

#2 THE TOPICS KIT



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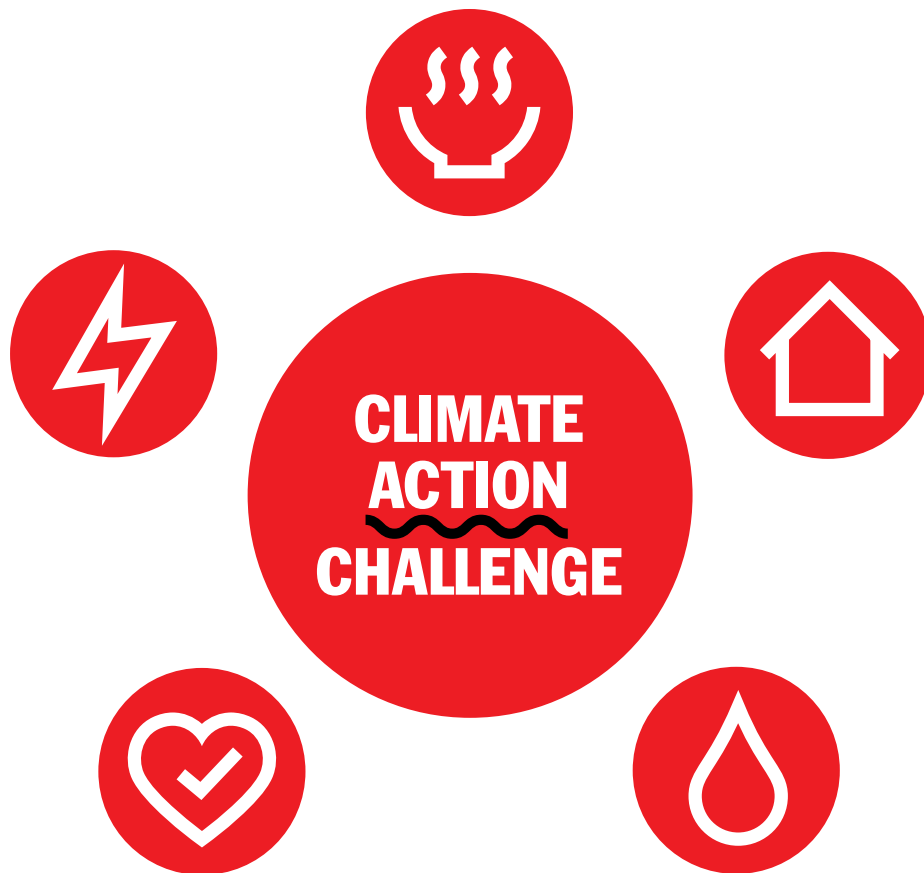
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01. TOPICS

INTRODUCTION



Climate change threatens the most basic necessities of life: food, water, shelter, energy. As such, it poses an enormous danger to our health. According to the most respected authorities on climate change adaptation, such as the The United Nations' Intergovernmental Panel on Climate Change (IPCC), these five topics are where the biggest problems are, and therefore where we need to focus.

These topics need to be looked at in a holistic way, as they interrelate and often overlap. For example, a lack of energy resources can lead to a lack of food or water, or cause a black-out in a hospital, which in turn affects health. Being homeless, or living in a flooded house, can make you sick and spoil your stored food. And having no water makes it impossible to grow any food in the first place. There are countless other ways in which they are interrelated. This is why you need to consider the relationship between your chosen topic and the others.

02. TOPIC

WATER



“What is terrifying about climate change is that it changes the water cycle of the earth... We’re the watery planet. Everything depends on water. For every 1 degree that the temperature on earth goes up because of industrially-induced climate change, the atmosphere is actually absorbing 7% more precipitation from the ground.”

– Jeremy Rifkin, economic and social theorist and author

Most of the consequences of climate change are related to water. A warming planet means that many people are now threatened by too much water – rising seas, record-breaking rainfall, and flash floods – while others are threatened by too little, in the form of drought.

People who live on the coast are at risk of their houses being submerged by rising sea levels, which are projected to rise half a metre by 2100 as higher temperatures melt the ice-caps. This will cause large-scale migration, homelessness and death. Low-lying countries and islands are particularly at risk.

Floods can cause death, sickness, food shortages and homelessness. They can also threaten livelihoods over the long term when people are displaced and their assets or resources are destroyed. Flooding can be worsened when land is paved or deforested. The number of people exposed to ‘the worst floods in 100 years’ in their region will triple if we continue to emit high amounts of carbon.

Water shortages and droughts can lead to dehydration, hunger and death. They can also cause sickness as people are driven to drink water from unsafe sources. By 2025, 1.8 billion people will experience absolute water scarcity, and two-thirds of the world will be living under water-stressed conditions. Today, 30 to 40 percent of people are already exposed to water shortages, while more than 40 percent of the world’s rural population live in river basins where there is not enough water.

One in every four cities experiences water stress. Many subtropical regions are projected to suffer from significant reductions in rainfall and renewable and groundwater resources.

Water shortages also reduce food production, as a lack of rainfall or irrigation affects crops and livestock. Droughts will disproportionately affect areas of the world that depend on rainfall for agriculture. Depending on boreholes can also make people more vulnerable, as it makes it difficult to see how much water is left, and users are not able to fix a broken pump themselves.

A shortage of water often leads to desperation, conflict and migration, which will become worse as the global population grows from 7.5 bln currently to a projected 9.7 bln by 2050.

That means the whole water cycle of the earth is thrown off. We're getting more violent winter snows, more dramatic spring flooding, more prolonged summer droughts, more category 3, 4 and 5 tsunamis and typhoons. Our ecosystem can't catch up to this dramatic shift in the water cycle of the planet and they're being stressed to exhaustion."

– Jeremy Rifkin, economic and social theorist and author,
in the film *Demain*

"The water came up to our knees, the only thing we could do was run for our lives and to try and keep calm."

