



Global Estimates 2012

People displaced by disasters

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Cover photo: A boy peeks from the entrance of a makeshift shelter at a camp outside the Chadian capital N'Djamena where thousands sought refuge in the aftermath of heavy flooding in 2012. © Otto Bakano/IRIN

Please note: The global, regional and national estimates provided in this report are based on information available to IDMC on the overall scale of displacement related to disasters as of 30 April 2013. Where new information becomes available, the IDMC dataset is updated. Revisions to aggregate figures are reflected in the following year's report.

Total displacement per country and all 2012 disasters that displaced at least 100,000 people are listed in annexes to this report. In the body of this report, figures of 10,000 and over have been rounded to the nearest 1,000; figures of 1,000 and less have been rounded to the nearest 100. Data on all disaster-induced displacement events for each year since 2008 including sources of information used is available upon request. Please email: idmc@nrc.ch.

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Executive Summary

The displacement of people by the risk and impact of disasters is a concern for policymakers in both rich and poor countries worldwide. Since 2009, the Norwegian Refugee Council's Internal Displacement Monitoring Centre (IDMC) has been providing global estimates of the number of people displaced each year to inform policy and measures by governments and other humanitarian and development actors that address the risk of displacement and ensure vulnerable displaced people are protected. This year's report presents new findings for displacement during 2012 and analysis drawn from five years of data compiled by IDMC. As with previous years, estimates were determined by collecting, cross-checking and analysing secondary data from an expanding range of sources related to rapid-onset weather-related and geophysical hazard events. Statistical data is complemented by research on specific countries, situations and types of disasters.

In 2012, an estimated 32.4 million people in 82 countries were newly displaced by disasters associated with natural hazard events. Over five years from 2008 to 2012, around 144 million people were forced from their homes in 125 countries. Around three-quarters of these countries were affected by multiple disaster-induced displacement events over the period. Repeated displacement sets back recovery and development gains, undermines resilience and compounds vulnerability to further disaster.

In 2012, an estimated 32.4 million people in 82 countries were newly displaced by disasters; 144 million over five years

The vast majority of this displacement (98 per cent in 2012; 83 per cent over five years) was triggered by climate- and weather-related hazards such as floods, storms and wildfires. 2012 had the lowest level of displacement due to geophysical disasters for five years; around 680,000 people were displaced by earthquake and volcanic eruption disasters.

The two largest events of 2012, flood disasters in north-east India and Nigeria, accounted for 41 per cent of the year's total. Eight disasters each caused mass displacement on the largest scale of between one to 6.9 million people. The varying frequency and size of such mega-scale events has created substantial fluctuations in global totals for each year. Annual global displacement between 2008 and 2012 has ranged between 16.5 million people in 2011 and over 42.3 million in 2010.

While prolonged and protracted displacement is not uncommon, particularly following major disasters, the cumulative number of displaced people worldwide as of the end of 2012 is unknown. This constitutes an important blind spot in the current global data. Displaced populations are at increased risk of being neglected, unprotected and left without durable solutions to their displacement the longer they are displaced.

The two largest events of 2012, flood disasters in north-east India and Nigeria, accounted for 41 per cent of the year's total

As in previous years, most disaster-induced displacement in 2012 was in Asia where disaster risk is highly concentrated (22.2 million people displaced; 69 per cent). At the same time, displacement in Africa reached a five-year high due to widespread floods across western and central regions: 8.2 million people were displaced, compared to 665,000 displaced in the continent in 2011. High levels of displacement in Niger, Chad and South Sudan, as well as in Nigeria, compounded the vulnerability of people facing severe food insecurity, many of them already displaced by conflict.

2012 also saw the highest levels of displacement since 2008 in Oceania, forcing over 129,000 people from their homes. This included displacement caused by flood and storm disasters in Papua New Guinea, Fiji and Australia. In the Americas, 1.8 million people were displaced, mostly due to Hurricane Sandy's impact across eight countries, and floods related to La Niña weather phenomenon in Peru and Colombia. In Europe, around 74,000 people were displaced, including by flood disasters in southern Russia and an earthquake in northern Italy.

The vast majority of displacement is triggered by climate- and weather-related hazards (98 per cent in 2012; 83 per cent over five years)

Five countries (China, India, Pakistan, the Philippines and Nigeria) had the highest numbers of people displaced by disasters in 2012, as well as in the last five years overall. Data reveals strong patterns of frequent and repeated displacement as well as displacement on a massive scale. India had the most new displacement worldwide in 2012



IDPs outside a school in Koton Kafi, Kogi State where over 300 hundred families are sheltering having been displaced by severe floods that have left them homeless and destroyed their crops. (Photo: Shelterbox/Mike Greenslade, November 2012)

(9.1 million) and the second highest number in 2008-2012 (23.8 million). However, this was almost half the number in China where 49.8 million were forced from their homes over the same period. The number of people displaced in 2012 in the Philippines (11.4 million) and Pakistan (15 million) was also very high relative to the size of their populations.

Data reveals strong patterns of frequent and repeated displacement as well as displacement on a massive scale

Displacement takes a toll on both the richest and poorest countries. Two and a half million people were displaced in High-Income Countries (HICs) between 2008 and 2012; 1.3 million in 2012. The USA, for example, was among the top ten countries with the most new displacement in 2012. The vast majority of people displaced (98 per cent over 2008-2012), however, were in developing countries, reflecting the strong correlation between poverty, the number of people exposed to hazards and displacement. Furthermore, many of the countries where people were displaced by disasters are also conflict-affected (around a quarter of those countries with new disaster-induced displacement in 2012), compounding vulnerability and the risk of further displacement.

While the highest numbers of people displaced world-wide are seen in large and densely populated countries, dominated by Asia, displacement relative to population size reveals a different picture and includes countries in Africa, the Americas and Oceania among those worst affected. The poorest and Least Developed Countries (LDCs) and Small Island Developing States (SIDS) are more likely to have a high level of per capita displacement. Some of the SIDS (including Samoa, Cuba, Fiji, the Comoros and Papua New Guinea) had the highest levels of per capita displacement by disasters in 2012. Haiti, a SID and LDC, had displacement levels equivalent to 19 per cent of its total population (1.9 million people) during 2008-2012 – the highest relative level of displacement experienced by any country.

The poorest countries and SIDS warrant particular attention: Chad (2012) and Haiti (over five years) had the highest per capita displacement

For this reason, together with their high vulnerability to disasters, the poorest countries and SIDS warrant particular attention due to the pressure put on limited resources to respond and recover as well as to prevent

The risk of displacement is expected to rise in line with global trends that increase the risk of disaster

and prepare for further disasters and displacement. The risk of future displacement can remain elevated for years following a major event. In 2012 1.7 million were displaced in LDCs; 9.8 million over the past five years. Over 99,000 people were displaced in SIDS in 2012; and a total of 1.9 million over five years.

The risk of displacement is expected to rise in line with related and interconnected global trends that increase the risk of disaster. These include population growth, rapid urbanisation and the exposure of vulnerable communities, homes and livelihoods to hazards. Due to improved life-saving measures, mortality rates associated with major weather-related hazards are falling, yet increasing numbers of disaster survivors will still be displaced from their homes. In the longer term, human-made climate change is expected to increase the frequency and severity of weather-related hazards including floods and storms, which account for a high proportion of disaster-induced displacement each year. The level of displacement risk will be greatly influenced by how well countries and communities are able to strengthen disaster prevention, preparedness and response and adapt to new realities.

The way forward

High levels of disaster-induced displacement and its frequency place huge pressure on limited local, national and international resources. Chronic and recurrent displacement, whatever its scale, undermines development gains and increases risks and needs faced by exposed and vulnerable populations. In both developing and developed countries more must be done by governments, donors, civil society and other actors to prevent, prepare for and respond to displacement. National and local policies, plans and measures should be developed and implemented to support community-based resilience, strengthen early warning and response mechanisms and develop the capacity of local authorities to protect, manage and find solutions for displaced people.

The systematic collection, analysis and sharing of data on disaster-induced displacement, including a common set of indicators for recording and reporting on displacement, is a critical first step. Information available tends to be biased, however, towards reporting on the largest events and on the most visible displaced people taking refuge in official shelter sites. Displaced people taking refuge with host families and communities (very often the

majority of those displaced), people displaced repeatedly by smaller-scale events, and people caught in protracted displacement are at risk of being overlooked or neglected. Reported data is mostly available from a smaller proportion of affected countries where there is strong national commitment and capacity for disaster management and prevention, or strong international agency, donor and media presence. Many countries have developed, or are developing, information systems for improved disaster risk management. Improved and reliable information is needed, however, on displaced people and their specific concerns to inform policy and measures where they are needed the most.

The systematic collection, analysis and sharing of data is critical to inform policy and measures where they are needed the most

IDMC hopes that the findings of this report will continue to raise awareness and inform the work of governments and non-governmental actors to better address the humanitarian, development and human rights concerns faced by those displaced – and at risk of being displaced – by disasters.

1 Introduction

Since 2009, the Norwegian Refugee Council's Internal Displacement Monitoring Centre (IDMC) – through initial collaboration with the UN Office for the Coordination of Humanitarian Affairs (OCHA) – has provided annual estimates to quantify the scale and location of people forced from their homes by disasters. These have used an established methodology (see Annex 3). Evidence is gathered to inform governments, international institutions and civil society actors about the plight of millions of displaced people and about the risk of displacement faced by millions more.

This report presents global estimates for disaster-induced displacement associated with hazards that rapidly impact communities or are experienced as sudden triggers to forced movement. These include both weather hazards, such as floods, storms and wildfires, and geophysical hazards, such as earthquakes and volcanic eruptions, as shown in Table 1.1 below.

New findings for 2012 are presented together with analysis from across five-years of data compiled by IDMC. This is possible thanks to the efforts of a wide range of actors who have collected and shared information on the situation of displaced people, including both high profile disasters as well as many neglected, yet critical, situations that might otherwise have gone unnoticed.

Sources include governments and humanitarian and development organisations of the United Nations, the International Organisation for Migration (IOM), the International Federation of Red Cross and Red Crescent Societies (IFRC), non-governmental organisations (NGOs), research institutions, media and private sector organisations. Multiple secondary sources of quantitative data for each event identified are collected, cross-checked and analysed. Statistical data is complemented by research on specific countries, situations and types of disasters so as to inform policy makers and enable measures to reduce displacement risk and protect vulnerable populations in both rapid- and slow-onset disaster situations (see Annex 1: Note on methodology, 2012).

Table 1.1: Typology of natural hazard-related disasters included in the study*

Weather or climate-related				
	Meteorological	Meteorological	Hydrological	Climatological
Rapid onset	Earthquakes and tsunamis, volcanic eruptions, dry mass movements (rock falls, landslides, avalanches, sudden subsidence)	Storms: tropical, winter, tornados, snow and sand	Floods: flash, coastal, riverine, snow melt, dam releases; wet mass movements: landslides, avalanches, sudden subsidence	Extreme winter conditions, heat waves, wild fires
Slow onset	Long-lasting subsidence Volcanic mud flow		Sea-level rise	Drought (with associated food insecurity)

*Based on classification as used by the International Disaster Database (EM-DAT), maintained by the Centre for Research on the Epidemiology of Disasters (CRED), Brussels, www.emdat.be. Shaded parts of the table indicate types of disaster included in the study.

Box 1.1 Key terms and concepts

'Natural' hazards are events or conditions originating in the natural environment that may affect people and critical assets located in exposed areas. They include climate- and weather-related events as well as geo-physical events. The nature of these hazards is often strongly influenced by human actions, including urban development, deforestation, dam-building, release of flood waters and high carbon emissions that contribute to long-term changes in the global climate. Thus, their causes are often less than 'natural'.

The methodology for this study estimates displacement associated with hazards that impact communities rapidly or are experienced as sudden shocks or triggers to movement, such as storms, floods, landslides, earthquakes and wildfires. It does not quantify displacement in the context of slow-onset or gradually deteriorating situations related to drought and sea-level rise that result in loss of habitat and livelihoods (see Table 1.1).

Disaster is defined as "a serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources" (UN Office for Disaster Risk Reduction, 2009). Disasters result from a combination of risk factors: the exposure of people and critical assets to single or multiple hazards together with existing conditions of vulnerability, including insufficient capacity or measures to reduce or cope with potential negative consequences.

Displacement addressed in this report is a result of the threat and impact of disasters. It also increases the risk of future disasters and further displacement. Being displaced puts people at a higher risk of impoverishment and human rights abuses, creating new concerns and exacerbating pre-existing vulnerability. This is especially true where homes and livelihoods are destroyed and where displacement is recurrent or remains unresolved for prolonged periods of time. Forced from their homes, people face specific forms of deprivation, such as the loss of shelter, and often face heightened or particular protection risks such as family separation and sexual and gender-based violence, particularly affecting women and children.¹ The process of returning and resettling back home or relocating elsewhere brings other challenges before a durable solution can be found (see below on "durable solutions").

It is widely agreed that the vast majority of people displaced by disasters are internally displaced. A smaller number are displaced across borders but this has not been quantified globally. As defined by the 1998 *Guiding Principles on Internal Displacement*, internally displaced people (IDPs) are individuals or groups of people "who have been forced or obliged to flee or to leave their homes or places of habitual residence [...] and who have not crossed an internationally recognised state border."²

The non-voluntary nature of the movement is central to the definition of displacement. It includes people forced from their homes or evacuated in order to avoid the effects or a threat of disaster. It does not matter how far people are forced to move. Displacement may include situations where people are rendered homeless or deprived of their livelihoods but remain close to their original dwellings, whether through choice or because they have no alternative access to shelter and assistance.

Disasters that develop rapidly or are triggered suddenly, such as by an earthquake, create very little room for choice in terms of whether or not to flee. This is assuming flight is an option at all. In slow-onset or gradually developing disaster situations the decision to move is typically more complex and involves decisions situated on a continuum between voluntary and forced. This is discussed further in section 6 in relation to modelling displacement by disasters related to drought.

On the other hand, voluntary and planned migration or relocation can be a way to adapt and build the resilience of people facing high and increasing risk of disaster and to avoid or prevent displacement. People who are trapped or forced to stay may be at greater risk than those able to move to safer locations.³

A **durable solution** to displacement is defined as being achieved when internally displaced people (IDPs) are sustainably (re)integrated and no longer have any specific assistance and protection needs that are linked to their displacement and can enjoy their human rights without discrimination on account of their displacement (IASC).⁴ IDPs – whether they return to their homes, settle elsewhere in the country, or try to integrate locally where they are displaced – usually face continuing problems and risks requiring support beyond the acute crisis period of a disaster. Achieving a durable solution is thus a gradual and complex process requiring timely and coordinated efforts to address humanitarian, development and human rights concerns including measures to prevent and prepare for further displacement.⁵

2 Displacement on a global scale and trends in displacement risk

32.4 million displaced in 2012; almost twice as many as in 2011

In 2012, an estimated 32.4 million people were forced from their homes by the risk or impact of rapid-onset disasters associated with natural hazards such as floods and earthquakes. This figure is almost twice the number of people displaced in 2011. As for previous years this estimate does not include disasters related to drought (see Section 6 for more on drought-related displacement).

143.9 million displaced over five years, 2008-2012

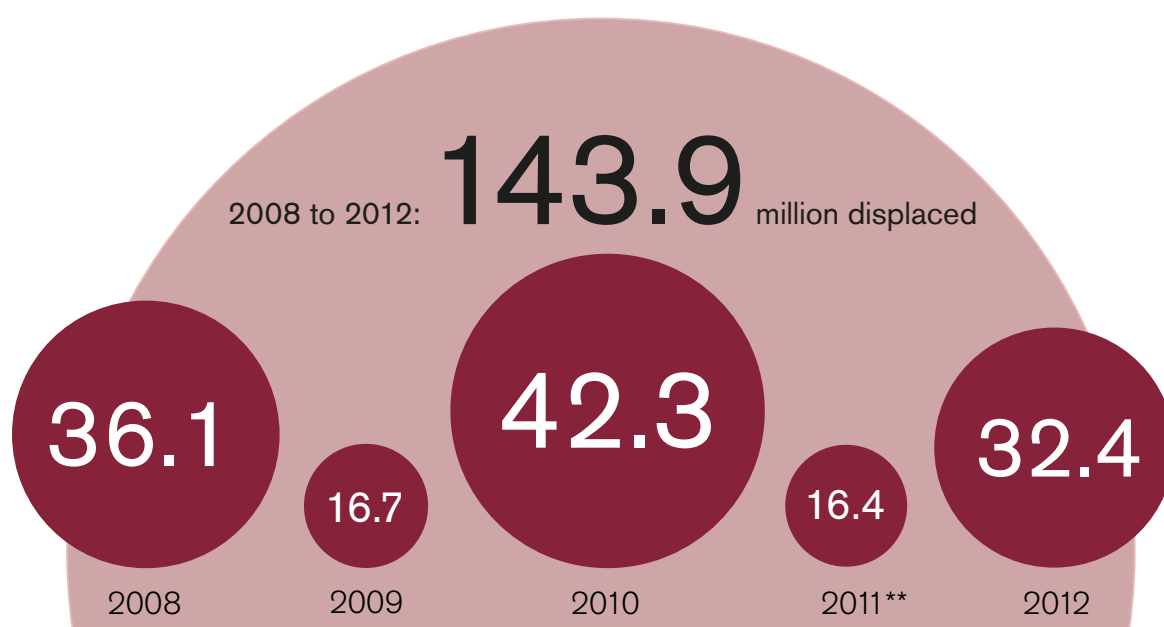
From 2008 to 2012, an estimated 143.9 million people in 125 countries worldwide were newly displaced by rapid-onset disasters triggered by hazards such as floods, storms, earthquakes and wildfires. This aggregated figure for new displacement during the period includes millions of people who have been repeatedly displaced. Around three-quarters of these countries were affected by multiple displacement events between 2008-2012. At least 16.5 million people were displaced each year, with more than double this number in 2010 when more than 42.3 million people were displaced (see Figure 2.1).

