Thousands displaced by floods and conflict near Jowhar, Somalia in 2013
Credit: UN Photo/Tobin Jones

Environmental Displacement: Human mobility in the Anthropocene

What is Environmental Displacement?

We live in an era of unprecedented mobility: movement of ideas, goods, money and, increasingly, of people. Two hundred and fifty million people live and work outside the country of their birth. Another 750 million migrate within their own countries.[1]

The scale and pace of human mobility coupled with a global population that is predicted to peak at more than 9 billion by the middle of this century represents our new demographic reality. Migration is a hugely important driver of development and progress, offering opportunities to individuals and families, as well as spreading ideas and connecting the world. But the issue has also proven to be politically divisive.

At the same time we live in an era of unprecedented environmental change. Human activity has reshaped our planet so profoundly that scientists suggest that we have entered a new geological epoch they label "the Anthropocene".

Environmental change and environmental degradation—desertification, deforestation, land degradation, climate change and water scarcity—are fundamentally redrawing the map of our world. Environmental degradation affects where and how people are able to live. It drives human displacement and forced migration by threatening lives and making people's livelihoods untenable, particularly the poorest and most vulnerable.

Meanwhile, armed conflicts lead to further flows of people fleeing violence either within their countries (internal displacement) or across international borders (refugees). Analysis of civil wars over the past 70 years indicate that at least 40 per cent are linked to the contested control or use of natural resources such as land, water, minerals or oil.[2] By the end of 2016, more than 65 million people were refugees or internally displaced—a number greater than at any time since the end of the Second World War, and 128 million people required humanitarian assistance.[3,4]

Environmental issues have been one factor in population movements ever since humans first left Africa. Those factors have always been varied and complex, though it is important to recognize that, historically at least, environmental degradation has tended to 'set the stage' for displacement but other factors of vulnerability such as poverty and lack of opportunity are often key drivers of displacement. What is different now is that the degree of environmental degradation and the ability to move are combining to create a push and pull effect that is on a scale never seen before.[5]

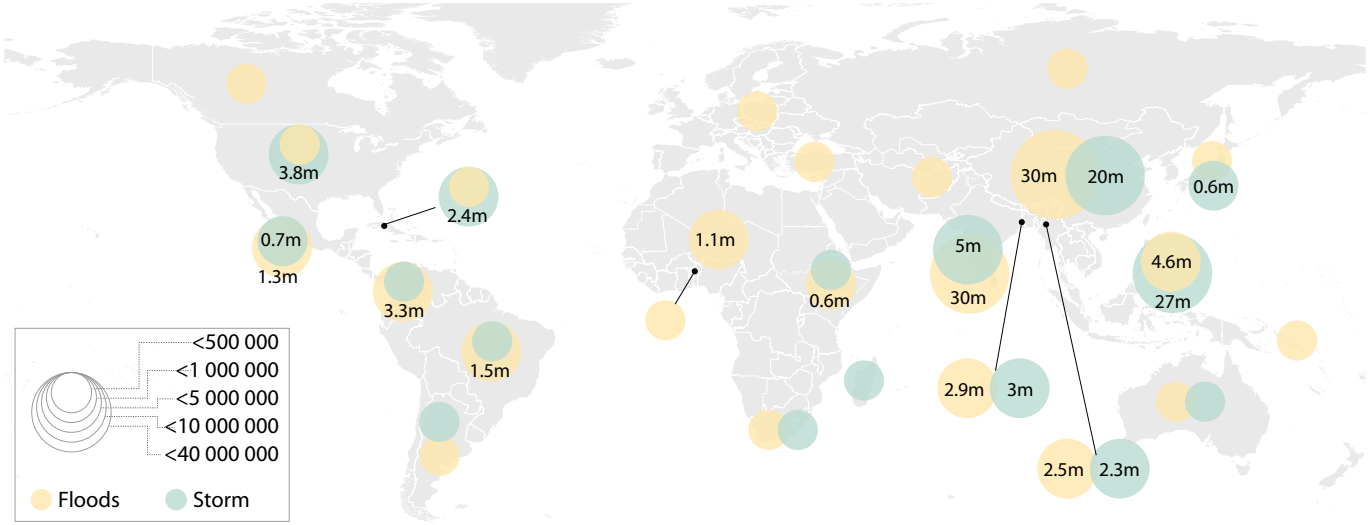
Population growth is leading to more people living in marginal and environmentally vulnerable areas.[6]

Already an average of 26.4 million people are displaced from their homes by natural disasters each year.[7] This is equivalent to one person every second. But we cannot become anesthetized by the figures. Every single statistic is a personal story of loss—of worlds turned upside down, opportunities closed, education foregone.