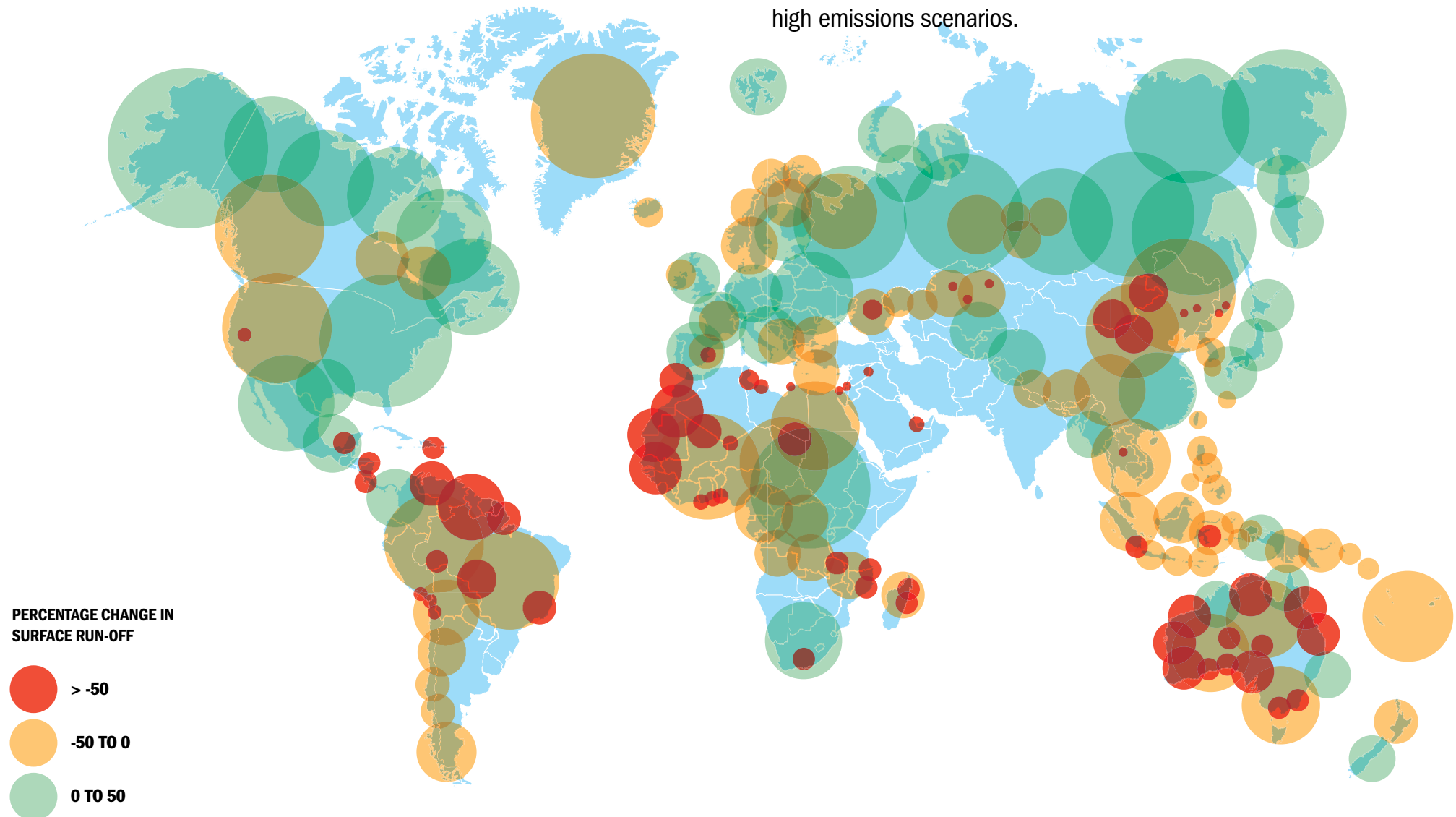
– Shirley Moran, Peru

"In Honduras, there isn't work because there isn't enough rain. Everything that's grown you lose. That's when you make the decision of risking everything and coming to the U.S. illegally."

