MALTA

HEALTH AND CLIMATE CHANGE
COUNTRY PROFILE 2021

World Health Organization
United Nations Framework Convention on Climate Change

CONTENTS

ACKNOWLEDGEMENTS

The World Health Organization (WHO) Regional Office for Europe, the WHO Headquarters and the Ministry for Health led the development of this document and together with the United Nations Framework Convention on Climate Change (UNFCCC) gratefully acknowledge the contributions of Dr Roberto Debono and Dr Norman Galea. Financial support for this project was provided by the Norwegian Agency for Development Cooperation (NORAD) and the Wellcome Trust.

HOW TO USE THIS PROFILE

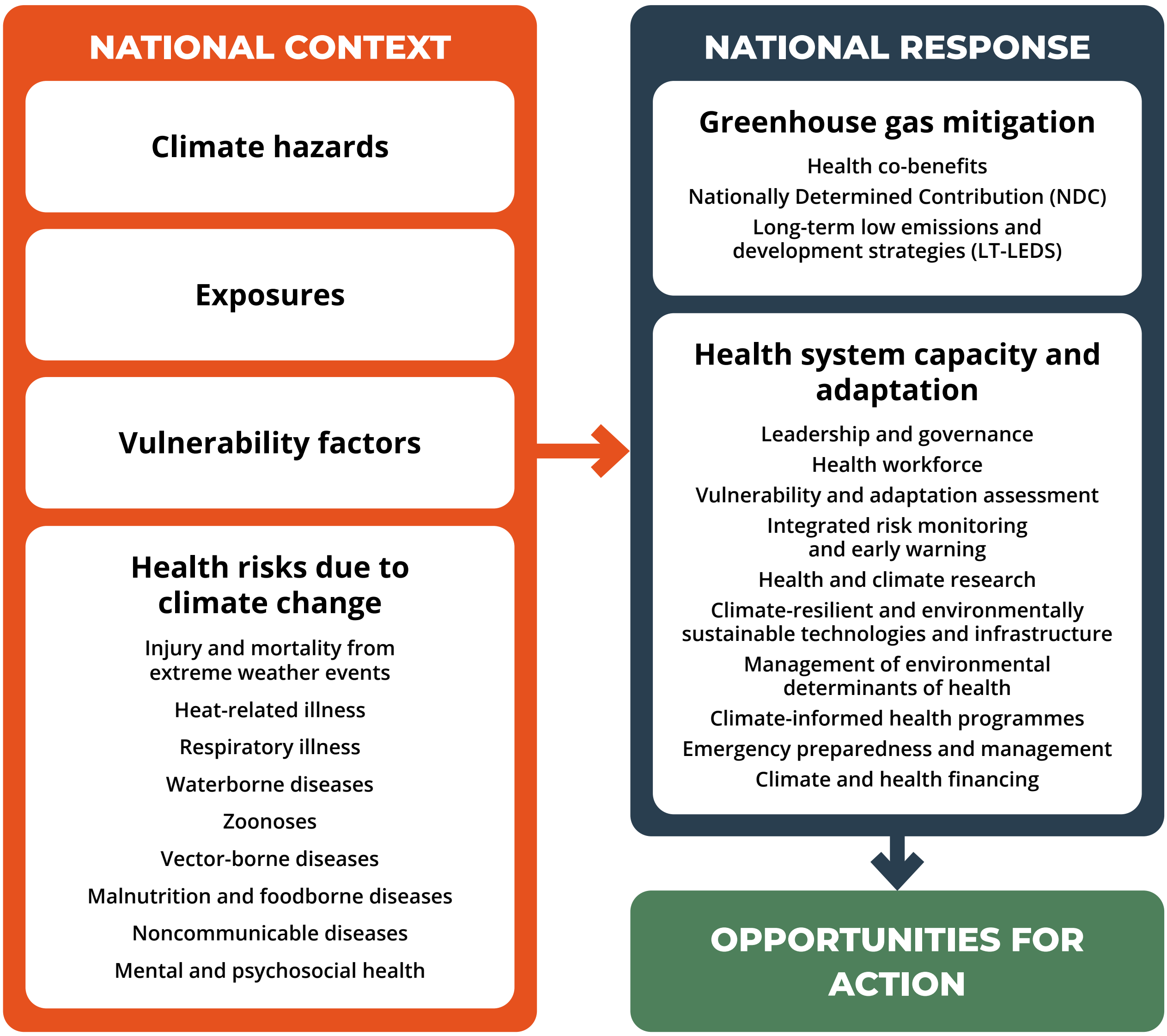
This health and climate change country profile presents a snapshot of country-specific climate hazards, climate-sensitive health risks and potential health benefits of climate change mitigation. The profile is also a key tool in monitoring national health sector response to the risk that climate variability 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 Mediterranean Sea, the Maltese Archipelago is composed of six islands of which Malta is the largest. The Malta and Gozo islands are characterized by low hills in the north and plains in the south *(1)*. Classified as a high-income country, Malta's economy predominantly depends on foreign trade, services and tourism *(2,3)*. The Maltese population is one of the smallest in the world, yet it is one of the most densely populated countries worldwide *(1)*.

