

HEALTH

Climate change threatens human health in a number of ways. Various threats come from both direct (such as from increased frequency of heat waves and severe storms) and indirect impacts (such as illnesses caused by diminished local air quality standards and rise in aero-allergens). The nature and severity of these impacts is dependent on the resilience and fitness of the local community to climate change¹, the degree of exposure and its ability to adapt.

At the same time, the Maltese population is aging, and older people are more vulnerable to hot weather and heat waves. The percentage of the Maltese population over the age of 65 is currently 16% and is projected to be 32% by 2060.

Although difficult to quantify, these impacts will mainly originate from the expected rise in air temperature. A number of vulnerable groups from our society have been identified who will probably experience stronger effects and suffer from a greater burden of related diseases. These groups include the elderly and the disabled, children, individuals suffering from cardiovascular and respiratory diseases, as well as people on low income. Diabetics are also at greater risk of heat-related death, which in 2010, is already affecting 3% of the total population. The probability of aggravated health risks due to climate change underlines the need to maintain a strong public health infrastructure to help limit future impacts.

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Salient impacts:

- *Increase in the risk of morbidity and death due to extreme heat and heat waves is very likely.*
- *Some reduction in the risk of mortality related to extreme cold is expected, although it is still unclear how winter deaths (such as those due to pulmonary illnesses) are affected by temperature.*
- *Extreme weather events, such as flooding or extreme heat will cause physical and mental health problems.*
- *Diseases transmitted via food, water and biological vectors are likely to increase.*
- *Increase in pollen production due to prolonged pollen seasons in plants is expected to increase, posing a health risk to society.*
- *Higher temperatures and associated stagnant air masses pose greater changes to maintain air quality standards, particularly for harmful ground-level ozone.*

¹ In 2008, 33% of the households which participated in the HBS-2008 had an air-conditioning or central air-conditioning system (compared to 20% in 2000), so until this reaches saturation, it is expected to see a general decline in heat-related deaths.

- *Highly vulnerable groups to such impacts include children, patients suffering from cardiovascular and pulmonary illnesses, the elderly and people on low income.*

Phenomenon	Mortality	Morbidity	Dehydration	Vector-borne diseases ²	Air quality	Allergies	Water quality	Infections	Health care services
Increased air temperature	Increased, due to cardiovascular and respiratory diseases, especially among the elderly (+65) and individuals suffering from such conditions.	Enhanced, the size of which at least proportional to that of the increased mortality and probably greater.	Increased episodes in babies and young children and infants.	Increased incidence. Examples include Lyme disease, enhanced by the onset of an early spring and an extension of the transmission period.	Diminished air quality standards, with reference to ground ozone (during the high summer temperatures) and particulate matter (throughout the year).	Affects the timing and also the duration of the pollen season, resulting in a higher incidence of hay fever, asthma, and allergic eczema.	Increased growth or/and exposure to bacterial contamination in coastal, surface and drinking water.	Increased prevalence of salmonellosis.	Increased services to address increased morbidity and chronic allergies.
		Enhanced due to an increase in pathogenic microbes, which are currently insignificant.		Increased episodes of malarial infection and dengue fever.					
				Dust-mites related allergies associated with eye irritations and other allergic symptoms will increase.	Decreased pulmonary function and growth in children.				
				Increased incidence of sand-fly disease (leishmaniasis), and other infections ³ brought about by the already present <i>Aedes albopictus</i> (Asian tiger mosquito).	Increased infant mortality, miscarriages, premature births and low birth weight.				
Increased frequency of	Mortality increases	Increased morbidity of	Increased episodes in						Increased costs of hospitalisation of

² Such an impact is uncertain since each vector type would be affected in a different way. While increased air temperature may favour an increased duration of vector's season, its number and distribution may be constrained by decreased humidity levels.

³ Vector-borne viral infections viruses pathogens, including the West Nile virus, Yellow fever virus, St. Louis encephalitis, dengue fever, and Chikungunya fever.

⁴ Such as increased risks of physical, physiological and cognitive immaturity in children

⁵ Risk groups include those who exercise outdoors, people with cardiovascular diseases and respiratory problems and people who are extra sensitive to ozone exposure. Impact is difficult to quantify.

heat-waves	<p>substantially at temperatures higher than 35°C</p> <p>Substantial loss of life-years can also result to high risk groups.</p> <p>People with diabetes-related heart disease are at especially increased risk of dying.</p>	<p>particular risk groups⁶ when considered as an occupational hazard.</p>	<p>infants and young children.</p> <p>Fluid imbalance and dehydration create higher risks for diabetics during heat-waves.</p>					<p>risk groups.</p> <p>Increased medication costs from emergency department visits.</p> <p>Increased stress on public health infrastructure.</p>
Increased torrential rains, flooding and severe storms	<p>Death and injury.</p>	<p>Increased psychological and post-traumatic stress disorders leading to depression.</p>				<p>Increased gastric illness contracted from contamination at beaches. Other minor illnesses may include ear, eye, nose, and throat infections.</p>	<p>Increased gastrointestinal distress and illnesses among victims.</p>	<p>Increased use of health services in the period following the event.</p> <p>May cause physical damage to hospitals, clinics, pharmacies and health centres.</p>
Increased exposure to UV radiation			<p>Increased cataracts, skin diseases and a weakening of the immune system to high-risk groups⁷ engaged in outdoor activities.</p>					

⁶ Sector of the population who are at most risk from heatstroke, including those working in the construction, agriculture, fisheries and transportation sectors.

⁷ Young children and adolescents who spend more time in vigorous activities outdoors, and so are increasingly exposed to UV radiation.