the strategy/plan?	N/A
Are the health co-benefits of mitigation action considered in the strategy/plan?	N/A
Performance indicators are specified	N/A
Level of implementation of the strategy/plan	N/A
Current health budget covers the cost of implementing the strategy/plan	N/A

✓=yes, X=no, O=unknown, N/A=not applicable

^a In this context, a national strategy or plan is a broad term that includes national health and climate strategies as well as the health component of national adaptation plans (H-NAPs).

Intersectoral collaboration to address climate change

Is there an agreement in place between the ministry of health and other sectors in relation to health and climate change policy?

Sector ^b	Agreement in place
Transportation	X
Electricity generation	X
Household energy	X
Agriculture	X
Social services	✓
Water, sanitation and wastewater management	✓

✓=yes, X=no, O=unknown, N/A=not applicable

^b Specific roles and responsibilities between the national health authority and the sector indicated are defined in the agreement.

Evidence: Building the investment case

Vulnerability and adaptation assessments for health

Has an assessment of health vulnerability and impacts of climate change been conducted at the national level?		X	
TITLE/YEAR: N/A			
Have the results of the assessment been used for policy prioritization or the allocation of human and financial resources to address the health risks of climate change?			
Policy prioritization		N/A	
Human and financial resource allocation			
	None	Minimal	Somewhat
	Strong		
	Level of influence of assessment results		

Implementation: Preparedness for climate risks

Integrated risk monitoring and early warning

Climate-sensitive diseases and health outcomes	Monitoring system in place ^a	Monitoring system includes meteorological information ^b	Early warning and prevention strategies in place to reach affected population
Thermal stress (e.g. heat waves)	X	X	X
Vector-borne diseases	✓	✓	✓
Foodborne diseases	✓	✓	✓
Waterborne diseases	✓	✓	✓
Nutrition (e.g. malnutrition associated with extreme climatic events)	X	X	X
Injuries (e.g. physical injuries or drowning in extreme weather events)	O	O	X
Mental health and well-being	X	X	X
Airborne and respiratory diseases	✓	✓	✓

✓=yes, X= no, O=unknown, N/A= not applicable

^a A positive response indicates that the monitoring system is in place, it will identify changing health risks or impacts AND it will trigger early action.

^b Meteorological information refers to either short-term weather information, seasonal climate information OR long-term climate information.

Emergency preparedness

Climate hazard	Early warning system in place	Health sector response plan in place	Health sector response plan includes meteorological information
Heat waves	✗	○	✗
Storms (e.g. hurricanes, monsoons, typhoons)	✓	✓	✓
Flooding	✓	✓	✓
Drought	✗	✗	✗

✓=yes, ✗= no, ○=unknown, N/A= not applicable

Resources: Facilitating access to climate and health finance

International climate finance

Are international funds to support climate change and health work currently being accessed?



If yes, from which sources?

☐

Green Climate Fund (GCF)

☐

Global Environment Facility (GEF)

☐

Other multilateral donors

☐

Bilateral donors

☐

Other: _____

Funding challenges

Greatest challenges faced in accessing international funds

Lack of information on the opportunities		Lack of country eligibility	
Lack of connection by health actors with climate change processes		Lack of capacity to prepare country proposals	
Lack of success in submitted applications		None (no challenges/challenges were minimal)	
Other (please specify):		Not applicable	

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