

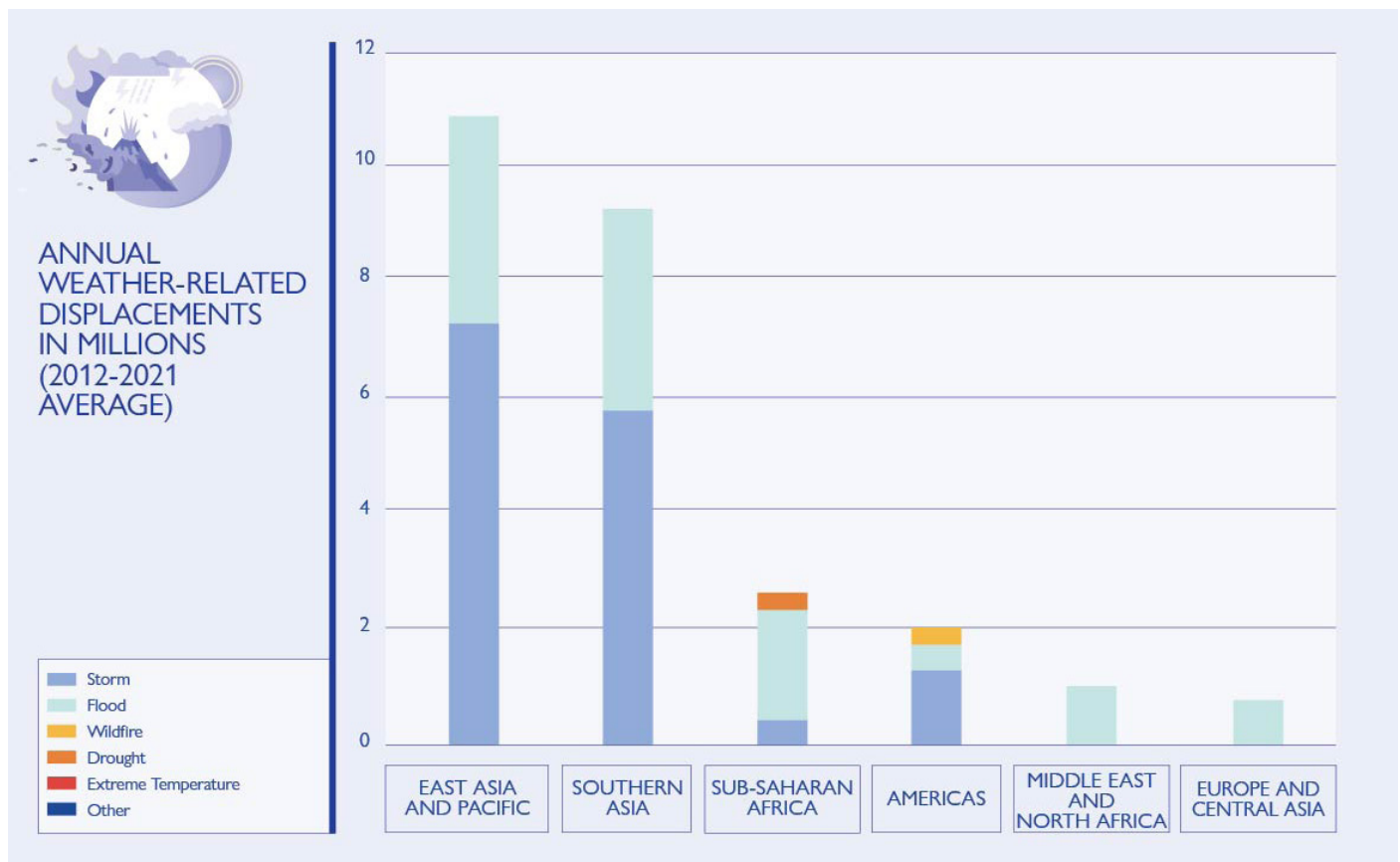
CLIMATE CHANGE AND FUTURE HUMAN MOBILITY

Evidence Summary

In the past decade, an estimated 21.6 million people were internally displaced annually by climate-related hazards worldwide (Figure 1). Climate change is increasing these hazards across many parts of the world. In addition to concerted climate mitigation, navigating these challenges requires effective, evidence-based policy measures that support people at risk. This fact sheet contributes by providing evidence highlights compiled, unless noted otherwise, by the Intergovernmental Panel on Climate Change (IPCC)¹ on projected future impacts of climate change related to human mobility.²

It shows how climate change is expected to expose more than a billion people to sea level rise, flooding, droughts, and other hazards, and will likely drive the movement of tens to hundreds of millions of people in coming decades. Whilst precise projections remain difficult to come by, the overall trend is clear.

Figure 1: Annual weather-related displacements in millions (2012 – 2021 average)



Source: Internal Monitoring Displacement Centre (IDMC) (2022).

¹ The IPCC is the United Nations body for assessing the science related to climate change. The present document is based on the IPCC's Sixth Assessment Report (IPCC, 2022).

² This document supplements IOM's policy paper "People on the Move in a Changing Climate - Linking Policy, Evidence and Action", prepared for COP27. Available at <https://publications.iom.int/books/people-move-changing-climate-linking-policy-evidence-and-action>.

THEMATIC BRIEF

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1. STATE OF THE EVIDENCE

- Projections of when and where people will be exposed to climate-related hazards, including sea level rise, floods, and heat stress, are becoming increasingly precise. In comparison, estimates of the number of migrants and displaced persons that will be generated by these events remain subject to higher uncertainty.
- The variety of climate change processes and the complex, interrelated factors shaping people's movements (social, demographic, economic, environmental and political), as well as inconsistent data collection, make it difficult to readily quantify the extent to which climate change drives human mobility.
- Improved collection, use and analysis of migration and displacement data in line with international guidelines are key for a better understanding of human mobility in the context of climate change.

