ICELAND

HEALTH AND CLIMATE CHANGE
COUNTRY PROFILE 2022

World Health Organization
United Nations Framework Convention on Climate Change

CONTENTS

ACKNOWLEDGEMENTS

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HOW TO USE THIS PROFILE

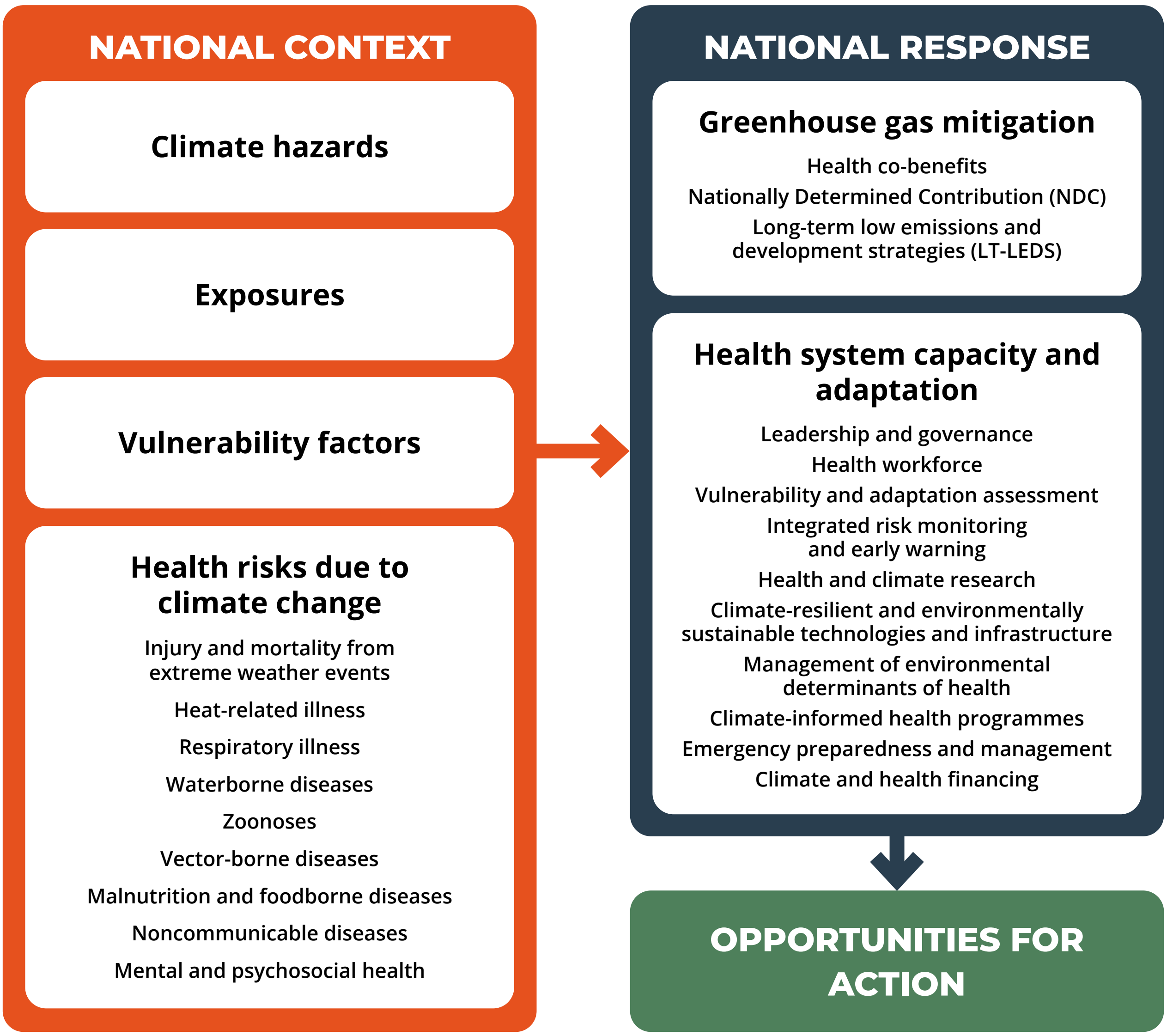
This health and climate change country profile presents a snapshot of country-specific climate hazards, climate-sensitive health risks and potential health benefits of climate change mitigation. The profile is also a key tool in monitoring national health sector response to the risk that climate variability and climate change pose to human health and health systems. By presenting this national evidence, the profile aims to:

- Raise awareness of the health threats of climate change within the health sector, other health-related sectors and among the general public;
- Monitor national health response;
- Support decision-makers to identify opportunities for action;
- Provide links to key WHO resources.