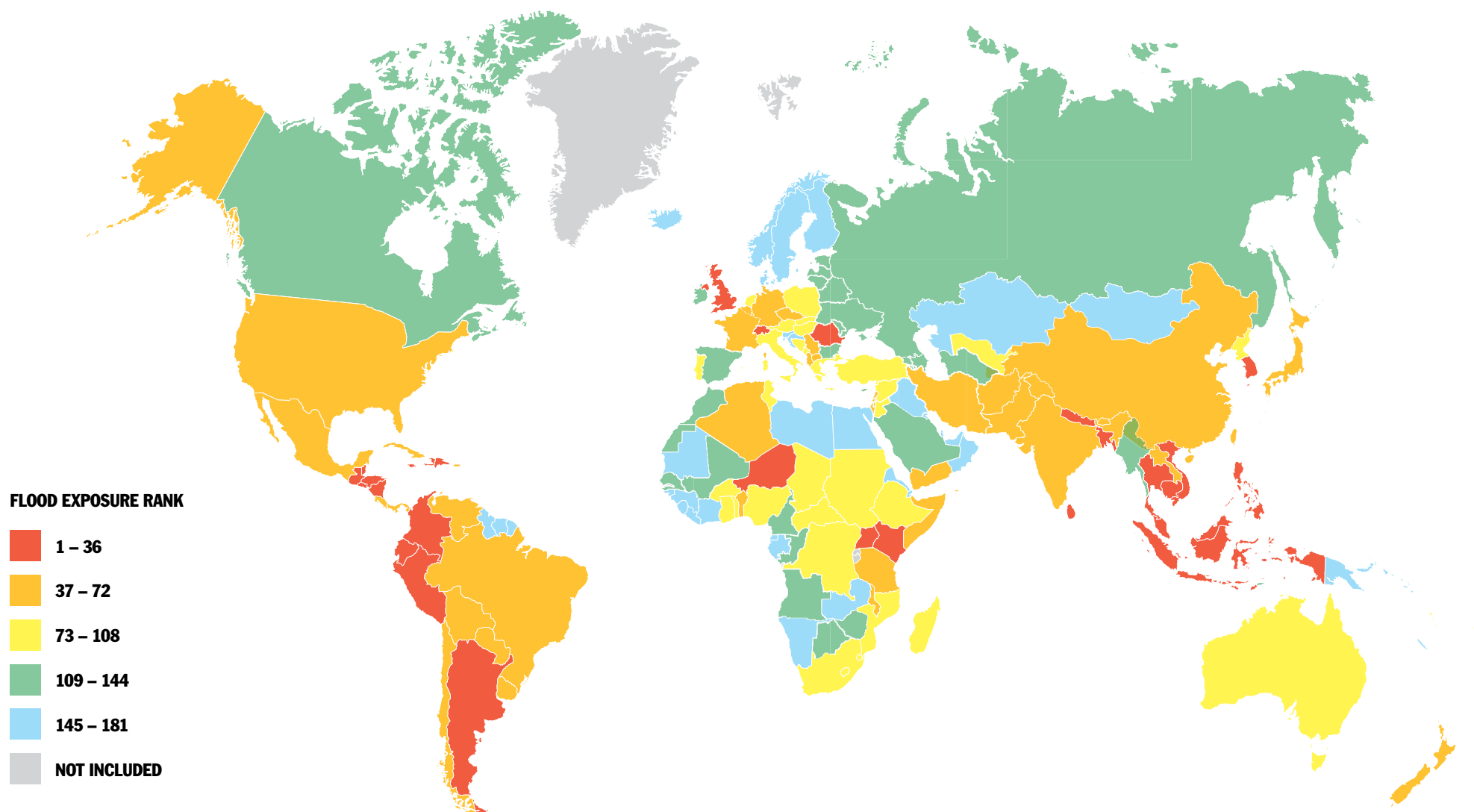
– Noel, former bean farmer, New Orleans

THE IMPACT OF CLIMATE CHANGE ON **WATER RESOURCES**

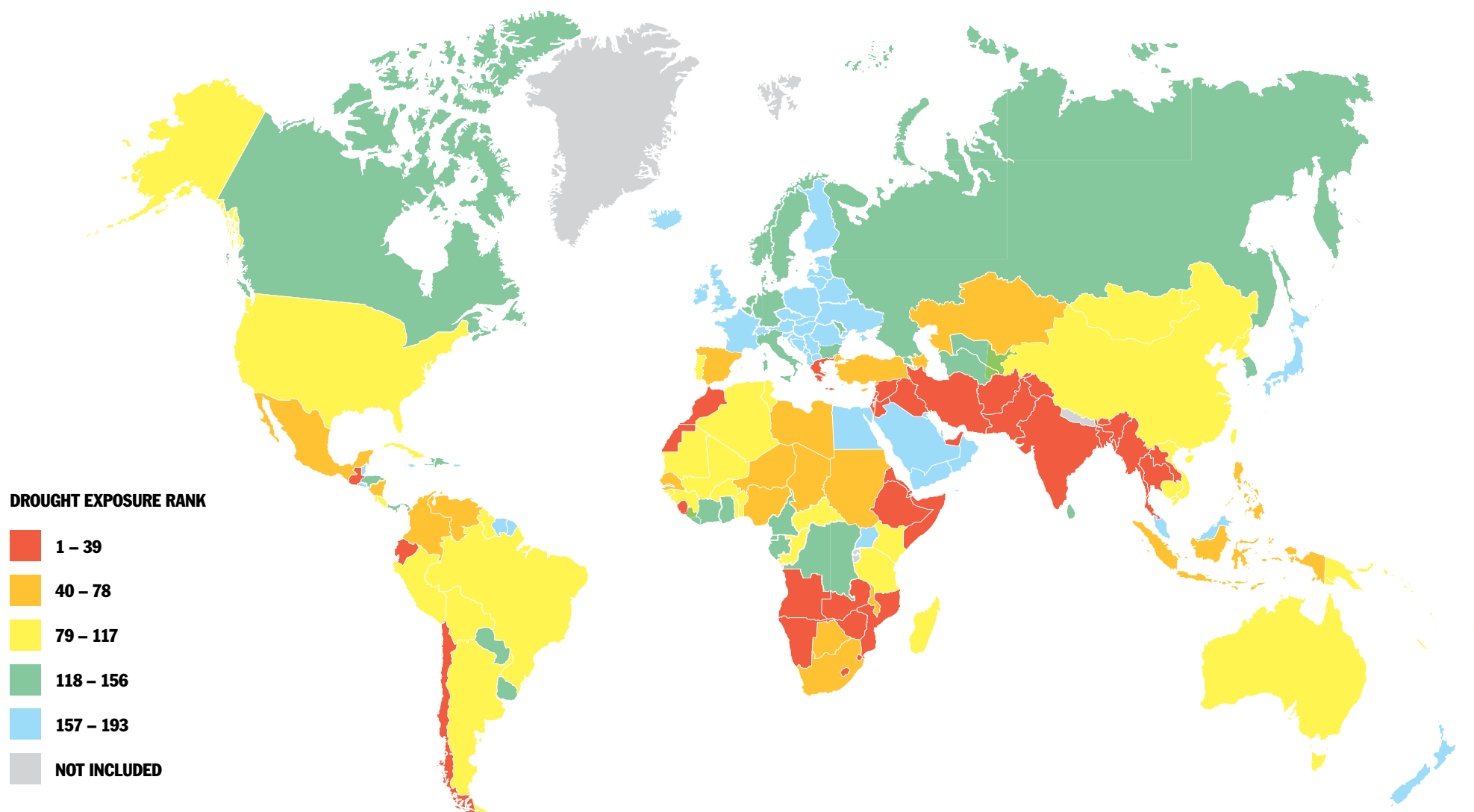
For every 1 degree of warming, another 7% of the population experiences a 20% decline in water availability; today already 30-40% exposed to water shortages; also population exposed to 100-year flood triples between low to high emissions scenarios.



