

# #3 THE REGIONS KIT



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## 01. REGIONS

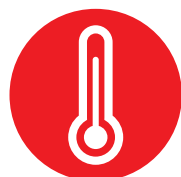
# INTRODUCTION

The consequences of climate change are not evenly distributed around the globe. Unfortunately, the poorest and most vulnerable regions — Sub-Saharan Africa and South-East Asia — will feel the brunt of it. But that doesn't mean that other regions are "safe". It is already affecting the wealthiest countries in the world as well, in the form of lethal floods, storms and wildfires.

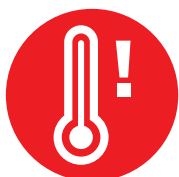
We provide a continental overview of the consequences here. Of course, with such a global issue, we couldn't possibly find and list all the potential consequences in every country. We encourage you to go and do your own research into how your region will be specifically affected.

# LEGENDA

## CLIMATE-RELATED DRIVERS OF IMPACTS



WARMING TREND



EXTREME EXPOSURE



DRYING TREND



EXTREME PRECIPITATION



DAMAGING CYCLONE



FLOODING



STORM SURGE



OCEAN ACIDIFICATION



CARBON DIOXIDE FERTILIZATION



DROUGHT

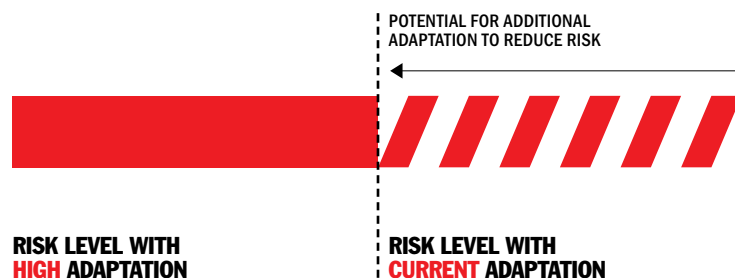


SNOW



RAIN

## LEVEL OF RISK & POTENTIAL FOR ADAPTATION



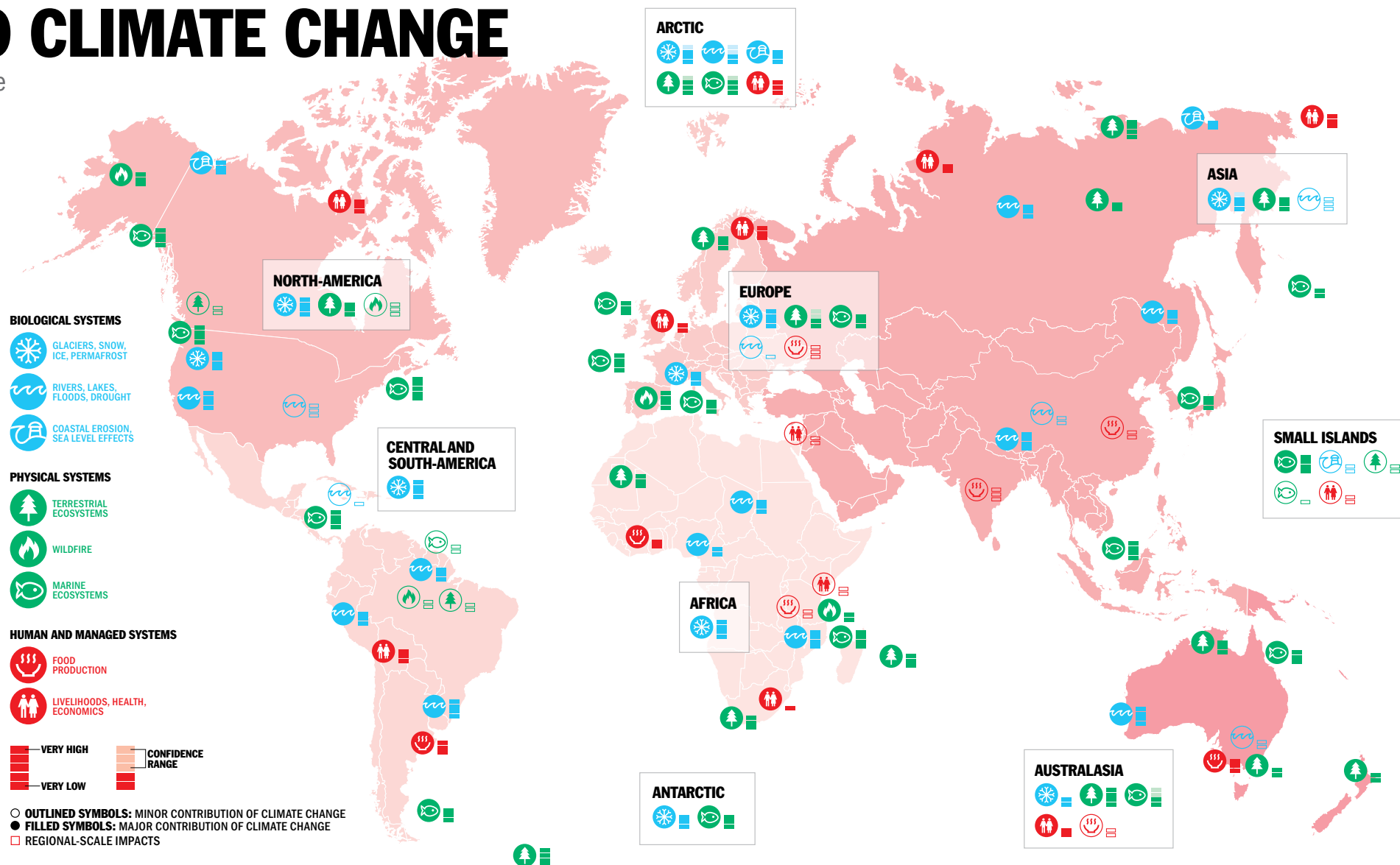
# REGIONAL KEY RISKS

source



# CONFIDENCE OF **IMPACTS** ATTRIBUTED TO CLIMATE CHANGE

source



## 02. REGION

# AFRICA



Africa is suffering from water shortages, reduced food supply, and increases in water and insect-spread diseases as a result of climate change. A lack of fresh water causes hunger and poverty, which are both drivers behind migration and conflict.