Tools to support the communication of the information presented in this country profile are available. For more information please contact: nevillet@who.int

The diagram below presents the linkages between climate change and health. This profile provides country-specific information following these pathways. **The profile does not necessarily include comprehensive information on all exposures, vulnerability factors or health risks** but rather provides examples based on available evidence and the highest priority climate-sensitive health risks for your country.

CLIMATE CHANGE AND HEALTH



COUNTRY BACKGROUND

Located in the North Atlantic, Iceland has a land area of 103 000 km^2 and a coastline of 4970 km; rivers and lakes cover 6% of the territory and freshwater sources are abundant *(1)*. Iceland's economy is characterized by high income levels and its large marine and energy sectors *(2)*. Iceland's population is growing; whilst over 60% of the population lives in the capital city of Reykjavík, Iceland is one of the least densely populated countries in Europe *(1)*.

Iceland's climate is warmer than expected at this latitude, as it is influenced by the Gulf Stream *(1,3)*. Iceland has experienced rising temperatures since the 1980s and changing precipitation intensity, leading to impacts on marine and terrestrial ecosystems, fish stocks and changes in glacier runoff. Increased frequency and intensity of extreme weather events is expected to be the biggest risk for human health in Iceland *(1)*.

Iceland has updated its Nationally Determined Contribution (NDC), enhancing its commitment to at least 55% net greenhouse gas emissions reduction by 2030 compared to 1990, to be achieved by acting jointly with the European Union and its Member States and Norway *(4)*. In 2021, the Ministry for the Environment and Natural Resources published a white paper and a strategy on climate change *(5,6)*.

CLIMATE-SENSITIVE HEALTH RISKS – ICELAND

Health risks	
Health impacts of extreme weather events	yes
Heat-related illnesses	no
Respiratory illnesses	yes
Waterborne diseases and other water-related health impacts	no
Zoonoses	no
Vector-borne diseases	no
Malnutrition and foodborne diseases	no
Noncommunicable diseases	yes
Mental/psychosocial health	yes
Impacts on health care facilities	yes
Effects on health systems	no
Health impacts of climate-induced population pressures	no

● yes ● no ○ unknown / not applicable

Source: List of climate-sensitive health risks adapted from the Quality Criteria for Health National Adaptation Plans, WHO (2021) *(7)*.

CURRENT AND FUTURE CLIMATE HAZARDS

CLIMATE HAZARD PROJECTIONS FOR ICELAND

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

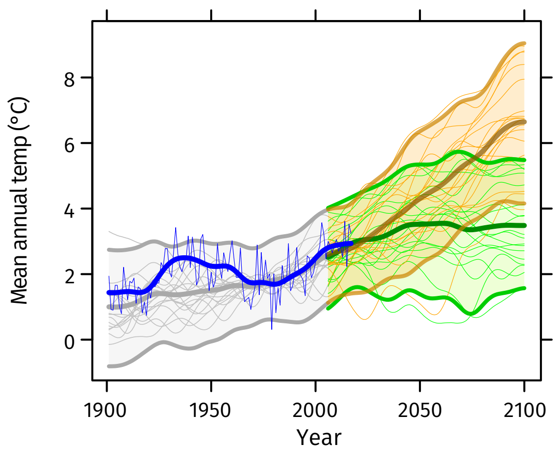
The climate model projections given below present climate hazards under a high emissions scenario, Representative Concentration Pathway 8.5 (RCP8.5 – in orange) and a low emissions scenario (RCP2.6 – in green).[a] The text describes the projected changes averaged across about 20 global climate models (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 geographically small countries are not explicitly represented. There are also issues associated with the availability and representativeness of observed data for some locations.

NATIONAL CONTEXT

Rising temperature

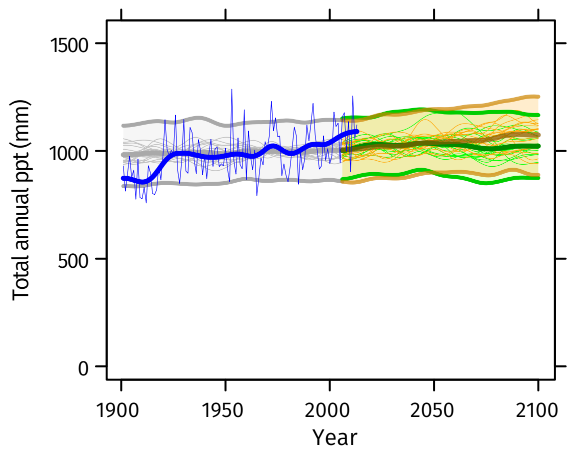
FIGURE 1: Mean annual temperature, 1900–2100



Under a high emissions scenario, the mean annual temperature is projected to rise by about 3.9°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 1.3°C.