FLOOD EXPOSURE



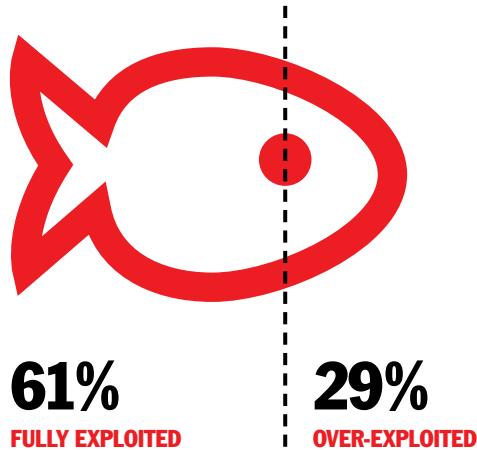
DROUGHT EXPOSURE



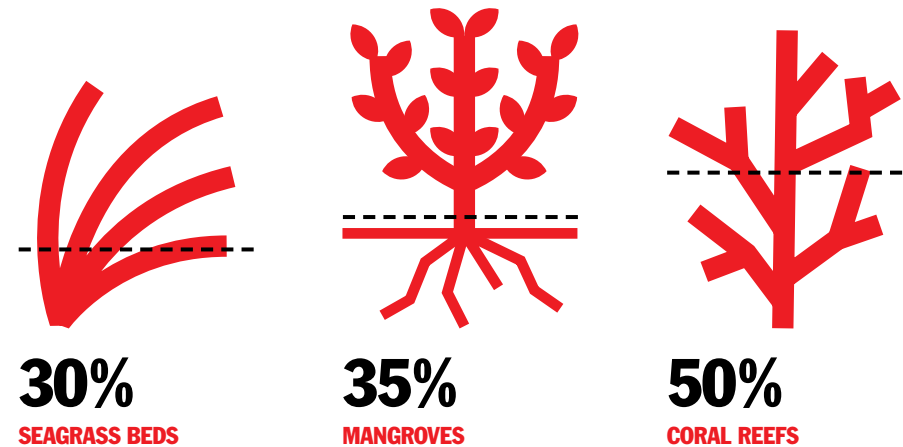
A HEALTHY OCEAN

source

GLOBAL FISH STOCKS



% OF CRITICAL HABITATS ALREADY DESTROYED



THE BENEFITS OF A HEALTHY OCEAN



350M
JOBS ARE LINKED
TO THE OCEAN



FISHERIES
ARE AN IMPORTANT
SOURCE OF PROTEIN



200M
JOBS ARE LINKED
TO THE MARINE
TOURISM INDUSTRY



RESILIENCE
A HEALTHY OCEAN
WILL COPE WITH
NEGATIVE IMPACTS
BETTER



COASTAL PROTECTION
WETLANDS, SEAGRASS,
MANGROVES AND CORAL
REEFS ARE NATURAL DEFENCES
TO PROTECT COASTLINES

03. TOPIC

FOOD



Climate change is reducing food production. Most plant species, mammals and molluscs cannot adapt fast enough to keep up with the changes in climate. Higher temperatures and a lack of rainfall are already reducing crop yields and killing livestock in many areas. Yields of major crops such as wheat, rice, maize and soy will fall drastically if the seeds and growing conditions are not changed as global temperatures reach 2 degrees. The unusual cold spells and heavy rain and snowfall caused by climate change in some areas are also damaging food production.

Rapidly changing temperatures are disrupting entire ecosystems, from the forest to the coast. The acidification of the ocean, warmer sea temperatures and changing currents are also killing coral and marine life, threatening vital food sources for many people.

Higher temperatures may mean that food cannot safely be transported over long distances. Natural disasters or a lack of fuel will also block or destroy normal transportation routes. The longer the chain of relationships between food producers and consumers, the more vulnerable consumers are.

Even if a country's food production is not majorly affected by climate change, a country that it relies on for food imports may be. Climate change will worsen desertification and soil depletion around the world. Industrial farms that rely on mono-culture agriculture – where only one crop is grown over a large area – weaken the soil, shortening its productivity over the long term. Small-scale farmers are also very vulnerable to the effects of climate change, because they are often uninsured and lack a financial 'buffer' when their crops or livestock are hit by weather.

For livestock farmers, their animals represent their savings, and this can be wiped out in one bad season. For this reason, climate change will hit low- and middle-income countries the hardest, as millions of people rely on agriculture as a livelihood.

All this will lead to more frequent and more intense famine and malnutrition. Oxfam say that people at risk of hunger could double to 20% by 2050, and daily calories available per capita will fall.

In more developed and industrialised countries, climate change may not result in famine, but will likely reduce or eliminate certain types of foods, including milk, lamb, almonds, grapes, walnuts, avocados, chocolate, potatoes, and coffee. (sources: 1, 2, 3, 4)

“The food crisis is not over in the developing world. In fact, the situation is more alarming in many countries than it was even a year ago. There’s nothing more basic than food. If people don’t have it, one of three things happen: they revolt, they migrate or they die.”

– Josette Sheeran, head of the UN’s World Food Programme

“It was just a short time before harvest but everything was destroyed. We did not get enough rice for our family to eat.”

– Eugenia Liwag, Farmer, Philippines, after a typhoon

“We lost about eighty breeding ewes and we lost a hundred ponies but we were fortunate - we dug eighty or ninety ewes out. A neighbour of ours lost half his hill flock overnight - gone.”