Drought is one of the problems for African agriculture, which depends heavily on rainfall. Overexploitation and degradation of water resources compound the problem. Higher temperatures are also predicted to shorten the growing period for crops by up to 20 percent. Livestock are at risk due to heat and a lack of water and/or food. Climate change will also increase desertification and soil depletion – roughly 65 per cent of Africa's land is already degraded – putting even more pressure on food production. Pests and crop diseases are also on the rise due to climate change. Many crops and food stuffs are

spoiled post-harvest due to a lack of storage facilities, floods, and opportunities to process food to make it last longer, which reduces food supply and available calories. Since an estimated 80 percent of people in Africa are dependent on livelihoods from the land, climate change is likely to cause unemployment and worsen poverty.

Higher temperatures are also expected to increase the incidence of vector-borne diseases such as malaria and dengue, because mosquitos thrive in hot weather, along with water-borne diseases and infections as bacteria in water and food sources thrive in warmer temperatures.













Droughts will also hit Africa's energy supply, as many countries rely on hydro-electric dams. It is particularly important to ensure a supply of clean energy in Africa to replace indoor cooking fires and stoves where wood, animal dung, crop waste or coal is burnt, since the fumes they emit kill 600,000 people in Africa every year. The smoke from indoor cooking fires disproportionately affect women and young children the most as they spend the most time near the hearth.