Small increase in total precipitation

FIGURE 2: Total annual precipitation, 1900–2100



Total annual precipitation is projected to increase by about 5% on average under a high emissions scenario, although the uncertainty range is large (-2% to +14%). If emissions decrease rapidly, there is little projected change on average, with an uncertainty range of -5% to +8%.

NOTES

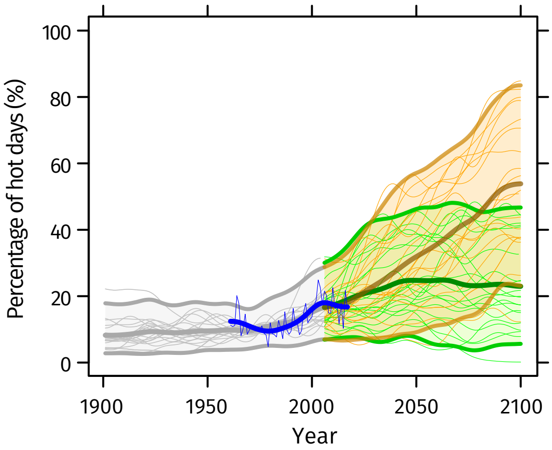
[a] Model projections are from CMIP5 for RCP8.5 (high emissions) and RCP2.6 (low emissions). Model anomalies are added to the historical mean and smoothed.

[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.

More high temperature extremes

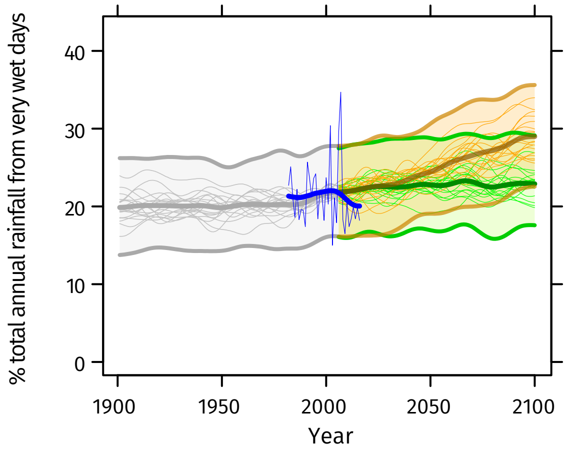
FIGURE 3: Percentage of hot days ('heat stress'), 1900–2100



The percentage of hot days[d] is projected to increase from about 15% of all days on average in 1981–2010 (10% in 1961–1990). Under a high emissions scenario, about 50% of days on average are defined as 'hot' by the end-of-century. If emissions decrease rapidly, about 25% of days on average are 'hot'. Similar increases are seen in hot nights[d] (not shown).

Increase in extreme rainfall

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



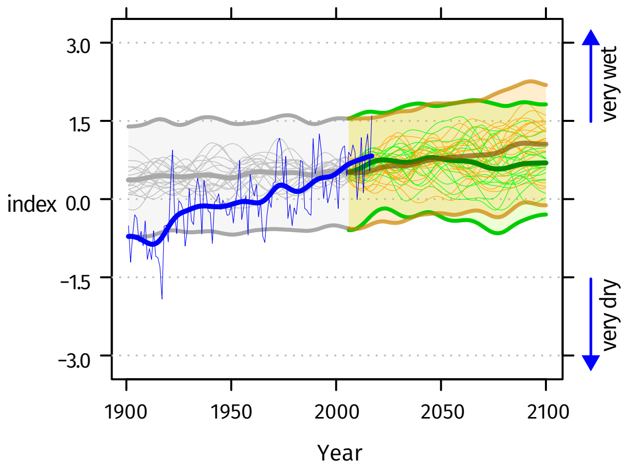
Under a high emissions scenario, the proportion of total annual rainfall from very wet days[e] (about 20% for 1981–2010) could increase by the end-of-century (to about 30% on average with an uncertainty range of about 20% to 35%), with little change if emissions decrease rapidly. These projected changes are accompanied by a small increase in total annual rainfall under a high emissions scenario (see Figure 2).

Drought frequency and intensity

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). 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.

Under a high emissions scenario, SPI12 values are projected to increase from about 0.4 to 1 on average by the end of the century (2071–2100) indicating an increase in the frequency and/or intensity of wet events. If emissions decrease rapidly, there is less change. Year-to-year variability remains large with some dry episodes continuing to occur into the future.[f]



[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): +0.5 to -0.5 near normal conditions; -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.

HEALTH RISKS DUE TO CLIMATE CHANGE

HEAT STRESS

CLIMATE HAZARDS[a]

Up to 3.9°C mean annual temperature rise by the end-of-century.

About 50% of days could be 'hot days' by the end-of-century.