The interlacing trends of climate change, population growth, rising consumption, large infrastructure projects and environmental degradation may lead to greater numbers of people displaced in future. This is particularly likely if these trends occur in the context of inadequate responses from governments and the international community to build the resilience of countries and communities to these changes. The most commonly cited figure is that there could be as many as 200 million people displaced for environmental reasons by 2050.[5]

That would mean that, in a world of nine billion people, one in 45 would have been forced from home for environmental reasons, and entire low-lying island territories may have to be abandoned. Addressing such displacement may be the defining environmental challenge of the 21st century.

Number of people displaced by floods and storms in selected countries in 2008-2016



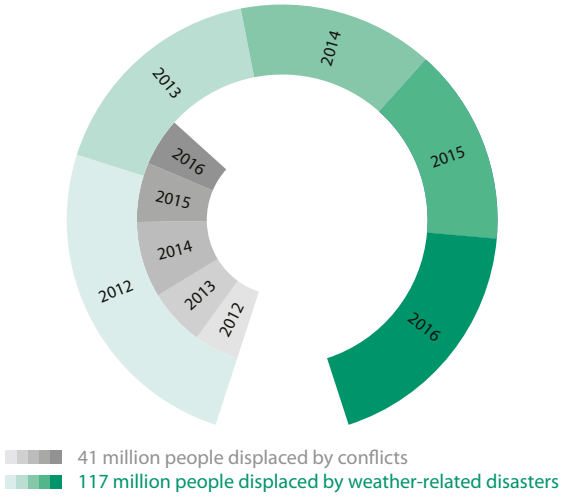
Data source: Internal Displacement Monitoring Centre, www.internal-displacement.org/database

Understanding environmental displacement

Although the issue of irregular migration has gained prominence in recent years as a result of Europe's "migration crisis", it is by no means a uniquely European challenge. Just as migration occurs across the globe, every corner of the world has the potential to be affected by environmental displacement.

For example, models project that the Asia and the Pacific region will see a growth in displacement as the impacts of climate change gather pace.[10,11] Coastal areas, large deltas, and small islands are vulnerable to sea level rise and particularly exposed to cyclones. The Pacific small island state of Tuvalu, whose highest point is just five metres above sea level, may have to be evacuated entirely in the next 50 years, the Maldives in the next 30. Already several states are starting to plan for the eventual relocation of some or all their populations: In 2014 President Anote Tong of the Republic of Kiribati bought land in Fiji as an insurance policy against rising sea levels.[12]

Number of people displaced by conflicts and weather-related disasters from 2012-2016



Data source: Internal Displacement Monitoring Centre, www.internal-displacement.org/database

The African continent, meanwhile, has more countries affected by displacement than any other continent or region, and in 2015 was hosting more than 15 million people who had been displaced within their own country for a number of reasons, including those linked to the environment.[13] More than half of the world's fragile states are in sub-Saharan Africa, and the continent is particularly prone to droughts, which increase the risk of food scarcity.[13,14]

Labels matter

One contentious issue is whether people displaced by environmental degradation and climate change should be called "environmental refugees", "environmental migrants" or "environmentally displaced people". This is not just semantics. Which definition becomes generally accepted has real implications for the obligations of the international community under humanitarian law and the rights of the people displaced.