# RISKS AND ADAPTATIONS

## IN AFRICA

source

KEY RISK	CLIMATIC DRIVERS	TIMEFRAME	RISK & POTENTIAL FOR ADAPTATION
			Very lowMediumVery high
Compounded stress on water resources facing significant strain from overexploitation and degradation at present and increased demand in the future, with drought stress exacerbated in drought-prone regions of Africa (high confidence).	   	Present	<div><div></div></div>
		Near term (2030 - 2040)	<div><div></div></div>
		Long term (2080 - 2100)	<div><div></div></div>
Reduced crop productivity associated with heat and drought stress, with strong adverse effects on regional, national, and household livelihood and food security, also given increased pest and disease damage and flood impacts on food system infrastructure (high confidence).	   	Present	<div><div></div></div>
		Near term (2030 - 2040)	<div><div></div></div>
		Long term (2080 - 2100)	<div><div></div></div>
Changes in the incidence and geographic range of vector- and water-borne diseases due to changes in the mean and variability of temperature and precipitation, particularly along the edges of their distribution (medium confidence).	   	Present	<div><div></div></div>
		Near term (2030 - 2040)	<div><div></div></div>
		Long term (2080 - 2100)	<div><div></div></div>

# LOCAL CHALLENGES IN AFRICA

- The most vulnerable amongst those hit by drought will be those with few assets to sell, those who most need to purchase grain due to an absence of their own household reserves and those who cannot gain access to food through other means. (FAO)
- Drought affects Africa more than any other continent: 136 droughts, over 40 percent of the global total, were recorded between 1995 and 2015.
- Climate change is projected to increase malaria in many areas of Kenya. In areas where malaria already occurs, transmission intensity is expected to increase along with the length of the transmission season. (WHO)
- In Ghana, under a high emissions scenario, heat-related deaths in the elderly (65+ years) are projected to increase to almost 70 deaths per 100,000 by 2080.
- Due to population growth, food demand in Sub-Saharan Africa is expected to increase by 60 percent. That increase in production would be a challenge in a stable climate, but as temperatures are set to rise “faster than the global average” in Africa, grain crop yields are expected to fall as much as 22 percent in the same time period. (The World Bank Group + Agriculture For Impact)
- The UN says 11 million children at risk from hunger, disease and water shortages in east and southern Africa because of El Nino. (UN)

# PERSONAL OBSERVATIONS FROM **AFRICA**

**“When the maize crop goes down, the circumstances for social unrest go up ... This is exactly how the Arab spring in the Middle East started.**

– Louis Meintjes, South Africa

**“As months passed by without rain, the crops began to wither and die. It was horrible to see their leaves falling down. All the crops failed – whether it was pepper or maize or teff or sorghum or haricot beans. I lost everything. I became psychologically ill.”**

– Hamid, farmer, Ethiopia

### 03. REGION

# ASIA



Asia is suffering from increasingly frequent and intense droughts and floods, while higher temperatures are already pushing the limits of human tolerance during summer, and may eventually cause some areas to become uninhabitable. Heatwaves across many countries in Asia already cause heat stroke and deaths.



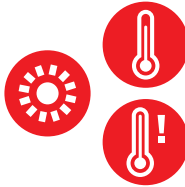
Droughts that accompany these heatwaves in dry regions are causing and worsening water and food shortages. More than 2.2 billion people in the Asia Pacific region rely on agriculture for their livelihoods, but production cannot catch up with the population increase in the region. Shortages of staple foods such as rice and wheat are expected to increase cases of malnutrition.

Increased flooding is another major consequence: 97 percent of the 2.3 billion people affected by flooding between 1995-2015 lived in Asia. Rising seas are expected to cause flooding in coastal areas and on islands, while increased rainfall will cause floods in river basins and urban areas. This can also lead to landslides and surges of floodwater. Floods also damage electricity lines, while poorly-maintained sewers can overflow and contaminate drinking water supplies. Death from drowning and water-borne diseases, as well as the damage and destruction of homes and infrastructure, are expected to result, along with second-order consequences, such as negative health impacts, migration and negative economic impact.