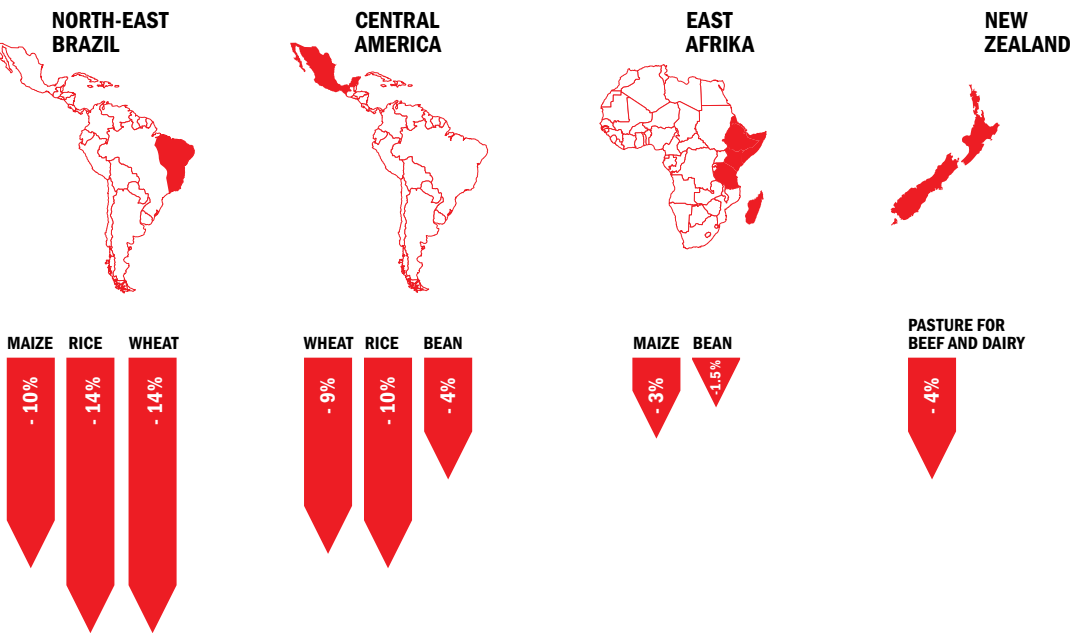
– Gareth Wyn Jones, Farmer, Wales, after heavy snowfall

THE FUTURE OF FOOD
AND FARMING: 2030S

In the 2030s, climate change will affect food and farming more strongly, particularly small-scale producers in poor countries.

source

CROP AND PASTURE YIELDS ARE LIKELY TO DECLINE IN MANY PLACES



ADAPTION WILL BE KEY

	CROPS	Temperate regions will benefit more from adaption than tropical regions	Switching to varieties tolerant to heat, drought or salinity	Optimising irrigation	Managing soil nutrients and erosion
	LIVESTOCK	Key adaptation for small-scale producers include:	Matching animal numbers to changes in pastures	More farms that mix crops and livestock	Controlling the spread of pests, weeds and diseases
	FISHERIES	Key adaptation for small-scale fisheries include:	Switching to more abundant species	Restoring degraded habitats and breeding sites like mangroves	Strengthening infrastructure such as ports and landing sites

04. TOPIC

HOUSING



A home is supposed to be a refuge from the outside world, but as the climate changes, our homes may not be able to protect us any more. In some cases, their location or construction can even put us at risk, with flooding, heatwaves, heavy snowfall and other consequences of climate change damaging the house and potentially injuring people inside it. The effect on housing can be either sudden, as in a natural disaster that sweeps away homes, or long-term, such as intolerably high or low temperatures.

The biggest and most urgent challenge is relocating people whose homes will be submerged by rising seas or floods. This includes entire island nations as well as coastal villages, towns and cities around the world. The problem is worsened by the land sinking (subsidence) due to excess groundwater extraction. Many major cities, including Beijing, Tokyo, Venice and New Orleans, suffer from this problem. In some cases, cities are sinking ten times faster than the sea is rising. Both factors, of course, increase the risk of both acute and chronic flooding.

Heatwaves and droughts could also make some areas uninhabitable, due to a lack of water and the difficulty of surviving extreme temperatures. Temperatures in some areas are already reaching the limits of human tolerance. In hot and dry regions suffering from drought, wildfires pose another threat to homes.

Other areas are experiencing colder and longer winters, with heavier and more frequent snowstorms that can damage homes and infrastructure. Many areas are experiencing record heavy rainfall, which can lead to landslides that submerge and destroy homes.

All of these climate factors and their consequences — higher temperatures, drought, heavy precipitation, a lack of food and water — force people to migrate to survive. According to the United Nations High Commissioner on Refugees (UNHCR), displacement due to climate change is set to increase dramatically. In 2014, weather-related disasters, mostly associated with floods and storms, displaced more than 17.5 million people.

As disasters and migration will cause homelessness, there is also a need to design temporary shelters and housing. These need to be designed to withstand the climatic conditions of the region.