Prolonged and protracted displacement is not uncommon as seen in many countries. This is particularly the case following major and recurrent disasters when homes and livelihoods are destroyed and safe return is not possible. See Box 5.1 on Haiti, for example, and Section 3c on the USA. The cumulative number of displaced people worldwide is unknown, however, including people still displaced following events in previous years. This is an important blind spot in the global data given the increasing risk of displaced populations being neglected, unprotected and left without durable solutions the longer they are displaced for.

Annual variance due to the largest mass displacement events

Variance between the annual global estimates is mostly due to the scale and frequency of the largest or mega-scale displacement events, which have each displaced between one to fifteen million people between two to eight times every year since 2008. In 2012, there were eight disasters that each displaced between one to 6.9 million people, accounting for most of the people displaced worldwide (72 per cent) (see Figure 2.2). There were 29 events on this mega scale over five years; 2008-

Figure 2.1: Global disaster-induced displacement*



* Number of individual people displaced. Rounded to the nearest 100,000.

** Revised figure.⁶



Displaced villagers paddle with their belongings through flood waters in the Pobitora Wildlife Sanctuary, some 55 kms from Guwahati, the capital city of the northeastern state of Assam on June 28, 2012. Photo: AFP/Biju BORO

2012 (see Table 2.1). The two largest 2012 events, flood disasters in north-east India and across almost all of Nigeria, account for 41 per cent of all people displaced in the year (see Table 3.2).

Medium to small events, each displacing less than 100,000 people, accounted for a relatively non-fluctuating annual figure of approximately two million people. However, significant under-reporting of smaller, but frequent, displacement events means this figure is undoubtedly an underestimate (see Figure 2.2).

The increasing risk of disaster-induced displacement

While the data compiled for 2008-2012 does not allow longer-term trends in displacement to be observed, the risk of displacement is projected to rise in line with related and interconnected global trends that increase the risk of disaster. These include:

Population growth and exposure in hazard-prone areas: More people than ever are living in locations exposed to natural hazards, particularly in urban and peri-urban areas. Poorer families are disproportionately exposed as they are more likely to live on land not formally intended for residential purposes or highly exposed to hazards such as floods and landslides.

Urbanisation and sub-standard housing: Living in housing unable to withstand even predictable, smaller-scale hazard events directly contributes to displacement risk. This may include the risk of prolonged displacement when homes are destroyed or severely damaged and return is not a safe and early option. Migration from rural to urban areas, lack of social housing for poorer families, unplanned growth of informal and unplanned settlements and unimplemented standards for disaster-resistant housing construction puts millions at risk, with the poorest hit the hardest.

Table 2.1: Displacement due to mega-scale displacement events, 2008-2012

	2008	2009	2010	2011	2012	All Years
Number of mega-events*	8 events	3 events	7 events	3 events	8 events	29 events
% global displacement	80%	38%	80%	41%	68%	68%

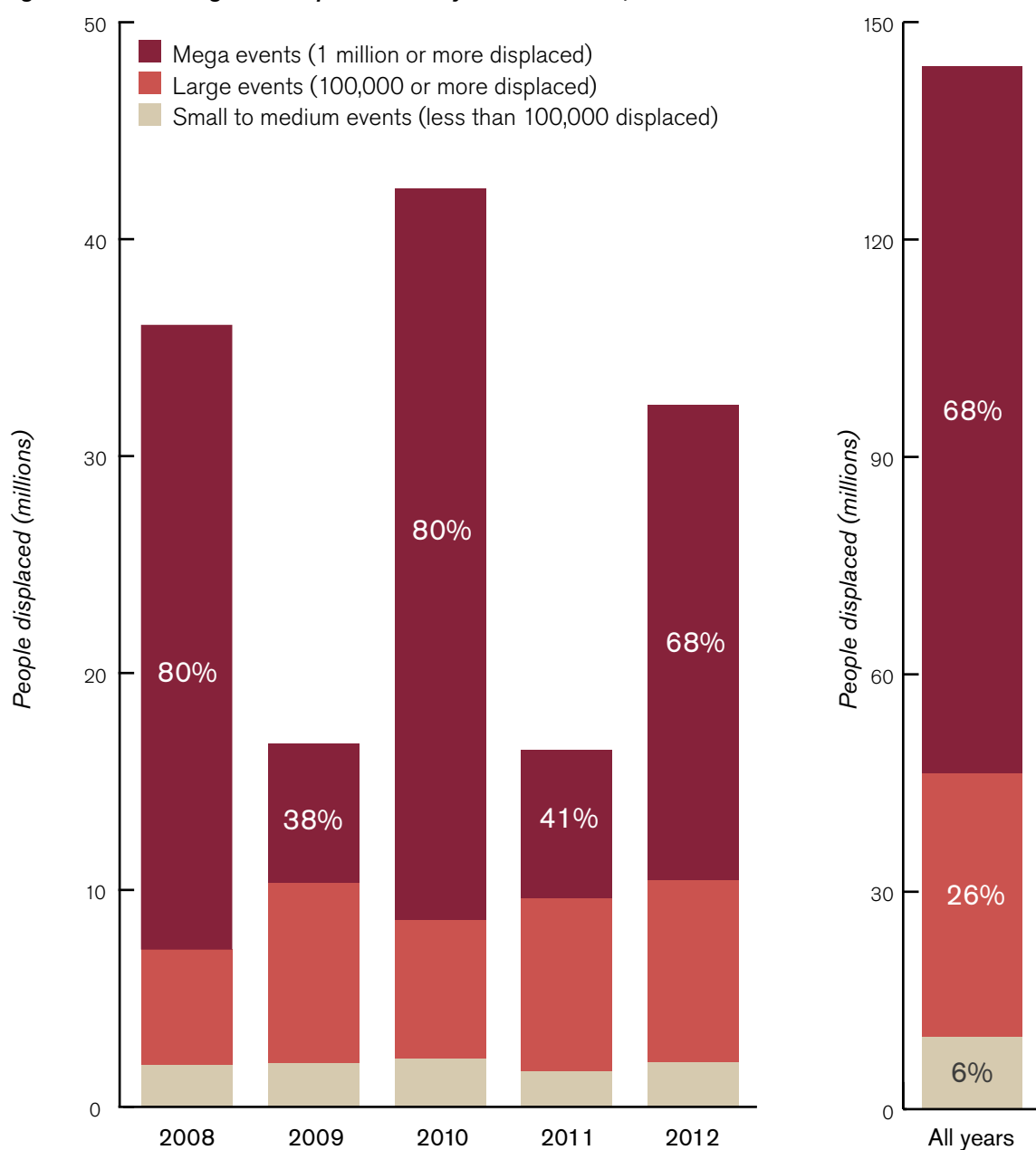
* At least 1 million people displaced per event

Fewer deaths and more displaced survivors: Mortality risk related to major weather-related hazards is now falling globally, including in Asia, due to improvements in early warning and other life-saving measures.⁷ However, increasing numbers of disaster-affected people may then face specific problems due to being displaced. This includes risks faced while they are fleeing from danger and during their stay in places of refuge. Early return to home areas may be to houses unfit or unsafe to live in and where access to basic services and critical economic and social support networks are still disrupted. Even in the case of displacement in the form of pre-emptive evacuations the evacuation process and time in crowded

shelters often brings particular risks for vulnerable people with protection needs, including women, children, older people and people with disabilities.

Increasingly frequent, intense and variable extreme weather events: In the longer term, human-induced climate change is expected to increase the frequency and severity of weather-related hazards, including floods, storms, wildfires and droughts which contribute to most disaster-induced displacement (see Box 2.1).

Figure 2.2: Annual global displacement by scale of event, 2008-2012*



Box 2.1 Findings from the Intergovernmental Panel on Climate Change (IPCC) on Climate Change and Displacement

The IPCC launched a special report in March 2012, *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX)*. SREX was written over two and a half years, involved hundreds of authors and reviewers and its findings were approved by 194 governments. The report acknowledges a significant relationship between extreme weather or climate events (“climate extremes”) and displacement:

“Although data on climate change-forced displacement is incomplete, it is clear that the many outcomes of climate change processes will be seen and felt as disasters by the affected populations. For people affected by disasters, subsequent displacement and resettlement often constitute a second disaster in their lives.”⁸

The report also says that:

“Disasters associated with climate extremes influence population mobility and relocation, affecting host and origin communities (medium agreement, medium evidence). If disasters occur more frequently and/or with greater magnitude, some local areas will become increasingly marginal as places to live or in which to maintain livelihoods. In such cases, migration and displacement could become permanent and could introduce new pressures in areas of relocation. For locations such as atolls, in some cases it is possible that many residents will have to relocate.”⁹

Evidence suggests that climate change has already altered the magnitude and frequency of some climate extremes in some regions and that these climate extremes have become more unpredictable. Also, significant impacts on the severity and magnitude of climate extremes in the future are likely, though with strong variations between different regions.

Even without taking climate change into account, disaster risk will continue to increase in many countries as more people and assets are exposed to climate extremes:

“Climate extremes, exposure, and vulnerability are influenced by a wide range of factors, including anthropogenic climate change, natural climate variability, and socioeconomic development.”¹⁰

The IPCC reports that for the next two or three decades the expected increase in climate extremes will probably be relatively small compared to normal year-to-year variations in such extremes. Therefore, changes in exposure and vulnerability will be the predominant driver of increases (or decreases) in disaster risk.

These findings point to the importance of improvements in national risk management and preparedness measures to address disaster-induced displacement.

3

The largest mass displacement events

The five largest disaster-induced displacement events during 2008 to 2012 each forced between six million to over 15 million people from their homes. They include the world's two largest events in China, caused by the 2010 monsoon floods and the 2008 Sichuan earthquake disasters, along with the 2010 monsoon floods in Pakistan and two major flood disasters in 2012 in India and Nigeria (see Table 3.1).

Table 3.1: The five largest displacement events, 2008-2012

	Year	Event	People Displaced
1	2010	China: monsoon floods	15.2 million
2	2008	China: Sichuan (Wenchuan) earthquake	15.0 million
3	2010	Pakistan: monsoon floods	11.0 million
4	2012	North-east India: monsoon floods	6.9 million
5	2012	Nigeria floods	6.1 million

The 20 largest disaster-induced displacement events of 2012 were all associated with flood- and storm-related disasters. Fourteen of them were in Asia, including multiple disasters that caused repeated mass displacement in India, China and the Philippines. Eight mega-events each displaced over one million people, while the two largest events (massive floods across the north-eastern Indian states of Assam and Arunachal Pradesh and floods throughout most of Nigeria) each displaced over six million people. In the Americas, Hurricane Sandy displaced more than 775,000 people in the USA and 343,000 in Cuba, though other countries were also affected along its path. In Africa large scale flood-displacement was most serious in Nigeria, Chad, Niger and South Sudan (see Table 3.2).

Some of these events are described in more detail below, including a focus on the unprecedented floods in west and central Africa and back-to-back disasters in the Philippines.

a) The largest displacement event of 2012: flood disaster in North-east India

Widespread and repeated floods across the north-eastern states of Assam and Arunachal Pradesh triggered the largest displacement of 6.9 million people.

Continuous rainfall from the third week of June onwards in the catchment areas of the Brahmaputra and Barak rivers and their tributaries led to floods in most districts of both states, including areas not normally affected by seasonal flooding. The government reported that around 900,000 people were evacuated in Arunachal Pradesh; two thirds of the state's population.¹¹ In Assam, the Central Water Commission estimated that as many as six million, 20 per cent of the state's population, were forced to flee by rising waters¹².

In August and September, most districts of Assam were affected by another wave of floods and two million people were displaced. Almost half of these IDPs were staying in relief camps, while the remaining flood displaced population stayed with relatives or out in the open using tarpaulins for shelter.

Humanitarian organisations reported that conflict in parts of Assam had distracted attention from the plight and recovery needs of those affected by floods.¹⁴ In July and August, up to 500,000 people were forced to flee their homes in Assam due to inter-communal violence between Bodos, an indigenous tribal group, and Muslims of Bengali descent.¹⁵ At the end of the year more than 36,000 conflict IDPs were still in official camps.

Shelter needs were a primary humanitarian concern as the authorities encouraged IDPs to leave relief camps and return to water-logged villages, destroyed houses and eroded land. Humanitarian assistance by the government, the Indian Red Cross and NGOs was unable to cover all affected areas.¹³

According to government statistics for 1958 to 2011, floods in Assam damage 77,000 houses on average every year in Assam, affecting around 464,000 people.¹⁶ Officials claimed the 2012 floods were the worst since 2004 when eight times more houses were recorded as damaged than in an average year.¹⁷

In response to the chronic flood problem, water resource ministers from both states met in February 2013 to jointly discuss how to tackle the needs of those affected. The state governments also urged the Indian central government to hold talks with China to mitigate the downstream impacts for the Siang River in Arunachal and the Brahmaputra in Assam of three new dams the Chinese are planning to build on the Liangpo River.¹⁸

Table 3.2: Top 20 largest disaster-induced displacement events in 2012

A more detailed listing of these events with sources can be found in Annex 2.

	2012 Event	Location	Displaced	Date
1	India monsoons floods (1st period)	North-east: Assam state and Arunachal Pradesh state	6,900,000	June/July
2	Nigeria rainy season floods	33 out of 36 states, including the Federal Capital Territory	6,089,000	September/October
3	China Typhoon Haikui floods	Coastal, northern and southern provinces	2,079,000	August
4	India monsoon floods (2nd period)	North-east : Assam and Arunachal Pradesh	2,000,000	August/September
5	Philippines Typhoon Pablo (Bopha)	Mindanao	1,932,000	December
6	Pakistan monsoon floods	Balochistan, Sindh, Punjab	1,857,000	August/September
7	Philippines floods - southwest monsoon and typhoon effects	Luzon, including Metro Manila. Parts of Visayas and Mindanao	1,553,000	June/August
8	China monsoon floods (2nd period)	12 provinces or areas of the east, central, south, south-west and north-west.	1,420,000	June/July
9	China Twin typhoons Saola and Damrey/ floods	10 provinces – north-east to south-east	867,000	August
10	USA Hurricane Sandy	East Coast, Appalachians, Mid-West	776,000	October
11	Bangladesh monsoon floods	South-east and north-east	600,000	June
12	China Typhoon Kai-Tak	East coast – Guangdong and Guangxi	530,000	August
13	Niger rainy season floods	Dosso (south-west), Tillabéri (west) and Niamey Region	530,000	July/August
14	Chad rainy season floods	N'Djamena, southern regions	500,000	July/October
15	China monsoon floods (1st period)	147 counties in 22 provinces, including Gansu, Hunan and Jiangxi provinces	443,000	April/May
16	Cuba Hurricane Sandy	East coast	343,000	October
17	South Sudan rainy season floods	44 out of 47 counties in Jonglei, Upper Nile and Unity states	340,000	June/July
18	Japan floods and landslides	Kyushu	250,000	July
19	DPRK (North Korea) monsoon floods	South Phyongan province	212,000	June/July
20	India Cyclonic storm Nilam	Andhra Pradesh state and Tamil Nadu state	210,000	October

b) Successive flood and typhoon disasters in China

Wide areas of China were affected by several waves of severe spring and summer flooding and landslides. There were no fewer than ten typhoons in the year, breaking a number of extreme weather historical records.¹⁹ From April to May 147 counties in 22 provinces were flooded, including Gansu, Hunan and Jiangxi, and 443,000 people displaced. A second wave from late June brought further

displacement of 1.4 million people across huge areas of the east, centre, south, south-west and north-west. Many of the same provinces were impacted multiple times.

