State of the World 2013

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THE WORLDWATCH INSTITUTE

CHAPTER 31

Climate Change and Displacements

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In late 2010, the *New York Times* reported that after four consecutive years of drought—the worst in 40 years—Syria's agricultural heartland, along with adjacent areas in Iraq, was in deep trouble: "Ancient irrigation systems have collapsed, underground water sources have run dry and hundreds of villages have been abandoned as farmlands turn to cracked desert and grazing animals die off. Sandstorms have become far more common, and vast tent cities of dispossessed farmers and their families have risen up around the larger towns and cities of Syria and Iraq."[1]

The area primarily affected by the lack of rainfall is the northeast, which accounts for 75 percent of total wheat production in Syria. The 2011 *Global Assessment Report on Disaster Risk Reduction* published by the United Nations notes that since the start of the drought, close to 75 percent of agriculture-dependent households in the northeast have experienced total crop failure. Prior to the drought, Syria's agricultural sector accounted for 40 percent of the country's workforce and 25 percent of gross domestic product. Some 2–3 million people have been pushed into extreme poverty by the lack of crop income combined with the need to sell livestock at 60–70 percent below cost. Syria's livestock herd has been decimated: it went from 21 million to an estimated 14–16 million. A number of factors have produced this calamity, including climate change, overexploitation of groundwater due to subsidies for water-thirsty crops (cotton and wheat), inefficient irrigation systems, and overgrazing.[2]

The drought has led to an exodus of hundreds of thousands of people from rural to urban areas. Syria's cities were already under economic stress, in part because of the influx of refugees from Iraq after the U.S. invasion of 2003. Growing numbers of destitute people find themselves in intense competition for scarce jobs and access to resources. Francesco Femia and Caitlin Werrell of the Center for Climate and Security write that "the role of disaffected rural communities in the Syrian opposition movement has been

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prominent compared to their equivalents in other 'Arab Spring' countries. Indeed, the rural farming town of Dara'a was the focal point for protests in the early stages of the opposition movement [in 2011]—a place that was especially hard hit by five years of drought and water scarcity, with little assistance from the al-Assad regime."[3]

Syria's experience suggests that environmental and resource pressures, including climate change, could become an important driver of displacement. And while deep-seated popular discontent over decades of repressive rule surely is a major driver of Syria's civil war, climate-induced pressures have added fuel to the fire. But this is the important point: the repercussions from environmental degradation do not occur in a void; they interact with a cauldron of pre-existing societal pressures and problems.

Climate Impacts

Although governments are on record as wanting to limit additional warming to 2 degrees Celsius, they have failed to pursue climate policies that can meet this goal. The U.N. Environment Programme now estimates that the "emissions gap" by 2020—the difference between greenhouse gas emissions consistent with the 2 degrees target and the levels projected by then if current reduction pledges by governments are fulfilled—will amount to 8–13 gigatons of carbon dioxide equivalent (depending on how pledges are implemented). This compares to a 6–11 gigaton gap estimated in 2011. The actual trajectory of greenhouse gas emissions therefore increases the likelihood that the earth will heat up by 4 degrees Celsius by the end of the century. A new report by the Potsdam Institute for Climate Impact Research and Climate Analytics warns that the consequences will be cataclysmic in many regions, including unprecedented heat waves, inundated coastal cities, exacerbated water scarcity, increasing risks for food production, increased intensity of tropical cyclones, and irreversible loss of biodiversity.[4]

As the world gets more of a taste of the repercussions from a destabilized climate, a key question is how physical changes will translate into social and economic changes that in turn may cause people to leave their homes, either temporarily or for good. As early as 1990 the Intergovernmental Panel on Climate Change warned that "the greatest single impact of climate change could be on human migration," with millions of people displaced by shoreline erosion, coastal flooding, and severe drought. But the precise dynamics and interactions will invariably differ from place to place, with more severe consequences in some places, greater resilience and adaptability in some areas, and diverging political responses.[5]

As this section describes, climate change looks to intensify many existing challenges. (See Figure 31–1.) More-extreme weather, water stress, and loss of land can undermine habitability, food security, and economic viability.

Figure 31–1. Climate Change, Livability, and Possible Responses

Source: Author

Affected communities, regions, or countries may be able to cope with the pressures through more drought-tolerant crops, economic diversification, and other adaptation measures. But people may also feel the need to move, either as a coping strategy or out of desperation.