EXPOSURES

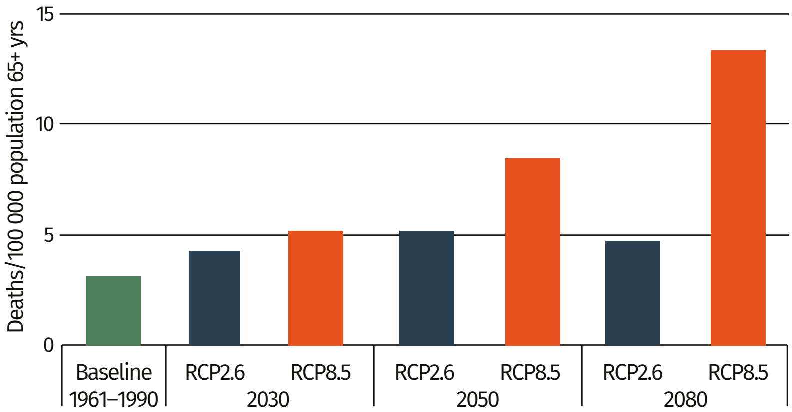
Population exposure to heat stress is likely to rise in the future, due to increased urbanization (and the associated urban heat island effect) and climate change increasing the likelihood of severe heat waves (periods of prolonged heat).

EXAMPLE VULNERABILITY FACTORS[b]

- Age (e.g. the elderly and children)
- Biological factors and health status
- Geographical factors (e.g. urbanization)
- Socioeconomic factors (e.g. occupation and poverty)

HEALTH RISKS[c]

FIGURE 6: Heat-related mortality in population 65 years or above, Iceland (deaths/100 000 population 65+ yrs)[d]
Source: Honda et al. (2015) *(8)*



The health risks of heat stress include heat-related illnesses such as dehydration, rash, cramps, heatstroke, heat exhaustion and death.

Current heat-related deaths among the elderly (+65 years) are just over 3 per 100 000 population. In all scenarios, the number of deaths is projected to increase between 2030 and 2080. Under a high emissions scenario (RCP8.5), heat-related deaths among the elderly (+65 years) are projected to rise to about 13.4 per 100 000 population. A rapid reduction in emissions (RCP2.6) could significantly reduce deaths among the elderly in 2080 to around 4.8 per 100 000 population *(8)*.

[a] For details see "Current and future climate hazards".

[b] These vulnerability factors are not comprehensive but rather examples of relevant vulnerability factors. Please see the WHO Quality Criteria for Health National Adaptation Plans for more details: https://www.who.int/publications/i/item/quality-criteria-health-national-adaptation-plans.

[c] See "National health response: health system capacity and adaptation" for the national response to heat stress.

[d] Country-level analysis, completed by Honda et al. (2015), was based on health models outlined in the Quantitative risk assessment of the effects of climate change on selected causes of death, 2030s and 2050s. Geneva: World Health Organization, 2014. The mean of impact estimates for three global climate models are presented. Models assume continued socioeconomic trends (SSP2 or comparable).

FOOD SAFETY AND SECURITY

CLIMATE HAZARDS[a]

- Up to 3.9°C mean annual temperature rise by the end-of-century.
- Total annual precipitation could increase by about 5% by the end-of-century.
- About 50% of days could be ‘hot days’ by the end-of-century.
- Large year-to-year variability in drought conditions.

EXPOSURES

Reliable food resources are essential to good health. Climate change significantly increases exposure to changes in the safety and sustainability of food systems, directly through its effects on agriculture and indirectly by contributing to underlying risk factors such as water insecurity, dependency on imported foods, urbanization and migration, and health service disruption.

EXAMPLE VULNERABILITY FACTORS[b]

- Age (e.g. the elderly and children)
- Biological factors and health status (e.g. pregnant women)
- Environmental factors (e.g. loss of biodiversity)
- Gender and equity
- Socioeconomic factors

HEALTH RISKS[c]

Food safety and security problems can result in: malnutrition and foodborne diseases, zoonoses, noncommunicable diseases (NCDs), and mortality. As food security decreases due to climate change, metabolic and lifestyle risk factors for diet-related NCDs are likely to be exacerbated. Increasing temperatures can lead to increases in foodborne illnesses through spoiled food from refrigeration failure in transport/storage or changes in patterns of salmonella growth.

The overall impact of climate change on food security in Iceland is complex. While warmer temperatures may benefit agricultural productivity, it is clear that there will be some significant threats to the agricultural industry *(9)*. Notably, sea level rise flooding low-lying agricultural land; changing precipitation patterns and warmer winters; and increased flooding from glacial retreat *(10)*. Furthermore, Iceland’s increased reliance on important foods could affect food security, if crops fail elsewhere *(9)*. Ocean acidification could also decrease marine productivity, potentially affecting fish stocks, which are an important source of food in Iceland *(10)*.

[a] For details see "Current and future climate hazards".