During the first half of August China was hit by a series of four large disasters caused by typhoons bringing strong winds, heavy rainfall, floods and mudslides to northern and southern coastal provinces. Some 3.5 million people were forced to leave their homes. Mass evacuations were carried out by provincial authorities. Hundreds of

thousands of families were left homeless after damage to homes and public infrastructure and forced to take refuge with friends and relatives or in emergency shelters.

Typhoon Haikui, the largest in this series of disasters, made landfall on 8 August, bringing heavy rains and flooding and displacing over two million people in Shanghai and the surrounding provinces of Anhui, Jiangsu and Zhejiang. In Shanghai 370,000 people living in port areas and in temporary housing had to be evacuated.²⁰ The Shenjiakeng Reservoir in the Zhoushan archipelago in Zhejiang collapsed, destroying one-third of Zhangtu township.

Some of the Haikui-affected provinces had been hit just five days earlier by twin typhoons Saola and Damrey which made landfall within hours of each other on 2 August. The two storms, heavy rain and floods caused widespread damage across ten provinces and displaced over 860,000 people. Over 56,000 houses were completely destroyed.²¹

Ten days after Haikui arrived, Typhoon Kai-Tak affected coastal areas of Guangdong and Guangxi, displacing a further 530,000 people. The typhoon destroyed about 4,200 houses, damaged another 17,000 and caused economic losses of over 1.48 billion yuan (c. \$232.8 million).²²

For more on disaster data in China and displacement estimates, see Box 5.1.

c) Hurricane/'Superstorm' Sandy in the Americas

Hurricane Sandy, the largest tropical system on record in the Atlantic basin, was the deadliest storm of the 2012 Atlantic hurricane season. It killed at least 285 people and affected eight countries in late October.²³ Starting as a Caribbean tropical storm on 22 October 2012, it intensified to hurricane level just before making landfall in Cuba on the 25th. Sandy then tracked through the Bahamas before turning north-west and hitting the United States as a tropical storm on October 29th.²⁴ Its outer bands also brought heavy rains, wind and floods to other countries, including Haiti, the Dominican Republic, Jamaica and the Bahamas.

More than three-quarters of a million people in the United States were forced to leave their homes. Dubbed 'Superstorm Sandy' by the US media, the disaster affected 24 states on the eastern seaboard, in the Appalachians and in parts of the Midwest. The most severe damage was in New Jersey and in New York. The disaster became the costliest storm disaster in US history, with economic damage assessed in the region of \$71 billion.

As of late April, an estimated 39,000 New Jersey families remained displaced according to the State Governor, down from 161,000 the day after the storm. More than 250 families were still living in hotel rooms across New York paid for by the Federal Emergency Management Agency, while others were living with relatives or in temporary rented accommodation.²⁵

In Cuba, around 15,000 homes unable to withstand the hurricane's impact were destroyed and around 340,000 people displaced by widespread coastal flooding and wind damage. While far fewer than in the USA, the proportion of the total population exposed and displaced by the storm was much greater with 30.6 in every 1000 people displaced, compared to 2.5 people in every 1,000 in the USA.

Haiti also had a higher proportion of its population displaced compared to the USA, with over 3 people in every 1,000 of its highly vulnerable population displaced. The longer term impacts on Haiti can be expected to be far reaching compared to either the USA or Cuba given its relative lack of capacity to recover from the disaster as well as to prevent or prepare for the next one (see Table 3.3). Further information on displacement and vulnerability in Haiti is provided in Box 5.2.

Table 3.3: People displaced by Hurricane Sandy across six countries

Country	People displaced	HDI 2013*
USA	776,000	Very high
Cuba	343,000	High
Haiti	32,000	Low
Dominican Republic	19,000	Medium
Jamaica	2,000	High
Bahamas	200	High

* UNDP Human Development Index 2013

d) Recurrent monsoon flood displacement in Pakistan

Pakistan was hit by large-scale floods in 2012 following heavy rains that began on 7 September 2012. 4.8 million people were affected according to the National Disaster Management Authority (NDMA). An estimated 1.9 million people were displaced as a result of widespread damage to homes, infrastructure and livelihoods across the three hardest-hit areas of western Balochistan, northern Sindh and southern Punjab. A joint UN and government assessment in September 2012 found around 88 per cent of houses in five of the most-affected districts were

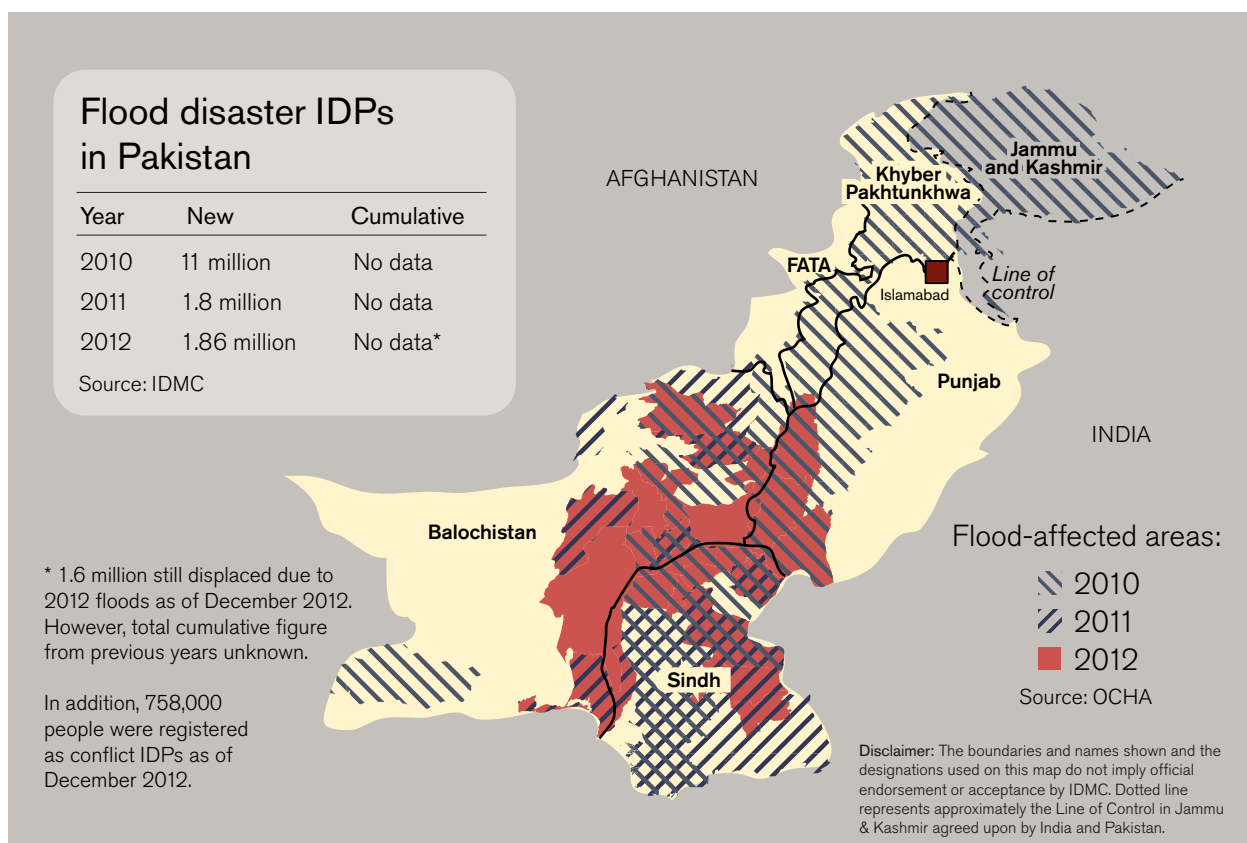
damaged or destroyed. Emergency shelter needs were critical, with over a quarter of the assessed population lacking any shelter.²⁶ The government estimated 636,000 homes had been damaged or destroyed.²⁷

Many of the affected districts, particularly in Balochistan and Sindh, were already struggling to recover from the floods of 2010 and 2011, some being inundated for the third year in succession (see Figure 3.1). Balochistan was also hit by an earthquake disaster in 2010. Consecutive years of flood disasters have deepened a food crisis in Sindh, triggering severe malnutrition. Towards the end of 2011, 72 per cent of the province's population was food insecure, including 16.8 per cent experiencing severe hunger.²⁸ A couple of months before the 2012 floods, critical support to people displaced ten months earlier by the 2011 floods were still unmet. Funding needed for critical shelter assistance, for example, was only six per cent covered as of the end of June 2012. Reduced humanitarian presence and cuts in human resources also hampered preparedness measures by the government and humanitarian partners ahead of the new monsoon season.²⁹ Furthermore, Balochistan and Sindh have Pakistan's highest rates of population growth, thus increasing the number of people exposed to potential disaster in the future.³⁰

By the end of 2012 1.6 million flood IDPs were still in temporary shelter, putting people at greater risk during Pakistan's cold winter.³¹ Over a third of displaced people had returned to their places of origin two to three months after being forced to flee the danger related to rising floodwaters, the destruction of homes and property and the disruption of land-based livelihoods. However, over half the returnees were not in their own homes but residing in temporary shelters in their towns and villages. Around two per cent remained in IDP settlements elsewhere. As of April 2013, some areas were still inundated, with 1.2 million flood-affected people continuing to be displaced in makeshift shelters near their original homes or in temporary shelters.³²

There is particular concern for vulnerable people with specific needs in such situations, including older persons, people with disabilities and those at risk of exclusion. Ongoing lack of funding is again adding to the problem of basic needs remaining unmet with the new rainy season expected to begin in July.³³ With each successive flood and other disasters the resilience of affected Pakistanis is at risk of being further undermined. Frequent, protracted and repeated displacement looks set to increase.

Figure 3.1: Pakistan flood disaster-affected districts and displacement (2010, 2011 and 2012)



e) West and central Africa floods

Unusually heavy and prolonged rainfall from June to November 2012 resulted in widespread flooding across 18 countries. Displacement was reported in 13: Benin, Cameroon, Central African Republic, Chad, the Democratic Republic of Congo, Gabon, the Gambia, Mali, Niger, Nigeria, Senegal, Sudan and South Sudan (see Figure 3.2). Over 7.6 million people were displaced from their homes. The IFRC and national Red Cross and Red Crescent societies in a number of these countries highlighted the importance of having a regional overview when planning international interventions in states with inter-linked flood disasters (see Figure 3.2).

Nigeria, Niger, Chad and South Sudan were the worst affected, with the highest levels of flood-induced displacement and extremely vulnerable populations facing multi-faceted insecurity and ongoing conflict displacement. These countries also have some of the world's lowest rankings in the 2013 Human Development Index. Out of 186 countries, Niger is ranked 186, Chad is 184 and Nigeria is 153. South Sudan is not included in the 2013 index.³⁴ Per capita displacement in these four countries was between 3.1 and 4.4 per cent. These were among the world's largest displacement events worldwide in 2012 (see Table 3.4).

Traditional earth and/or mud brick housing in many parts of the region is not designed to withstand severe floods. Thus hundreds of thousands of houses either collapsed or were made uninhabitable. Most of those displaced took refuge with host families, while others found shelter in schools and other public buildings or set up makeshift shelters, mostly in informal camps. IDPs made homeless and sheltering in schools were among the most vulnerable as governments promoted early return to free up school premises for the new academic year. Overcrowding in IDP areas and poor water and sanitation created the additional risk of cholera and other water-borne diseases.

Nigeria

In Africa's most populous country over 3.6 per cent of the population, more than six million people, were displaced by widespread flooding across the country. This was the second largest disaster-induced displacement event worldwide in 2012, on a scale more usually associated with disasters in highly populated Asian countries. The floods affected populated areas of the vast river plains of the Benue and Niger and their tributaries across thirty-three of the country's thirty-six states. Those hardest-hit included Adamawa, Bayelsa, Benue, Cross Rivers, Delta, Jigawa, Kebbi, Kogi, Niger, Rivers and Taraba.³⁵ IDMC data for 2008-2012 shows that displacement due to flood disasters is a regular occurrence in Nigeria (see Table

3.4). The 2012 floods, however, were the most devastating in Nigeria's history. Thousands of houses, bridges, other public infrastructure and wide areas of farmland were destroyed and numerous cattle killed.

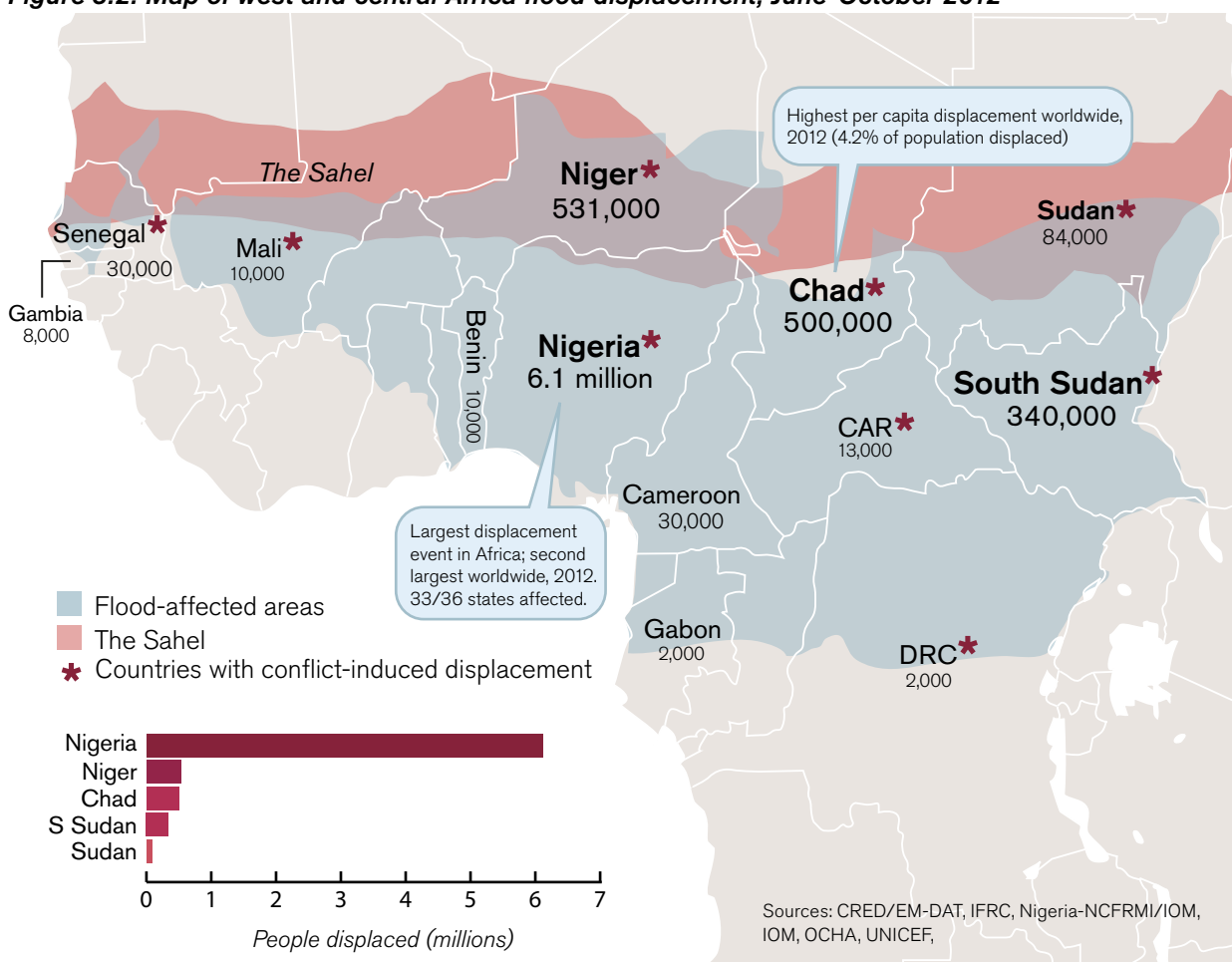
The National Commission for Refugees, Migrants and Internally Displaced Persons (NCFRMI) reported that over six million people were forced from their homes by the disaster.³⁶ The National Emergency Management Authority (NEMA) noted that 7.7 million people were directly affected by the floods of whom over 2.1 million were officially registered as internally displaced in order to receive assistance. Most displaced people took refuge with host families. While there were no official camps or IDP settlements there were *de facto* gatherings in overcrowded public buildings such as schools. In these sites, living conditions were reported to be dire with insufficient food supplies, inadequate shelter and poor sanitation and hygiene.³⁷ Displacement by the floods came on top of the displacement of tens of thousands of people as a result of armed violence during the year, including in some flood-affected states such as Adamawa, Benue, Nassarawa and Plateau.³⁸

National authorities, the IFRC, the Nigerian Red Cross Society and UNICEF were among the main actors providing assistance. Nigeria's President Goodluck Jonathan set up a Presidential Committee on Flood Relief and Rehabilitation and pledged \$110 million to assist flood victims.³⁹ However, the number of organisations and the level of funding and assistance delivered were insufficient compared to the massive needs.