After the Second World War, international policy makers judged that the term 'refugee' should be restricted to "A person who, owing to a well-founded fear of persecution for reasons of race, religion, nationality, membership of a particular social group or political opinions, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country".[8]

Campaigners have used the phrase "environmental refugee" to convey the urgency of the issue. However, the use of the word "refugee" to describe those fleeing from environmental pressures is not accurate under international law. The majority of people forced out of their homes by environmental change will likely stay within their own borders, but there may be no possibility of return for areas inundated by rising sea levels.[9]

Partly for lack of an adequate definition, environment-driven population movements are often invisible, particularly when the displacement happens over time. No single international institution is responsible for collecting data on their numbers, let alone providing them with basic services. Unable to prove political persecution in their country of origin, they fall through the cracks in international humanitarian law. This report uses the term "environmental displacement", acknowledging that it is not a universally accepted term but in the hope that it conveys a reasonably accurate impression of the increasing phenomenon of forced population displacement linked to environmental degradation and climate change.

Environmental Displacement

Land Degradation, Desertification and Drought

Severe drought and food insecurity has **displaced 761 000 people** in Somalia since November 2016

The ecological restoration of land over 50 000 km² across Burkina Faso, Mali and Niger contributes to the **reversal of outward migration**

Drought is projected to become more intense, frequent, and protracted because of climate change

50% of agricultural land in Latin America is subject to desertification by 2050

Drylands are becoming more arid and less productive due to unsustainable use of land and water, and climate change. One third of the world's population live in drylands.

Natural Disasters

IPCC predicts frequent **extreme rainfall** making landfall in North and Central America, East Africa, West Asia, South Asia, Southeast Asia, East Asia, Australia and many Pacific islands

117 million people were displaced by weather-related disasters from 2012-2016

Climate change influences the likelihood, frequency and intensity of extreme climate events. Extreme weather events can make areas uninhabitable, and displace populations temporarily or permanently.

Wind speed of **tropical cyclones** is becoming stronger, and likely to cause serious damage

Demand and Competition over Natural Resources

Over the past 70 years, at least **40% of all conflicts** within national borders are related to natural resources

Competition over increasingly scarce natural resources – land, water, timber, oil, minerals – can create tensions and ignite conflicts among users. In many cases, tensions can lead to violent conflicts and large-scale forced displacement.

Forced dispossession of land are increasingly common in Latin America as a result of mining, logging, plantation activities

Industrial Accidents

The 1986 Chernobyl nuclear meltdown forced the **evacuation and resettlement** of at least **330 000 people**

150 000 people were displaced due to **radiation leaks** from the Fukushima nuclear power plant in Japan. The return and resettlement remains uncertain.

Serious industrial accidents can leave large areas polluted, and force people to abandon their homes and resettle elsewhere. Long-term health, social, economic and environmental impacts of industrial accidents can complicate their permanent return.

Sea Level Rise

In the Solomon Islands, five vegetated **reef islands have vanished in recent decades** due to sea level rise and wave exposure. Communities have relocated to a higher volcanic island nearby.

A study of migration patterns in developing countries from 1970 to 2000 suggests that people relocate away from marginal drylands and drought-prone areas towards the coastal zone **prone to floods and cyclones**

Most of the world's megacities are located in the coastal zone and large deltas, where the livelihood of millions of people depend on. Low-lying coastal cities and small islands are vulnerable to flooding, storm surges, shoreline transformation and saltwater intrusion as a result of sea level rise.

Infrastructure Projects

In the 1980s, 10 million people were forcibly displaced each year by **dam construction and transportation projects**

Large-scale infrastructure projects such as dams and roads can result in massive displacement. Meanwhile, large-scale land purchases in developing countries by infrastructure projects and agribusiness, often labelled *land grabbing*, are likely to be prominent cause of future displacement.

