



REDUCING DISPLACEMENT RISK IN THE GREATER HORN OF AFRICA

A baseline for future work

AUGUST 2017

THEMATIC REPORT

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This report was written by Leonardo Milano (Senior Data Scientist, Internal Displacement Monitoring Centre) and Justin Ginnetti (Head of Data and Analysis Department, Internal Displacement Monitoring Centre).

The analysis was designed and performed by Leonardo Milano and Justin Ginnetti with support from César Velásquez (independent consultant) and Lucia Avila (independent consultant).

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UNISDR Regional Office for Africa welcomes comments on this report and invites additional contributions from the disaster risk reduction community. Please send comments and contributions to isdr-africa@un.org.

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Cover photo: Women collect water, as NRC is providing water through water trucking activities in the Dollow District of Somalia. The water is helping IDPs and host communities to counter the harsh effects of the drought as a short term measure. Photo: NRC/Nashon Tado, March 2017

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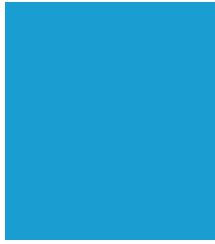


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SUMMARY

Displacement in the Greater Horn of Africa is a highly complex and large-scale phenomenon. Sudden-onset hazards, primarily floods, caused more than 600,000 new displacements in 2016. Slow-onset events and processes such as drought and environmental degradation added considerably to that figure, but quantifying their impacts is difficult with the data currently available. At the same time, conflict and violence triggered at least 800,000 new displacements in 2016.

It can be misleading, however, to attribute particular displacements to a single cause, when in reality a range of interlinked triggers and drivers are at play. Disasters tend to increase competition for land and resources, which in turn may trigger violence and conflict, while the latter increases communities' vulnerability to the impacts of natural hazards.

To add to the complexity, the region appears set to be among those worst affected by the multiplier effects of climate change through above average temperatures, excessive or insufficient rainfall, desertification and environmental degradation. Its countries all rank high or very high on INFORM's risk index for humanitarian crises and disasters, their institutions and infrastructure are ill-prepared to cope and socioeconomic vulnerability is rife.

The need to address the risk and impacts of displacement caused by disasters and exacerbated by climate change is a global and regional priority. To do so, however, one must first measure it. Governments and other stakeholders need a baseline against which to measure their progress.



A pastoralist in Kakuma, Kenya. Photo: Ubbe Haavind/NRC



Two displaced girls carry jerry cans to collect safe water, making their way through floodwaters at the inundated Bentiu Protection of Civilians site, South Sudan. Photo: © UNICEF/UNI169379/Nesbitt

This report provides such a baseline for the Greater Horn of Africa - Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan and Uganda, plus Burundi, Rwanda and Tanzania - with the ultimate aim of reducing future displacement risk. It gives an overview of the scale, scope and distribution of risk associated with sudden-onset natural hazards, explains the methodology used to calculate it, and defines key concepts, data sources and metrics, including annual average displacement, return period and displacement exceedance.

It also describes the method used to assess the impact of displacement associated with drought in the Afar and Shinile regions of Ethiopia.

We used two complementary types of analysis to calculate displacement risk for sudden-onset hazards. We based retrospective assessments on direct observation of the impacts of past disasters - primarily destroyed

and flooded housing - by correlating information from IDMC's own databases and the DesInventar tool hosted by the UN Office for Disaster Risk Reduction (UNISDR).

To overcome the limited spatial and temporal coverage of our findings, we also conducted prospective assessments drawing principally on models used to inform UNISDR's Global Assessment Reports. When possible, the outputs of both were combined in a hybrid assessment.

Our approach, which was subjected to extensive peer review, produced a number of key findings:

- Absolute displacement risk is driven mainly by high exposure, and it is distributed extremely unevenly across the region. It is concentrated in countries with densely populated river basins prone to flooding, and as such is 250 times higher in Ethiopia than in Djibouti.
- When population size is accounted for, some countries with below average absolute risk - such as Somalia,

Rwanda and Burundi - have the highest figures, because their vulnerability and limited capacity to reduce disaster risk tend to be the overriding determinants.

- Relative displacement risk in the Greater Horn of Africa is about 20 per cent lower than the global average. This is because population density - and therefore exposure - is lower than in other parts of the world, and the fact that displacement associated with drought is not systematically recorded. That said, Somalia, Rwanda and Burundi are above the global average, reflecting the countries' high vulnerability.
- Absolute displacement risk in the region is driven more by exposure to floods than to other sudden-onset hazards. This is in part because floods occur more regularly, but the size of the populations exposed to them is a more significant factor.
- The duration of displacement is not yet known, which represents a major evidence gap. We have tried to estimate duration by collecting time-series data for a number of events, but we encountered a number of obstacles to producing robust figures. Without time-series data it is difficult to analyse longer-term impacts and knock-on effects of displacement.
- Available data suggests low levels of preparedness for early action in the face of imminent threats from hazards in the region. As such, historically recorded displacement and that anticipated by our risk model are a close match. In contrast, historical figures for south and south-east Asia are much higher, because evacuations account for much of the displacement recorded.
- Of the 11 countries considered in this report, only Ethiopia, Kenya and Uganda systematically collect data on disasters and maintain a national loss inventory. This significant gap hinders understanding of the effect of disasters in the region and is a major obstacle to informed planning and responses.
- There are significant conceptual and data gaps for displacement associated with drought. They concern the difficulty in clearly identifying the spatial and temporal dimensions of slow-onset hazards and the many overlapping drivers, triggers and human factors involved, and they prevent the compilation of robust figures.

These findings have a number of policy implications for the Greater Horn of Africa. Chief among them is the need for significant investment in the collection of time-series data as the basis for strengthening the resilience of displaced communities and their hosts, and existing displacement risk scenarios should be updated to account for expected changes in demography, development pathways and climate.

There are as-yet unrealised opportunities to reduce and manage displacement risk associated with drought. If kept updated and extended to other areas of the region, our models for estimating displacement among pastoralists could be used to improve resilience not only for nomadic groups but also agro-pastoralists and sedentary farmers by simulating the effectiveness of different policies and measures under different scenarios.

Communities should also be better prepared to confront the risks they face, including the establishment of effective early warning systems that allow for early actions. These would cause more short-term displacement, but save many lives.

1

INTRODUCTION

DISPLACEMENT IN THE GREATER HORN OF AFRICA

Displacement in the Greater Horn of Africa is a highly complex phenomenon.¹ Behind immediate triggers such as natural hazard events lies a confluence of social, economic, political and environmental drivers of vulnerability and exposure that creates high levels of both disaster and displacement risk. This is reflected in the scale of displacement in the region in recent decades and in the figures reported for 2016, when sudden-onset hazards, primarily floods, caused more than 600,000 new displacements.²

Displacement associated with the impacts of drought and environmental degradation on food and livelihood security added considerably to the figure, but its scale is difficult to quantify with the data currently available. At the same time, clashes between ethnic groups, political and electoral violence and ongoing armed conflicts triggered at least 800,000 new displacements (see figure 1.1 and table 1.1).

It can be misleading, however, to attribute particular displacements to a single cause, when in reality a range of interlinked triggers and drivers are at play. When drought reduces the availability of water and pasture and the productivity of agricultural land, competition for resources between pastoralists and farmers may increase the risk of conflict and violence, and with it displacement. Conversely, conflict and violence also increase the vulnerability of communities whose livelihoods and survival depend on timely and adequate rainfall.

To add to the complexity, the region appears set to be among those worst affected by the multiplier effects of climate change in the coming decades, through above average temperatures, excessive or insufficient rainfall and gradual processes of desertification and environmental degradation.

WHAT ARE WE COUNTING?

This report presents two types of headline figures: new displacements caused by conflict and disasters during the course of the year and the total number of people displaced by conflict at year's end. We commonly refer to "new displacements" or "incidents" and "cases" of displacement as this may include individuals who have been displaced more than once. Where we refer to the total number of people displaced, this is to mean single incidents or cases affecting one person. This can be the case in the context of specific disaster events and is also used to present the total number of people displaced by conflict at year's end.

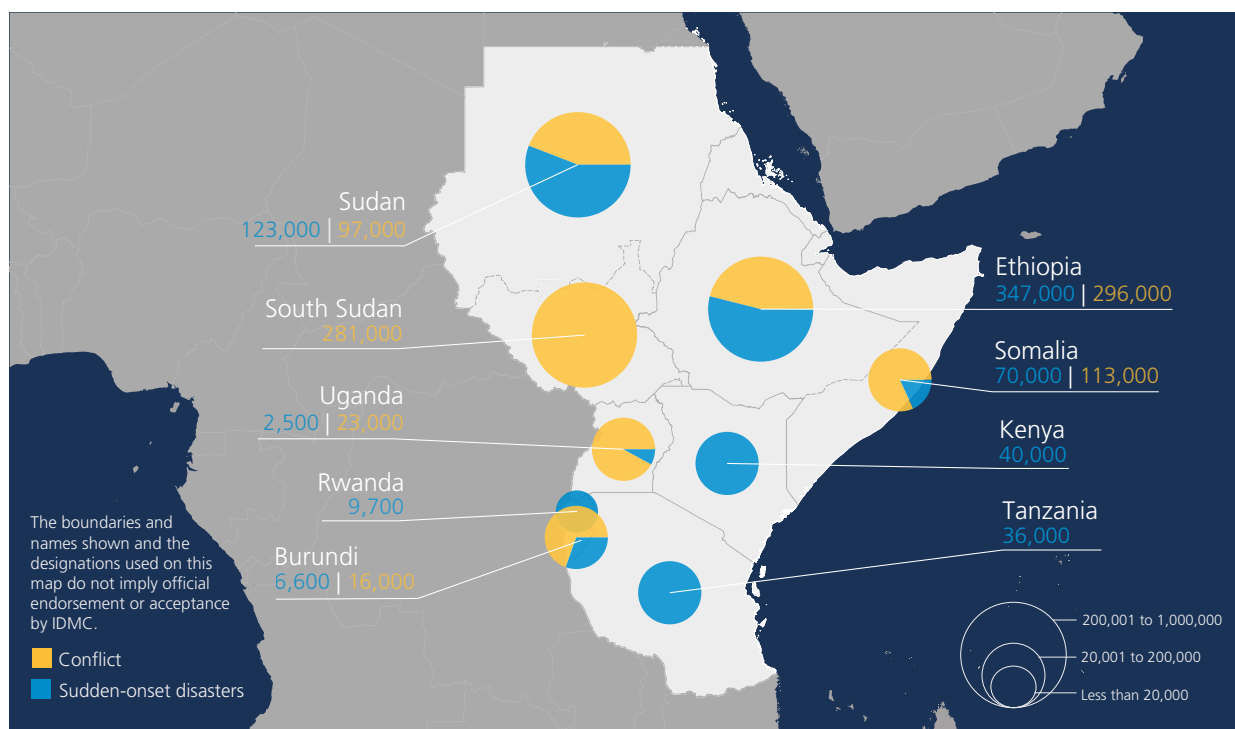
Table 1.1: New displacements associated with conflict and sudden-onset disasters in 2016