# RISKS AND ADAPTATIONS

## IN ASIA

source

KEY RISK	CLIMATIC DRIVERS	TIMEFRAME	RISK & POTENTIAL FOR ADAPTATION		
			Very low	Medium	Very high
Increased riverine, coastal, and urban flooding leading to widespread damage to infrastructure, livelihoods, and settlements in Asia (medium confidence).		Present	<div><div></div></div>		
		Near term (2030 - 2040)	<div><div></div></div>		
		Long term (2080 - 2100)	<div><div></div></div>		
Increased risk of heat-related mortality (high confidence).		Present	<div><div></div></div>		
		Near term (2030 - 2040)	<div><div></div></div>		
		Long term (2080 - 2100)	<div><div></div></div>		
Increased risk of drought-related water and food shortage causing malnutrition (high confidence).		Present	<div><div></div></div>		
		Near term (2030 - 2040)	<div><div></div></div>		
		Long term (2080 - 2100)	<div><div></div></div>		

# LOCAL CHALLENGES IN ASIA

- The largest direct impact of climate change on health in China is likely to be through heat as heatwaves are strongly related to morbidity and mortality, especially in urban environments. (WHO)
- The Himalayan glaciers have been shrinking at a fast pace therefore posing serious threat to regional water resources as well as increase flooding. (UNEP)
- Uzbekistan will have significant health problems related to water and its availability due to rising temperatures. Dust storms present a major health risk with over 5.5 million people increasingly affected. (WHO)
- Crop yields could decrease up to 30 per cent in South Asia by the mid-21st century (UNEP)

# PERSONAL OBSERVATIONS FROM **ASIA**

**“Even if they filter this water before drinking it they will get diarrhea and fever. And if they use it for bathing their skin will get irritated with red spots and dryness.”**

– Hun Heng, director of a local school support committee in Kampong province, Cambodia

**“We’ve lost all that we have. Our house is still under water. We have seen floods, but never anything like this before. This year is the worst.”**

– Htay Shein, Myanmar

## 04. REGION

# NORTH-AMERICA



Parts of North America will be hit badly by extreme heat, which will have implications for health and agriculture. Heatwaves cause heatstroke and dehydration, and can be fatal, particularly for the elderly and children. Increased demand for electricity for cooling during heatwaves can also cause blackouts.

In some areas, extreme heat will be accompanied by a lack of rainfall and moisture, which will damage agriculture and spark more frequent and severe wildfires, as we are already seeing. There were 38 forest fire disasters between 1995 and 2015 (UNISDR 2015), which caused injuries and deaths and heavily damaged ecosystems, houses and critical infrastructure. Wildfires can cause breathing problems due to the particulate matter in the smoke.







North America will also be hit by coastal and river flooding. Some coastal areas are in danger of being submerged by rising seas, displacing up to 13 million Americans by the end of this century. Flooding will heavily damage property and infrastructure, and disrupt supply chains, ecosystems and social systems. It will also degrade water quality and cause health problems, some from water-borne diseases. In non-coastal areas, floods are caused by increasingly severe and frequent storms and cyclones, which are already dropping record-breaking amounts of rainfall. Cyclones and storms can cut off water and energy supply.



# RISKS AND ADAPTATIONS

## IN NORTH-AMERICA

source

KEY RISK	CLIMATIC DRIVERS	TIMEFRAME	RISK & POTENTIAL FOR ADAPTATION		
			Very low	Medium	Very high
Wildfire-induced loss of ecosystem integrity, property loss, human morbidity, and mortality as a result of increased drying trend and temperature trend (high confidence).	 	Present	<div><div></div><div></div><div></div></div>		
		Near term (2030 - 2040)	<div><div></div><div></div><div></div></div>		
		Long term (2080 - 2100)	<div><div></div><div></div><div></div></div>		
Heat-related human mortality (high confidence).		Present	<div><div></div><div></div><div></div></div>		
		Near term (2030 - 2040)	<div><div></div><div></div><div></div></div>		
		Long term (2080 - 2100)	<div><div></div><div></div><div></div></div>		
Urban floods in riverine and coastal areas, inducing property and infrastructure damage; supply chain, ecosystem, and social system disruption; public health impacts; and water quality impairment, due to sea level rise, extreme precipitation, and cyclones (high confidence).	  	Present	<div><div></div><div></div><div></div></div>		
		Near term (2030 - 2040)	<div><div></div><div></div><div></div></div>		
		Long term (2080 - 2100)	<div><div></div><div></div><div></div></div>		