[b] These vulnerability factors are not comprehensive but rather examples of relevant vulnerability factors. Please see the WHO Quality Criteria for Health National Adaptation Plans for more details: https://www.who.int/publications/i/item/quality-criteria-health-national-adaptation-plans.

[c] See "National health response: health system capacity and adaptation" for the national response to food safety and security.

WATER QUANTITY AND QUALITY

CLIMATE HAZARDS[a]

Up to 3.9°C mean annual temperature rise by the end-of-century.

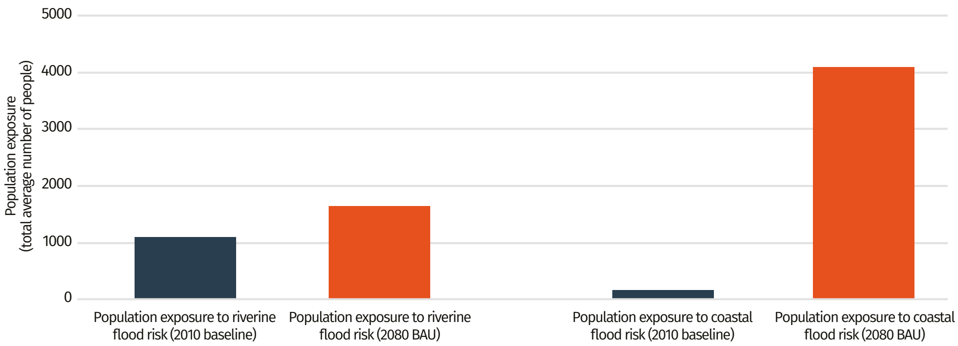
Total annual precipitation could increase by about 5% by the end-of-century.

Annual rainfall from very wet days could increase by the end-of-century.

Large year-to-year variability in drought conditions.

EXPOSURES

FIGURE 7: Change in population exposure to riverine and coastal flooding in Iceland from 2010 (baseline) to 2080 (under a BAU scenario)[b] *(11)*



Climate change increases the intensity and frequency of extreme weather events including drought and floods. Rising sea levels can lead to storm surges, coastal erosion, saltwater intrusion of groundwater aquifers, and ecosystem disruption. These events can lead to population displacement and affect water and sanitation infrastructure and services, contaminate water with faecal bacteria (e.g. *E. coli*, salmonella) from runoff or sewer overflow. Increasing temperatures and precipitation can also lead to water contaminated with Vibrio bacteria or algae blooms.

EXAMPLE VULNERABILITY FACTORS[c]

- Access to clean and safe water and sanitation services
- People living near flood and drought zones
- Socioeconomic factors
- Gender and equity

HEALTH RISKS[d]

Physical injury and drowning are direct health risks from extreme weather events associated with climate change. Indirectly, the impact of climate change on water quality and quantity can lead to waterborne diseases (such as diarrhoeal disease) and noncommunicable diseases. Glacial loss has already been observed in Iceland and it is expected that glaciers could be largely lost from Iceland during the next 100–200 years. Increased runoff from glaciers can increase the risk of flooding, and will also change seasonal runoff patterns across Iceland *(12)*. This could also have significant practical implications for the functioning of hydroelectric power plants, which are an important part of Iceland's power supply *(1)*.

[a] For details see "Current and future climate hazards".

[b] This analysis, conducted by Aqueduct, shows projections for changing population exposure to riverine and coastal flood risk under a BAU scenario, which reflects RCP8.5 and SSP2. SSP2 is the socioeconomic pathway representing "middle of the road", whereby global social, economic, and technological trends do not shift significantly from historical patterns.

[c] These vulnerability factors are not comprehensive but rather examples of relevant vulnerability factors. Please see the WHO Quality Criteria for Health National Adaptation Plans for more details: https://www.who.int/publications/i/item/quality-criteria-health-national-adaptation-plans.

[d] See "National health response: health system capacity and adaptation" for the national response to water quantity and quality.

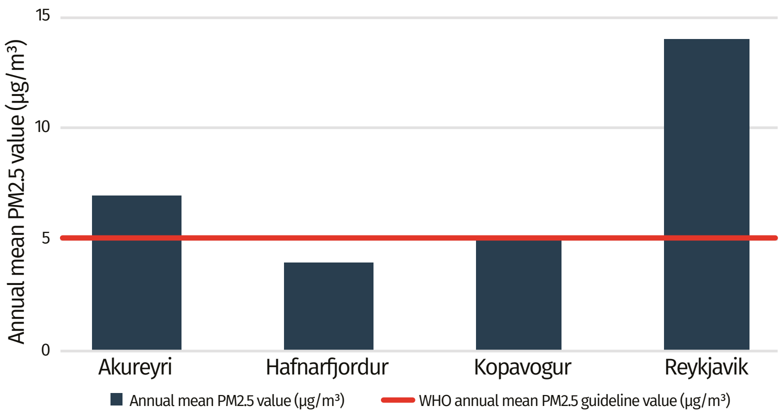
HEALTH RISKS DUE TO AIR POLLUTION

Many of the drivers of climate change, such as inefficient and polluting forms of energy and transport systems, also contribute to air pollution. Air pollution is now one of the largest global health risks, causing approximately seven million deaths every year. There is an important opportunity to promote policies that both protect the climate at a global level, and also have large and immediate health benefits at a local level.