New displacements January through December 2016	
Conflict and violence	827,000
Sudden-onset disasters	635,000

Source: IDMC

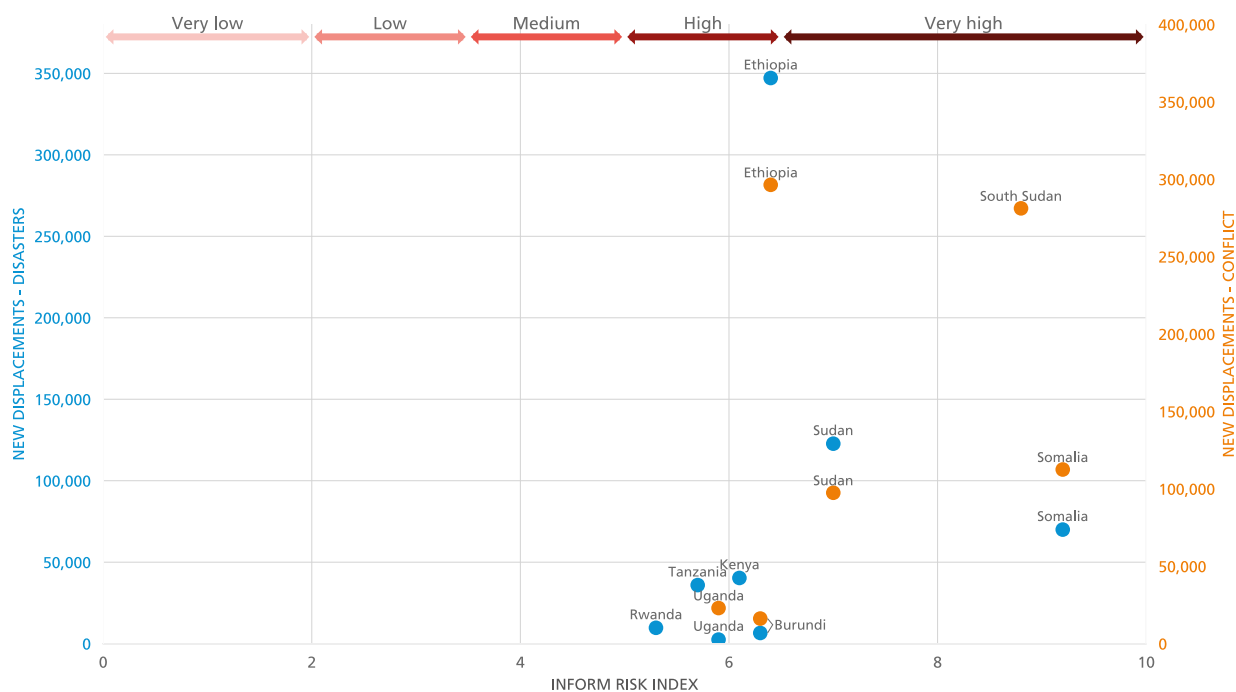
All of the displacement in the Greater Horn of Africa in 2016 took place against a backdrop of significant exposure to natural hazards and ongoing conflict, high levels of socioeconomic vulnerability, and institutions and infrastructure ill-prepared to cope. All of the countries in the region rank high or very high on INFORM's risk index for humanitarian crises and disasters (see figure 1.2).³

Figure 1.1: New displacements associated with conflict and sudden-onset disasters in 2016, in the Greater Horn of Africa



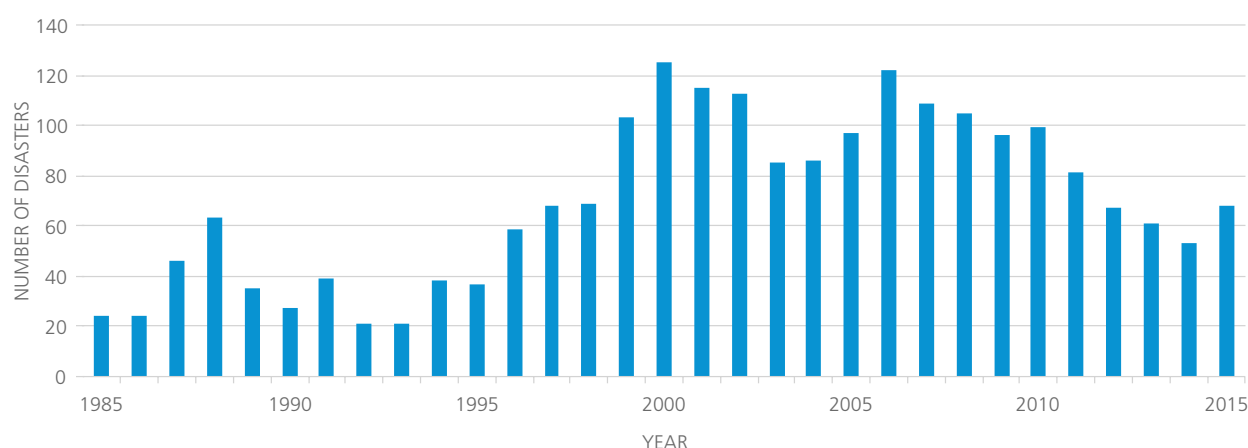
Source: IDMC

Figure 1.2: New displacements associated with conflict and sudden-onset disasters according to level of risk



Source: IDMC and INFORM

Figure 1.3: Number of intensive natural hazard events reported each year in Africa, 1985–2015



Source: Development Initiatives based on EM-DAT

DISASTER RISK AND DISPLACEMENT

Africa is experiencing an increasing number of natural hazard events (see figure 1.3). The significant exposure of both infrastructure and populations, together with burgeoning urbanisation across the continent lead to significant displacement and agricultural and other losses.⁴

Sudden-onset events triggered an average of more than 350,000 new displacements a year between 2008 and 2016. Most of the hazards were weather-related, primarily floods but also including storms and wet mass movements (see figure 1.4).

More than 50 per cent of the displacements were triggered by either small or medium-size events, defined as displacing fewer than 100,000 people each (see figure 1.5). The contribution of less frequent, large-scale events, defined as displacing between 100,000 and a million people each, was also significant between 2012 and 2016. These events were mainly triggered by countrywide floods during the rainy season, such as those in Sudan in 2013 and Ethiopia in 2016.

The need to address the risk and impacts of displacement caused by disasters and exacerbated by climate change is a global and regional policy priority, but public and private investment in risk assessment, early warning and long-term risk reduction does not currently reflect this.

Key policy instruments including the African Union's Kampala Convention⁵ and policy framework for pastoralism in Africa,⁶ the Great Lakes Pact,⁷ the UN secretary general's Agenda for Humanity,⁸ the Sendai Framework for Disaster Risk Reduction⁹ and the UN Framework

Convention on Climate Change (UNFCCC) Paris Agreement¹⁰ all acknowledge that disaster risk and displacement drivers need to be addressed. To do so, however, the scale of the phenomenon needs to be measured and its nature understood. Governments and other stakeholders need a baseline against which to gauge their progress.

This report constitutes the first such baseline for displacement risk associated with sudden-onset disasters in the countries of the Greater Horn of Africa, plus Burundi, Rwanda and Tanzania. South Sudan is not included in the probabilistic risk model results because not enough data was available to do so. It presents the basis for understanding the current situation and also lays the groundwork for assessing future displacement risk associated with disasters and climate change in the region.

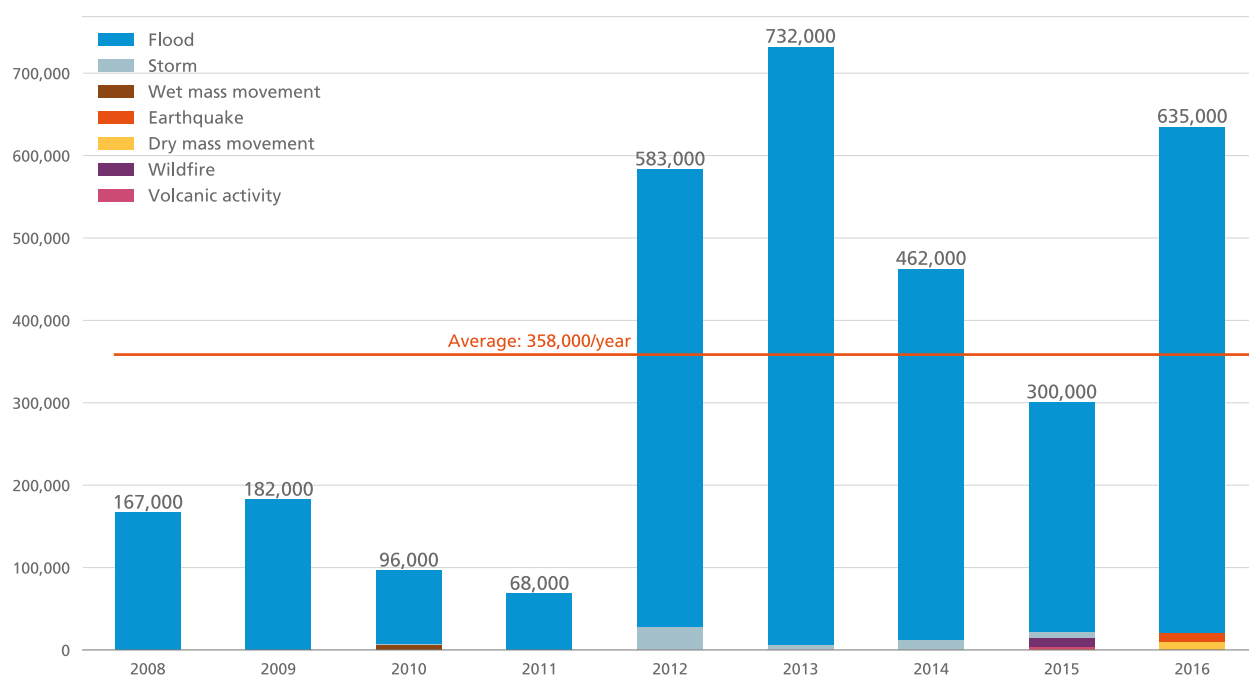
STRUCTURE OF THE REPORT

The second section of the report provides an overview of the scale, scope and distribution of displacement risk associated with sudden-onset natural hazards. It explains the methodology used to calculate it for floods, tropical cyclones, tsunamis and earthquakes, and defines key concepts, data sources and the metrics used to characterise displacement risk.