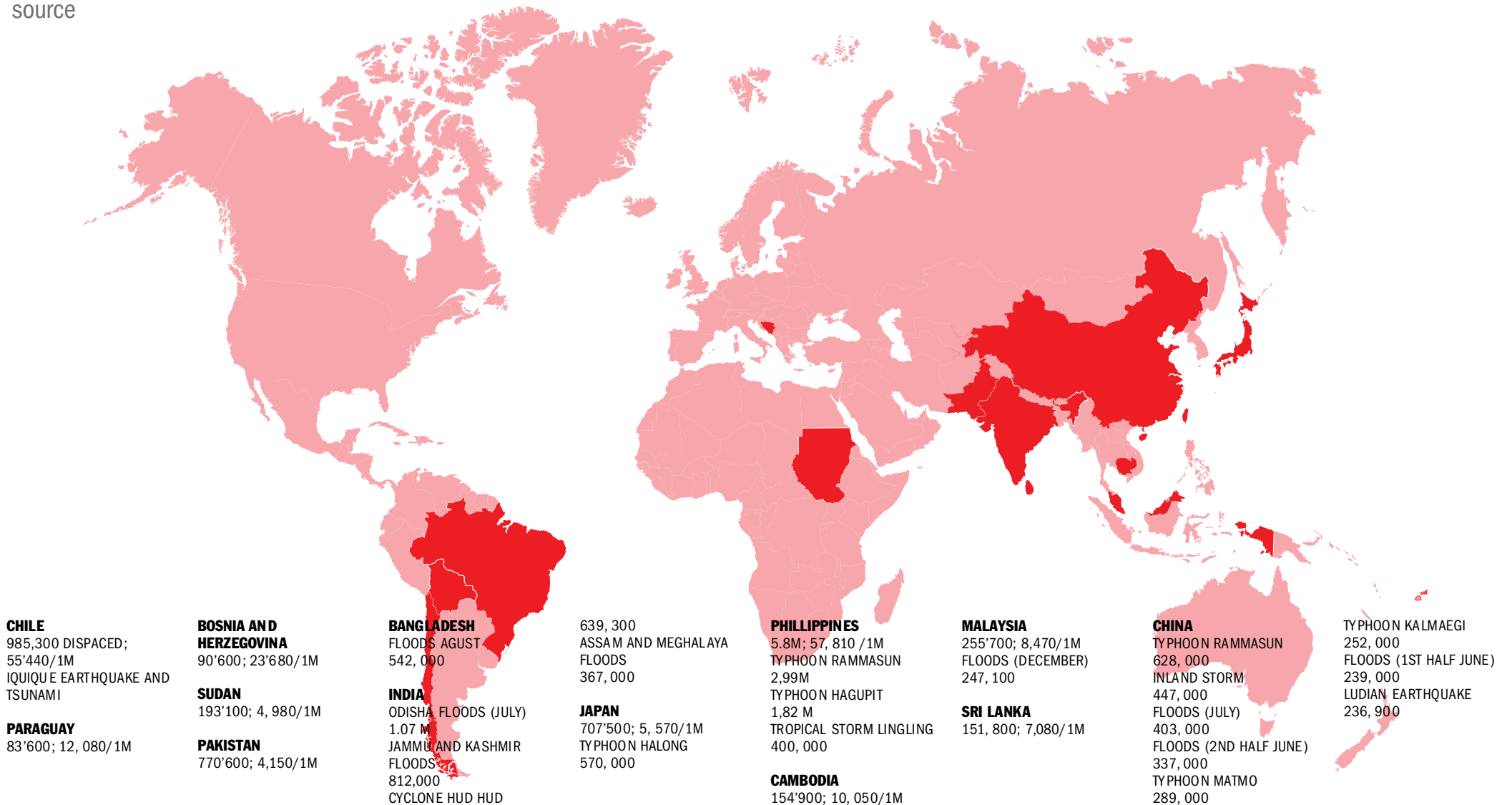
“As we see this threat increase in the future, it’s going to come down to who has the money to be able to put their home on stilts, or rebuild, and usually these homes are rebuilt nicer and more expensive than they were originally, even if once they were affected by a hurricane. Which communities have money to fight off the rising sea level? There will be a bit of inequality created by this.”

– Svenya Gudell, economist

DISPLACEMENT RELATED TO DISASTERS WORLDWIDE IN 2014

19.3 MILLION PEOPLE NEWLY DISPLACED WORLDWIDE

source



INTRODUCTION

WATER

FOOD

HOUSING

HEALTH

ENERGY

THE IMPACT OF CLIMATE CHANGE ON HUMAN RIGHTS



1 Climate change has significant effects on several human rights. This interconnectivity needs to be recognized by strengthening human rights protections under the UNFCCC in the Paris treaty.



2 An institutional safeguards system applicable to all climate actions is needed to prevent social and environmental harm and human rights abuses.

“But as important as technology and infrastructure are, perhaps the human element is even more critical. We need better planning and systems for evacuation. We need to better understand how people make decisions in times of crisis, and why. While it’s true that many who died in Katrina did not have access to transportation, others who did refused to leave as the storm approached, often because available transportation and shelters refused to allow them to take their pets. Imagine leaving behind your own pet in an evacuation or a rescue.”

– Vicki Arroyo, lawyer and executive director of the
Georgetown Climate Center

05. TOPIC

HEALTH



At the heart of it, this challenge is all about our health — and ultimately, our survival. Both direct changes in the climate (higher temperatures, extreme rainfall, rising seas) and the resulting lack of basic resources (food, water, housing, energy) can damage our health and even kill us.

The impact on human health from climate change is broad and complex. Higher temperatures will cause heatstroke and heat exhaustion, and worsen air quality, increase bacteria in food and water, and raise pollen counts, which will aggravate asthma and allergies.

Warmer weather will also increase the number of disease-transmitting insects, such as mosquitos, which spread malaria and dengue, and ticks, which spread Lyme disease. Prolonged hot and dry weather increases the chances of forest fires, which cause death and burns as well as respiratory illnesses due to particulate matter in the smoke. Air pollution is in fact one of the biggest killers in the world. Many respiratory illnesses and symptoms are caused by **ozone** (what many people call “smog”), a toxic gas formed when pollutants from vehicle exhaust and power plants combine in sunlight and heat.

Warm weather increases concentrations of ozone, worsening its impact on people. In the Global South, air pollution at home is the biggest danger: smoke from open fires and stoves used to cook and heat homes causes 4 million premature deaths a year. Three billion people continue to burn wood, animal dung, crop waste and coal indoors because they can gather these fuels for free, unlike cleaner alternatives. As climate change increases poverty, the number of people relying on these stoves may grow.



A lack of food, either in the aftermath of a disaster, or after poor harvests due to climate change, is causing more famines and hunger. Even when calories are available, the food sources are often monotonous or nutritionally poor, leading to malnutrition. This is not only a problem or a risk in the Global South: many of the poorest people in richer nations will also be affected as climate change makes food more expensive. Diabetes has been linked to climate change for this reason.

Another set of risks comes with the changing water cycle. Rising seas and floods threaten to drown and injure people. Increasingly frequent and severe storms (including typhoons, hurricanes, tornadoes, cyclones) do the same. And the homelessness that will result from natural disasters such as these will increase the chances of infectious diseases, such as cholera, malaria and diarrheal diseases.

All these effects, as well as other consequences of climate change discussed elsewhere in this background pack, will increase the incidence of mental health problems as well.

“By the end of the century we are looking at an increase of tens of thousands of illnesses and death episodes because of climate change. There is not one single source that we can target. As far as history is concerned this is a new kind of threat that we are facing.”

– Vivek Murthy, surgeon general of the United States



“It’s very hard to work like this, it’s sweaty, sometimes we get dizzy. Every summer I get ill. But what can we do? We have to work to fill our stomachs. This is our karma I guess.”