The 17-year long construction of the **Three Gorges Dam** on the Yangtze river in China is estimated to have **displaced 1.3 million people.** Many are still facing challenges to resettle

Nor is North America immune to the impacts of environmental displacement. In 2016 the residents of Isle de Jean Charles in Louisiana were the first US "climate migrants" to receive federal funds for their relocation. The US$48 million grant was part of US$1 billion awarded in January 2016 by the Department of Housing and Urban Development to help communities across 13 states adapt to climate change by building dams, drainage systems and stronger levees.[15]

But the picture is complicated. The most vulnerable groups often lack the means or connections to move, and may be trapped in place. Others, such as pastoralists, rely on seasonal migration as a livelihood strategy. Meanwhile, the planned relocation of populations in the face of a particular risk such as major land degradation can act as a release valve, reducing environmental pressures on fragile ecosystems but also, in effect, "exporting" their environmental footprint elsewhere.[16]

It is also important to remember that displacement itself can have environmental impacts, causing environmental degradation that can prolong the humanitarian emergency or worsening relationships with host communities. Informal urbanization or disorganized refugee camps can put pressure on scarce land, water, energy and food resources. Such situations can undermine ecosystem services, lead to health risks from improper waste disposal, and position displaced persons in direct competition with local communities.[17,18]

Video: Foresight - Migration and Global Environmental Change

Video Link: https://www.youtube.com/watch?v=zt0UJU0aAVg *© GO-Science*
Photo Credit: Thousands displaced due to flooding in Cap-Haïtien, Haiti, by UN Photo/Logan Abassi

Institutional solutions

The issue of environmental displacement has moved up the political agenda, attracting attention from policymakers, academics, and the humanitarian community. In 2011, the UK Government Office for Science published the results of The Foresight Project, a study of how human population movements across the world could be affected by global environmental changes. The project took two years and involved over 350 leading experts and stakeholders from over 30 countries covering subjects ranging from demographics to economic development to ecology.[16] The Foresight project exposed unanticipated facets, particularly regarding the benefits of migration, as well as assigning new importance to good planning for in situ adaptation where possible, well-managed retreat from threatened locations, and best practice resettlement schemes among host communities.

At the same time the Foresight Project was conducting research, the Norwegian and Swiss governments campaigned for principles to guide responses to the complex challenges of population displacement in the context of climate change and other environmental hazards.[19] This campaign eventually evolved into the Nansen Initiative and then reformed as the Platform on Disaster Displacement. The Platform's mission is to organise towards consensus on rights and protections for people displaced across borders due to disasters and climate change.[20] Since the early 2000s, the International Organization for Migration has been working on the issue and established a special division devoted to Migration and Climate Change.[21] In 2016, the University of Liège in Belgium formally established The Hugo Observatory as the first academic unit dedicated to the topic of environmental migration.[22]

Migration and displacement issues have been increasingly integrated in the 2015 international agreements that set out much of the development framework for the next 15 years. The Sustainable Development Goals include a commitment to 'orderly, safe, regular and responsible migration' as part of Goal 10 to reduce inequality.[23] The Sendai Framework on Disaster Risk Reduction creates a global framework for reducing disaster risk and losses in lives, livelihoods and health, aiming to substantially reduce the number of displaced people globally by 2030.[24] Migration issues were formally integrated

into the Paris Agreement on Climate Change with the creation of a Taskforce under the Warsaw Mechanism on Loss and Damage to develop approaches to prevent, minimize and address climate change displacement.[25]

The 2016 UN General Assembly convened a high-level meeting to build international consensus to address the growing challenge of international migration and the increasing flow of refugees. The meeting adopted the New York Declaration for Refugees and Migrants.[26] The declaration includes two annexes: The first is a framework for a comprehensive response for refugees. The second is a roadmap towards the achievement of a Global Compact for Safe, Orderly and Regular Migration, to be presented for adoption at an inter-governmental conference on the issue in 2018.[27]