The third section highlights the main findings and conclusions to emerge from the above analysis, and describes the approach used to assess the risk of displacement associated with drought in the Afar and Shinile regions of Ethiopia.

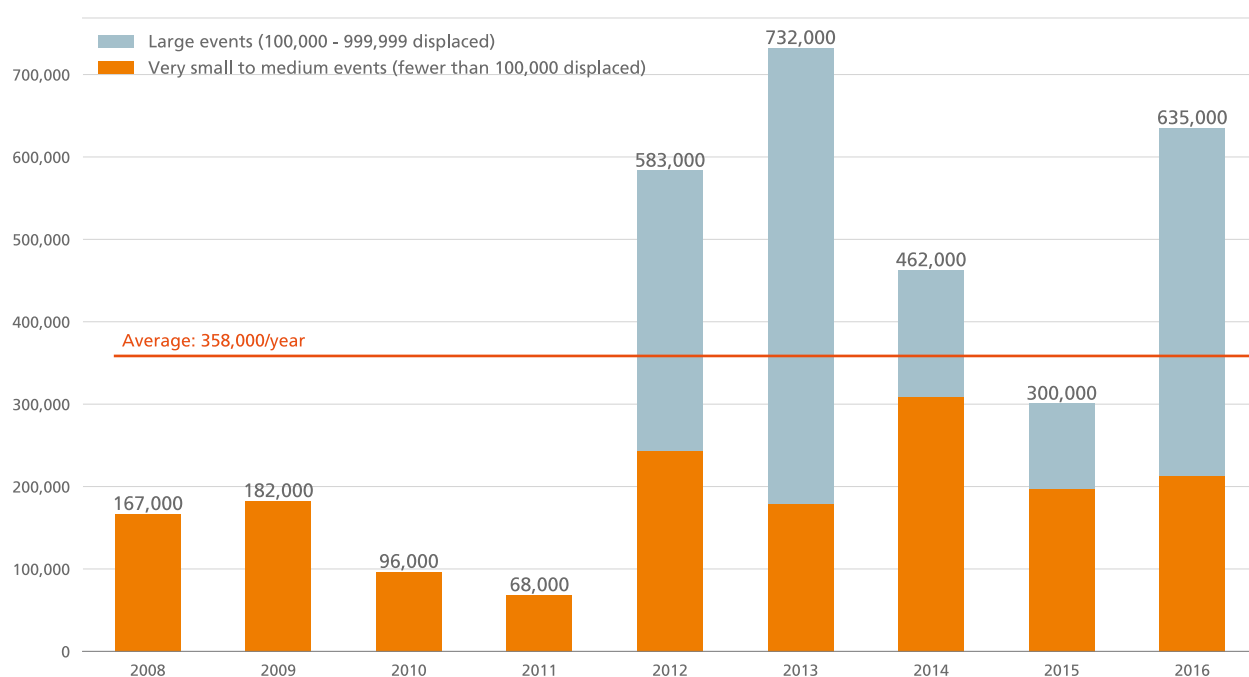
The fourth section draws attention to the report's implications for policymakers in the region.

Figure 1.4: New displacements associated with sudden-onset disasters by hazard type, in the Greater Horn of Africa



Source: IDMC

Figure 1.5: New displacements associated with sudden-onset disasters by scale of event, in the Greater Horn of Africa



Source: IDMC

2

A GLOBAL DISASTER DISPLACEMENT RISK MODEL

IDMC has collected data on incidents of displacement triggered by sudden-onset hazards for the past nine years. There is not, however, enough information about how much displacement took place, or where and why, to inform forward-looking policy and planning to prevent or minimise its occurrence. Measuring displacement risk - the probability that any one individual will become displaced by a disaster in a given year - and understanding its drivers is important if it is to be reduced.¹¹

Without an accurate baseline it is impossible to know if the risk is increasing or decreasing, or why it is doing so. To address this shortfall, we have developed a methodology to estimate displacement risk associated with sudden-onset natural hazards. The result is the first fully probabilistic assessment of the phenomenon conducted for the Greater Horn of Africa.

Drawing on the global disaster risk models the United Nations Office for Disaster Risk Reduction (UNISDR) uses to inform its global assessment reports, we estimated the risk of displacement associated with sudden-onset disasters in the region as a whole, by country and at the sub-national level for Kenya and Uganda.¹²

We have also developed a separate methodology for analysing displacement associated with drought, which we parameterised to assess the phenomenon at the sub-national level in the Afar and Shinile regions of Ethiopia.

Disaster risk is normally expressed as the probability of an outcome - the loss of life, injury or destroyed or damaged capital stock - resulting from a hazardous event over a given period of time. In this study, the disaster outcome in question is displacement and it is considered a function of hazard, exposure and vulnerability:

$$\text{Risk} = \text{Exposure} * \text{Hazard} * \text{Vulnerability}$$

The risk analysed is that of disasters causing displacement. The number of people likely to be displaced on a per event basis and over a specific return period is calculated.

KEY CONCEPTS¹³

Hazard

A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation. Hazards may be natural, anthropogenic or socionatural in origin. Natural hazards are predominantly associated with natural processes and phenomena. Several hazards are socionatural, in that they are associated with a combination of natural and anthropogenic factors, including environmental degradation and climate change.

Exposure

The situation of people, infrastructure, housing, production capacities and other tangible human assets located in hazard-prone areas.

Vulnerability

The conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards.

DEFINING DISPLACEMENT ASSOCIATED WITH DISASTERS

Internally displaced people (IDPs) are described as “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 generalised violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognised State border.”¹⁴ The definition is based on two core parameters, the forced nature of the movement and the internal dimension of the flight.

Most people displaced by disasters remain within their home countries, but some cross borders in certain circumstances. Cross-border movements can be either intentional, or accidental when borders are porous and not clearly marked. In the Greater Horn of Africa, significant cross-border displacement has been reported during food crises and famines that were driven at least in part by droughts in 2010 and 2011 and between 2015 and 2017. Around 60,000 pastoralists and 127,000 head of livestock moved from Turkana in Kenya into Uganda in April 2017, and around 7,000 people crossed from Somalia into neighbouring Ethiopia and Kenya between November 2016 and 9 May 2017.¹⁵ Cross-border movements may also have taken place in the region in response to the impacts of floods and other sudden-onset hazards.

HOW DOES DISPLACEMENT ASSOCIATED WITH DISASTERS COME ABOUT?

People may become displaced during or following the impact of a sudden-onset hazard when either the event itself or the disaster it triggers puts them in direct physical danger. They may become de facto displaced if their homes are rendered uninhabitable or they lose their livelihoods or access to basic services.

They may also be displaced in order to avoid the potential impacts of a hazard before it strikes, which may take the form of emergency evacuations. These may be well planned processes ordered or recommended and facilitated officially, or they may be the spontaneous response of exposed populations based on their own information and perceptions of risk. Either way, they are usually undertaken as a measure of last resort.

This is reflected in the way we identify and record displacement incidents. Most of our estimates related to actual or observed events are based on reported evacuations, or reports of homes “severely damaged” or “destroyed” and people “displaced”.

KEY METRICS

This report calculates the following metrics and uses them as the basis for analysing risk in the region as a whole and for specific countries:

Average annual displacement (AAD) is the average number of people expected to be displaced each year. Results are provided both in absolute terms - the anticipated number of IDPs each year - and relative to the population size - the number of people per 100,000 inhabitants expected to be displaced each year.

The **return period** is the expected average time between two events of a given intensity, calculated over long periods. It is usually defined as the reciprocal of the **event frequency**.

Displacement exceedance is the main metric used to quantify risk in probabilistic models. The displacement exceedance curve describes expected displacement as a function of the return period. It determines the return period of an event displacing at least *X* people.

METHODOLOGY

We calculated the displacement risk for sudden-onset hazards using two complementary approaches.



A sample of a preparedness plan to address both manmade and natural disaster in Ethiopia. © UNICEF/Mersha, 2016

1. Retrospective risk assessment

Unfortunately, the disaggregated information contained in national disaster loss databases does not systematically include the number of people displaced. Such databases do, however, tend to cover the number of houses severely damaged or destroyed and this information can be used as a proxy for displacement.

Using our GIDD to validate the information contained in national disaster loss databases, we found that the best correlation between our displacement figures and DesInventar's information was given by the number

of houses destroyed, so we estimated the number of people displaced by multiplying the latter by AHHS. The retrospective risk assessment is based on ground-validated data and as such on direct observation of the impacts of past disasters.

We found the main limitation of this approach to be its spatial and temporal coverage. National disaster loss databases usually only have data going back a few decades, which limits the estimation of risk to very frequent and low-impact events for which we have enough data to conduct a probabilistic analysis. Nor is the approach global because it is limited to those countries and regions for which systematic national disaster inventories exist.¹⁹

Data sources

IDMC's global internal displacement database (GIDD) aims to provide comprehensive information on the phenomenon worldwide. It covers all countries and territories for which we have obtained data, and provides information on internal displacement associated with conflict and generalised violence between 2003 and 2016, and that associated with sudden-onset natural hazards and the disasters they triggered between 2008 and 2016.¹⁶

DesInventar is a conceptual and methodological tool for the generation of national disaster inventories and the construction of databases on damage, losses and the general effects of disasters. UNISDR is the host and main sponsor of its development and worldwide dissemination.¹⁷

IDMC's average household size (AHHS) database provides annually updated and standardised data for all of the countries we monitor. Primary sources often report the number of homes rendered uninhabitable or the number of families displaced, which we convert into a figure for IDPs by multiplying the reported numbers by AHHS.¹⁸

2. Prospective risk assessment

To overcome these gaps and limitations in the historical data, we also developed a prospective risk assessment methodology in which hazard, exposure and vulnerability are used in a model that estimates a risk profile for each country. The methodology is similar to that used for UNISDR's 2015 Global Assessment Report (GAR 2015), but with a specific focus on displacement.²⁰

The prospective risk assessment allowed us to estimate the expected impact of disasters over a return period of tens of thousands of years, extending and completing the picture painted by the retrospective analysis. The model also has almost a global coverage because it includes all of the countries considered in GAR 2015.