Malta's climate is typically Mediterranean with dry, hot summers and rainy, mild winters. The highest precipitation rates occur between November and February. Malta has experienced increasing air and sea surface temperatures, decreasing annual precipitation, and more frequent intense rainfall events that cause flooding, threaten water resources, agriculture and infrastructure. Climate-sensitive health risks include heat stress, vector-borne and foodborne diseases (such as salmonellosis), and increased risk of deaths and injuries from flash floods *(1)*.

Malta, as a member of the European Union (EU) is committed to the European Nationally Determined Contribution (NDC), which seeks to mitigate at least 55% of its greenhouse gas emissions by 2030 compared with the 1990 levels *(4)*. The Maltese National Adaptation Strategy includes health adaptation measures, such as surveillance of vector-borne diseases, reducing risks associated with food safety, and education campaigns on climate and health issues *(5)*.

CLIMATE-SENSITIVE HEALTH RISKS – MALTA

Health risks	
Health impacts of extreme weather events	no
Heat-related illnesses	yes
Respiratory illnesses	yes
Waterborne diseases and other water-related health impacts	no
Zoonoses	no
Vector-borne diseases	yes
Malnutrition and foodborne diseases	no
Noncommunicable diseases	unknown / not applicable
Mental/psychosocial health	no
Impacts on health care facilities	no
Effects on health systems	yes
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) *(6)*.

CURRENT AND FUTURE CLIMATE HAZARDS

CLIMATE HAZARD PROJECTIONS FOR MALTA

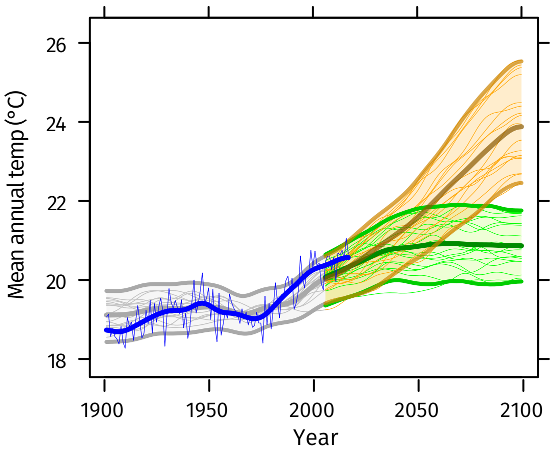
Country-specific projections are outlined up to the year 2100 for climate hazards under a 'business as usual' (BAU) high emissions scenario compared to projections under a 'two-degree' scenario with rapidly decreasing global emissions (see Figures 1–5).

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.

Rising temperature

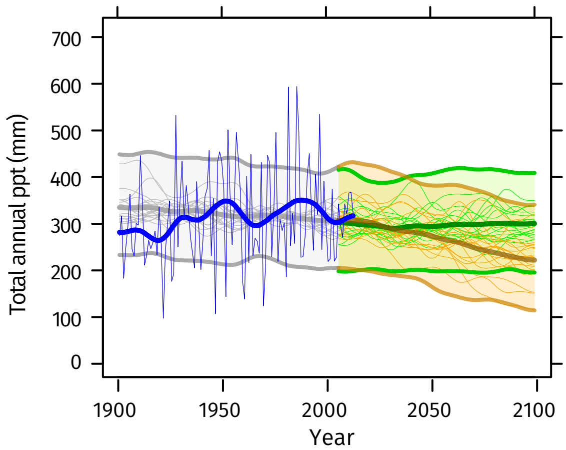
FIGURE 1: Mean annual temperature, 1900–2100



Under a high emissions scenario, the mean annual temperature is projected to rise by about 3.7°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 1.2°C.

Decrease in total precipitation

FIGURE 2: Total annual precipitation, 1900–2100



Total annual precipitation is projected to decrease by about 25% on average under a high emissions scenario, although the uncertainty range is large (-46% to -2%). If emissions decrease rapidly, there is little projected change on average, with an uncertainty range of -13% to +8%.