Extreme Weather and Habitability. The pace of disasters is likely to accelerate in a warming world, although the precise frequency and intensity of disasters is not yet known. A 2011 article in *Scientific American* observed that the frequency of natural disasters has already increased by 42 percent since the 1980s and that the share of disasters that are climate-related has risen from 50 to 82 percent.[6]

Fast-onset impacts like floods and storms affect people in different ways than more-gradual processes like drought and desertification or sea level rise. The intensity and frequency of disasters may also have different ramifications. Population movements in response to disasters may vary widely with regard to their duration, characteristic, and destination.

Extreme weather disasters are seen as typically causing short-distance, temporary displacement, with affected communities returning to rebuild once a storm or flood has subsided. But experiences like the aftermath of Hurricane Katrina in the United States suggest that displacements could well be permanent in some cases. The population of Orleans Parish dropped by more than 120,000, or 24.5 percent, between 2005 and 2010.[7]

Water Stress and Food Security. Shifting rainfall patterns, more-erratic rain, and more-severe droughts resulting from a warming climate translate into fluctuating water availability—with potentially severe impacts on agriculture. Arid and semiarid areas cover about 40 percent of Earth's land surface and are home to more than 2 billion people.[8]

Over a decade ago, scientists warned that desertification processes put

an estimated 135 million people worldwide at risk of being driven from their lands. Growing water stress in parts of the world will be compounded by the effects of saltwater intrusion in coastal areas due to sea level rise, by glacier melt in regions like the Himalayas and the Andes, and by disruptions of the monsoon cycle. Water shortages could affect anywhere from 75 million to 250 million people in Africa by 2020 and more than 1 billion people in Asia by 2050.[9]

In 2012, drought devastated crops around the world, including in major producers like Argentina, Australia, Brazil, India, Russia, and the United States. The World Meteorological Organization stated in August 2012 that "climate change is projected to increase the frequency, intensity, and duration of droughts, with impacts on many sectors, in particular food, water, and energy." In a world where the average temperature has risen 4 degrees Celsius, yields for staple crops in large parts of sub-Saharan Africa are projected to drop massively, and more than one third of current cropland in eastern and southern Africa would likely become unsuitable for cultivation.[10]

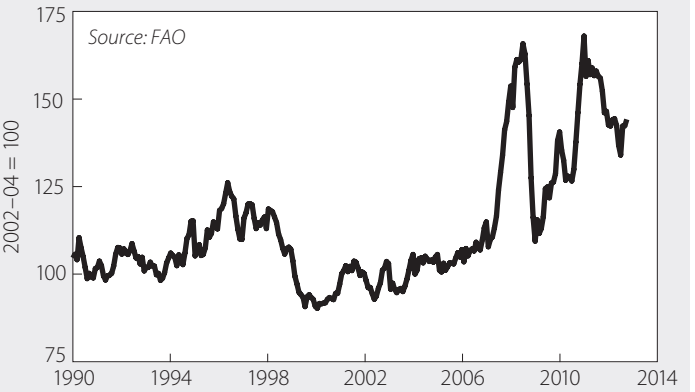
Lower yields, shortened growing seasons, or outright loss of harvests undermine food security for many millions of people. They threaten household income from farming in rural areas. Oxfam notes that affected people are typically forced to change their diets, sell productive assets, incur even more debt, take their children out of school, and in some cases migrate. Price volatility is bad for planning ahead, and many small-scale farmers may not even be able to take advantage of rising prices if they lack access to credit and agricultural inputs.[11]

The repercussions of climate change will be felt by way of rising food prices—both sudden spikes and a more-gradual, longer-term rise. Already the past decade has seen a steady price rise, along with two severe spikes. (See Figure 31–2.) A recent study by the New England Complex Systems Institute argued that food prices are a key precipitating factor for social unrest. Given the reliance of many poor countries on the global food system and a limited ability of local supplies to provide a sufficient buffer, there is heightened sensitivity to global food price trends. To the extent that governments are unable to provide food security, their legitimacy suffers, and ensuing protests could become a vehicle for expressing discontent with a range of other problems. When prices first spiked in 2008, more than 60 food riots occurred in 30 different countries. Surging prices in late 2010 and early 2011 again coincided with food riots, including in the Arab Spring countries. Aside from price spikes, the underlying steady upward trend in prices observable over the past decade may be an indicator of more continuous unrest and instability to come.[12]