Data Sources

The data sources we used for our prospective risk assessment were the same as those used for GAR 2015.

Hazard: The hazard models for cyclones and earthquakes were developed by the International Centre for Numerical Methods in Engineering (CIMNE) and INGENIAR Ltda with inputs from the Global Earthquake Model (GEM). Those for floods were developed by the International Centre on Environmental Monitoring (CIMA) and UN Environment's global resource information database (UNEP-GRID). Those for tsunamis and volcanoes by Geoscience Australia with the Norwegian Geotechnical Institute (NGI) and the Global Volcano Model Network (GVM) respectively.

Exposure: The global-level exposure model was developed by UNEP-GRID and CIMNE in collaboration with the World Agency for Planetary Monitoring and Earthquake Risk Reduction (WAPMERR), the European Commission's Joint Research Centre (EU-JRC), Kokusai Kogyo and Beijing Normal University.

Vulnerability was modelled by CIMNE with INGENIAR Ltda for Latin America and the Caribbean, and by Geoscience Australia for the Asia-Pacific region. In other regions, the Hazus software developed by the US Federal Emergency Management Agency (FEMA) was used. Agricultural drought risk assessments were undertaken by the Arab Center for the Studies of Arid Zones and Dry Lands (ACSAD) and the Famine Early Warning Systems Network (FEWS NET).

Hybrid risk assessment

When possible we pulled the outputs of our retrospective and prospective analyses together in a hybrid risk assessment. This gives the most thorough representation of disaster risk because it combines direct information on high-frequency and low-impact events from the retrospective analysis and low-frequency catastrophic events from the prospective analysis.

PEER REVIEW

We discussed and reviewed our methodology in two workshops, in Geneva in January 2017 and Nairobi in June 2017. The list of partners who took part in the meetings includes the African Development Bank (AfDB), the Canadian and Finnish governments, the Directorate-General for European Civil Protection and Humanitarian Aid Operations (ECHO), the UN's Food and Agriculture Organization (FAO), HelpAge International, IAWG, the International Federation of Red Cross and Red Crescent Societies (IFRC), the Intergovernmental Authority on Development (IGAD), the IGAD Centre for Pastoral Areas and Livestock Development (ICPALD), the International Organization for Migration (IOM), the International Union for Conservation of Nature (IUCN), Save the Children, the UN Entity for Gender Equality and the Empowerment of Women (UN Women), the Joint UN Programme on HIV/AIDS (UNAIDS), the UN Development Programme (UNDP), the UN Human Settlements Programme (UN-Habitat), the UN Refugee Agency (UNHCR), the UN Office for Project Services (UNOPS), the World Food Programme (WFP), the World Health Organization (WHO), the Norwegian Refugee Council (NRC), UNISDR, the UN Operational Satellite Applications Programme (UNOSAT), the World Bank and the World Meteorological Organization (WMO).

3

KEY FINDINGS

1: DISPLACEMENT RISK IS CONCENTRATED IN COUNTRIES WITH THE LARGEST POPULATIONS EXPOSED TO DISASTERS

The modelled global AAD associated with earthquakes, tsunamis, riverine floods and tropical cyclones is shown in figure 3.1. In absolute terms, displacement risk is more than 29 times higher in Ethiopia than in neighbouring Eritrea, and more than 250 times higher than in Djibouti.

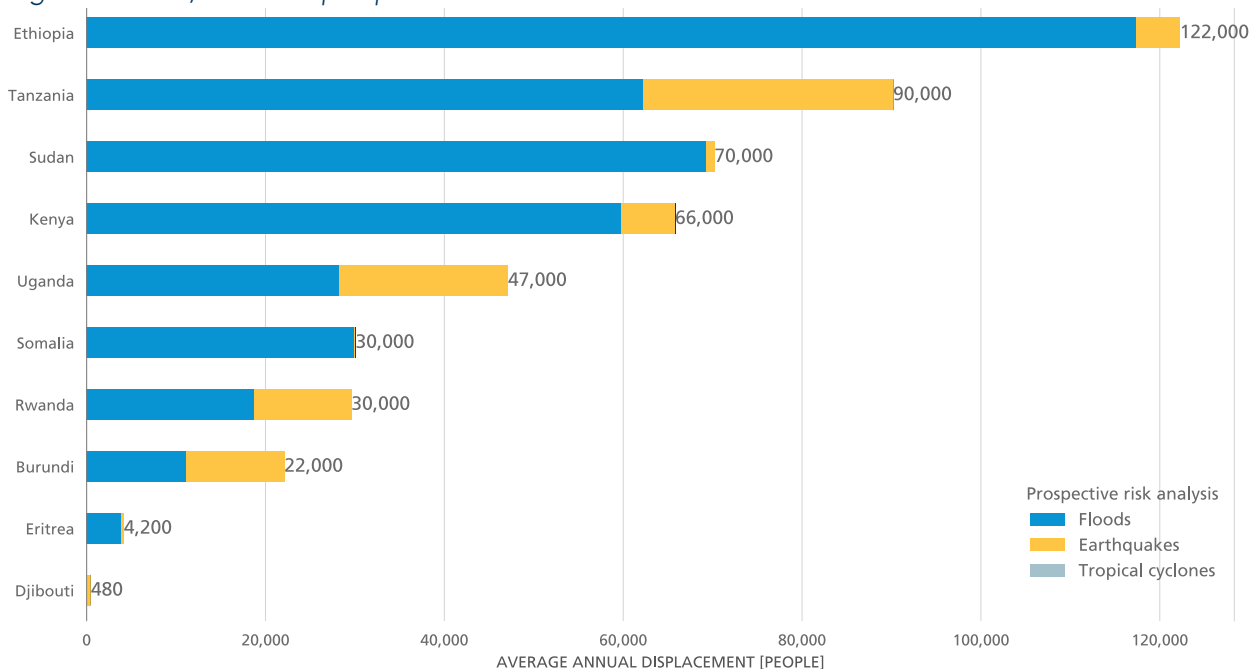
Risk is concentrated in countries, such as Ethiopia, with dense populations living in river basins prone to flooding, where exposure tends to be the dominant driver of displacement risk. Because it is also the most populous country in the region, Ethiopia has the highest absolute displacement risk, with more than 120,000 people displaced every year by disasters.

2: VULNERABILITY AND LIMITED CAPACITY TO REDUCE DISASTER RISK TEND TO BE THE MAIN DETERMINANTS OF DISPLACEMENT RISK RELATIVE TO POPULATION SIZE

When each country's population size is taken into account the figures tell a different story (see figure 3.2). Displacement risk is much more evenly distributed in relative than in absolute terms, because population size varies significantly between countries. Some, such as Somalia, Rwanda and Burundi, have below-average absolute risk compared to other countries in the region but the highest figures relative to population size.

This highlights their vulnerability and limited capacity to reduce disaster risk rather than exposure as the overriding factors that determine displacement risk. All countries with above-average relative displacement risk have comparatively weak governance structures and high poverty rates. They have also experienced recent conflict, which has undermined their stability and security.

Figure 3.1: AAD, based on prospective risk assessment



Source: IDMC

3: RELATIVE DISPLACEMENT RISK FOR SUDDEN-ONSET DISASTERS IN THE GREATER HORN OF AFRICA IS BELOW THE GLOBAL AVERAGE

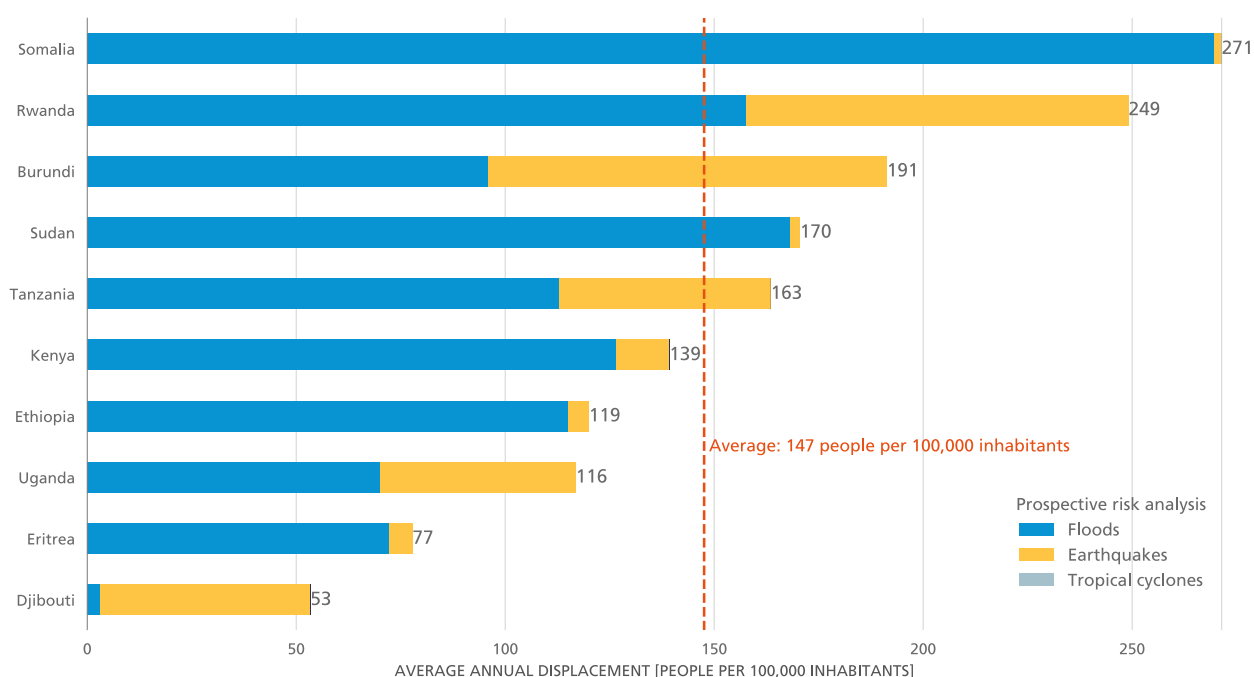
With 147 people per 100,000 inhabitants displaced a year, the relative risk of displacement associated with sudden-onset disasters in the Greater Horn of Africa is about 20 per cent lower than the global average of around 187 (see figure 3.3). That said, the countries in the region with the highest relative displacement risk - Somalia, Rwanda and Burundi - are above the global average.