Most of the affected and displaced people were left to fend for themselves, both during the floods and after the water had receded. Delivery of humanitarian assistance was hampered by large distances, the remoteness of many affected communities and the blocking of certain roads as a result of the rising waters and destruction of bridges.⁴⁰ Political insecurity was also an issue in some flood-affected states of central and northern Nigeria, where there are frequent ethno-religious clashes and where the radical Islamist group Boko Haram has attacked civilians.⁴¹

Many IDPs remained homeless and faced severe food insecurity until the end of November. Authorities in some states ordered people to return home so as to enable public facilities to resume their normal functions.⁴² Local authorities also insisted that people living in areas prone to flooding rebuild their houses on higher ground.⁴³ This raised fears that without proper assistance from the authorities in negotiating with landowners, especially in states already affected by conflict and violence, new clashes could flare up as a result of relocations. Since November 2012 there has been little information available

Figure 3.2: Map of west and central Africa flood displacement, June-October 2012



on the fate of those still displaced and those who have returned home.

The 2012 floods were triggered by unusually heavy rains between July and September together with the release of water from dams in Nigeria and the Lagdo dam in neighbouring Cameroon. It is clear that the frequency of flooding and resultant displacement is more attributable to human factors than to environmental drivers. An eight-year study from the Tai Solarin University of Education into the pattern and parameters of floods in twenty five Nigerian cities and towns found that human activities – such as the construction of dams, irrigation channels, bridges and other infrastructure – have impeded the free flow of water into natural and manmade drainage channels, particularly in rapidly growing urban centres. Respondents to a wide survey of the causes of floods acknowledged torrential rainfall as a factor but accorded it far less importance compared to illegal construction, poor physical planning, blocked drainage channels, land reclamation and non-compliance with regulations. This indicates the need for policymakers and urban planners to accord greater importance to flood prevention measures.⁴⁴

Niger

During August and September, over 530,000 people were displaced by unprecedented floods. The most affected regions were Tillabéry and Dosso in the west, Zinder in the south and the capital, Niamey.⁴⁵ Tens of thousands of houses were destroyed, large areas of crops were lost and cattle killed. As in Nigeria and other Sahelian countries, the floods occurred during a period of severe food crisis. In addition, a cholera epidemic quickly spread in the west, particularly in Tillabéry region: nearly 5,000 people were affected and by October over 100 had died.⁴⁶

Further compounding the crisis was the presence in the flood-affected regions of Tahoua, Tillabéry and Niamey of 60,000 refugees from the conflict in neighbouring Mali.⁴⁷ The kidnapping of six aid workers in October near Dakoro in southern Niger, reportedly by one of the Islamist groups that had seized control of northern Mali, prompted humanitarian organizations to reduce their activities which had an impact on assistance to displaced populations.⁴⁸

Many of those displaced by the floods took refuge in overcrowded schools, public buildings and mosques, having

Table 3.4: New displacement in Nigeria, Niger, Chad and South Sudan, 2008-2012

Country	2008	2009	2010	2011	2012	Total (2008-2012)
Nigeria	No data	140,000	560,000	6,300	6,112,000	6,818,000
Niger	14,000	6,000	205,000	28,000	540,000	794,000
Chad	17,000	6,000	70,000	No data	500,000	593,000
South Sudan	No data	No data	No data	No data	340,000	494,000
Sudan	54,000	80,000	20,000	No data	84,000	238,000

to contend with poor sanitation and hygiene conditions.⁴⁹ Some of these sites proved unsafe because of rising water levels and IDPs had to be relocated to stay with host families or in government evacuation sites. This secondary displacement caused delays and challenges in the provision of assistance.⁵⁰ Once the waters had receded many IDPs were reported to have returned to their home areas. In Niamey, around 32,000 displaced families took refuge in vacated public buildings before returning to their places of origin. IDP families vacated these sites, especially schools, when supplied with cash vouchers and basic supplies by the government and aid agencies. The government also called on host families to help IDPs.⁵¹

The risk of further disaster remained high. In December, ahead of anticipated rains and new flooding of the Niger River basin, among 10,000 people living in high risk areas in Niamey around 7,000 people were evacuated. The government provided cash vouchers and basic food supplies. Many recipients had earlier been affected by the floods in August.⁵² Strengthening community resilience to disasters is critical as more large-scale floods are expected which will require increased attention from both donors and the government. As of 13 March 2013, however, the 2013 global humanitarian appeal for Niger, which directly addresses this objective, was only 4.2 per cent met, making it one of the world's least funded appeals.⁵³

Chad

Chad regularly faces heavy rains and floods during the annual rainy season. The scale and frequency of flood-related displacement, especially in smaller, localised disasters, is most likely under-reported. In 2012, as in Nigeria and Niger, the magnitude of the floods was unprecedented.⁵⁴ Central, eastern and southern Chad were flooded, including wide areas south of the capital, N'Djamena. From mid-October, the floods destroyed around 96,000 houses and thousands of hectares of cultivated land, worsening the existing food insecurity⁵⁵ (see Table 3.4).

The floods forced around 500,000 people to take refuge in makeshift camps or with host families, creating the highest per capita displacement by disasters worldwide in 2012⁵⁶ (see Figure 3.2). Floodwaters impeded humanitarian access to thousands of IDPs previously displaced by

armed conflict, attacks by criminal groups and inter-ethnic violence and also to camps hosting Central African refugees.⁵⁷ Despite access constraints, the government, together with national and international humanitarian organisations, responded to urgent needs including shelter, health care, water and sanitation.⁵⁸ As the flood waters receded in December and January most flood IDPs could return home but continued to face major challenges to recovery due to widespread losses and continuing disaster risk and insecurity.⁵⁹ In 2013, the government started to discuss measures to prevent and prepare for future disasters, including building more robust dykes and houses, permanently relocating communities from flood-prone areas and contingency planning. Local officials foresee challenges around relocation because of the strong attachment of communities to their homes and lands in spite of recurrent flood displacement and a risk of tensions with communities in relocation areas.⁶⁰

South Sudan

Linked to the flooding elsewhere in the region, heavy seasonal rains triggered severe flooding between June and October across 44 of South Sudan's 79 counties. The UN estimated that three times more people were affected than had been impacted by the 2011 floods. Over 340,000 people were displaced from their homes or places of residence. This included 120,000 Sudanese refugees who had fled to South Sudan from Sudan's Blue Nile State, and who then had to be relocated in South Sudan to a new site in Gendrassa due to the floods. In Jonglei State, the area worst-affected by the floods, a further 220,000 people were displaced as inundation made over 90 per cent of roads impassable. Inter-communal violence also delayed humanitarian access to flooded villages.⁶¹

Flood-related displacement cannot be considered separately from the complex crisis and broader displacement situation in the country. This includes the impact of decades-long conflict between state and non-state armed groups while South Sudan was still part of the state of Sudan, political tensions between Sudan and South Sudan, endemic communal violence, food insecurity and ongoing IDP, refugee and returnee situations. In addition to flood-induced displacement, 190,000 people were internally displaced by border clashes in South Su-

Table 3.5: Displacement in the Philippines, 2008-2012

2008	2009	2010	2011	2012	Total (2008-2012)
2,921,000	2,062,000	1,002,000	2,499,000	3,859,000	12,343,000

dan during 2012 and 203,000 refugees from Sudan and the Democratic Republic of Congo sought shelter in the country, including in flood-prone areas.

It is crucial that international actors, including donors, work to support national actors, particularly the Government of South Sudan, to strengthen planning and capacities for prevention, preparedness and humanitarian response as part of a broader vision for long-term development.

f) The Philippines: floods, typhoons and a closer look at Mindanao

In 2012, the Philippines had its highest level of disaster-induced displacement in five years. Some 3.9 million people were displaced. The Philippines is highly prone

to frequent disasters and has recently had high levels of new displacement of at least one million people per annum (see Table 3.5).

These high levels of displacement were made up of multiple events. Peak periods for new displacement over the past four years include around September 2009 when Typhoon Pepeng and another large flood event together displaced over 1.2 million people. Displacement peaked in June and December 2012 due to massive floods and the Typhoon Bopha disaster (see Figure 3.3).

Between June and September, severe and widespread flooding, strong winds, landslides, storm surges and flash floods displaced over 1.5 million people out of an affected population of more than 4.4 million people (900,000 families). The impact of torrential and prolonged rain brought by the south-west monsoon was exacerbated by

Figure 3.3: The Philippines- Monthly scale of new displacement over four years, 2009-2012

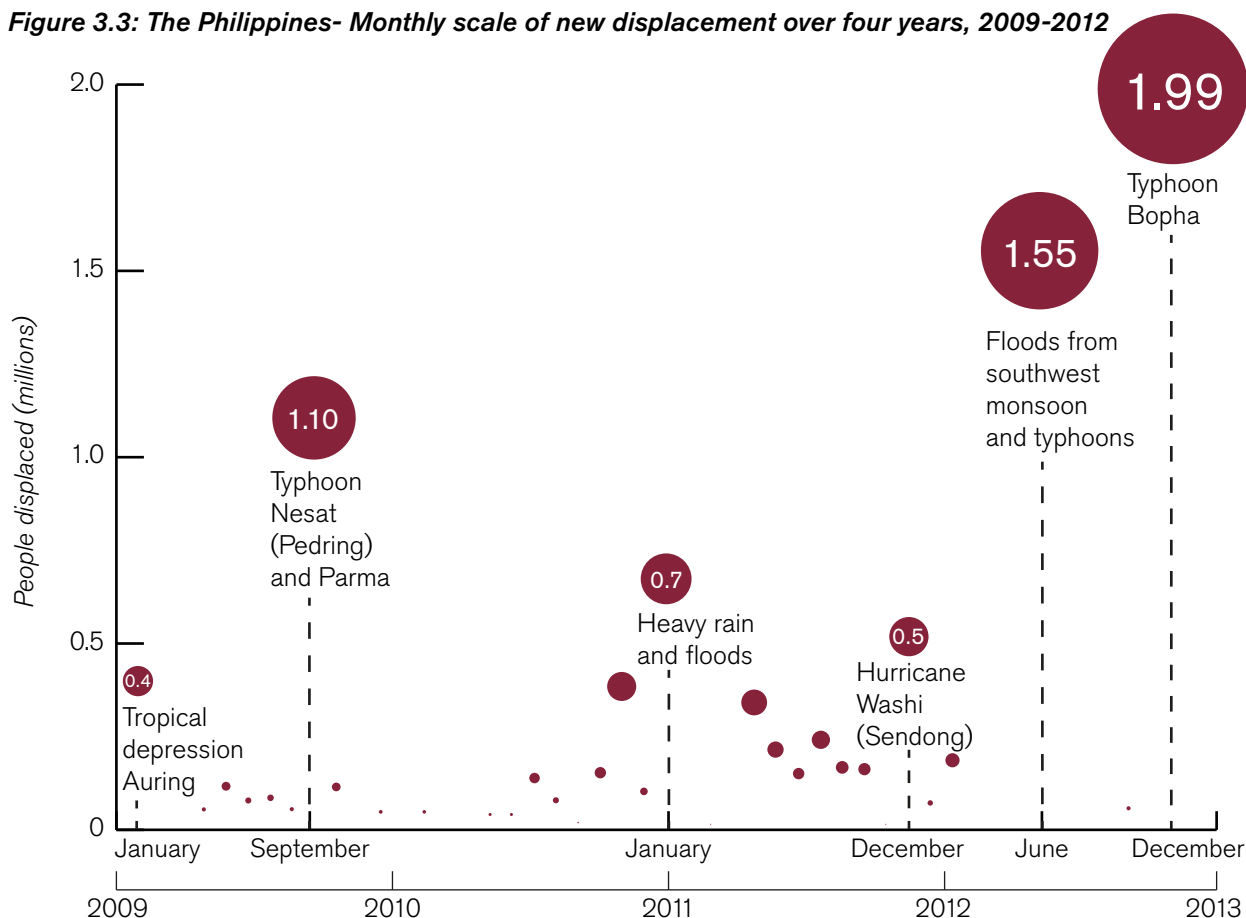
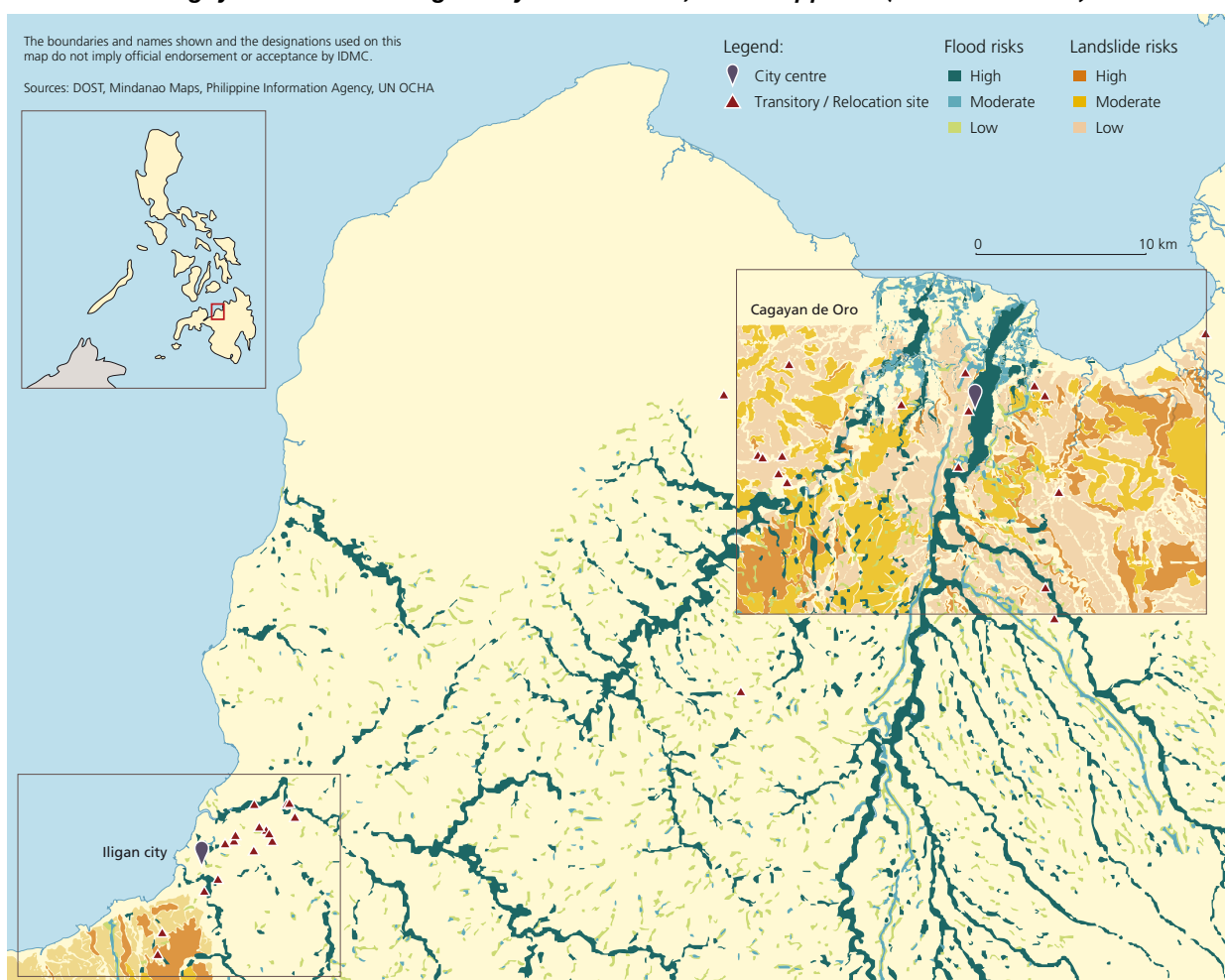


Figure 3.4: Map of temporary shelters and relocation sites and flood and landslide risks for IDPs in and around Cagayan de Oro and Iligan city in Mindanao, the Philippines (November 2012)