Rising Seas and Loss of Land. Small island states like the Maldives in the Indian Ocean and Tuvalu in the Pacific could be submerged entirely as the seas continue to rise. And more than 600 million people worldwide

live in river deltas and other low-lying coastal zones. Sea level rise can lead to greater coastal erosion as well as bigger storm surges. The government of Bangladesh warns that more than 20 million of the country's inhabitants could be forced to move due to a combination of rising sea levels and a growing number of cyclones and storm surges. Modeling suggests that 40 million people in India could be displaced by a one-meter sea level rise. In Vietnam's Mekong Delta, a one-meter sea level rise could eventually displace more than 7 million residents, and a two-meter rise would double the figure—affecting half of all delta residents.[13]

Figure 31–2. World Food Price Index, January 1990–September 2012*



*Prices in real terms, adjusted for inflation

Sea level rise may have more-gradual impacts than extreme weather events, but it also has an irreversible impact. Floods recede eventually, but in a warming world the sea does not return to lower levels. Resulting displacements of people are therefore permanent ones.

To Move or Not to Move

There is still vigorous debate over whether climate change will lead to a massive increase in population movements. The International Organization for Migration rightly points out that "migration does not always occur, as the most vulnerable may lack the means to migrate." Where climate-induced population movements do take place, they can be seen as either a failure to adapt (that is, a reflection of vulnerability and inadequate resilience, and thus a more refugee-like response) or as a coping strategy (an effort to diversify sources of income and build resilience). Still, in order to move, people need financial resources, and they may need access to social networks that facilitate mobility and perhaps provide assistance at their destinations. Without such wherewithal, people may be stuck in their place of residence irrespective of the conditions. Of course, absence of movement does not equate with absence of adverse impacts.[14]

The conventional view is that even in a warming world migration will continue to be a safety valve that allows people and communities to cope. The resilience and adaptability of people should certainly not be underestimated. Still, the past is unlikely to be prologue, and for several reasons this may be an overly sanguine view.

First, the repercussions from a destabilized climate system—stronger and more-frequent disaster events—have no meaningful precedent in the human experience. Second, societies will likely not be exposed to one impact at a time but rather will experience different types of impacts—for instance, floods and droughts—simultaneously, with the possibility of cascading effects and unexpected feedback loops. Far greater numbers of people may feel the need to move than is currently the case.[15]

Third, larger populations on the move limit the maneuvering space for adaptation, as more people compete with each other and with host communities for the same opportunities, jobs, resources, and services. Fourth, in receiving areas there may also be a sharply reduced willingness to be open to an influx of people—a response that is already in evidence around the world in today's circumstances.

Fifth, migration patterns may become more permanent and less temporary. For instance, severe impacts of climate change could disrupt traditional patterns of seasonal mobility. In sub-Saharan Africa, nomadic patterns used by pastoralists to cope with droughts are already affected by rapidly changing environmental conditions. In Bangladesh, the traditional movement between different *chars* (sand and silt islands in the Padma river delta and Bay of Bengal that are home to more than 5 million people) is being disrupted by increasingly frequent and intense flash floods.[16]

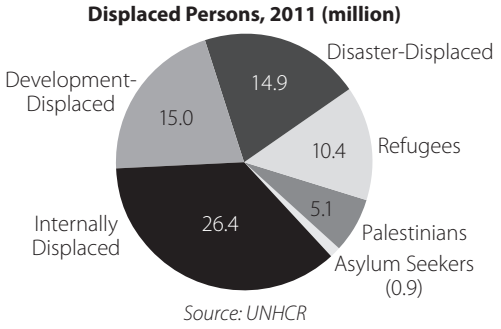
Similarly, Vietnamese rice farmers who have migrated seasonally to cities during the flooding season in order to diversify their incomes have more recently been forced to settle there permanently because extreme floods have destroyed their rural livelihoods. And in Mozambique, communities along the Zambezi and Limpopo rivers have traditionally moved out of the floodplain periodically to avoid flooding. Following disastrous floods in 2000, 2001, and 2007, however, the government encouraged residents to relocate permanently. But people who have resettled lack the means to sustain themselves; heavily dependent on aid, they may need to consider moving to the new capital, Maputo, or to neighboring South Africa.[17]

New Categories and Controversies

Among the various groups of people who leave home for different reasons, some categories are well established. (See Box 31–1.) International law accords recognition to international refugees (though governments do not always live up to their responsibilities). By contrast, internally displaced persons receive far fewer protections and sometimes none at all. There have been efforts to give additional groups of displaced people—persons uprooted by natural hazards and by development projects—greater visibility, but they typically remain at the mercy of ad hoc humanitarian aid if they receive any support at all.[18]

Box 31–1. Displacement and Migration: How Many People Are Affected?