– Mohammed Zakir, a homeless rickshaw puller, Delhi (India)

“As summers grow hotter, we see species moving up from the [United] States, so you have more incidents of Lyme disease, for example, because ticks are moving north into southern Ontario.”

– Gideon Forman, Canada

CLIMATE CHANGE THREATENS YOUR HEALTH

source of data



DROUGHT

Floods and heat waves will increase.



VECTOR-BORNE DISEASES

Malaria and dengue virus will increase with more humidity and heat.

BASIC NECESSITIES WILL BE DISRUPTED...



FOOD

Hunger and famine will increase as food production is stabilised by drought.



AIR

Pollution and pollen seasons will increase, leading to more allergies and asthma.



WATER

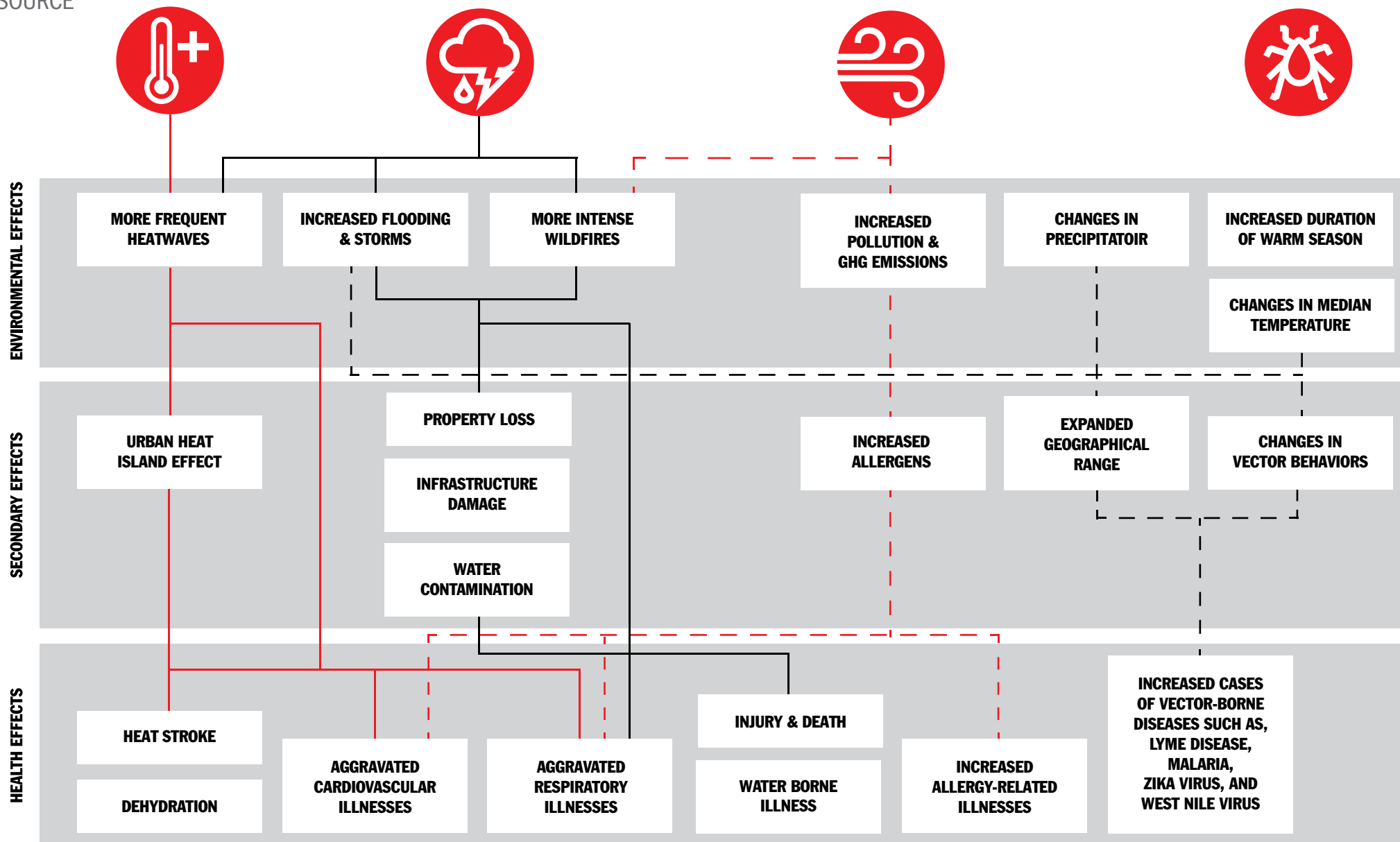
Warmer waters and flooding will increase exposures to diseases in drinking and recreational waters.

Between 2030 and 2050 climate change is expected to cause **250 000 ADDITIONAL DEATHS PER YEAR** due to malaria, malnutrition, diarrhoea and heat stress.



HOW CLIMATE AFFECTS YOUR HEALTH

SOURCE



06. TOPIC

ENERGY



Most people know that our energy usage is a problem for the climate. What many don't realise is that climate change is also a problem for our energy usage.

We currently get 98% of our electricity from hydropower and thermoelectric power, which both rely heavily on water. Droughts and restricted freshwater resources due to climate change will therefore hit our energy supply.

Natural disasters, extreme temperatures and harsh climates can all damage or cut out energy supplies, from electricity or gas supplied by a national grid, to biomass for stoves or fires (wood, coal, dung and crop waste). In the first three months of 2013, over one million people were reported to be affected by power outages due to extreme weather events. Heatwaves often accompany blackouts as the extra demand for cooling devices strains the grid.

People living in 'energy poverty' will become even more vulnerable after natural disasters as their normal energy sources, such as firewood, animal dung or crop waste, become unavailable.

People living in wealthier areas will experience an energy shortage as a complete breakdown of life as they know it — from no way to get to work, to no food on the supermarket shelves, and no way to communicate.