Sources: OCHA Philippines, DENR-MGB, DOST and IDMC

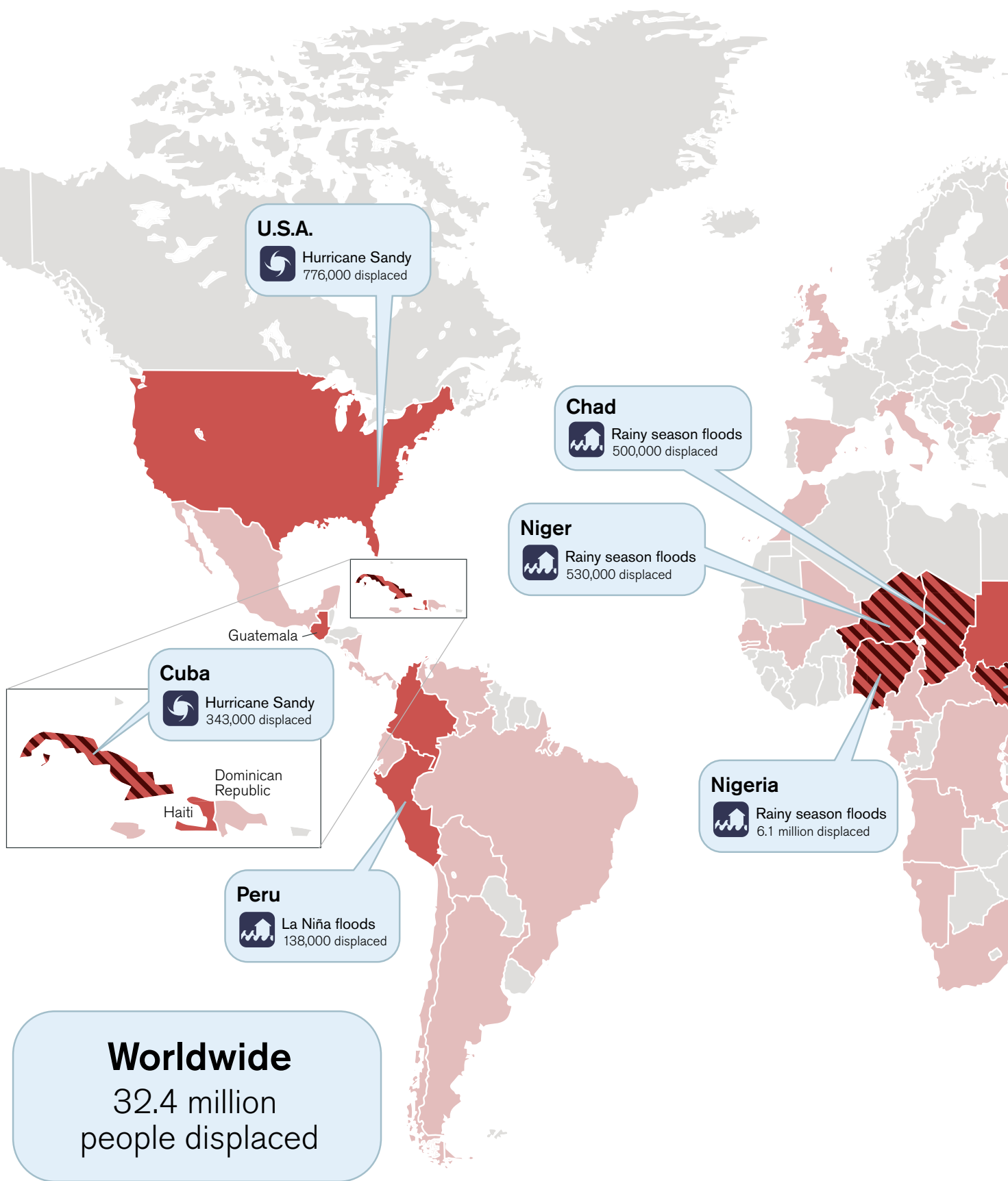
multiple typhoons – Saola (locally designated as Gener), Haikui, Kai-Tak, Tembin and Bolaven – which added to repeated flooding and hampered recovery efforts.⁶² The government declared a state of calamity across regions of Luzon and in some parts of Mindanao and the Visayas.⁶³

Local authorities reported around 70 per cent of Metro Manila affected by flooding, with floodwaters in some areas as deep as three metres, worsened by a high tide and the release of dam waters in surrounding provinces.⁶⁴ Low-lying areas were flooded after the La Mesa reservoir was breached. Homes in shanty towns, including in Quezon City, were hit by landslides.⁶⁵ The vast majority of IDPs took refuge with relatives and friends. In addition, hundreds of thousands of people were evacuated to emergency shelters. Local authorities expected prolonged displacement of people from areas where floodwaters are historically known to recede slowly. At the end of August, 1.2 million people were taking refuge with families or friends and 431 centres were still providing shelter to 135,000 people.⁶⁶

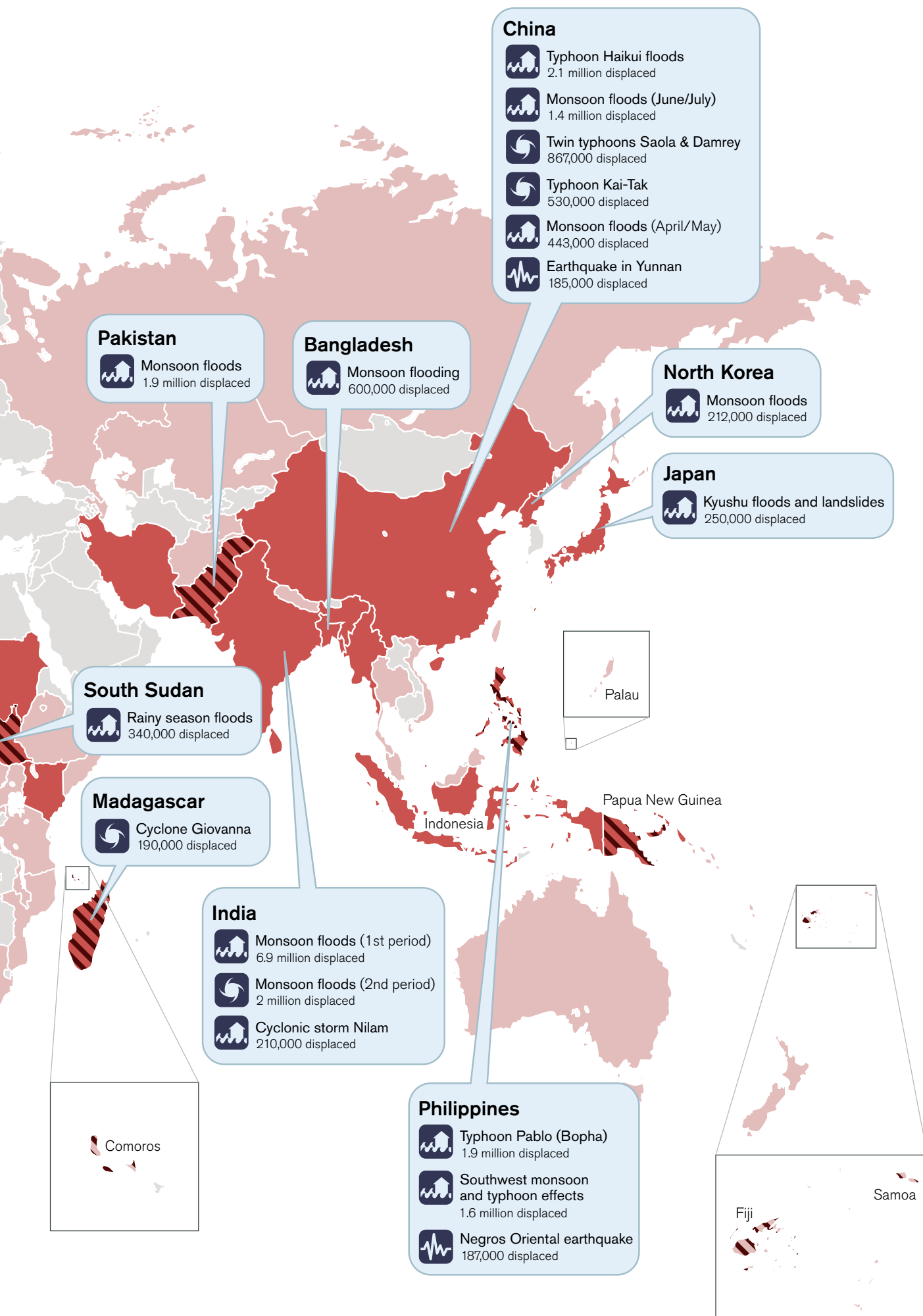
Further south, the province of Mindanao has suffered an unusually high level of disaster-related displacement in recent years, compounding the situation of people who have already been displaced by conflict in the region. Towards the end of 2011, Tropical Storm Washi (known in the Philippines as Sendong) made landfall along the east coast of Mindanao, resulting in one of the world's worst disasters of 2011. The government reported 441,000 people displaced.⁶⁷ The greatest impact was felt in and around the cities of Cagayan de Oro, where floods and rain-triggered landslides displaced over half the population, and Iligan where approximately one third of the population was displaced.

The disaster took place a year after the Philippines had enacted a law intended to reduce disaster risk and improve national, provincial and local disaster management. The response to Washi, however, indicated poor implementation of the new mechanisms. Washi had relatively weak winds and the catastrophic damage that resulted was largely due to human activities. Illegal logging, mining

Disaster-induced displacement worldwide in 2012



- All countries with new displacement
- Countries with 50,000 people or more displaced
- Countries with 1% of population displaced or more



and quarrying upstream from Iligan and Cagayan de Oro filled rivers with trees, sediment and boulders. Floodwaters laden with debris swept away homes, bridges and other structures. The scale of death and destruction was exacerbated by official tolerance of people constructing informal settlements along riverbanks and on sand bars despite government designation of these areas as unsafe No Build Zones. Early warning mechanisms were inadequate. Many vulnerable communities did not receive evacuation notices in time, thus compounding the scale of the disaster.

Comparing registered IDP data with nationally collected displacement statistics, IDMC found that the overwhelming majority of those displaced had sought shelter with family or friends. Having taken up residence outside of an official temporary shelter, these Washi survivors face a greater challenge accessing government-provided services and permanent housing. Whether they sought shelter with family or in temporary shelters, those displaced by the storm have reported an on-going lack of access to such basic needs as water, adequate health care, livelihoods opportunities and replacement of lost documentation.

Nine months after the disaster, IDMC and Philippine NGO partners (Green Mindanao and the Civil Society Organization Forum for Peace) conducted surveys with 305 disaster affected people, 96 per cent of whom had been displaced by Washi. In Iligan, 80 per cent of the survey respondents had been displaced more than once in the aftermath of the disaster and in Cagayan de Oro, 75 per cent had been displaced multiple times. Due in part to the lack of suitable land, many of the temporary shelters used to house displaced people are located in areas which the government has designated as flood plains or prone to landslides. Some have returned to riverbanks to reconstruct informal settlements despite official prohibitions. As a result, many people who were displaced by Washi remain at risk of additional displacement if further floods or landslides strike.⁶⁸

During 2012, on top of the on-going recovery efforts following Washi, an estimated 1.8 million people were newly displaced in Mindanao, mainly by typhoons and floods.⁶⁹ On 4 December 2012, Mindanao faced another major storm and flood disaster with Typhoon Bopha (locally known as Pablo). Compared to Washi, Bopha had three times the wind speed, brought double the rainfall and resulted in the loss of over a thousand lives, making it the most deadly disaster globally in 2012. Around 1.9 out of 6.2 million people affected were forced to evacuate their homes, according to the government.⁷⁰ This included people in Cagayan de Oro and Iligan who were again forced from their homes. According to statistics from the Philippines' Department for Social Welfare and Development (DSWD), the majority of the homes that were either completely destroyed

or partially damaged were concentrated in one region. 79,000 homes were completely destroyed. Damage to agricultural-based livelihoods was enormous, in particular in Compostela Valley where the governor estimated that 70 per cent of the province had been devastated.⁷¹ Thousands of families were left with no means to make a living and feed their families.⁷² In the wake of the disaster, it was estimated that nearly one million people were in need of food assistance. As with Washi, many displaced families who sought shelter in informal settlements in urban areas either have no land to return to or are unable to return to their land.⁷³ Many others have remained near to their damaged former homes or are living on the sides of roads. Four months later, 934,000 people remained displaced, including 15,000 people still in evacuation centres and 919,000 people taking shelter outside them.⁷⁴

While the Philippines frequently experiences severe typhoons, the most severely impacted provinces (Davao Oriental, Compostela Valley, Agusan del Sur and Surigao del Sur) were ill prepared for a storm of this magnitude as nothing of such severity had struck for over a century. On a more positive note, however, and in contrast to the Washi response, local governments and urban authorities issued timely warnings and evacuation notices, thus saving many lives.

Eastern Mindanao is one of the poorest areas of the Philippines and affected by conflict between government forces and the New Peoples' Army (NPA). Earlier in 2012, 178,000 people had been displaced by armed conflict and violence though most had returned to their homes by the end of the year, including to areas later hit by the typhoon.⁷⁵ Deforestation as a result of unchecked illegal gold mining, decades of indiscriminate logging and the cultivation of banana plantations in this resource-rich and mountainous area have made populated areas highly prone to flash floods and landslides. At the end of the year, thousands were again forced to leave their homes due to further floods and the threat of landslides that destroyed newly replanted crops and hampered on-going humanitarian programmes for vulnerable populations.⁷⁶

An encouraging sign is that the massive displacement triggered by these disasters and other causes, has spurred the Philippines government into action. In February 2013, the Congress enacted an IDP law that, if implemented robustly, would protect the rights of those displaced by disasters.⁷⁷

4

Displacement by geographical region

Data from 2012 and over 2008-2012 reveals clear patterns in the distribution of global displacement across different continents or macro-regions. While Asia has had the highest annual levels of displacement over 2008 to 2012 compared to other regions, the proportion of global displacement it accounts for has varied, particularly in relation to displacement in Africa. At the same time the proportion of global displacement in the Europe, Oceania and the Americas has been similar for both 2012 and over 2008-2012 (see Figure 4.1).

In all regions, displacement levels have fluctuated most strongly where there have been disasters on a mega-scale, affecting Asia and the Americas most often (see Figure 4.2). It should be noted that if slow-onset hazards such as drought were included in these estimates the level and proportion of displacement in Sub-Saharan Africa and the Middle East, including some countries within western Asia and northern Africa, would be undoubtedly much higher.

The largest displacement events of 2012 are highlighted below within brief overviews of each region. A full list of all countries affected by disaster-induced displacement in 2012 is provided in Annex 3 (see Table A3.1).

Asia

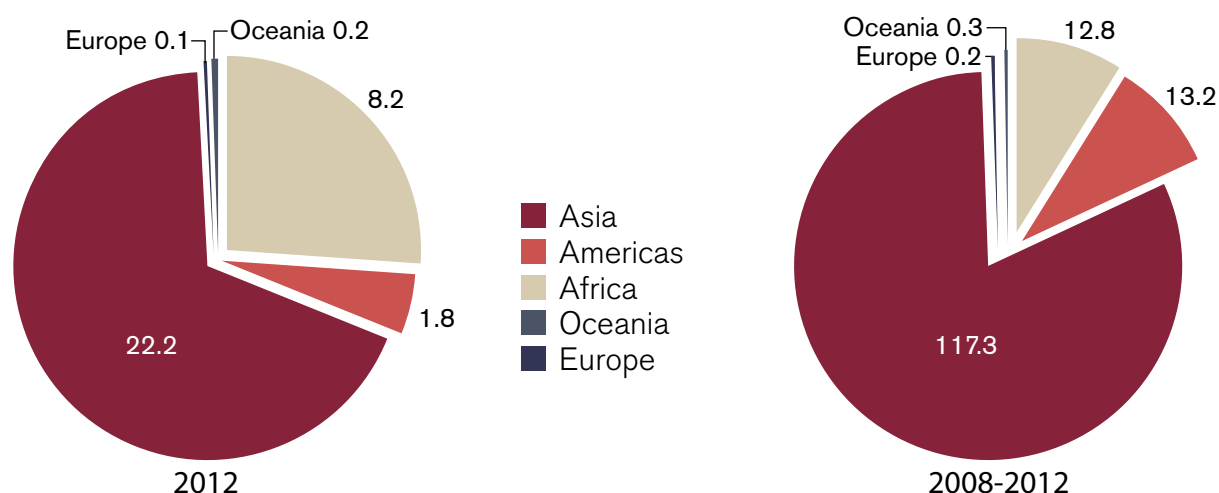
In 2012, 22.2 million people in 22 countries were displaced by disasters in Asia. This included the five countries worldwide where the most people were displaced during the year (see Figure 5.1) and 14 out of the top 20 largest displacement events (see Table 5.1).

Each year the highest number of people displaced by disasters and the highest proportion of global displacement has been in Asia, accounting for 81 per cent of new displacement from 2008 to 2012. However, displacement in Asia constituted a significantly lower proportion of global displacement in 2012 (69 per cent) when compared to previous years.