According to the 2012 edition of the *World Disasters Report* published by the Red Cross, close to 73 million people were displaced in 2011, either inside their home countries or across a border. International refugees numbered more than 16 million (see Figure below), including 10.4 million refugees under the care of the U.N. High Commissioner for Refugees (UNHCR), 5.1 million Palestinians under the care of the U.N. Relief and Works Agency for Palestine Refugees in the Near East, and close to 1 million asylum seekers. Internally displaced persons are an even larger category of displaced persons, with 26.4 million. People displaced by natural hazards were estimated at nearly 15 million, roughly the same number as those displaced by ill-considered development projects.



Source: UNHCR

The number of people forced to flee in the face of disasters fluctuates strongly from year to year, declining from 36 million in 2008 to 17 million in 2009, surging to 42 million in 2010, but then declining again to 15 million in 2011. The relative importance of climate-related events is also fluctuating. Among the 36 million people displaced in 2008, some 56 percent were uprooted due to climate-related events. In 2010, however, climate was regarded as the culprit for more than 90 percent of displacements.

The number of climate-displaced persons is generally expected to rise in coming years, as extreme weather events become more frequent and intense and as droughts, desertification, sea level rise, and glacier melt become more prominent. The International Organization for Migration, for example, has suggested that in a 4-degree warmer world, the commonly cited estimate of 200 million people displaced by climate change by 2050 could "easily be exceeded." However, it seems impossible to make any reliable projections about how many people may be uprooted due to climate change in coming years and decades. There are too many unknowns to be able to predict the scale of population movements to come, let alone their direction, destination, and timing.

It should be noted that at present the number of people who leave involuntarily for any reason remains considerably lower than that of people who leave more or less voluntarily. Long-term international migrants (people who live outside their home country for a year or longer) are estimated at 214 million, and internal migrants may number as many as 740 million. The ranks of both groups of migrants have grown significantly over the past half-century as economies have become more interconnected.

Source: See endnote 18.

A number of researchers have suggested for years that the world community needs to develop new categories of people on the move and that the old categories no longer adequately capture the complex reasons why and how people move. The term *environmental refugee* was proposed as early as the 1970s, but a report written by Essam El-Hinnawi for the U.N. Environment Programme in 1985 brought the term into much broader view.[19]

The emergence of this new terminology prompted a vigorous debate. Some analysts argue that the category of refugees—legally defined as people fleeing persecution without access to protection by their own country—

should not be muddied by other factors such as environmental degradation. To some extent this reflects the fact that migration studies have essentially ignored environmental factors until recently.[20]

Other analysts point out that not everyone uprooted by environmental change crosses a border—and thus does not technically become a refugee but rather an *environmentally displaced person*. Further, some people may be more aptly described as environmental migrants—moving, sometimes seasonally or temporarily, before the "push" of environmental degradation forces them to leave, motivated in part by the "pull" of an expected better life elsewhere or the prospect of remittances flowing back home to supplement local incomes made more meager or precarious by climate impacts. Climate change is likely to extend the time that seasonal migrants spend away from home, and over time "push" may outweigh "pull."[21]

Beyond the category of refugees, there is no agreed-upon—and, more important, no legally binding—definition of other groups of people on the move. The definition of internally displaced people finds some de facto recognition in guidelines adopted by the United Nations. But terms like *environmental refugees* and *environmental migrants* are wholly informal and contested. (See Table 31–1.)[22]

For now, the distinction between forced and voluntary forms of population movements remains key to international law and government policies, and the fact that there is no official recognition given to new categories of people on the move constrains the world's ability to properly deal with the situation.