EXPOSURES

Two cities in Iceland, for which air pollution data were available, had annual mean $PM_{2.5}$[a] levels above the WHO guideline value of 5 µg/m^3 (see Figure 8) *(13).*

FIGURE 8: Annual mean $PM_{2.5}$ in Icelandic cities, for which data were available, compared with the WHO guideline value of $PM_{2.5}$ of 5 µg/m^3. Source: Ambient Air Pollution Database, WHO, 2018. A standard conversion has been used on some data points, see source for further details *(13)*



EXAMPLE VULNERABILITY FACTORS[b]

- Age (e.g. the elderly and children)
- Biological factors and health status (e.g. pre-existing conditions)
- Gender and equity
- Geographical factors (e.g. rural/urban areas)
- Socioeconomic factors (e.g. poverty)

HEALTH RISKS[c]

Ambient air pollution can have direct and sometimes severe consequences for health. Fine particles, which penetrate deep into the respiratory tract, subsequently increase mortality from respiratory infections, lung cancer and cardiovascular disease.

56

deaths from ambient air pollution in Iceland in 2016 *(14)*

0.8%

economic costs of premature deaths from ambient particulate matter pollution and household air pollution as a percentage of GDP (2010) *(15)*

[a] $PM_{2.5}$ is atmospheric particulate matter (PM) with a diameter of <2.5 µm.

[b] These vulnerability factors are not comprehensive but rather examples of relevant vulnerability factors. Please see the WHO Quality Criteria for Health National Adaptation Plans for more details: https://www.who.int/publications/i/item/quality-criteria-health-national-adaptation-plans.

[c] See "National health response: health system capacity and adaptation" for the national response to air pollution.

HEALTH CO-BENEFITS FROM CLIMATE CHANGE MITIGATION

Health co-benefits are local, national and international measures with the potential to simultaneously yield large, immediate public health benefits and reduce greenhouse gas emissions.

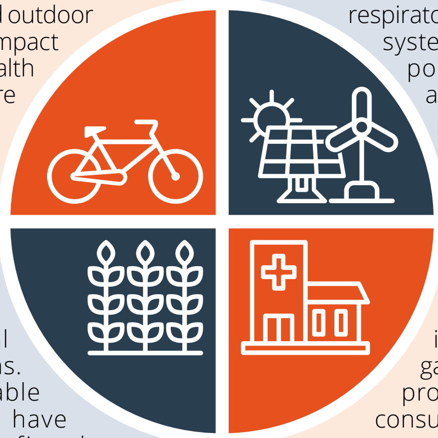
GLOBAL EXAMPLES

TRANSPORT

A shift towards active transportation and sustainable public transport systems could see reductions in greenhouse gas emissions; decreases in illnesses related to physical inactivity, reduced outdoor air pollution and noise exposure. Compact urban planning can also improve health equity by making urban services more accessible to the elderly and poor.

ENERGY

The health benefits of transitioning from polluting fuels, such as coal, to lower carbon sources and renewables are clear: reduced rates of cardiovascular and respiratory diseases; cost-savings for health systems; improved health equity where populations are disproportionately affected by household or ambient air pollution; and improved economic productivity from a healthier and more productive workforce.