# LOCAL CHALLENGES IN NORTH-AMERICA

- The National Oceanic and Atmospheric Administration (NOAA) said increasing global temperatures driven by human activity likely contributed to the Louisiana floods, considered the worst natural disaster in the US since Hurricane Sandy in 2012. Heavy precipitation of almost 7tn gallons of water came down on Louisiana, flooding 60,000 properties and killing 13 people. The repairs could cost as much as \$9bn. (The Guardian, 2016)
- Heat is the biggest weather-related killer in the U.S. Florida could face a greater increase than other states in the dangerous combination of heat and humidity over the next several decades. (Climate Central, 2016)
- Over the period 1948 to 2013, the average annual temperature in Canada has warmed by 1.6 °C (relative to the 1961-1990 average), a higher rate of warming than in most other regions of the world. Future warming will be accompanied by other changes, including the amount and distribution of rain, snow, and ice and the risk of extreme weather events such as heat waves, heavy rainfalls and related flooding, dry spells and/or droughts, and forest fires. (Government of Canada)
- In 11 places in the United States, ranging from the Miami area, to Wilmington, N.C., to Seattle, more than 80 percent of flood days in a 10-year span can be attributed to human-caused sea level rise. (Climate Central 2016)



# PERSONAL OBSERVATIONS FROM **NORTH-AMERICA**

**“This is the worst flooding and water rescue situation that I have personally participated in [...] The water that is coming through here is contaminated. Everyone that has been in that water needs to be decontaminated.”**

– Mitch Matlow, San Jose Fire Department Capt.

**50 years of my observation, I have seen a lot of changes, from cold winters that — and ice that was very safe into thinning of ice. And we had to move in some cases further north. Our hunters are going out further. Like, in Shishmaref, they are having to go 90 miles out to find ice to get their walrus and their seals. And they’re having to risk more going out further into the sea. And when the weather hits and then that’s where the loss of life occurs.”**

– Mike Williams, Akiak Native Community in Alaska



## 05. REGION

# CENTRAL AND SOUTH-AMERICA



South America will be affected by water shortages, a fall in food production and quality, floods and landslides, and a spread of diseases transmitted by insects such as the Zika virus.

Water shortages will hit semi-arid areas due to a lack of rainfall, while higher temperatures will reduce water availability in areas that depend on glacier melt, such as in the tropical Andes, where glaciers have shrunk by between 30 and 50 percent in the 30 years to 2013. Rainfall in the Amazon area is also expected to fall up to 40 percent. All of this will damage food production and agriculture, which will cause health problems and hurt those who depend on agriculture as a livelihood in the region. Energy will also be impacted in areas that depend on hydroelectricity.

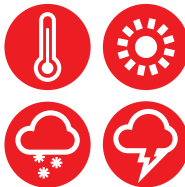



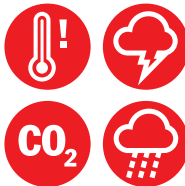



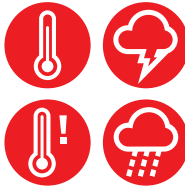


On the other end of the spectrum, heavy rainfall is already causing increasing frequent and intense floods and landslides, in both urban and rural areas. Tornadoes, which were once rare, will become more frequent, causing damage to houses and infrastructure and causing injuries and death.

Heatwaves will also cause sickness and ill health, as well as deaths. Warmer temperatures also allow mosquitos and other disease-transmitting insects to thrive, which is expected to increase the spread of vector-borne diseases. A hotter climate may reduce yields of crops such as coffee, maize and soy, partly due to the spread of fungal diseases and pests. It will also cause food to spoil, which will result in more cases of food poisoning. Extreme cold has also more of a health risk in Central and South America, where the winters have become particularly harsh in the past decade, affecting over 5 million people.