A number of factors combine to produce lower relative displacement risk in the region. Population density is comparatively low, meaning fewer people tend to

be exposed to and affected by sudden-onset hazards than in other regions. African cities are growing, many of them rapidly, but they are exposed to relatively few sudden-onset hazards compared with other regions, particularly south and south-east Asia.

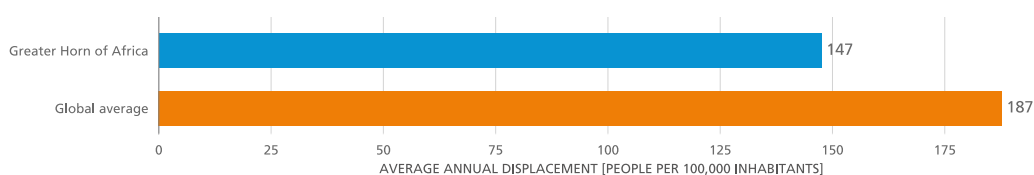
The comparison in figure 3.3 only refers to sudden-onset disasters. Given that displacement associated with the more indirect impacts of drought on food and livelihood security are not systematically recorded, it is difficult to estimate how much relative displacement risk in the Greater Horn of Africa would increase if this hazard were included in global and sub-regional data. Country examples show, however, that it would certainly increase to some extent. This is particularly the case in countries with populations exposed and vulnerable to agricultural drought, as discussed in the spotlight below on Ethiopia.

Figure 3.2: AAD relative to population size, based on prospective risk assessment



Source: IDMC, with UN Population Division data

Figure 3.3: AAD relative to population size globally and for the Greater Horn of Africa, based on prospective risk assessment

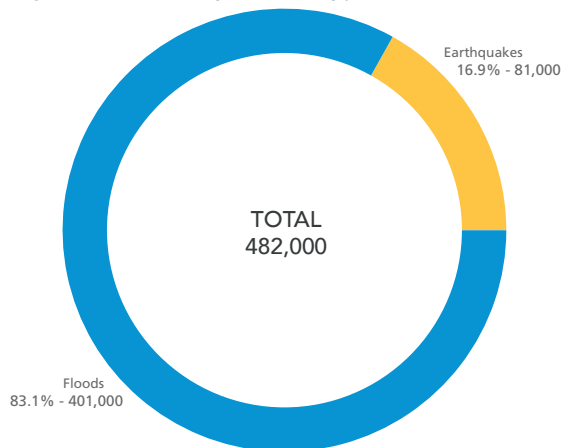


Source: IDMC, with UN Population Division data

4: DISPLACEMENT RISK IN THE GREATER HORN OF AFRICA IS DRIVEN MORE BY EXPOSURE TO FLOODS THAN TO OTHER TYPES OF SUDDEN-ONSET HAZARD

Absolute displacement risk is more strongly associated with floods than other types of sudden-onset hazards, as shown in figure 3.4. This is in part because floods occur more regularly than earthquakes and tropical cyclones, but the size of the populations exposed to them is a more significant factor, as discussed in the Kenya and Uganda spotlights below.

Figure 3.4: AAD by hazard type



5: LIMITED KNOWLEDGE ABOUT THE DURATION OF DISPLACEMENT IS A MAJOR EVIDENCE GAP

This report estimates the average number of people likely to be displaced by event and by year, but we were not able to ascertain for how long people tend to remain displaced in different situations. A lack of data on historical displacement patterns hinders our understanding of the potential duration of displacement, including the risk of it becoming protracted.

When compiling our annual global figures we tried to include duration by collecting time-series data for a number of events, but we encountered a number of obstacles:

- We were only able to obtain time-series data for a small number of events
- The period of time over which data was collected varied greatly, and for most events it was less than three months
- Information was not updated, meaning that the time-series data that was available was generally out of date

- Data was rarely disaggregated by age, sex or other characteristics that would help to understand how displacement patterns vary among different groups of IDPs.²¹

Without systematically collected and disaggregated time-series data, it is difficult to analyse longer-term displacement patterns and their implications for IDPs, their host and home communities, and governments and other responders. That said, our estimates of displacement risk are based on people whose homes have been destroyed, which in itself provides some indication of the general severity of disaster impacts and the need for a longer period of recovery and reconstruction.

As such, there is reason to believe that the displacement risk considered in this report involves situations that may last for months or even years, accompanied by other forms of loss and obstacles to IDPs' safe, voluntary and dignified settlement in their former homes or alternative locations.

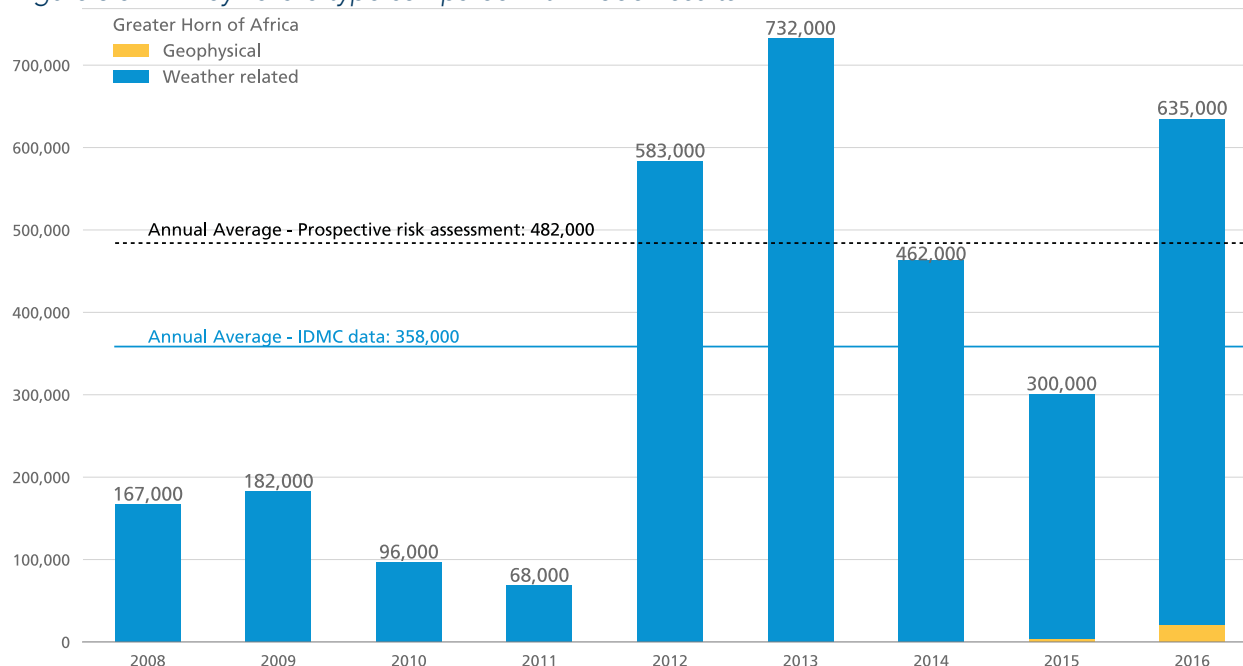
6: THERE ARE FEW EVACUATIONS AND LITTLE PREPAREDNESS IN THE REGION

Large-scale displacements associated with cyclones, floods and tsunamis in south and south-east Asia often begin as pre-emptive, life-saving evacuations in response to early warnings. Evacuations may also be initiated after a hazard's initial impact, as the disaster and the threats it poses evolve. Evacuees whose homes are rendered temporarily or permanently uninhabitable may remain displaced for long periods of time.

Their displacement may also be prolonged by the loss or disruption of their livelihoods, their inability to access basic services in their home areas, damage to essential infrastructure such as roads and electricity and water supplies, and the breakdown of their social support networks. In situations where safely executed evacuations are not followed by significant disaster impacts, early and sustainable returns are possible and displacement impacts are minimised.

The recourse to evacuations in south and south-east Asian countries means our estimates of historical displacement are significantly higher than anticipated by our risk model, which is based on the proxies of potentially destroyed or flooded housing. In the Greater Horn of Africa, however, historical and modelled displacement levels are a close match. This suggests that evacuations play a relatively lesser role in determining the overall scale of displacement, or that they tend to be spontaneous rather than planned and so less reported on by official sources (see figure 3.5).

Figure 3.5: AAD by hazard type compared with model results



Source: IDMC

This finding is further supported by an analysis of the terms used to report displacement in the region. None of the sources we used to compile our annual estimates for 2016 reported evacuations as a preventive measure. Instead they referred to people displaced, homeless or whose homes has been destroyed during or after the onset of a hazard. This too suggests a lack of early warning systems and preparedness.²²

7: FEW COUNTRIES IN THE GREATER HORN OF AFRICA MAINTAIN NATIONAL DISASTER DATABASES

Of the 11 countries considered in this report, only Ethiopia, Kenya and Uganda collect data on disasters systematically and maintain a national loss inventory.²³ Without historical data on disaster losses it is impossible to assess displacement risk based on the direct observation of a hazard's impact, which can then be compared with the output of a probabilistic risk assessment. The comparison presented in figure 3.5 suggests that disasters in the Greater Horn of Africa tend to be under-reported not only in national loss inventories but also by the sources that IDMC used to compile its global disaster displacement figures. These include National Authorities, UN agencies and offices, local and international media and non-governmental organisations and academic institutions. This significant gap hinders understanding of the effect of disasters in the region and is a major obstacle to informed planning and responses.

Country spotlights: Kenya and Uganda

From the national disaster loss databases for Kenya and Uganda we analysed 1,270 entries that reported houses destroyed between 2001 and 2017, and under the methodology described above we used the figures to calculate the number of people displaced.²⁴ The nature of the displacement was diverse, triggered by windstorms, thunderstorms, mudslides, landslides, forest fires and floods. Of the entries we analysed, 405 were for Kenya between 2002 and 2017 and 865 for Uganda between 2001 and 2016.