There is growing recognition that it will be increasingly difficult to easily categorize the displaced by separate causes. Environmental problems are often closely intertwined with socioeconomic conditions such as poverty and inequality of land ownership, resource disputes, poorly designed development projects, and weak governance. Distinguishing in a clear-cut way between forced and voluntary movements of people is becoming harder. Instead of distinctions written in stone, it is more useful to think in terms of a continuum of causes and factors. Indeed, as the 2012 edition of the *World Disasters Report* from the Red Cross explains, the term *mixed migration* is increasingly being used. For a better understanding of the dynamics and for more-productive discussions about possible policies, it is essential that migration, refugee, and environmental experts engage with each other with an open mind.[23]

Resilience and Adaptation

Resilience is a key factor determining whether vulnerability translates into flight. The poor are typically most exposed to environmental hazards. Social marginalization often compels them to live in risky places—steep hillsides likely to be hit by landslides, low-lying areas susceptible to flooding, or

Table 31–1. Definitions of Different Types of Population Movements

Category (Source)	Definition
Refugee (1951 United Nations Convention Relating to the Status of Refugees)	Someone who "owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, 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; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it."
Internally displaced persons (Guiding Principles on Internal Displacement, Introduction, 1998)	"Persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border."
International migrants (International Organization for Migration)	"Generally speaking, international migrants are those who cross international borders in order to settle in another country, even temporarily."
Environmental refugees (Essam El-Hinnawi, 1985)	"People who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and/or seriously affected the quality of their life."
Environmental migrants (International Organization for Migration, 2007)	"Environmental migrants are persons or groups of persons who, for compelling reasons of sudden or progressive change in the environment that adversely affects their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad."

Source: See endnote 22.

coastal strips whose natural buffers (wetlands, mangroves, and coral reefs) have been stripped away. And they often have limited capacity to deal with these challenges, sometimes lacking the necessary monetary resources, family networks, or other connections needed to migrate.[24]

Adaptation measures can help reduce vulnerability: disaster and famine early warning systems, livelihood diversification, drought-tolerant crops, restoration of ecosystems, flood-defense infrastructure, crop insurance, and other measures. But even in the wake of floods or storms, well-calibrated emergency and recovery aid can make the difference between staying and leaving. Resilience is also a function of overall economic capacity, diversification to reduce dependence on one or a few economic assets, demographic pressures, governance structures and good leadership, and social and political cohesiveness.[25]

The World Bank estimates that in a 2-degrees warmer world, annual ad-

aptation costs for developing countries will run to $70 billion by 2020 and $100 billion by 2050. Other estimates, however, make this look like a very conservative figure, and warming above that level would escalate the costs. So far, international funding for adaptation in poor countries is wholly inadequate, and commitments by richer countries seem weak and ambiguous at best. Yet timely and well-designed adaptation will be much less costly in economic and human terms than dealing with growing disasters and displacements.[26]

The U.N. High Commissioner for Refugees already struggles to provide adequate support for refugees and internally displaced persons, and the same is true for agencies providing humanitarian aid. They will be overwhelmed if large-scale, climate-related displacements come to pass. UNHCR's 2012 annual report warns of a gap in international protection when it comes to people who flee across borders to escape the impact of climate change or natural disasters, as they are not recognized as refugees under international law. High Commissioner for Refugees Antonio Guterres argues that people who are on the move to escape the reach of storms, floods, and droughts need forms of support that differ from those provided by the 1951 Refugee Convention.[27]

While it is undoubtedly important to update the world's applicable conventions and legal categories and close the yawning protection gap, it remains essential to try and ward off as much damage as possible to Earth's natural systems. Mitigation—reducing greenhouse gas emissions and scaling back other human assaults on nature—must be given much higher priority and urgency. Adaptation can only go so far, and to be effective it must be pursued now, before the worst consequences of climate instability arrive, rather than later.

Climate activists have long insisted that science should guide policymaking. Yet over the years it has become ever clearer that the biggest challenge for humanity may not be to master the intricacies of climate science but rather to answer the much more vexing questions of how political systems operate and why they are so resistant to heeding science's alarm bells. It is a deadly irony that three U.S. presidential debates took place in 2012 without the word "climate" being uttered even once, swiftly followed by nature's "last word" in the form of the devastating Superstorm Sandy that hit the eastern United States, a storm that likely was made worse by the gathering pace of climate change. If we fail to learn how to make our political systems pay attention to climate challenges, we will have to learn how to deal with massive population displacements in coming decades.

Chapter 31. Climate Change and Displacements

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