# RISKS AND ADAPTATIONS

## IN CENTRAL AND SOUTH-AMERICA

source

KEY RISK	CLIMATIC DRIVERS	TIMEFRAME	RISK & POTENTIAL FOR ADAPTATION
			Very lowMediumVery high
Water availability in semi-arid and glacier-melt dependent regions and Central America; flooding and landslides in urban and rural areas due to extreme precipitation (high confidence).		Present	
		Near term (2030 - 2040)	
		Long term (2080 - 2100)	
Decreased food production and food quality (medium confidence).		Present	
		Near term (2030 - 2040)	
		Long term (2080 - 2100)	
Spread of vector-borne diseases in altitude and latitude (high confidence).		Present	
		Near term (2030 - 2040)	
		Long term (2080 - 2100)	not available not available

# LOCAL CHALLENGES IN CENTRAL AND SOUTH-AMERICA

- Heavy rain and warm temperatures have helped the mosquitoes carrying Zika thrive. (Climate Central 2016)
- The glaciers of the tropical Andes have shrunk by between 30 and 50 percent in 30 years and many will soon disappear altogether, cutting off the summer water supply for millions of people, according to scientists studying the region's climate. (Climate News Network, 2013)
- The PBMC report foresees that climate change in Brazil will also bring an increase in fungal diseases and pests, caused by the rise of CO<sup>2</sup> levels in the air and ultraviolet B radiation. In addition to cereals, fruit crops such as banana, mango and grape will be hit. (Climate Central)
- Retreating glaciers and climate change are threatening the water supply of Bolivians/Peruvians and, in turn, their ability to live. Estimates suggest that a third of Bolivians do not have access to clean water. (Latin Times, 2016)

# PERSONAL OBSERVATIONS FROM CENTRAL AND SOUTH-AMERICA

**“We are dealing with this emergency in the short term, but of course we need long-term strategies to avoid these situations so the people are not continually suffering in these emergencies.”**

– Marilú Martens, Education Minister, Peru, after devastating floods and mudslides, 2017

**“The lake was our mother and our father. Without this lake, where do we go?”**

– Adrián Quispe, Bolivia, where Lake Poopó has dried up, forcing people to relocate

## 06. REGION

# EUROPE



Europe will suffer from flooding in river basins and coasts, from water restrictions, and from wildfires. Both acute disasters and the long-term consequences of a changing climate will cause economic losses and reduce labour productivity.

Extreme levels of rainfall are already causing frequent flooding, which damages housing, infrastructure, power lines and transportation, and leaves people without clean water, medical treatment, light and a means to cook food. Increasing urbanisation and urban density is also a contributing factor to floods, as more paved ground and built areas prevent the ground from absorbing rainfall. Coastal erosion and rising sea level due to melting ice-caps also threatens seaside populations with floods.

Heatwaves are becoming more common in Europe, causing illnesses and health problems, particularly among the elderly. According to UNISDR, 90







percent of the total deaths relating to heatwaves were recorded in Europe (2015). Heatwaves can also reduce water resources (drainage and runoff) as a result of more water evaporating, particularly in southern Europe. Hotter summers will also lead to crop failure, which has enormous economic impact: droughts have cost over €100 billion in the past 30 years. Temperatures in mountain ranges such as the Alps and the Pyrenees are predicted to rise to temperatures that will melt glaciers.

The Mediterranean area and the Russian boreal area is becoming drier, making it more vulnerable to drought, which is causing crop failures and wildfires. The fumes and air pollution from wildfires cause respiratory illnesses and aggravate existing conditions. Extreme weather events such as wildfires have a big impact on health, including mental health. All over Europe, pollution from cars increases concentrations of ozone near ground level, which causes 21,000 hospital admissions a year. The number of people hospitalised for respiratory problems due to particulate matter exposure from car exhaust is almost five times that.