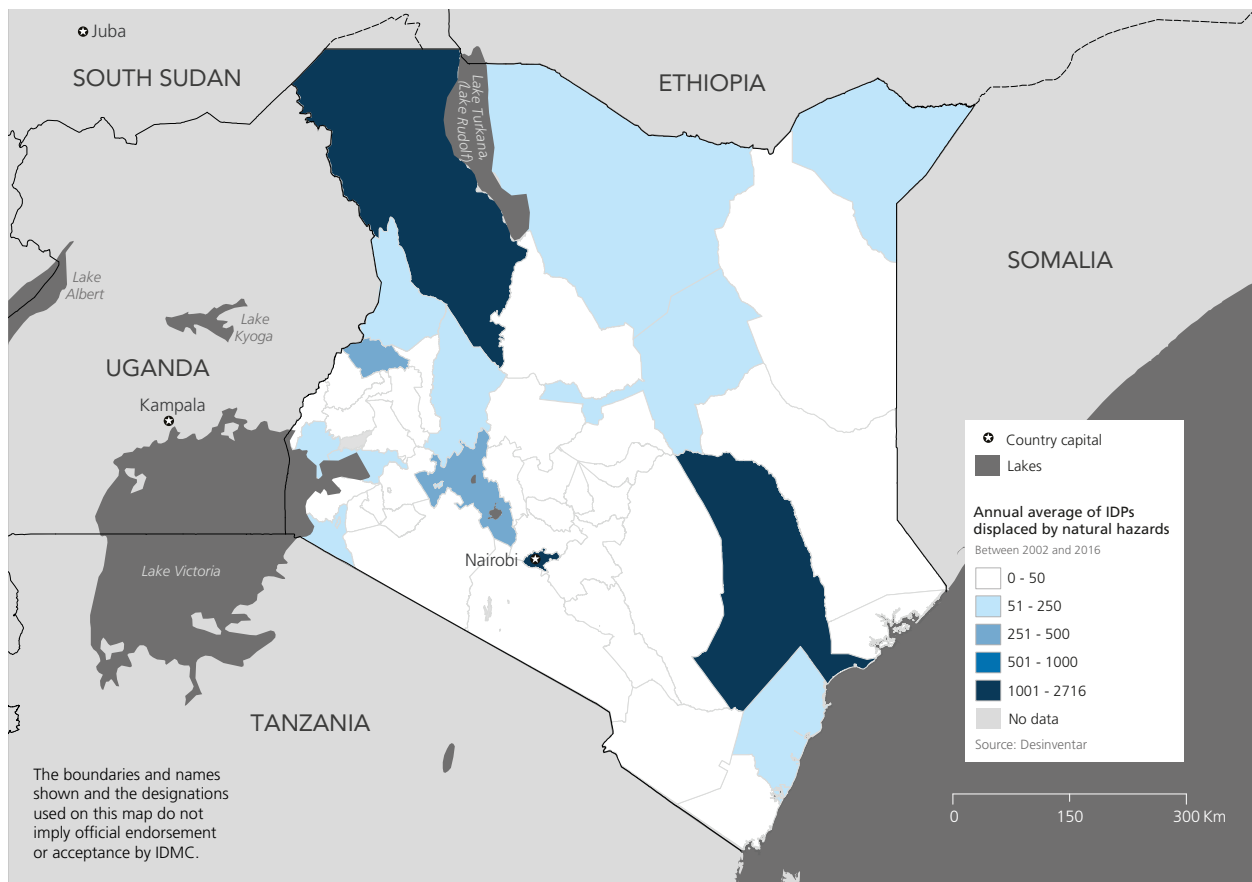
The figures do not include people displaced by slow-onset disasters related to agricultural drought, land degradation and deteriorating food and livelihood security. If such displacement risk were fully accounted for, the number of Kenyans and Ugandans displaced would surely increase, because large numbers of people in both countries live in arid and semi-arid areas and depend on pastoral farming, herding or rain-fed agricultural production for their livelihoods.

Kenya

In terms of AAD associated with sudden-onset hazards, Kenya has the fourth highest disaster displacement risk in the region, with around 66,000 displacements a year. The risk has historically been concentrated in flood-prone areas of Marsabit and Turkana around Lake Turkana, around Lake Nakuru and in Lamu county along the country's exposed Indian Ocean coast (see figure 3.6). Riverine flooding has also caused displacement in Mandera and Tana River counties.

When population size is taken into consideration, Kenya's AAD is 139 people per 100,000 inhabitants, slightly below the regional average of 147. This means that despite its relatively high exposure, Kenyans are less likely to become displaced than people living elsewhere in the region. This is somewhat surprising given the high concentrations of people living in vulnerable housing in the country's urban centres.

Figure 3.6 Map of displacement risk associated with sudden-onset disasters in Kenya based on recorded events



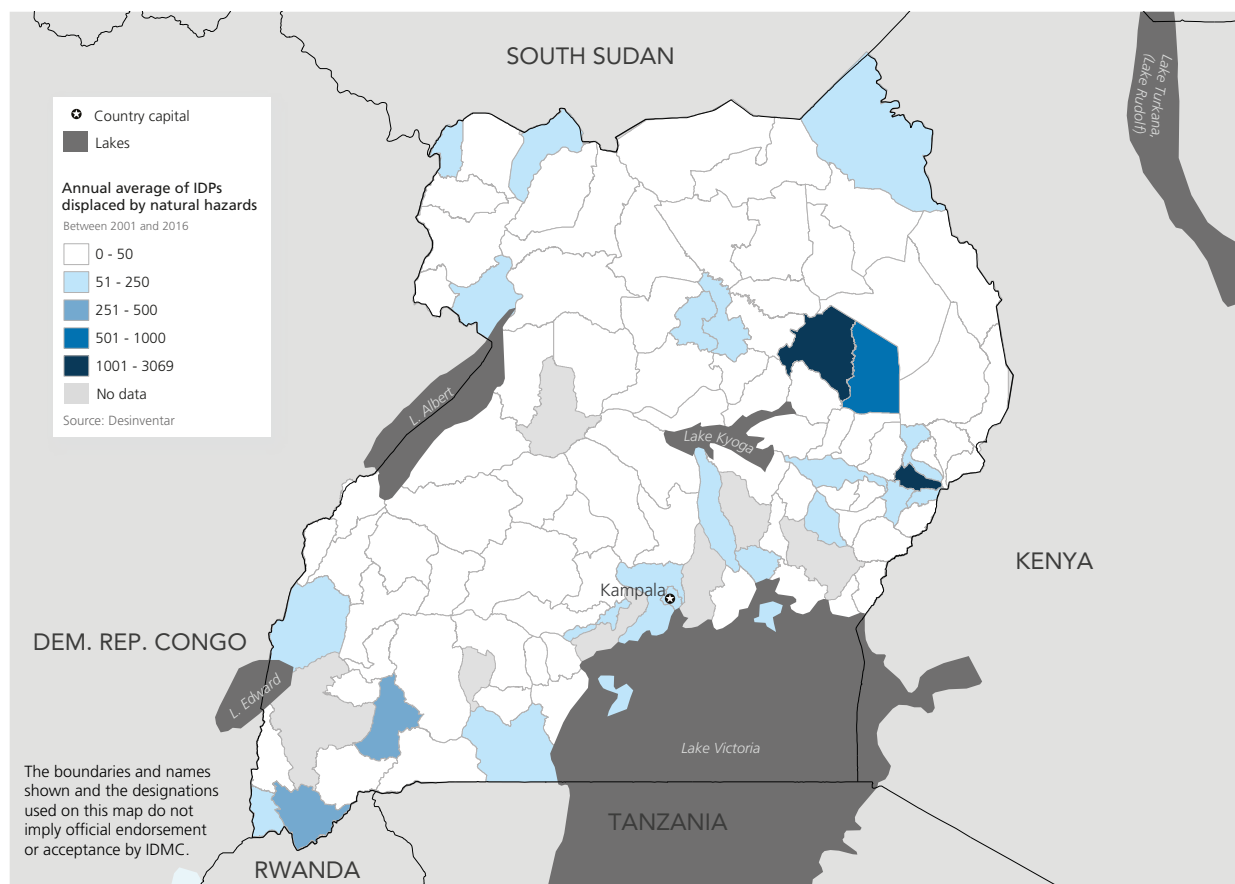
Source: IDMC with DesInventar data

Uganda

Ugandans are exposed both to flooding, principally in Amuria district in the east of the country and Wakiso district in the south, which lies between Kampala and Entebbe along the shore of Lake Victoria; and landslides in the Rwenzori and Eastern Rift mountains in the south-west and south-east (see figure 3.7).

The country's relative AAD is 116 people per 100,000 inhabitants, below the regional average, which indicates that Ugandans are generally less vulnerable than people living elsewhere in the region.

Figure 3.7 Map of displacement risk associated with sudden-onset disasters in Uganda based on recorded events



Assessing displacement associated with drought in Ethiopia

As well as having the highest absolute risk in the region, with an AAD of more than 120,000 for sudden-onset hazards, Ethiopia is also vulnerable to displacement associated with drought, particularly in the dry pastoral regions bordering Eritrea, Djibouti, Somalia and Kenya. Rainfall in these areas is highly variable, with frequent droughts punctuated by periods of intense precipitation.

This climatic variability has significant impacts on pastoral and agricultural productivity, human and livestock health, market prices and food availability. The latter decreased markedly following droughts in 1990-1991, 1994-1995, 1998-2000 and 2010-2011 (see figure 3.8).

Large numbers of pastoralists have also been displaced in the country's Afar and Somali regions since the end of 2015, as a result of drought and other environmental and human factors (see figure 3.9).

Displacement associated with drought is manifestly different to that caused by sudden-onset hazards. Rather than people being displaced immediately when their physical safety is put at risk by an acute shock or their homes are destroyed or rendered uninhabitable, drought contributes to displacement more indirectly by gradually eroding people's livelihood and food security. There tends to be a time lag after a period of below average rainfall while its effects take hold in combination with other risk drivers until a "tipping point" is reached at which people become displaced.

Displacement as a forced or involuntary survival measure of last resort is also more difficult to distinguish and measure in slowly evolving situations such as drought and environmental degradation, during which more voluntary forms of migration may also take place as a positive coping strategy to increase household or community resilience and avoid a crisis.

This is because of the nature of the hazards - it is hard to identify the spatial and temporal dimensions of drought

- and the many human factors that come into play. Displacement associated with drought is often multi-causal in the sense that the hazard's impacts depend on or are strongly linked to other drivers of exposure and vulnerability, including chronic poverty, conflict and violence, food insecurity and weak governance. This has been the case not only in Ethiopia, but also Somalia and South Sudan in 2016 and 2017.