NOTES

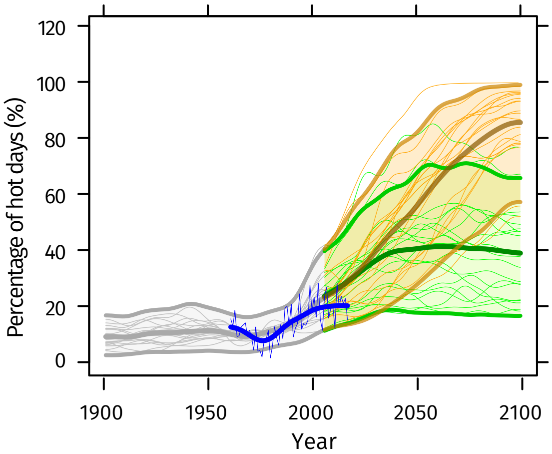
[a] Model projections are from CMIP5 for RCP8.5 (high emissions) and RCP2.6 (low emissions). Model anomalies are added to the historical mean and smoothed.

[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

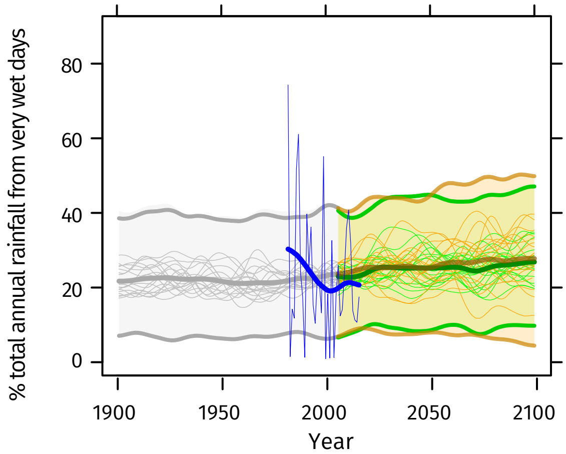
FIGURE 3: Percentage of hot days ('heat stress'), 1900–2100



The percentage of hot days[d] is projected to increase substantially from about 15% of all days on average in 1981–2010 (10% in 1961–1990). Under a high emissions scenario, about 80% of days on average are defined as 'hot' by the end-of-century. If emissions decrease rapidly, about 40% of days on average are 'hot'. Similar increases are seen in hot nights[d] (not shown).

Small increase in extreme rainfall

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

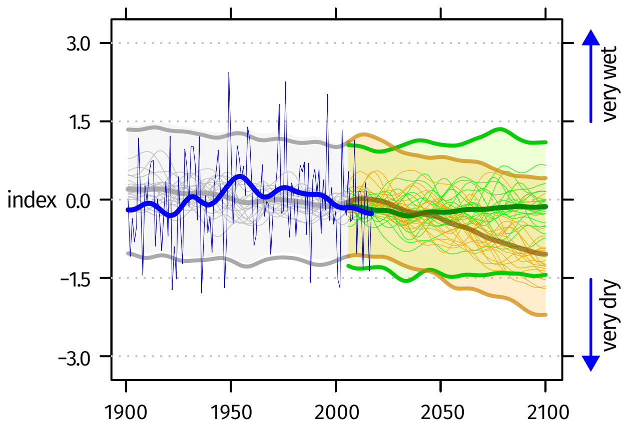


Under a high emissions scenario, the proportion of total annual rainfall from very wet days[e] (about 25% for 1981–2010) could increase a little by the end-of-century (to about 30% on average with an uncertainty range of about 5% to 50%), with little change if emissions decrease rapidly. These projected changes are accompanied by a decrease 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. 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 -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.



Under a high emissions scenario, SPI12 values are projected to decrease substantially from about 0 to -0.9 on average by the end-of-century (2071–2100) indicating an increase in the frequency and/or intensity of dry episodes and drought events. If emissions decrease rapidly, there is little change although year-to-year variability remains large.

[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.

HEALTH RISKS DUE TO CLIMATE CHANGE
HEAT STRESS

CLIMATE HAZARDS[a]

Up to 3.7°C mean annual temperature rise by the end-of-century.

About 80% of days could be 'hot days' by the end-of-century.

EXPOSURES

Population exposure to heat stress is likely to rise in the future with 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]

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

Modelling of daily mortality rates in Maltese adults over 65 years of age indicated an optimal temperature between 25°C and 27°C, which results in minimum death rates. In the case of Malta, a warmer country, the optimal temperature is higher than other Northern countries due to the physiological adaptations of people living in these conditions *(7)*. High and low temperature extremes were found to increase the number of deaths, particularly in those aged over 65 years of age, since their thermoregulation is less effective than their younger counterparts *(7)*. Indeed, annual premature deaths due to long-term exposure to heat are projected to increase in Malta as a

Projected change in annual premature deaths due to long-term exposure to heat in Malta *(8)*

50

deaths (2010)