Figure 2: Projected internal climate migrants by 2050



Source: Clement et al. (2021).

2. PROJECTED HUMAN MOBILITY RELATED TO CLIMATIC HAZARDS

- Globally, 44–113 million people are projected to internally migrate by 2050 as the result of slow-onset climate impacts (water stress, crop failure, sea level rise) under a climate-friendly scenario, increasing to 125–216 million people under a pessimistic scenario (Figure 2).
- Depending on the warming scenario and future population growth, tens to hundreds of millions of people are projected to be at risk of future displacement by sea level rise.
- With every additional degree Celsius of warming, the global risks of involuntary displacement due to flood events are projected to increase by approximately 50 per cent.

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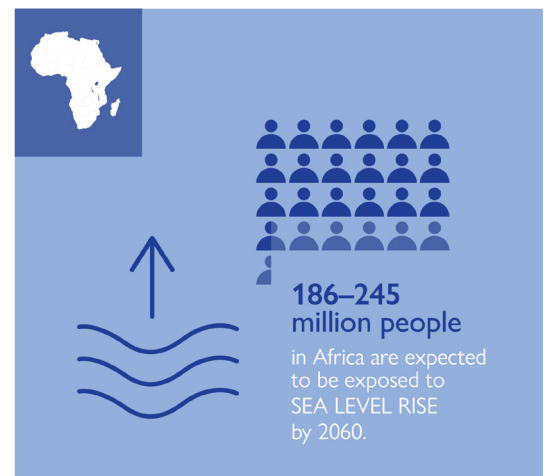
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- o Sea level rise and associated flooding events are projected to drive the migration of 750,000 people out of the east African coastal zone between 2020 and 2050.
- o In Bangladesh, direct inundation is estimated to drive migration of 0.73–2.1 million people by 2100 under 0.44 and 2 m mean sea level rise, respectively.
- o In Sub-Saharan Africa, displacement due to river flooding is projected to increase by 200 per cent in the last third of the century, compared to the year 2000, under low population growth and 1.6°C warming, increasing to 600 per cent under higher population growth and 2.6°C warming.

3. PROJECTED EXPOSURE TO MOBILITY-RELATED CLIMATIC HAZARDS

3.1. Sea level rise

- o By 2050, more than one billion people are expected to be at risk from coastal-specific climate hazards.
- o As a result of high coastal urbanisation rates and climate change, 186–245 millions of people in Africa are expected to be exposed to sea level rise by 2060.
- o For a global warming of 1.5–2.5°C compared to pre-industrial times, 400–430 thousand people in Small Island Developing States are projected to be exposed to permanent inundation by 2100. Many areas will become uninhabitable well before the time of permanent inundation, due to increased coastal flooding and soil salinisation.
- o In the United States, sea level rise of 0.9m by 2100 could place 4.2 million people at risk of inundation, increasing to 13.1 million people for 1.8 m sea level rise.



3.2. Floods and Storms

- o The global population at risk of river floods is projected to increase by 120 per cent at 2°C warming, and 400 per cent at 4°C.
- o Even without climate change, the extent of urban land exposed to high-frequency flooding is projected to increase around 270 per cent in north Africa, 800 per cent in southern Africa, and 2600 per cent in mid-latitude Africa by 2030 compared to 2000, based on current population and urbanisation trends.
- o In Indonesia, urbanisation will increase river and coastal flood risks by 76–120% between 2000 and 2030, while sea level rise will further increase exposure by 19–37%.
- o In China's urban agglomerations, 1.5°C global warming is projected to approximately double the intensity of total precipitation of very wet days, increasing risks of urban flash floods.
- o Globally, the number of tropical cyclones is expected to remain constant or decrease; however, their intensity is projected to increase. Small islands are particularly at risk; e.g., 2017 tropical cyclone Maria destroyed nearly all of Dominica's infrastructure, with losses amounting to over 225 per cent of annual GDP.

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3.3. Extreme Heat

- By 2100, between 50 per cent (low warming scenario) and 75 per cent (high warming) of the human population may be exposed to periods of life-threatening temperature and humidity conditions.
- Potentially lethal heat thresholds will be exceeded on up to 150 days annually in West Africa at 1.6°C warming, up to 150 days in central Africa at 2.5°C, and up to 300 days over tropical Africa for >4°C.
- South Asia is projected to experience more intense, more frequent, and longer heatwaves. For example, at 1.5°C global warming, Kolkata will experience heat equivalent to the 2015 record heatwaves on an annual basis.
- In China's urban agglomerations, the number of heat danger days is estimated to increase from 3 days annually in the early 2000s to 8–67 days by the end of the century under a high warming scenario, resulting in 310 million people facing more than three heat days annually.
- At 2°C global warming, half of the European population will face very high risk of heat stress in summer.



3.4. Drought and Food security

- Under a high warming scenario, 65 million additional people are projected to experience food insecurity by 2050 as the result of climate change.
- Globally, 2°C warming is projected to increase the population exposed to agricultural drought by 370 per cent. At 1.5°C global warming, the likelihood of extreme agricultural drought is projected to increase by at least 100 per cent over large areas of northern South America, the Mediterranean, western China and high-latitude North America and Eurasia, by up to 200 per cent at 2°C, and by over 200 per cent at 4°C.



This thematic brief was authored by Robert Beyer and Andrea Milan. The authors thank Deputy Director General Ugochi Daniels for her strategic guidance as well as Alice Baillat, Damien Fresnel, Nando Lewis, Simon Alexander McMahon, Manuel Marques Pereira, and Alina Narusova-Schmitz for their input.

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This publication was issued without formal editing by IOM.