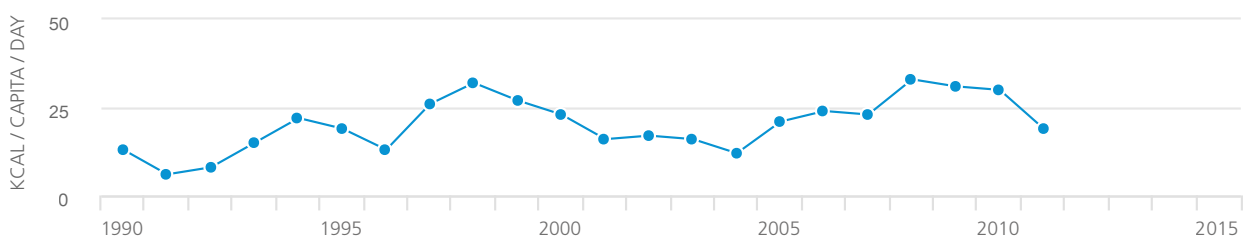
There are also many individual human factors that determine why some people are more vulnerable to drought than others. These include livelihood strategies; decisions about which crops to plant and when; access to pasture, irrigation, fertilisers and other agricultural inputs; access to markets and the availability of insurance, risk transfer and other risk-sharing measures.

Displaced pastoralists are a special case, and one that is particularly relevant to displacement associated with drought. As individuals or communities they lose access to their habitual living space as a result of, or in order to avoid the impacts of drought, desertification, violence, cattle rustling and other phenomena.²⁵

The displacement of pastoralists is linked to the loss of livestock as their primary basis of subsistence, but lack of access to pasture, markets, cash and alternative sources of income are also significant factors (see figure 3.10). Pasture and rangeland management policies have an impact on the rangeland conditions, use and carrying capacity, which in turn affects livestock health and mortality. Access to markets is important before, during and after drought for pastoralists to destock and restock in response to present and anticipated pasture conditions.²⁶

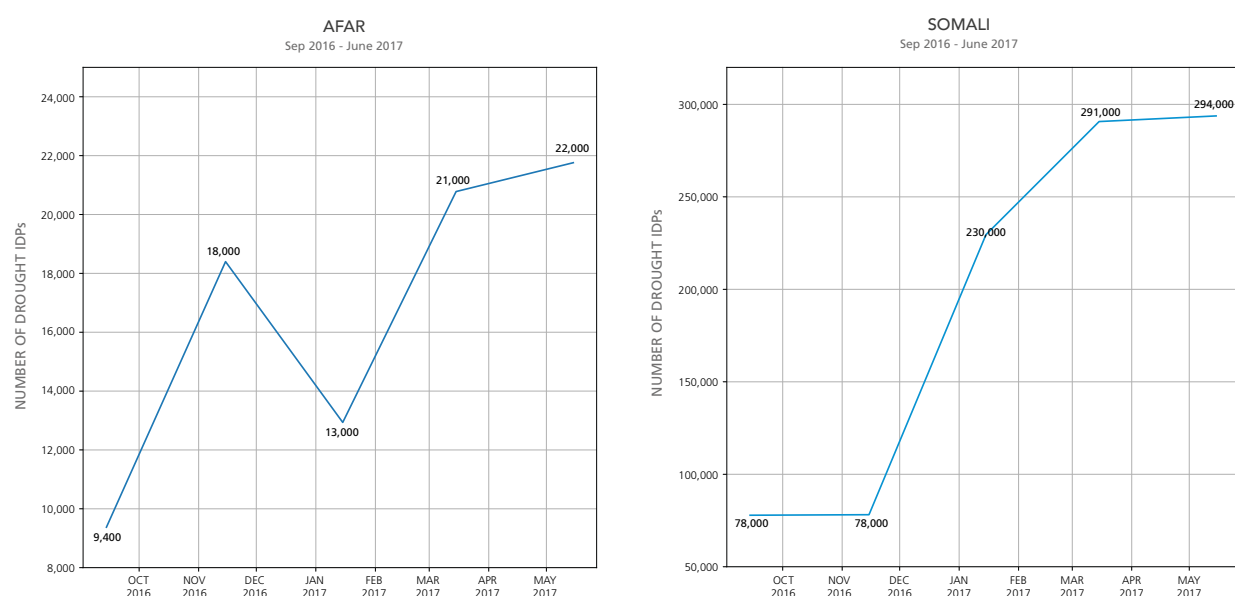
The most promising approach to measuring and analysing displacement risk associated with drought thus far has relied on the development of system dynamics models that take all of the key climatic, environmental and human factors into consideration.²⁷ We and our partners have developed models of pastoralist displacement for northern Kenya and areas of Ethiopia

Figure 3.8 Per capita food supply variability in Ethiopia, 1990 to 2011



Source: FAO

Figure 3.9: Displacement associated with drought in Ethiopia's Afar and Somali regions



Source: IOM

and south-central Somalia. The historical data required to validate and calibrate these models is patchy in terms of geographical and temporal coverage, however, which reduces their accuracy and confidence in them.

8: THERE ARE SIGNIFICANT CONCEPTUAL AND DATA GAPS ON DISPLACEMENT ASSOCIATED WITH DROUGHT

Observational data on displacement associated with drought in the Greater Horn of Africa is currently collected in Ethiopia, Somalia and South Sudan. In each country, however, those collecting data use different definitions and criteria. Some collect “flow” data on the number of IDPs arriving in camps over a period of time, while other collect “stock” data on the number in a camp at a specific moment in time. The fact that these are two different metrics is poorly understood by those collecting and using the data.

Given too that the vast majority of those affected by displacement associated with drought does not make their way to organised camps, additional data and analysis is needed on the range of factors that combine to displace people who may not be counted. Systematically collected, spatially disaggregated time-series data is required on the following types of indicators:

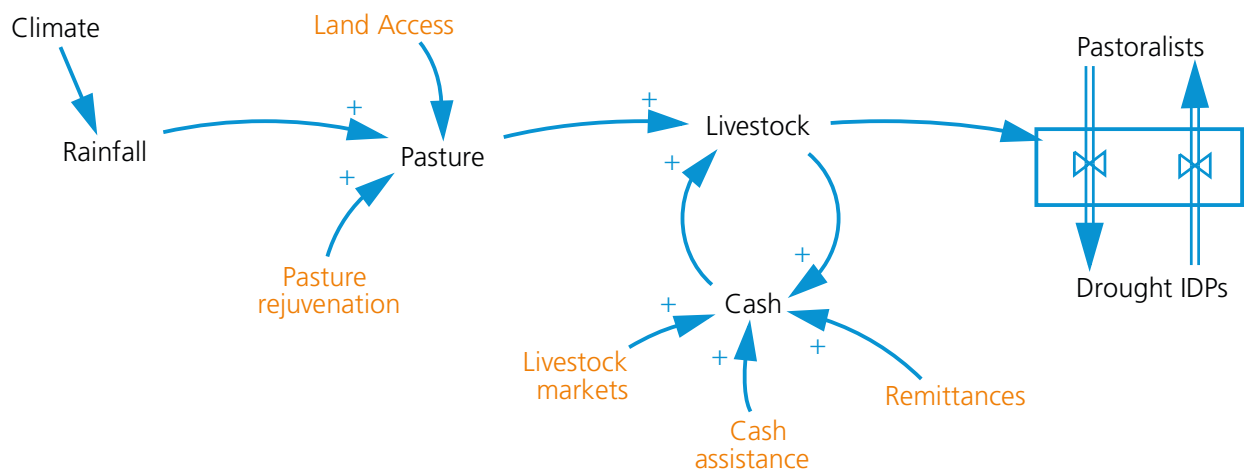
- Precipitation
- Rangeland and crop productivity

- Rangeland use and livestock density
- Livestock population, health, market price and sales, including imports and exports, disaggregated by species
- Crop harvests and prices
- Access to rangeland and arable land
- International and domestic remittance flows
- Humanitarian and development assistance such as food, cash and subsidies
- Household health, expenditure, income and livestock holdings, each disaggregated by income group
- Demographic factors such as household size and national and international migration flows
- Incidents of conflict and violence

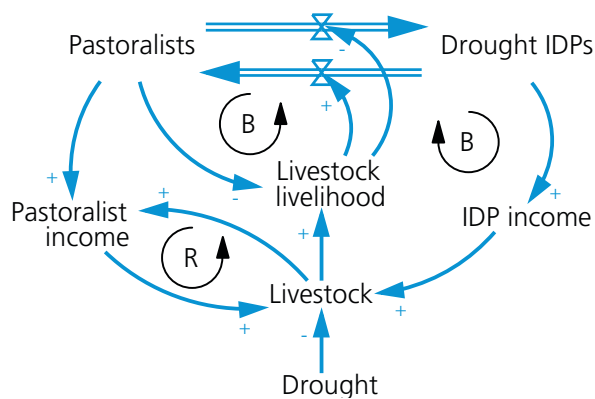
Importantly, this data is needed not just during and after periods of drought, but also during normal conditions. At present, this data is not being collected or shared in a manner needed to paint a comprehensive picture of displacement associated with drought.

Figure 3.10: Causal loop of drought and other impacts on pastoralist livelihoods and displacement

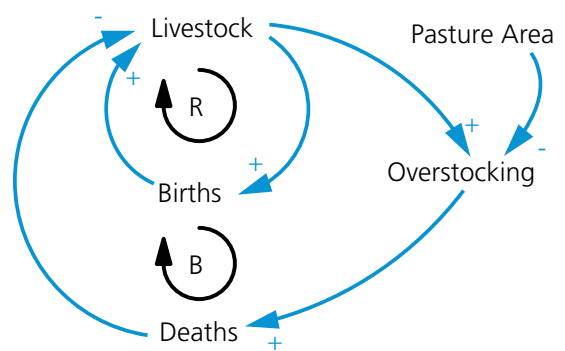
High-level casual-loop diagram of pastoralist displacement dynamics