# RISKS AND ADAPTATIONS

## IN EUROPE

source

KEY RISK	CLIMATIC DRIVERS	TIMEFRAME	RISK & POTENTIAL FOR ADAPTATION
			Very lowMediumVery high
Increased economic losses and people affected by flooding in river basins and coasts, driven by increasing urbanization, increasing sea levels, coastal erosion, and peak river discharges (high confidence).	 	Present	<div><div></div></div>
		Near term (2030 - 2040)	<div><div></div></div>
		Long term (2080 - 2100)	<div><div></div></div>
Increased water restrictions. Significant reduction in water availability from river abstraction and from groundwater resources, combined with increased water demand (e.g., for irrigation, energy and industry, domestic use) and with reduced water drainage and runoff as a result of increased evaporative demand, particularly in southern Europe (high confidence).	  	Present	<div><div></div></div>
		Near term (2030 - 2040)	<div><div></div></div>
		Long term (2080 - 2100)	<div><div></div></div>
Increased economic losses and people affected by extreme heat events: impacts on health and well-being, labor productivity, crop production, air quality, and increasing risk of wildfires in southern Europe and in Russian boreal region (medium confidence).		Present	<div><div></div></div>
		Near term (2030 - 2040)	<div><div></div></div>
		Long term (2080 - 2100)	<div><div></div></div>

# LOCAL CHALLENGES IN EUROPE

- Overall, 92% of deaths from heatwaves were recorded in high-income countries, with Europe reporting the lion's share at 90%. More than 55,000 people died during a heatwave in Russia during the summer of 2010, while Western and Southern Europe experienced major heatwaves in 2003 and 2006 which killed more than 72,000 and 3,400 people respectively. (UNISDR 2015)
- UK's National Flood Resilience review found that 530 critical infrastructure sites, such as water and telecoms, are at serious risk from floods, each potentially affecting at least 10,000 people. (The Guardian, Sept. 2016)
- Monthly rainfall averages fell by as much as 80% in parts of France, and parts of northern Spain experienced daily temperatures over 30 degrees for more than 40 consecutive days. (EDO; The Guardian)
- A heatwave in 2003 likely caused over 500 premature deaths in Paris and London, among an estimated tens of thousands of deaths across the whole of Europe. (Environmental Research Letters)
- In 2030, under a high CO2 emission scenario, more than 400 attributable deaths per year are expected in Athens, Budapest, Paris, and Rome. (European Commission)
- Researchers assessing the impact of drought have found that the south of France, Italy and the Balkans will be most negatively affected with periods of water shortages and lowered river flow levels. [European Commission's Joint Research Centre (JRC)]
- In January 2017, air pollution in London surpassed its annual limit in five days.

# PERSONAL OBSERVATIONS FROM EUROPE

**“Our modern assumptions about safety are punctured by a few days of rain, and so distressingly and violently. We have come to think of ourselves as protected by our tarmac and infrastructure and industrialised life... but we were just lucky.”**

– Rose George, Yorkshire, UK, after floods in the north of England

**“For one month we are suffocating from the smoke. The weather is hot, and there is a strong smell of burning and smoke. It is not possible to open windows, we cannot go out because we soon feel dizziness...”**

– Residents of Bratsk, a city in Russia affected by a forest fire in a petition to Vladimir Putin

## 07. REGION

# OCEANIA



Low-lying coastal areas and small islands in the Pacific Ocean, such as the Marshall Islands, face possible submersion by rising seas, which will cause forced migration and/or necessitate relocation projects. The disappearance of the coral reef in Oceania, which have been damaged by the warming and acidification of the ocean, worsen this problem as coral protects coastal areas from waves and storm surges. Coastal infrastructure across Oceania is expected to be damaged by rising sea levels and more storms, flooding and coral bleaching, which also affects marine life and fisheries. Food sources and availability will be reduced, while livelihoods in farming, fishing and tourism could be at risk, which may deepen inequalities and cause mental health problems. Australia and New Zealand will also see more frequent and intense floods, which threaten damage to infrastructure and settlements.

Australia has seen an increase in heatwaves recently, which are expected to become more frequent and more intense in the near-future. High temperatures reduce water supplies and damage crops, threatening the livelihoods of farmers and making food more expensive. Heat-wave related deaths in Australian cities are expected to double over the next 40 years. Warmer weather will also increase diseases spread by mosquitos and other insects, such as dengue.