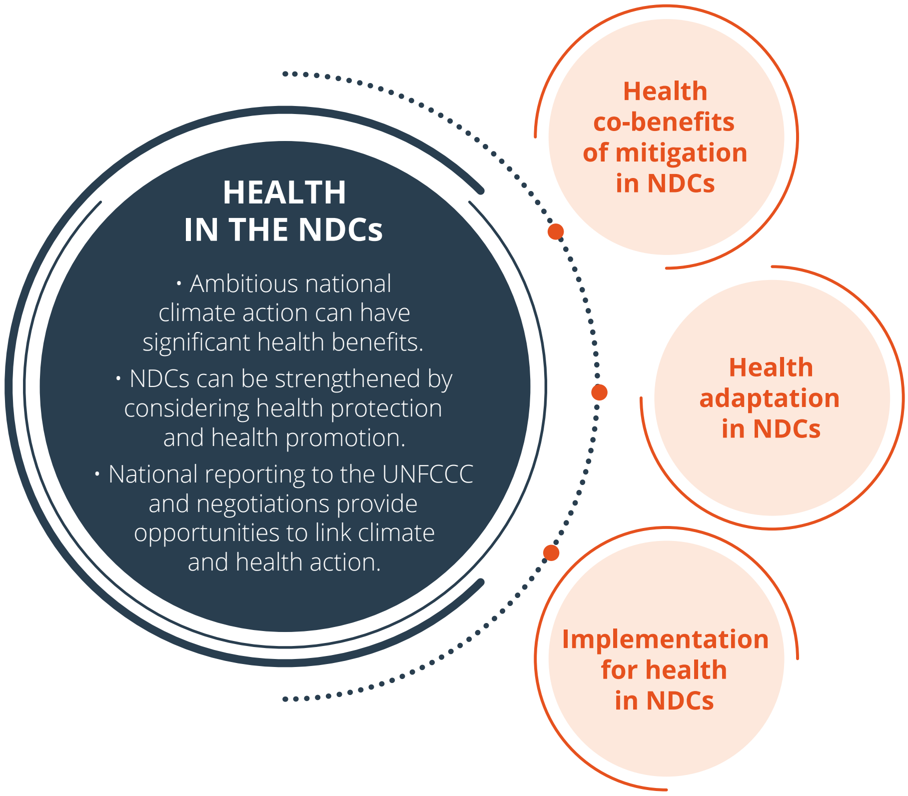
FOOD AND AGRICULTURE

Food systems emissions constitute a significant proportion of total global greenhouse gas emissions. Interventions to build sustainable and secure food systems can have significant public health benefits, by addressing malnutrition associated with food and nutrition insecurity while reducing diet-related noncommunicable diseases (NCDs).

HEALTH CARE SYSTEMS

Health care activities are an important source of greenhouse gas emissions. Major sources include procurement and inefficient energy consumption. Low-carbon and efficient energy solutions can lower the health sector's carbon footprint while improving the quality and reliability of energy services in many settings.

HEALTH IN THE NATIONALLY DETERMINED CONTRIBUTION (NDC)



Total 2019 emissions

13 794.4 kt CO_2 equivalent with LULUCF emissions *(16)*

NDC target

Reduce greenhouse gas emissions by 55% by 2030, compared with the 1990 levels; this is a common goal with the European Union, its Member States and Norway *(4)*

Iceland's NDC target to reduce greenhouse gas emissions by 55% by 2030 compared with a 1990 baseline is a common goal with the European Union's Member States and Norway. Iceland's NDC does not outline specific health adaptation targets *(4)*.

NATIONAL HEALTH RESPONSE: HEALTH SYSTEM CAPACITY AND ADAPTATION

The following section measures progress in the health sector in responding to climate threats based on country reported data collected in the WHO Health and Climate Change Global Survey *(17)*.

GOVERNANCE AND LEADERSHIP

National planning for health and climate change

Has a national health and climate change strategy or plan been developed?[a] *Title:* N/A *Year:* N/A	yes[b]
Content	
Are health adaptation priorities identified in the strategy/plan?	yes
Are the health co-benefits of mitigation action considered in the strategy/plan?	yes
Have performance indicators been identified?	no
Level of implementation of the strategy/plan	no
Portion of estimated costs to implement the strategy/plan covered in the health budget	no

● yes ● no ○ unknown / not applicable

Intersectoral collaboration to address climate change

Is there an agreement in place between the ministry of health and this sector which defines specific roles and responsibilities in relation to links between health and climate change policy?

Sector[c]	Agreement in place
Transportation	no
Electricity generation	no
Household energy	no
Agriculture	no
Social services	no
Water, sanitation and waste-water management	no

● yes ● no ○ unknown / 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 (HNAPs).

[b] Iceland published a plan on air quality and health in 2017 (Hreint loft til framtíðar. Áætlun um loftgæði á Ísland 2018–2029), but there is not yet a specific health and climate change strategy for Iceland.

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

EVIDENCE AND IMPLEMENTATION

Vulnerability and adaptation assessment for health

Has an assessment of health vulnerability and impacts of climate change been conducted at the national level? *Title:* N/A *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?