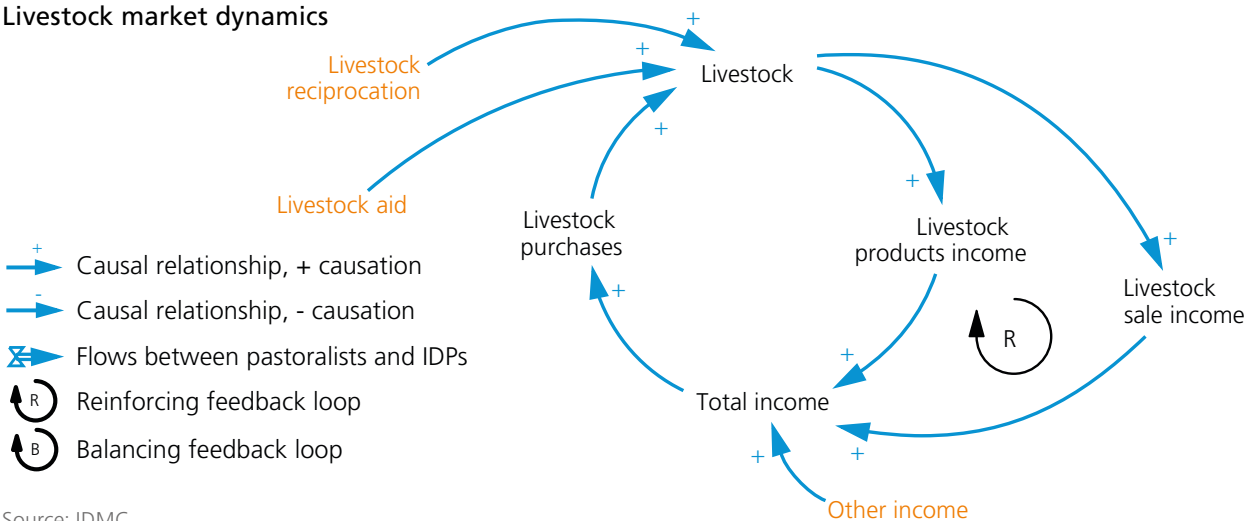
Detail of the displacement dynamics



Natural livestock dynamics



Livestock market dynamics



Source: IDMC

4

POLICY IMPLICATIONS

SIGNIFICANT INVESTMENT IS NEEDED IN THE COLLECTION OF TIME-SERIES DATA AS THE BASIS FOR BUILDING THE RESILIENCE OF DISPLACED COMMUNITIES AND THEIR HOSTS

At present, only three countries in the region collect data on disasters systematically and maintain a national loss inventory (see key finding 7). To strengthen the resilience of people displaced or at risk of becoming so as a result of disasters, including people whose displacement may become protracted, policymakers need to understand how the phenomenon, its impacts and IDPs' needs evolve over time.

This means, at minimum, collecting more data on how many people are displaced, to where and for how long (see key finding 5). Such information is needed to ensure that those in greatest need of assistance are prioritised, self-reliance is encouraged, obstacles to solutions are addressed and settlement options are risk-informed and sustainable, leaving people less vulnerable to future hazards rather than putting them back in harm's way.

EXISTING DISPLACEMENT RISK SCENARIOS SHOULD BE UPDATED TO ACCOUNT FOR EXPECTED CHANGES IN DEMOGRAPHY, DEVELOPMENT PATHWAYS AND CLIMATE CHANGE

This report provides a baseline assessment of displacement risk associated with sudden-onset disasters in the Greater Horn of Africa (see key findings 1, 2 and 3). As such, it is a useful starting point for informing policy debates about reducing and managing the phenomenon.

The risk configuration presented, however, is a static one. In order to better reflect reality and so guide policy development and implementation, it should be repeated incorporating different climate change scenarios and development trends such as the shared socioeconomic pathways (SSPs).²⁸

Such an analysis would enable projections for each scenario of whether displacement risk is likely to go up

or down, and why. This in turn would provide the basis for identifying and addressing the most significant risk drivers.

THERE ARE AS-YET UNREALISED OPPORTUNITIES TO REDUCE AND MANAGE THE RISK OF DISPLACEMENT ASSOCIATED WITH DROUGHT

More people are likely to be displaced by drought in the Greater Horn of Africa than by the other hazards addressed in this study, but the phenomenon is less well measured and its complexities less well understood. This inhibits efforts to prevent displacement and address people's needs once they have been displaced.

Our models for analysing the displacement of pastoralists associated with drought could help to better understand the main factors that lead to displacement via loss of livelihoods and severe food insecurity, and the measures that might be taken to reduce the risk and its impacts.

The amount of data required to run the models and paint a more comprehensive picture, however, is significant, and more effort and resources are needed to address current gaps (see key finding 8). Doing so would generate co-benefits across sectors and for many stakeholders. Data on livestock and crops would be useful to agriculture ministries, while data on human, economic and demographic indicators would be useful to finance and planning ministries. Data on rangeland, desertification and irrigation would be useful to environment ministries, and spatially disaggregated information on these factors would help local governments, NGOs and civil society.

If updated, adapted and extended to other areas in the Greater Horn of Africa, the models could be used to improve resilience not only for nomadic groups but also agro-pastoralists and sedentary farmers. They could be used to simulate the effectiveness of different policies and measures implemented alone or together and under different scenarios. The evidence derived from such analyses could inform investment strategies and help to develop more coherent plans to address the factors that determine people's vulnerability.

MORE EFFECTIVE EARLY WARNING SYSTEMS WOULD CAUSE MORE DISPLACEMENT, BUT SAVE MANY LIVES

More effective early warning systems and community-based early action may trigger higher levels of displacement as a necessary survival measure, but emergency evacuations would also save many lives and reduce the risks associated with initial displacement if they are well prepared for (see key finding 6).

It is important to note that evacuations, like other forms of displacement, carry risks associated with the mass movement of people under pressure and in short periods of time, and the temporary conditions in which those affected are obliged to take shelter. Such risks are elevated for vulnerable groups including older people, people with disabilities or serious medical conditions, children separated from their parents or guardians, and women. These should be receive particular attention when planning for evacuations.²⁹

Emergency evacuations are intended as a temporary protective measure, and are undertaken on the assumption that evacuees will be able to go back to their homes relatively quickly. Safe, voluntary and dignified return is not, however, always an option in the short term, and evacuation may become just the first phase in a longer period of displacement. In such cases, evacuees may have to be relocated to transitional shelters as emergency centres start to close or hosting arrangements

become unsustainable. If home areas are rendered uninhabitable or return is not permitted, alternative long-term settlement options are required.

This implies the need for:

- Continuous monitoring of evacuees' situation
- Planning that includes not only the safe and timely removal of people from danger, but also provisions for their safe shelter and return
- Contingency planning for transitions to longer-term arrangements and assistance if displacement becomes prolonged, with particular attention paid to vulnerable groups

Given that flooding accounts for most of the displacement associated with sudden-onset disasters in the Greater Horn of Africa (see key finding 4), a significant opportunity exists to use the forecasts and other early warnings available for such events to better prepare for them and therefore save lives.

The Sendai Framework calls for the relocation, wherever possible and in consultation with the people concerned, of public facilities and infrastructure to safe areas during post-disaster reconstruction; the strengthening of local authorities' capacity to evacuate people living in areas prone to disasters; and the formulation of public policies that aim to address the issues of prevention and, if possible and appropriate, the relocation of human settlements away from areas prone to disasters in accordance with national law and legal systems.³⁰



Displaced people in Somalia listen to a briefing from NRC staff. Photo: NRC/Adrienne Surprenant, 2017

NOTES


- 1 Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan and Uganda, plus Burundi, Rwanda and Tanzania.
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- 3 The overall INFORM risk index identifies countries at risk from humanitarian crises and disasters that could overwhelm national response capacity. <https://goo.gl/x26aWV>
- 4 UNISDR, Disaster risk reduction in Africa: Status report, 2015, available at <https://goo.gl/a6nAza>
- 5 African Union Convention for the Protection and Assistance of Internally Displaced Persons in Africa (Kampala Convention), available at <https://goo.gl/Vumxo8>
- 6 Policy Framework for Pastoralism in Africa: Securing, Protecting and Improving the Lives, Livelihoods and Rights of Pastoralist Communities, October 2010, adopted January 2011, available at <https://goo.gl/CX2sko>
- 7 The Pact on Security, Stability and Development For the Great Lakes Region, December 2006 amended November 2012 (article 20), available at <https://goo.gl/MYxPS3>
- 8 Agenda for Humanity, available at <https://goo.gl/G6QKUc>
- 9 Sendai Framework for Disaster Risk Reduction 2015-2030, available at <https://goo.gl/FgR7Eo>
- 10 UNFCCC Paris agreement, available at <https://goo.gl/dFSA45>
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- 12 UNISDR, Global Assessment Report, 2015, available at <https://goo.gl/c58HM3>
- 13 UNGA Resolution A/71/644: Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction
- 14 United Nations, Guiding Principles on Internal Displacement, 2001, available at <https://goo.gl/gS7QbU>
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- 19 UNISDR, Sendai framework data readiness review 2017 - global summary report, available at <https://goo.gl/VcNCSU>
- 20 UNISDR, Global Assessment Report, 2015, available at <https://goo.gl/c58HM3>
- 21 IDMC, 2017 Global Report on Internal Displacement, available at <https://goo.gl/y11uZK>
- 22 IDMC, 2017 Global Report on Internal Displacement, available at <https://goo.gl/y11uZK>
- 23 UNISDR, Sendai Framework data readiness review 2017, global summary report, available at <https://goo.gl/VcNCSU>
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- 25 IDMC, On the margin: Kenya's pastoralists - From displacement to solutions, a conceptual study on the internal displacement of pastoralists, 2014, available at: <https://goo.gl/Z2M3ot>
- 26 IDMC, Assessing drought displacement risk for Kenyan, Ethiopian and Somali pastoralists, 2014, available at: <https://goo.gl/NMYZqg>
- 27 *Ibid*
- 28 Global Environmental Change, The Shared Socio-economic Pathways and their energy, land use, and greenhouse gas emissions implications: An overview, 2017, available at <https://goo.gl/A72HBh>
- 29 CCCM Cluster, Comprehensive Guide for Planning Mass Evacuations in Natural Disasters, available at <https://goo.gl/DmFqX4>
- 30 UN, Sendai Framework for Disaster Risk Reduction, paragraphs 33.l, 33.m and 27.k, available at <https://goo.gl/FgR7Eo>



The Internal Displacement Monitoring Centre (IDMC) is the leading source of information and analysis on internal displacement worldwide. Since 1998, our role has been recognised and endorsed by United Nations General Assembly resolutions. IDMC is part of the Norwegian Refugee Council (NRC), an independent, non-governmental humanitarian organisation.

The Internal Displacement Monitoring Centre
3 rue de Varembe, 1202 Geneva, Switzerland
+41 22 552 3600 | info@idmc.ch

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UNISDR Regional Office for Africa
UN Complex, Gigiri, Block N level 2
P.O. Box 30218, 00100
Nairobi, Kenya

Tel: 254 20 762 6719
Email: ISDR-Africa@unisdr.unon.org
www.unisdr.org/africa
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