Video: How climate change impacts human displacement

Video Link: https://www.youtube.com/watch?v=a2nTq67So3U
Photo credit: Grand Dessalines, Haiti after Hurricane Tomas, by UN Photo/UNICEF/Marco Dormino, licensed under CC BY-NC-ND 2.0
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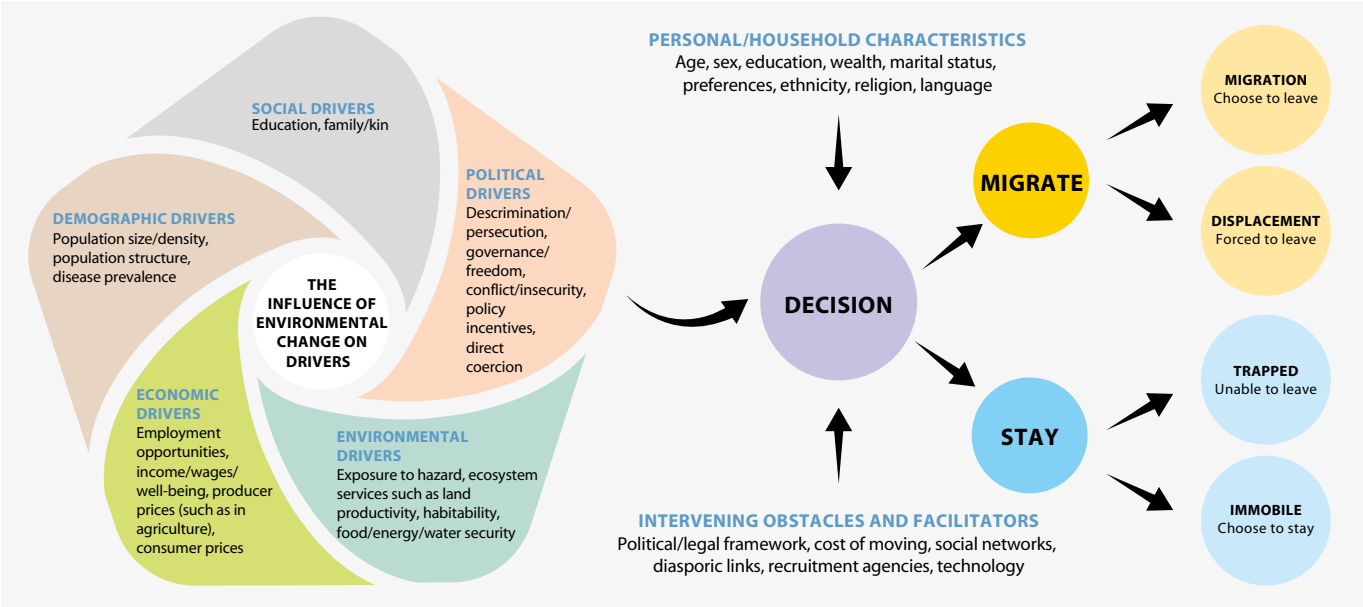
Environmental change and drivers of migration

The decision to migrate or stay is largely driven by a range of drivers. Global environmental change further influences the complex interactions of these drivers and can lead to different outcomes in decision making.



Source: Adapted from the conceptual framework of the drivers of migration and the influence of environmental change, adopted by the UK Government's Foresight Project[16]

Dealing with environmental displacement

Environmental degradation and mismanagement are interwoven with the political, economic and social drivers of displacement. We need to better understand, and tackle, those complex factors. Ultimately, unless we can deal with long-term environmental vulnerability, huge numbers of people displaced every year could become our 'new normal'.

The environmental community has an important role to play in building awareness of the ecological drivers of displacement; strengthening the capacity of communities and countries to withstand shocks and environmental change; and helping to plan the relocation of communities likely to be displaced by unavoidable environmental change.

Ultimately displacement is not just a political challenge. As the case of the Iraqi Marshland shows, it is important to think of it as an environmental challenge. The scale of possible future displacement under even moderate climate change scenarios means that environment, humanitarian and displacement-focused actors must work together to build people's resilience in a changing world.

Video: These Americans may become 'climate refugees'

Video Link: https://www.youtube.com/watch?v=TicvZPYuFfg *© CNN*
Photo Credit: Shishmaref, Alaska by Berring Land Bridge National Reserve, licensed under CC BY 2.0

Reviving the Iraqi Marshlands

In the 1950s the Marshlands of Mesopotamia (Al-Ahwar) in southern Iraq were a vast landscape home to half a million people known as the Ma'dan, or "Marsh Arabs". They lived in secluded villages of reed houses, fishing, growing rice and raising water buffalo to support their livelihoods.