But while access to energy may decline, harsher temperatures will increase demand for it. Only those with private generators or their own solar panels will be able to keep on their air conditioning or heating during a heatwave or unusually cold weather.

A shortage or lack of energy will have countless knock-on effects for health. Beyond the energy required to deliver the basics for survival — food, water, shelter — a blackout can restrict or cut off access to medication (especially those that must be chilled) and essential medical devices such as life support machines’ and then add the next two paragraphs.

The other “adaptation” we may have to make is to a world where we cannot burn fossil fuels any more. This means a lower energy supply in general. Renewable energy tends to be more resilient to natural disasters than conventional fossil fuels because it can be decentralised, unlike coal, nuclear and oil plants. But not all forms of renewable energy are necessarily adapted to climate change: hydroelectric dams across Africa are regularly shut down by droughts, while wind turbines can be damaged by strong winds.

“What we urgently need now is fuel, heavy and light oil, water and food. More than anything else, we need fuel because we can’t do anything without it. We can’t stay warm or work the water pumps.”

– Masao Hara, mayor of Koriyama, in the aftermath of the 2011 tsunami in northern Japan

“If you want to solve the problem of energy poverty with the realities of today, you’re going to be building coal plants all over the world. On the other hand, if our efforts were directed towards mitigating climate change, the implication is that all of us have to consume less energy. Which is saying, you guys in sub-Saharan Africa are doing the right thing, and we in Europe and North America have to adapt to that. Many of us wouldn’t be happy. So in the short term there is no way to solve the problem in either direction using the realities of today. Which means that we have to create a new reality.”

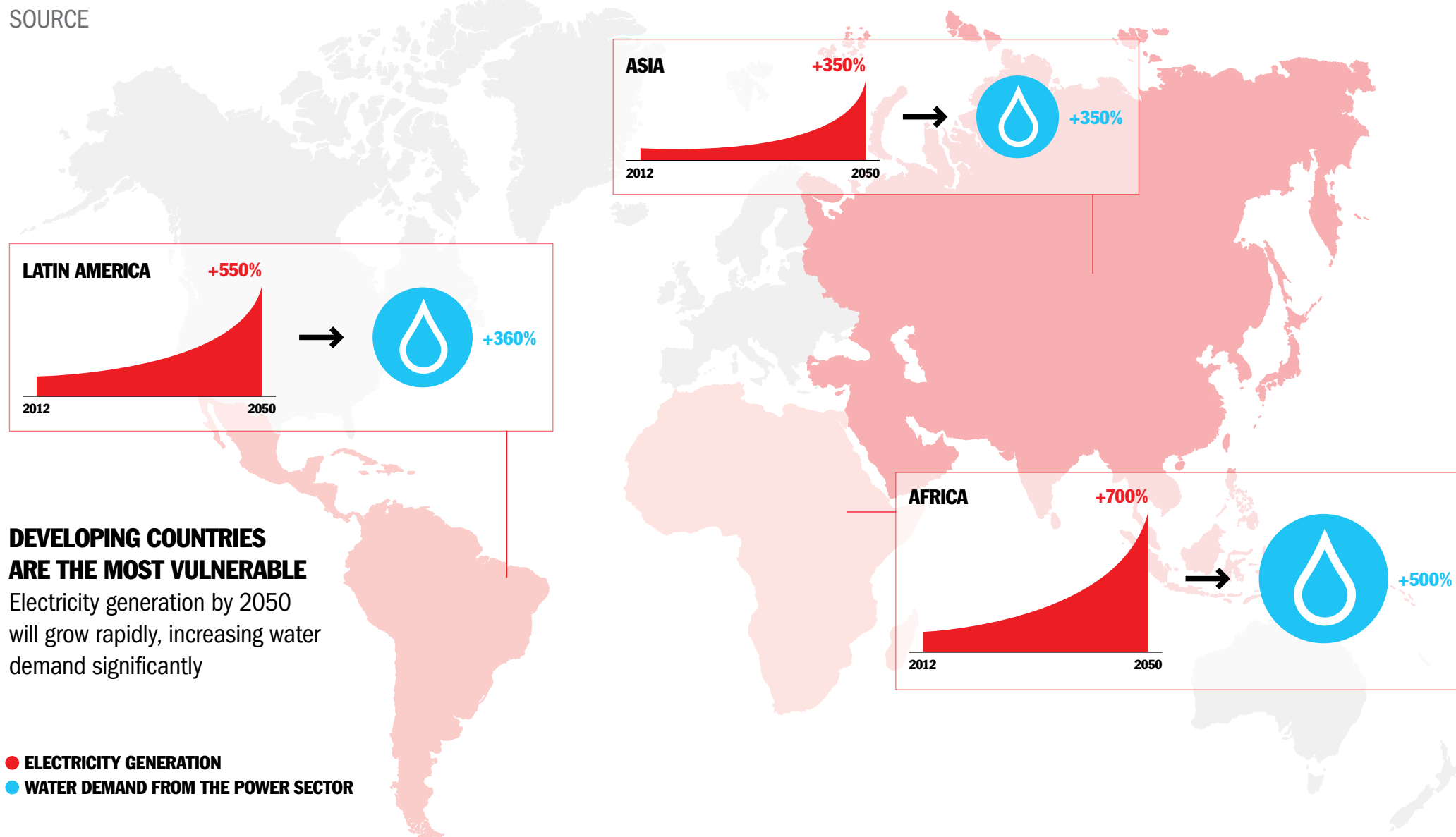
– Arash Aazami, founder of energy thinktank Kamangir

“Sometimes it gets pitch dark, we try to use the lamps here but it’s not enough light. So we really need someone to help us get the light.”

– Resident, Accra, Ghana, as drought shuts down a hydroelectric dam

ELECTRICITY GENERATION AND WATER USAGE IN DEVELOPING COUNTRIES BY 2050

SOURCE



DEVELOPING COUNTRIES ARE THE MOST VULNERABLE

Electricity generation by 2050 will grow rapidly, increasing water demand significantly

- **ELECTRICITY GENERATION**
- **WATER DEMAND FROM THE POWER SECTOR**



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