Table 4.1: Asia- Five largest displacement events, 2012

Event	Displaced
India monsoon floods (1st period)	6,900,000
China Typhoon Haikui floods	2,079,000
India monsoon floods (2nd period)	2,000,000
Philippines Typhoon Pablo (Bopha)	1,932,000
Pakistan monsoon floods	1,857,000

Figure 4.1: Global displacement per region, 2012 and 2008-2012



Eleven out of the twenty countries with the highest numbers of people displaced over these five years were in Asia (see Table 5.1). 2008 was the peak year for the region, strongly affected by the scale of the Sichuan (Wenchuan) earthquake disaster in China.

Africa

While a particularly low level of displacement was reported in Africa in 2011, in 2012 an exceptionally high number of almost 8.2 million people were displaced in 27 countries. Displacement in Africa accounted for 25 per cent of the 2012 global total compared to only about nine per cent of global displacement from 2008 to 2012. This is more than four times the level of new displacement reported in each of the previous four years.

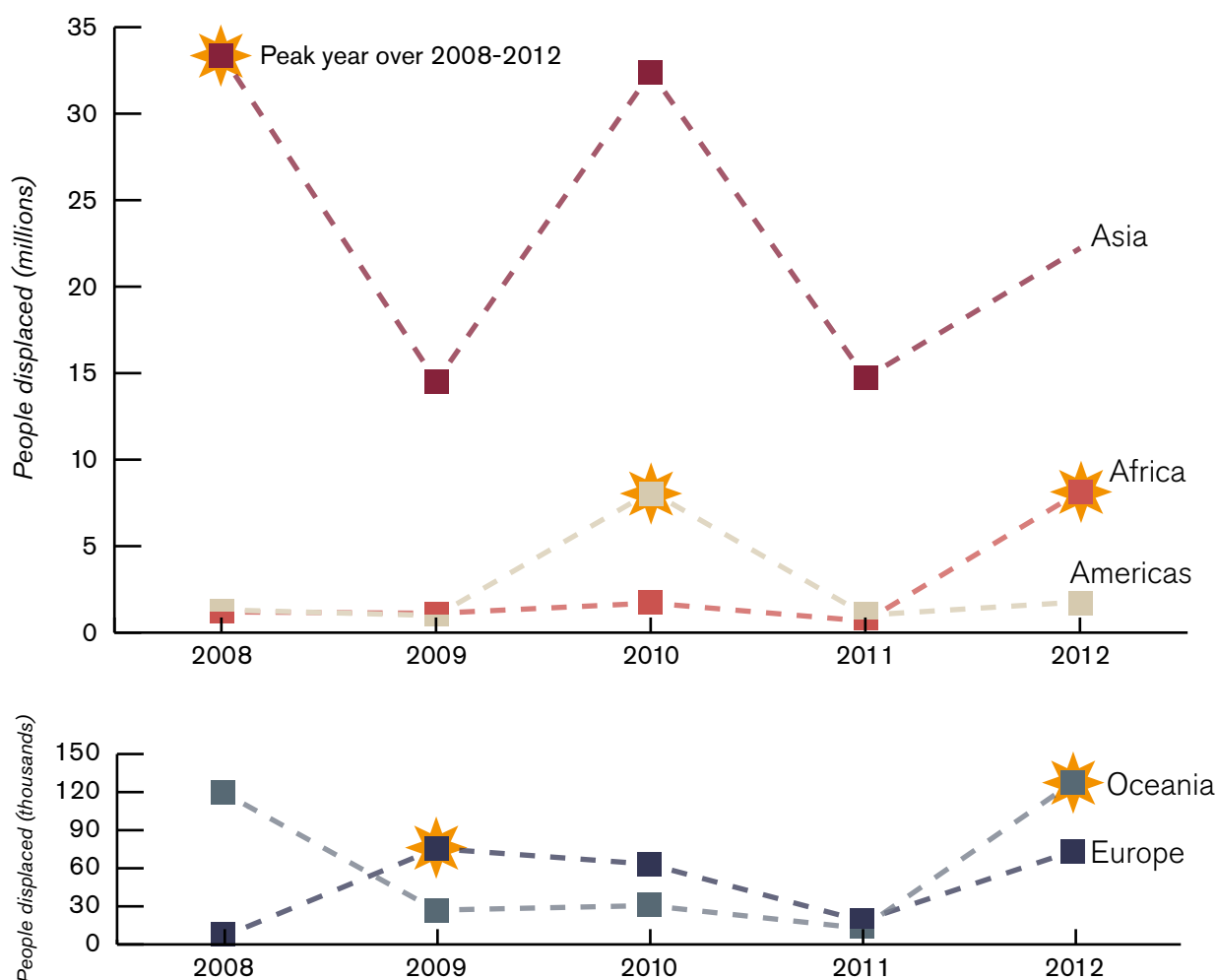
Most displacement in 2012 was related to massive flood disasters across west and central Africa, as previously described in section 3e.

Other major displacement events during the year included around 268,000 people who were forced from their homes in Madagascar by two storm-related disasters in February wrought first by Cyclone Giovanna and followed shortly afterwards by Cyclone Irina. Kenya was also badly affected by multiple floods, including approximately 97,000 people displaced in Homabay, Kisumu, Suba, and Busia counties in April.⁷⁸

Table 4.2: Africa- Five largest displacement events, 2012

Event	Displaced
Nigeria rainy season floods	6,089,000
Niger rainy season floods	530,000
Chad rainy season floods	500,000
South Sudan rainy season floods	340,000
Madagascar Cyclone Giovanna	190,000

Figure 4.2: Annual displacement per region, 2008-2012





An old school bus from the USA serves to evacuate the most vulnerable people ahead of Hurricane Sandy in Haiti (Photo: IOM Haiti, October 2012).

Americas

In the Americas, an overall number of 1.8 million people were displaced in 18 countries in 2012 or five per cent of the global total. This was at around the same scale and proportion seen in previous years, with the exception of 2010 when 8.1 million people were displaced. Disasters in 2010 included massive earthquakes in Haiti and Chile and devastating floods across Colombia and Mexico, each disaster displacing between one and two million people.

The largest displacement events of 2012 included the impact of Hurricane Sandy in the USA and Cuba (see Section 3c) and flood disasters brought on by heavy rainfall related to the La Niña weather phenomenon in Peru and Colombia.

The USA was among the ten countries worldwide with the highest displacement levels in 2012. Months before Hurricane Sandy, Hurricane Isaac displaced 60,000 people in August (see Table 4.3). Widespread forest fires forced over 39,000 people to evacuate their homes. Over 2008-2012 as a whole, however, the top ten countries included Colombia, due to repeated large-scale flood disasters, as well as Chile.

Table 4.3: Americas- Five largest displacement events, 2012

Event	Displaced
USA Hurricane Sandy	776,000
Cuba Hurricane Sandy	343,000
Peru La Niña related flooding	138,000
USA Hurricane Isaac	60,000
Colombia La Niña related floods	60,000

Oceania

In 2012, Oceania also saw the highest number of people displaced in the region since 2008 (over 129,000 people in 9 countries, compared to 13,000 displaced during the previous year). Over the entire 2008-2012 period, 129,000 people were displaced in the region.

Papua New Guinea, the most populous of the SIDS in the Pacific, had the highest number of people displaced (75,000) by several flood and landslide disasters during the year.

Over 27,000 people were forced from their homes in Fiji by two flood disasters and the impact of Cyclone Evan. Cyclone Evan further displaced over 7,000 people in Samoa where another 3,700 people were forced from their homes by floods.

Table 4.4: Oceania- Five largest displacement events, 2012

Event	Displaced
Papua New Guinea floods (March)	60,000
Fiji tropical depression/floods	15,000
Australia floods in eastern states (February and March)	13,000
Papua New Guinea floods and landslides (January)	11,000
Fiji Tropical Storm Evan	8,400

In addition, over a thousand people were displaced by Cyclone Freda and flash floods in the Solomon Islands. Cyclone Freda also displaced hundreds in Vanuatu and Tonga.

In recent years Australia has suffered from particularly devastating floods and at least 16,000 people in several states were forced to evacuate their homes in 2012. No major disasters were reported in New Zealand, though a localised tornado displaced 450 people whose homes were badly damaged or destroyed.

The total numbers displaced in the island nations of the Pacific may be small in absolute terms but impacts of disasters are often significant relative to the size of the country's population. In Samoa and Fiji over three per cent of inhabitants were displaced by disasters in 2012. Samoa had the second highest level of displacement worldwide relative to the size of its population (see Table 4.4). Furthermore, displacement by frequent small-scale events on hundreds of small islands throughout the region is under-reported.

Europe

In 2012, around 74,000 people were displaced in Europe, as reported in six countries. This was less than 0.3 per cent of displacement worldwide. During the last five years over 237,000 people were displaced.

The largest 2012 displacement event was in the Southern Krasnodar region of the Russian Federation where 7,200 homes were destroyed by floods, including 4,900 houses in the worst hit town of Krymsk. An estimated 26,000 people were displaced as a result.⁷⁹ Around 3,000 people were evacuated and 1,900 sheltered in evacuations centres.⁸⁰ While summer floods are common in the region, little official warning was given to residents in Krymsk and over 150 people were killed by the floods on 7 July. Four local officials from Krymsk district were formally charged with corruption and negligence for not taking measures to prevent or minimise damage due to

Table 4.5: Europe- Five largest displacement events, 2012

Event	Displaced
Russian Federation summer floods	26,000
Italy earthquake	11,000
Spain Malaga floods	9,000
Italy earthquake/aftershocks	5,000
Spain/Canary Islands forest fires	5,000

the disaster, including timely and appropriate warnings and evacuations.⁸¹

Just over a month later further flash floods in Tuapse, a town on the Black Sea coast, caused additional displacement as around 1,800 homes were inundated. Due to an improved emergency warning system 1,500 people were evacuated and there were only four reported fatalities.⁸²

In northern Italy, over 11,000 people were displaced by a devastating earthquake that struck on 20 May. A further 5,000 were displaced by large aftershocks nine days later. Southern Spain and the Canary Islands were also badly affected by wildfires that forced around 13,000 to flee for safety, with around 9,000 people displaced by flooding in Malaga. Over 2,000 people were also displaced by floods in Bulgaria and in Montenegro, 800 Roma refugees from Kosovo living in temporary camps were rendered homeless by floods. Several hundred people were evacuated due to floods in the United Kingdom.

Further figures broken down by sub-region and country for all continents or macro-regions are provided in Annex 2. Displacement by economic regions as categorised by the World Bank can be found in Table 5.2.

5 Countries with the highest levels of displacement

Countries with the highest numbers of displaced people

The IDMC 2012 dataset includes displacement information reported on disasters in 82 countries. The ten countries with the most new displacement in 2012 also had at least one event recorded in the top 20 largest displacement events listed in section 3.

In 2012, as for 2008-2012 overall, the same five countries (China, India, Pakistan, the Philippines and Nigeria) had the highest numbers of people displaced. India had the most new displacement worldwide in 2012 (9.1 million) and the second highest number of displaced over 2008-2012 (23.8 million). However, this was almost half the number in China where 49.8 million were displaced over the same five year period (see Figure 5.1 and Table 5.1).

Displacement levels in the Philippines and Pakistan from 2008 to 2012 also ranked them among countries with the highest levels of displacement relative to the size of their populations (see Figure 5.3). In the Philippines, between one and 3.9 million have been displaced annually while, in Pakistan, annual estimates have ranged widely between a low of 85,000 in 2009 to 11 million in 2010.

Displacement in developing and high income countries

Disaster-induced displacement takes a toll on both the richest and poorest countries. Two and a half million people were displaced in High-Income Countries (HICs) over the last five years. This includes Japan and the USA among the top 20 countries with the most displacement

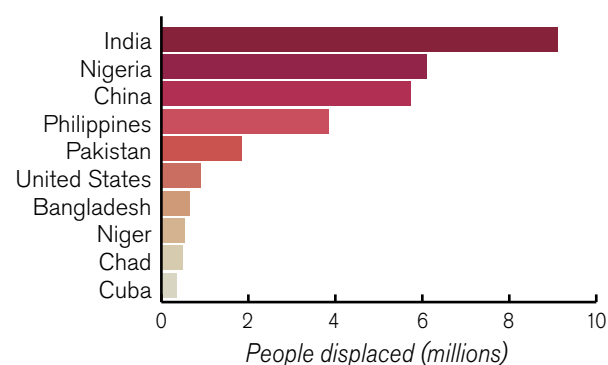
from 2008 to 2012. In 2012 around 1.3 million people were displaced in HICs, including the USA among the top 10 countries. Significant numbers of people also displaced in Japan, Australia, Italy and Spain.

However, the vast majority of people displaced (98 per cent over 2008-2012) were in middle and lower income developing countries. This points to the strong link between poverty and vulnerability, the number of people exposed to hazards and displacement. Similar proportions are found for 2012 displacement (see Table 5.2). Furthermore, many of the countries where people have been displaced by disasters are also conflict-affected (around a quarter of those countries with new disaster-induced displacement in 2012). Conflict compounds the vulnerability of displaced populations and increases the risk of further displacement by multiple causes.⁸³

Table 5.1: Top 20 countries with the most displacement over 2008-2012

Rank	Country	Displaced
1	China	49,782,000
2	India	23,775,000
3	Pakistan	14,991,000
4	Philippines	12,343,000
5	Nigeria	6,818,000
6	Colombia	3,289,000
7	Thailand	3,234,000
8	Bangladesh	2,999,000
9	Indonesia	2,479,000
10	Chile	2,133,000
11	Haiti	1,910,000
12	Myanmar	1,853,000
13	Mexico	1,830,000
14	Sri Lanka	1,578,000
15	Brazil	1,466,000
16	Japan	1,286,000
17	Viet Nam	1,079,000
18	United States	978,000
19	Niger	794,000
20	Mozambique	640,000

Figure 5.1: Top ten countries with most displacement in 2012



Box 5.1: Disasters and displacement estimates for China in 2012

According to China's Ministry of Civil Affairs and the National Committee for Disaster Reduction, disasters on the Chinese mainland affected 290 million people across 31 provinces and over 2,600 regions and cities in 2012. They inflicted direct economic losses of 418.55 billion yuan (\$66.55 billion) and disproportionately affected poor regions. Ten typhoons, including four major ones in coastal areas, caused large scale displacement and damage. Early spring floods and summer floods in southern China, as well as floods in northern China were particularly severe (see Top 20 events, Table 3.2). Western China experienced 16 earthquakes of magnitudes above five on the Richter scale. In addition, there were seven extreme winter weather disasters.⁹⁹

906,000 houses were destroyed and 1.46 million severely damaged by disasters in 2012. Based on an average household size of 3.1, up to 7.3 million people may have been displaced.¹⁰⁰ This figure might also exclude emergency evacuations of people whose homes were not seriously damaged, but who may have suffered other impacts, also been taken into account.

In comparison, the IDMC dataset for 2012 provides a total figure of approximately 5.7 million people displaced by disasters in China in 2012. This figure is based on just seven large, reported disasters, a small proportion of the total number of actual events during the year, including many on a smaller-scale. The difference between these figures illustrates how under-reporting of smaller disasters and shortcomings in available data means that the IDMC figures are likely to be conservative.



A villager sits in front of his destroyed house after floodwaters receded on July 22, 2012 in Beijing, China. Photo: ChinaFotoPress/ChinaFoto-Press via Getty Images

Table 5.2: Displacement in developing countries and High Income Countries (HICs)*

	2012	% of 2012 total	2008-2012	% of 2008-2012 total
High-income countries	1,265,000	3.91%	2,485,000	1.73%
Developing countries:	31,092,000	96.09%	141,422,000	98.27%
East Asia and Pacific	10,158,000	31.39%	71,904,000	49.97%
South Asia	11,777,000	36.40%	43,882,000	30.49%
Europe and Central Asia	81,000	0.25%	441,000	0.31%
Middle East and North Africa	52,000	0.16%	118,000	0.08%
Sub-Saharan Africa	8,158,000	25.19%	12,820,000	8.91%
Latin America and the Caribbean	876,000	2.70%	12,255,000	8.52%

* These regional categories, as defined by the World Bank, are composed of middle or lower income countries (developing countries) only. High Income Countries (HICs) are shown as a separate group.

While the number of people displaced in HICs is relatively low, it is still significant given the distress, vulnerability, instability and economic and social costs it entails for displaced families and their governments. The Tōhoku earthquake, tsunami and nuclear disaster in Japan in March 2011 created the highest level of economic damage by a disaster on record (estimated at \$210 billion).⁸⁴ More than 300,000 people were displaced by the disaster, including 77,000 forced to leave their homes in the exclusion zone around the Fukushima Daiichi nuclear plant, most of who are without solutions to their displacement and continue to live in limbo.⁸⁵

Higher vulnerability in LDCs and SIDS

The poorest countries worldwide warrant particular attention in view of their higher vulnerability and limited resources to protect displaced people, manage disasters and recover without external assistance. In 2012, over 1.8 million people were displaced in states categorised as Least Developed Countries (LDCs) by the World Bank (11.7 million people over five years). In Africa this includes displacement in Chad, Madagascar, Mali, Niger and Sudan. In Asia this includes in Afghanistan, Bangladesh, Nepal, Myanmar (Burma) and Yemen.