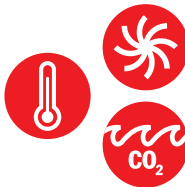


Australia's already dry climate is set to become drier as a result of climate change, which will cause more frequent bushfires, causing respiratory diseases and negative economic impact. Respiratory diseases caused by more people spending time indoors to avoid extreme heat outside are also expected to increase.



# RISKS AND ADAPTATIONS

## IN OCEANIA

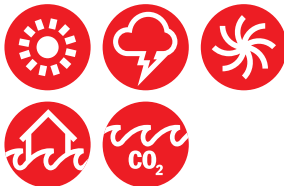

source

KEY RISK	CLIMATIC DRIVERS	TIMEFRAME	RISK & POTENTIAL FOR ADAPTATION
			Very lowMediumVery high
Significant change in community composition and structure of coral reef systems in Australia (high confidence).		Present	<div><div></div></div>
		Near term (2030 - 2040)	<div><div></div></div>
		Long term (2080 - 2100)	<div><div></div></div>
Increased frequency and intensity of flood damage to infrastructure and settlements in Australia and New Zealand (high confidence).		Present	<div><div></div></div>
		Near term (2030 - 2040)	<div><div></div></div>
		Long term (2080 - 2100)	<div><div></div></div>
Increasing risks to coastal infrastructure and low-lying ecosystems in Australia and New Zealand, with widespread damage towards the upper end of projected sea-level-rise ranges (high confidence).		Present	<div><div></div></div>
		Near term (2030 - 2040)	<div><div></div></div>
		Long term (2080 - 2100)	<div><div></div></div>

# RISKS AND ADAPTATIONS

## IN THE SMALL ISLANDS

source

KEY RISK	CLIMATIC DRIVERS	TIMEFRAME	RISK & POTENTIAL FOR ADAPTATION
			Very lowMediumVery high
Loss of livelihoods, coastal settlements, infrastructure, ecosystem services, and economic stability (high confidence).		Present	<div><div></div></div>
		Near term (2030 - 2040)	<div><div></div></div>
		Long term (2080 - 2100)	<div><div></div></div>
The interaction of rising global mean sea level in the 21st century with high-water-level-events will threaten low-lying coastal areas (high confidence).		Present	<div><div></div></div>
		Near term (2030 - 2040)	<div><div></div></div>
		Long term (2080 - 2100)	<div><div></div></div>

# LOCAL CHALLENGES IN OCEANIA

- Cyclone Debbie hit New South Wales in March 2017, with severe floods causing damage to buildings, roads and crops. The cyclone is also likely to have damaged the Great Barrier Reef. (BBC)
- Earlier studies have found a clear climate change signal in extreme heat events in Australia, including the record-hot year of 2013. (Climate Central)
- According to an IPCC report, Australia could have more frequent heatwaves and bushfire-prone conditions this century, warning that extreme weather is a “particularly serious health issue for Australia”, with the number of heatwave-related deaths in Australian cities set to double over the next 40 years. (Australian Academy of Science)
- Instances of disease, such as those borne by mosquitoes, are expected to increase as the climate warms, while high temperatures and disrupted water supplies will affect crops. In addition, the warming and acidification of oceans will affect Australia’s fisheries. (Australian Academy of Science)
- Australia is set to have an average annual temperature that is 1.3C warmer in 2030 compared to the average experienced between 1986 and 2005. This will be accompanied by more extreme droughts and less rainfall in the southern portion of the country. (CSIRO and Bureau of Meteorology in 2015)
- The Marshall Islands face worsening droughts, tropical storms, coral bleaching, coastal inundation and flooding – all exacerbated by rising temperatures and sea levels. (The Guardian)

# PERSONAL OBSERVATIONS FROM **OCEANIA**

**“Imagine if a whole race, Tuvaluans, we have our own culture, our own ways, is made extinct overnight because we are hit by a cyclone.”**

– Satini Tulaga Manuella, health minister of Tuvalu

**“They [the authorities] tell everyone in the towns what’s going on but further downstream, you’re sort of in the dark until that knock on the door from police. We got told ‘This is a 100-year flood, you need to go’. But we had nowhere to go. So we stayed it out.”**

– Phillip Roberts, NSW, Australia



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