However, starting in the 1970s, the Marshlands were devastated as a result of upstream dam construction and agriculture, oil exploration, military operations and most directly by the deliberate drainage of the wetlands by Saddam Hussein as an act of reprisal for the 1991 uprisings against his regime. By 2003, 90 per cent of the Marshlands had been lost and just 20 000 Ma'dan remained. It is estimated that up to 100 000 Ma'dan had fled to refugee camps in Iran and another 100 000 were internally displaced in Iraq.

In 2001, UN Environment sounded the alarm bell on the demise of the marshlands which brought its plight to the international spotlight. Following the Iraq War in 2003, UN Environment launched a project to help restore the marshland, building the capacity of decision makers, demonstrating environmentally sound technologies and monitoring the condition of the marshlands. This was followed with a joint project with the UNESCO in 2009 to support the designation of the marshlands as World Heritage Site. It included the development of a management plan that reflected the unique historical, cultural, environmental, hydrological and socio-economic characteristics of the region.

Since 2003 the wetlands have started to recover, though drought, upstream dam building and continuing conflict have hindered the process. Tens of thousands of the Ma'dan people are now returning to their ancestral home. In July 2016, with the support of UN Environment, the marshlands were inscribed as the first mixed cultural and natural World Heritage Site in the Middle East.

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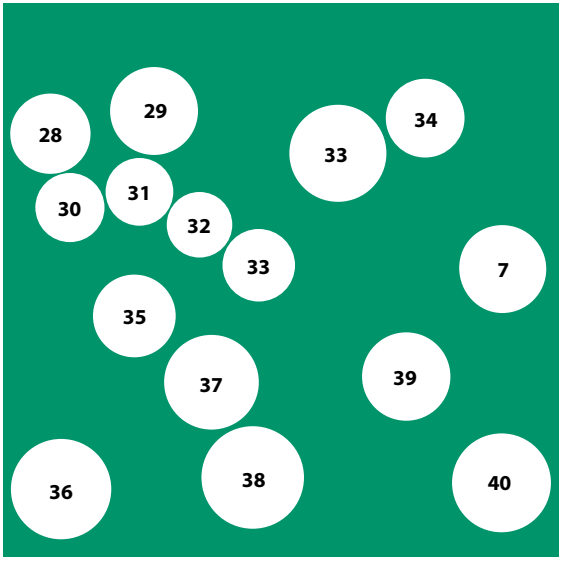

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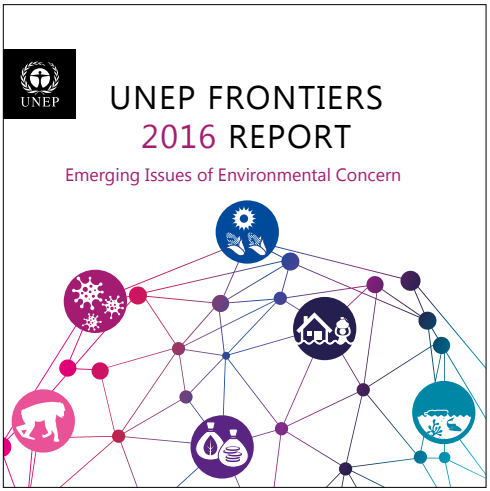
Forced dispossession of land is increasingly common as a result of expanded plantation of commodity crops
Photo credit: Eky Studio / Shutterstock



In 2016 UN Environment launched its new yearly publication series, *Frontiers - Emerging Issues of Environmental Concern*. The report identifies and provides an insight into a broad range of emerging environmental issues that require attention and action from governments, stakeholders, decision makers as well as the public at large. The first edition, *Frontiers 2016*, presents the following six emerging issues.

- The Financial Sector: A Linchpin to Advance Sustainable Development
- Zoonoses: Blurred Lines of Emergent Disease and Ecosystem Health
- Microplastics: Trouble in the Food Chain
- Loss and Damage: Unavoidable Impacts of Climate Change on Ecosystems
- Poisoned chalice: Toxin accumulation in crops in the era of climate change
- Exotic Consumerism: Illegal Trade in Live Animals