Small Island Developing States (SIDS) also require particular attention as they are characterised in part by their vulnerability to disasters as low-lying coastal countries with small but growing populations, limited resources and fragile environments.⁸⁶ In the SIDS, 606,000 people were displaced during 2012 and almost 2.7 million over the last five years (see Table 5.3).

Highest per capita displacement in Chad and Haiti

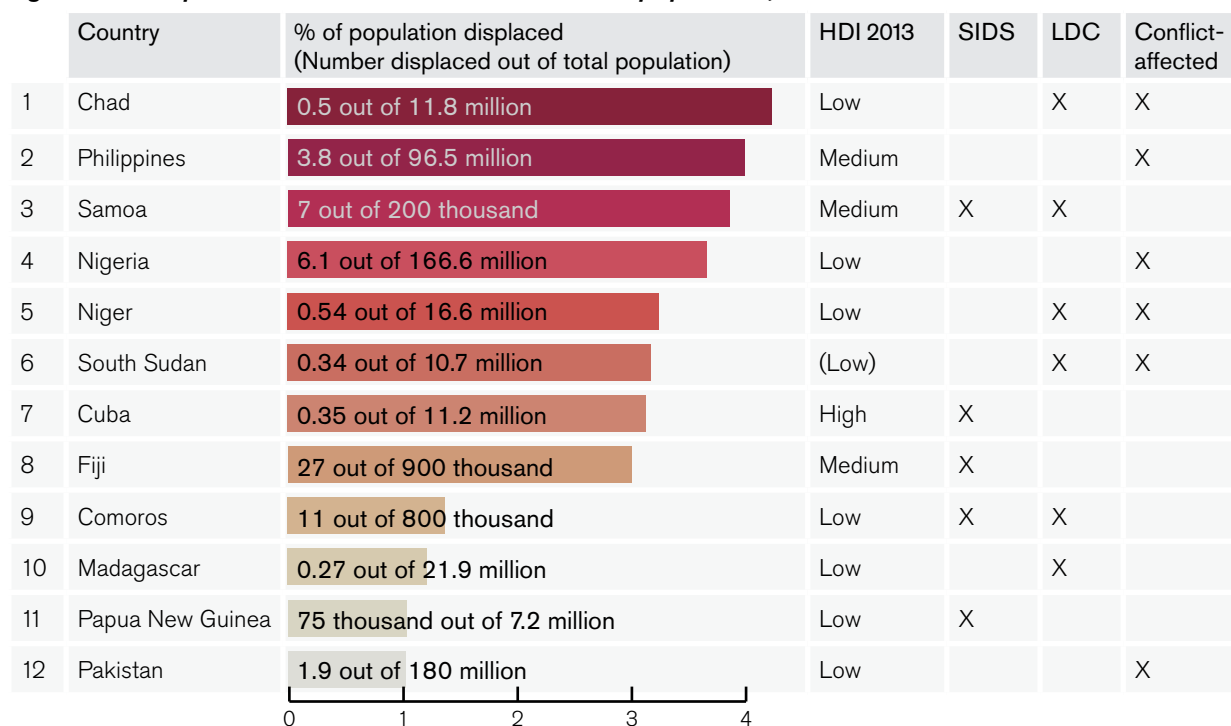
While the highest numbers of people displaced by disasters worldwide are regularly seen in large and densely populated countries, particularly in Asia, displacement figures considered as relative to population size reveal a different picture. The figures also reveal that the most vulnerable countries are more likely to have among the highest per capita levels of displacement globally (see Figures 5.3 and 5.4).

All of the countries where over 1 per cent of the population was displaced are all developing countries and are LDCs and/or SIDS and/or conflict-affected, with Chad having the highest per capita displacement in 2012 (see Figure 5.3). A similar pattern is seen for the 2008-2012 period as a whole, with the exception of Chile – a highly developed country where mass displacement was caused by an extreme earthquake disaster in 2010 (see Figure 5.4). Haiti, both a SIDS and a LDC, is clearly the country that had the highest proportionate displacement over this period, equivalent to almost 19 per cent of its population. Displacement in Haiti is further discussed in Box 5.2.

In contrast to countries with the highest absolute numbers of people displaced, only two out of the 12 countries with over one per cent of their populations displaced in 2012 are from Asia, with the rest from Africa, the Americas and Oceania. 2008-2012 data shows a similar pattern again, with just three of the top 11 countries being from Asia.

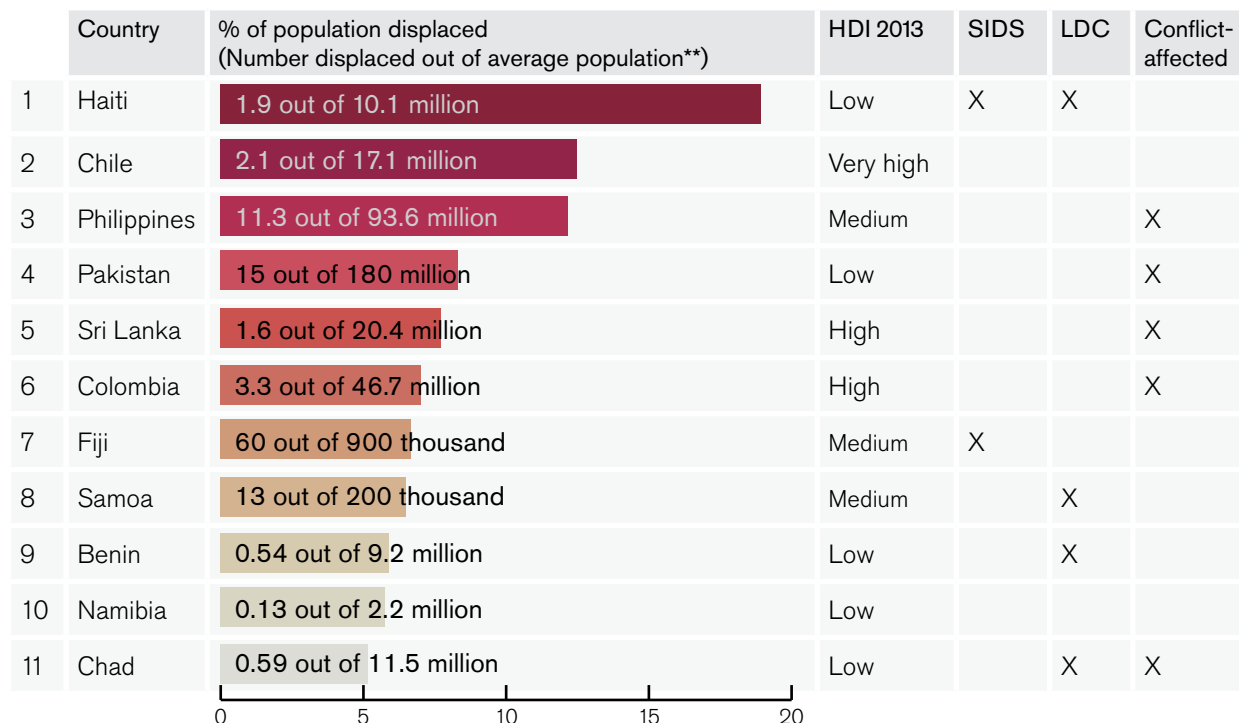
Pressure on limited local and national resources to respond and recover from disasters is particularly great where a significant proportion of a country's population is displaced and where pre-existing vulnerability levels are high. As a result, the risk of protracted and further displacement can remain elevated for years following a disaster.

Figure 5.3: Displacement relative to the size of total population, 2012*



* These regional categories, as defined by the World Bank, are composed of middle or lower income countries (developing countries) only. High Income Countries (HICs) are shown as a separate group.

Figure 5.4: Displacement relative to the size of total population, 2008-2012*



* Countries with over 5% of national population displaced

** Average of total population for each year from 2008-2012

Box 5.2 Disasters, recurrent displacement and vulnerability in Haiti

Haiti, one of the world's poorest countries, faces high a risk of recurrent disaster and displacement as a result of long-standing social and political instability, economic underdevelopment, weak governance, rapid urbanisation and environmental degradation. The majority of Haiti's urban poor live in low quality rented housing and crowded informal settlements. While building standards and norms have been developed, the government lacks the capacity to enforce regulations especially given that some 40,000 houses are repaired and constructed every year by Haitian families themselves.⁸⁷ Unplanned neighbourhoods have been created in flood and landslide-prone areas. Access to basic services is very limited, particularly in rural areas.⁸⁸

Repeated disasters and displacement have exacerbated vulnerability in Haiti where 54 per cent of the population lives in abject poverty.⁸⁹ In 2012, the combined impact of drought and the successive shocks of storm and flood disasters had a devastating effect on food security. As of December 2012, an estimated 2.1 million people (over 20 per cent of the country's population) were living in severe food insecurity, compared with 800,000 in 2011. Of these, 500,000 are classified as extremely vulnerable by the Food and Agriculture Organisation (FAO).⁹⁰

At the end of 2012, 357,000 IDPs remained in camps or sites established after the massive earthquake disaster in 2010, which had fallen to 320,000 IDPs in 385 sites by March 2013. Around 6 per cent of those who left the camps during the first few months of 2013 were forcibly evicted by private landowners or the authorities.⁹¹ Many thousands of families remaining continue to face the threat of forced eviction, which drives IDPs into further poverty.⁹²

In addition to the prolonged displacement of earthquake survivors, 86,000 people were displaced during 2012 due to disasters triggered by floods and storms including Hurricanes Isaac and Sandy. Seasonal flooding also worsened conditions for tens of thousands of IDPs in camps.

Disaster-induced displacement in Haiti, 2012

2012 Disasters	No. of people displaced
Hurricane Isaac (August)	45,000
Hurricane Sandy (October)	32,000
Floods (April - May Rainy season)	8,000
Floods in north (November)	1,500
Total new displacement in 2012	86,000
IDPs in post-January 2010 earthquake camps/sites	357,000*

*Source: IOM Haiti, Displacement Tracking Matrix (DTM), December 2012

Tropical Storm Sandy displaced an estimated 31,370 people at the end of October 2012, damaged or destroyed around 30,000 homes and prompted the government to declare a national state of emergency. More than a month later, the majority of those displaced by Sandy were still living in makeshift shelters or with host families and around 3,000 people remained in evacuation shelters.⁹³ Sandy also significantly worsened the situation of nearly 32,000 IDPs in 119 post-earthquake camps or sites, destroying 5,800 shelters. Hurricane Isaac had hit 78 of the same camps just three months earlier.⁹⁴ After Sandy more floods affected North department and Nippes in the south-west, leading to the evacuation of 1,500 people.

As of April 2013, OCHA reported that approximately 1.5 million Haitians, over 10 per cent of the population, are still in need of basic humanitarian assistance.⁹⁵ With the 2013 rainy season due to start in May, the urgency to increase the pace of progress in building Haiti's resilience against further disasters, including the provision of solutions to resettle people still displaced by previous disasters, is further highlighted.

For more on displacement in Haiti see IDMC's Haiti webpage (www.internal-displacement.org/countries/haiti).

6

Displacement related to different types of hazard

Displacement by weather-related hazards compared to geophysical hazards

In four out of five of the last five years over 90 per cent of displacement was related to climate and weather-related disasters. In 2012 this was the case for almost all disaster-induced displacement (98 per cent), displacing 29.7 million people. Over 2008-2012 weather-related disasters displaced around 120 million people (see Figures 6.1 and 6.2).

Most of this displacement was triggered by floods and storms. Other climate and weather-related hazards that caused significant amounts of displacement include wet landslides, extreme cold and wildfires (see Table 6.1). In early 2012, an extreme cold wave brought heavy snow and freezing temperatures to much of the European continent, with eastern and northern European countries hit the hardest. While reports made reference to the need for evacuations and damage to housing, no reports on the number of people displaced were identified (see Table 6.1).

Each year between two and ten per cent of displacement has resulted from geophysical disasters since 2008, with only about 680,000 people displaced by earthquake and volcano hazards. The largest displacement event of this type was due to an earthquake disaster in Negros Oriental in the Philippines which displaced over 150,000 people. 2008 was an exception to this pattern when 46 per cent of displacement was caused by geophysical disasters, mostly due to the displacement of over 15 million people by the Sichuan (Wenchuan) earthquake in China. Major earthquake disasters, though less frequent and less predictable, create very high levels of displacement due to the widespread destruction of homes and other infrastructure that they cause. 23.6 million people were displaced by earthquake disasters over 2008-2012.

While the high level and proportion of displacement related to climate and weather related is clear, the five year dataset covers too short a period of time to identify a rising or falling trend in the level of displacement by

Figure 6.1: Displacement by weather/ climate related hazards vs. geophysical hazards

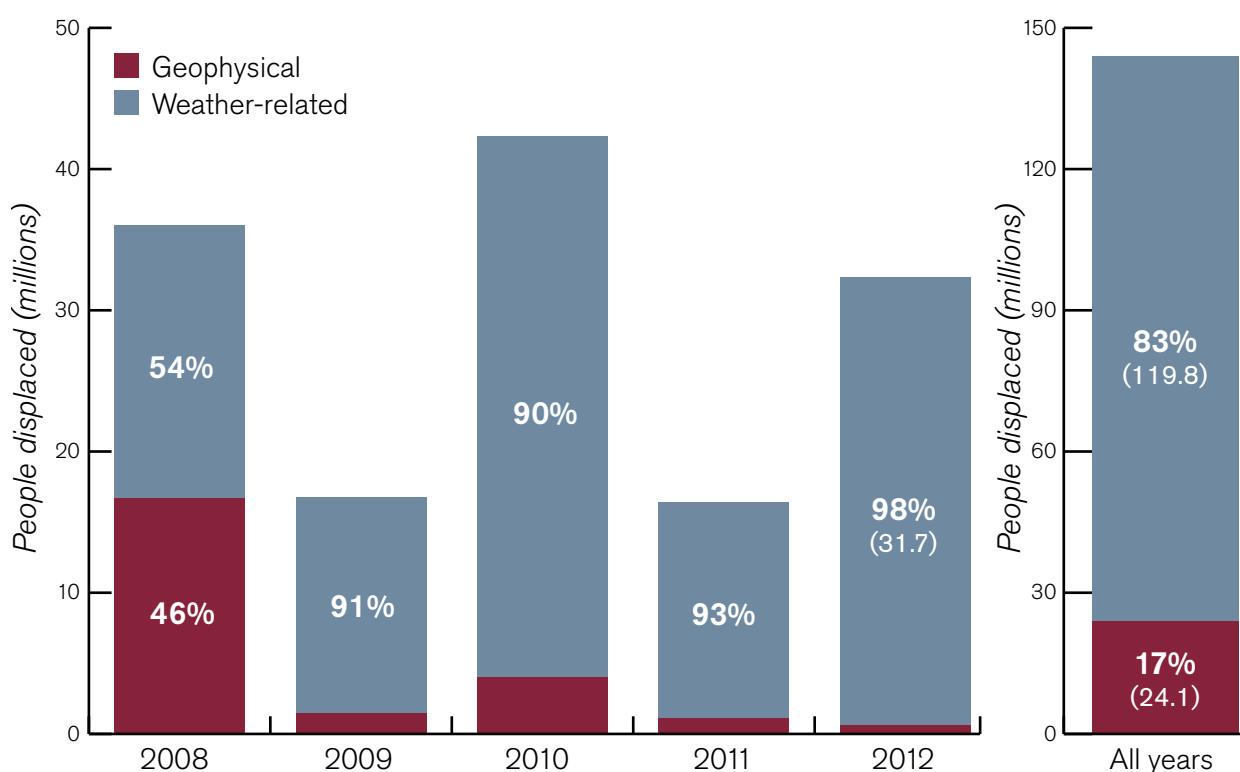
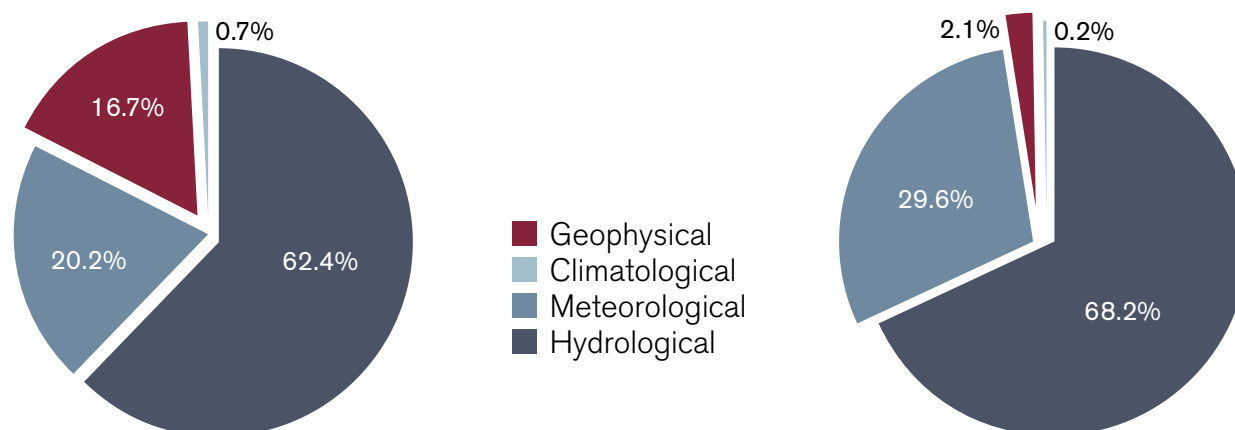


Figure 6.2: Proportion of displacement by category of hazard, 2012 and 2008-2012



any particular type of disaster. However, the increasing frequency and intensity of climate and weather hazards in the longer term due to human-made climate change are expected to play a part in increasing the risk of disaster and of displacement, as previously discussed in Section 2 (see Box 2.1).