● yes ● no ○ unknown / not applicable

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)	●	●	●
Vector-borne diseases	●	●	●
Foodborne diseases	●	●	●
Waterborne diseases	●	●	●
Nutrition (e.g. malnutrition associated with extreme climatic events)	●	●	●
Injuries (e.g. physical injuries or drowning in extreme weather events)	●	●	●
Mental health and well-being	●	●	●
Airborne and respiratory diseases	●	●	●

● yes ● no ○ unknown / 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	yes	yes	yes
Storms (e.g. hurricanes, monsoons, typhoons)	yes	yes	yes
Flooding	yes	yes	yes
Drought	yes	yes	yes
Air quality (e.g. particulate matter, ozone levels)	yes	yes	yes

● yes ● no ○ unknown / not applicable

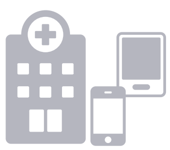
CAPACITY, INFRASTRUCTURE AND SUSTAINABILITY

Human resource capacity

International Health Regulations (IHR) Monitoring Framework Human Resources Core Capacity (2018) *(18)*	60%
Does your human resource capacity, as measured through the IHR, adequately consider the human resource requirements to respond to climate-related events?	no
Is there a national curriculum developed to train health personnel on the health impacts of climate change?	no

● yes ● no ○ unknown / not applicable

Health care facilities, infrastructure and technology



Has there been an assessment of the climate resilience of any public health care facilities?	Limited
Have measures been taken to increase the climate resilience of health infrastructure and technology?	Partially
Is there a national initiative/programme in place to promote the use of low-carbon, energy-efficient, sustainable technologies in the health sector?	no

● yes ● no ○ unknown / not applicable

OPPORTUNITIES FOR ACTION

1. DEVELOP A HEALTH NATIONAL ADAPTATION PLAN (HNAP) FOR ICELAND

Iceland does not have a national health and climate change plan/strategy or Health National Adaptation Plan (HNAP) in place. Develop an HNAP, led by the Ministry of Health, as part of the National Adaptation Plan (NAP) process of the United Nations Framework Convention on Climate Change (UNFCCC). The HNAP is an integrated part of the overall climate change process and can support the mobilization of resources and prioritization of health and climate change policies. See "WHO resources for action" for further details.

2. STRENGTHEN MULTISECTORAL COLLABORATION ON HEALTH AND CLIMATE CHANGE

There are no multisectoral agreements in place on climate change and health. Enhance collaboration between health and health-determining sectors with agreements on climate change and health action (e.g. with transport, energy, water and sanitation, national meteorological and hydrological services sectors, etc.). Promote climate mitigation and adaptation policies that protect and promote health and strengthen health systems.

3. CONDUCT A CLIMATE CHANGE AND HEALTH VULNERABILITY AND ADAPTATION ASSESSMENT

Iceland has not conducted a climate change and health vulnerability and adaptation assessment. Assess Iceland's vulnerability to climate-related health risks. Information gathered through iterative climate change and health vulnerability and adaptation assessments can be used to inform the development of health adaptation policies and plans as well as national climate change reporting mechanisms (e.g. Nationally Determined Contributions [NDCs], National Communications [NCs], National Adaptation Plans [NAPs]). See "WHO resources for action" for further details.

4. ASSESS THE HEALTH CO-BENEFITS OF NATIONAL CLIMATE MITIGATION POLICIES

Health co-benefits of mitigation are currently not included in Iceland's NDC. Ensure that climate mitigation policies include the health risks posed from climate change, identify health adaptation priorities and measure and optimize the health co-benefits of climate mitigation action.

5. BUILD CLIMATE-RESILIENT AND ENVIRONMENTALLY SUSTAINABLE HEALTH CARE FACILITIES

Measures can be taken to prevent the potentially devastating impacts of climate change on health care facilities and health service provision while decreasing the climate and environmental footprint of health care facilities. A commitment towards climate-resilient, environmentally sustainable health care facilities can improve system stability, promote a healing environment and mitigate climate change impacts.

WHO RESOURCES FOR ACTION

- **Operational framework for building climate-resilient health systems**
  https://www.who.int/publications/i/item/operational-framework-for-building-climate-resilient-health-systems
- **WHO guidance to protect health from climate change through health adaptation planning**
  https://www.who.int/publications/i/item/who-guidance-to-protect-health-from-climate-change-through-health-adaptation-planning
- **Quality Criteria for Health National Adaptation Plans**
  https://www.who.int/publications/i/item/quality-criteria-health-national-adaptation-plans
- **Protecting health from climate change: vulnerability and adaptation assessment**
  https://www.who.int/publications/i/item/protecting-health-from-climate-change-vulnerability-and-adaptation-assessment
- **Integrated risk surveillance and health early warning systems**
  https://www.who.int/activities/supporting-countries-to-protect-human-health-from-climate-change/surveillance-and-early-warning
- **WHO guidance for climate-resilient and environmentally sustainable health care facilities**
  https://www.who.int/publications/i/item/9789240012226
- **Heat early warning systems guidance**
  https://www.who.int/publications/i/item/heatwaves-and-health-guidance-on-warning-system-development
- **Climate services for health fundamentals and case studies**
  https://public.wmo.int/en/resources/library/climate-services-health-case-studies
- **Climate-resilient water safety plans**
  https://www.who.int/publications/i/item/9789241512794

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