Table 6.1: Displacement by type of related hazard, 2012 and 2008-2012

Type of hazard	Total displaced	
	2012	2008-2012
Flood	22,010,000	89,181,000
Storm	9,5667,000	29,051,000
Earthquake (Seismic activity)	637,000	23,604,000
Extreme Cold	2,000	923,000
Landslide (wet)	47,000	577,000
Volcano	40,000	472,000
Wildfire	59,000	103,000
Landslide (dry)	200	3,200
Extreme Heat	1,700	1,700

*Source: IOM Haiti, Displacement Tracking Matrix (DTM), December 2012

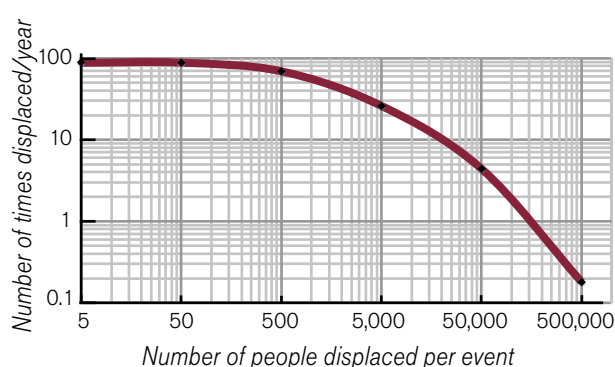
Modelling the risk of displacement associated with rapid-onset hazards

Probabilistic risk modelling has been used in the insurance and reinsurance industry as a way to quantify risk. The models are usually used to calculate how much is at risk in terms of assets, human lives or Gross Domestic Product (GDP). Risk models can be used to produce outputs such as Average Annual Losses (AAL) and Probable Maximum Loss (PML) for given periods of time (also known as return periods). These metrics are usually plotted on a loss exceedance curve, with the area under the

curve expressing how much (e.g. GDP, number of lives, etc.) is at risk.

In the situation of a rapid-onset hazard, such as a flood, storm, earthquake or wildfire, the damage and destruction of housing is a direct cause of displacement as homes are rendered uninhabitable and people are forced to seek shelter and safety elsewhere. By multiplying average household size by the number of houses damaged and destroyed as a result of past disaster events, one can begin to construct displacement risk curves (Figure 6.3). These illustrate how many people are likely to be displaced over a given period of time and the maximum number of people likely to be displaced by a single disaster during it.

Figure 6.3: Displacement risk in Colombia



Source: Dirección de Gestión de Riesgos (DGR)- Corporación OSSO

This model of displacement risk is justified for contexts in which houses damaged and destroyed are a reasonable proxy for displacement, though not for people who are displaced by droughts or in the rare cases when people are displaced by floods which destroy crops and livestock but leave their homes undamaged. Using geospatially referenced records stored in existing national disaster loss databases, partial displacement risk curves can already

be produced for nearly 40 countries, often at the provincial and local level. A complete, or 'hybrid', displacement risk curve would also need to incorporate the modelled risk of displacement associated with extreme disasters that cause unusually high levels of destruction.

Displacement in the form of flight or emergency evacuations to avoid imminent and further danger should also be considered, as should displacement related to the destruction or disruption of critical infrastructure and access to basic needs and services in the home area. Displacement risk curves require careful calibration due to the observed discrepancies between the number of houses reportedly damaged and destroyed and the number of people reported as displaced.⁹⁶ Using more precise household size data alone does not eliminate the discrepancies. Therefore, additional proxy indicators and verification is required to calibrate the models and produce accurate displacement risk curves.

Slow-onset hazards, such as drought or gradual changes in environmental conditions such as desertification and sea-level rise, also cause displacement through loss of habitat and livelihoods. However, to identify and quantify displacement related to such hazards requires a different methodology to that used for rapid-onset disasters, as explained below.

Building and applying knowledge about drought-induced displacement

IDMC and others have shown that displacement related to hazards such as floods and earthquakes can be identified and measured. Its causes are relatively straight forward: if someone's home or other critical assets have been destroyed, or face an acute threat of severe damage, they are likely to be displaced. In disasters associated with these and other rapid-onset hazards, governments, NGOs and the private sector are able to record impacts such as homes damaged and destroyed and the people evacuated and/or being assisted inside and outside emergency shelter sites.

Identifying and measuring displacement associated with drought and other slow onset hazards is more challenging, however, as the different factors that result in displacement are highly complex. Droughts do not typically destroy homes or trigger the sudden need to flee. Instead, they lead to displacement indirectly, by eroding natural, physical, financial and social capital and precipitating livelihoods crises for the vulnerable. Disaggregating drought-related displacement from voluntary migration poses additional challenges. As an important first step to prevent disaster-induced displacement by slow as well as rapid onset disasters, or to reduce their impacts and duration, IDMC is developing new research.

IDMC is currently collaborating with the NGO Climate Interactive (CI)⁹⁷ to create a system dynamics model of drought-induced displacement of pastoralists in the Horn of Africa (see Figure 6.4). The model will account for, and estimate, the number of people displaced by droughts and test ways to prevent or mitigate displacement and other drought impacts under scenarios of climate uncertainty. Working with partner organisations and experts, IDMC and CI have mapped causal relationships between drought and livelihoods. We have begun to build a formal mathematical model of the phenomena using empirical evidence and scientific methods.

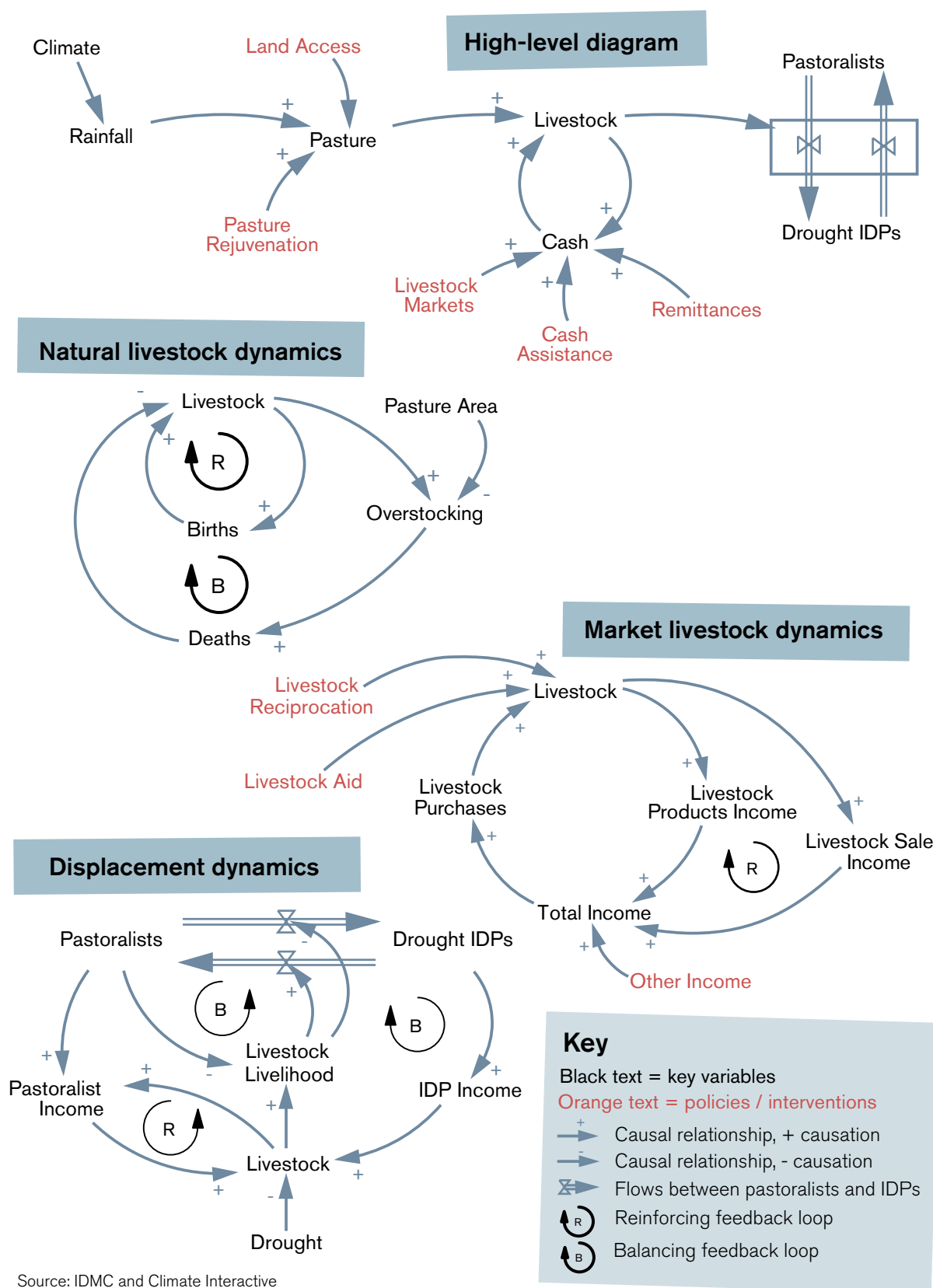
The model captures some of the key drivers of drought-induced displacement (e.g., rainfall, pasture quality, accessible grazing land, livestock numbers, type of livestock, grain stores and decisions about when to sell and purchase livestock and livestock products). It also reports the amount and rate of displacement under different scenarios. Thus, it provides a basis for estimating displacement and a quick, transparent and interactive way for communities and policymakers to test drought prevention and preparedness strategies.

System dynamics models such as this may also support stronger links between humanitarian interventions and development plans. Facing the prospect of a severe drought, how much should governments and humanitarian and development actors invest in food assistance, livelihood support, childhood nutrition and education?

While each of these interventions may yield positive results in preventing displacement, they do so over different time periods. The model can be used to test which combinations of interventions reinforce each other the most. It can also inform policy and plans by developing scenarios that mitigate the impacts of displacement (in situations where prevention is unfeasible), maximise long-term wellbeing and resilience and test which combinations of interventions work best over different time horizons.

IDMC's drought-induced displacement model contains some uncertainty and room for improvement. It could be further refined to account for the differential distribution of herds across households as well as the number of livestock imported into the region, for example. It is clear, however, that this model can illustrate the effects on livelihoods caused by positive or negative shocks and other short-term phenomena as well as of medium- and long-term demographic, climatic and developmental trends.

Figure 6.4: Modelling drought-induced displacement of pastoralists in the Horn of Africa*



Source: IDMC and Climate Interactive

*A more detailed version of this model is available on request from IDMC.

7

Building the evidence base: Displacement data collection and reporting

In order to prevent loss of life, mitigate suffering and address specific protection concerns related to disaster-induced displacement state and non-state actors first need to strengthen the systematic collection, analysis and sharing of relevant data. Information available on the occurrence, frequency, patterns and duration of highly dynamic and yet often predictable displacement situations and the related needs of people displaced and at risk, tends to be limited and subject to reporting bias. Adequate evidence is needed to inform policy making, response and risk reduction measures by local, national and international actors.

IDMC regularly reviews various types of information released by different sources on the numbers, needs and characteristics of displaced households and individuals, either as primary data gathered from displaced household or from secondary data compiled from various other sources (see Table 7.1).

Multiple challenges have been noted around the collection, compilation and interpretation of displacement relevant data. Whether conceptual, practical or political they all impact on the quality, comparability, availability and accessibility of information. Many of these challenges are related to varying institutional mandates, diverse re-

search domains and different purposes for collecting and sharing information of primary and secondary sources.

Terminology and definitions used in reporting on displacement and disasters

Different terms (such as evacuated, homeless, relocated, affected), as well as displaced, are employed by authorities, humanitarian bodies and the media in different ways. This changes how, where and when displaced people are defined and counted. For example, IOM operational offices often collect data focused on populations targeted for assistance and based on actual counts of humanitarian services provided to those who have had to flee their homes due to disasters. In Afghanistan, IOM's operational definitions count people displaced within their original villages as "affected" only, rather than "displaced". In the case of emergency evacuations, some data providers count people evacuated as a preventative measure as a separate category to people displaced following the impact of a hazard. Others count evacuees as a subset of displaced people. Especially in relation to slow-onset disaster situations, causality and the extent to which population movements are forced or obliged are less clear, as discussed earlier.

Table 7.1: Sources of data on disaster-induced displacement

Primary data collection activities during emergencies and protracted situations	Secondary data on emergencies and protracted situations
Figures compiled by authorities at evacuation centres, emergency IDP sites or settlements.	Data compiled for budgets, appeals, programming and communications (situation reports/updates): IFRC/Disaster Management Information System (DMIS); IOM/Displacement Tracking Matrix (DTM); Camp Coordination and Camp Management (CCCM) camp registration; country-level clusters/assessments; OCHA.
Disaster needs assessments/ rapid needs assessments	Government (national/provincial/district level disaster management or civil protection authorities; national or regional government disaster databases)
Humanitarian clusters, IOM, IFRC, NGOs individual/ household level needs assessments and services provided; registration reports	Secondary data hubs: (International Disaster Database (EM-DATem-Dat); Centre for Research on the Epidemiology of Disasters (CRED); Pacific Disaster Net; Dartmouth Floods Observatory; Asian Disaster Reduction Center (ADRC) Global IDentifier Number (Glide number) database; ReliefWeb
Representative sample surveys	Media (international, national and; local; e.g. Xinhua- China; Reuters Alertnet)

*Source: IOM Haiti, Displacement Tracking Matrix (DTM), December 2012

Classifying and defining a disaster to which displacement is related can be challenging due to questions around its start and end date, geographical scope and complex composition.

This is particularly true in relation to floods triggered by successive periods of heavy rain together with secondary impacts such as landslides and where events happen in close succession within the same country or locality. As the Dartmouth Floods Observatory observes: “repeat flooding in some regions is a complex phenomenon and may require a compromise between aggregating and dividing such events.”⁹⁸

Evolving statistics in highly dynamic situations

It is common for reported figures to be amended over time as access to information improves and initial assessments are verified. Reporting bias may be influenced by the amount of time after an event that data is collected and published. Reporting is more frequent but also less reliable in the acute and highly dynamic phases of a disaster. It is often deficient or lacking in ongoing and unresolved displacement situations.

Emphasis on reporting of larger events and IDPs in official shelter sites

Overall, global reporting tends to emphasise large events in a smaller number of countries where there is either substantial international agency, donor or media presence or strong national commitment and capacity for disaster management, prevention and information management. Information on smaller scale disasters accessible within and outside affected countries is particularly difficult to find.

There is less reporting on impacts in isolated and insecure areas. In many cases there is more reporting on IDPs gathered in official or managed collective shelters, camps and other sites than on those staying with host families. This is despite the fact that in most disaster situations the majority of displaced people take refuge with friends or family.

Some IDPs are also less visible, particularly those in female-headed households, older persons and those with disabilities. Political sensitivities and protection concerns for displaced populations related to the use of displacement data from different contexts may limit how accessible it is made or how widely it is shared. Reporting bodies may have reasons to understate or overstate the number of people who have been displaced, for example, to minimise or maximise requirements and expectations of government or donor resource allocations, including compensation claims.

The global figures are provided as estimates and assumed, on the whole, to reflect under- rather than over-reporting of the number of people displaced by disasters each year. This is due to the difficulty in identifying reliable and comprehensive data on displacement situations in many countries and disasters. Furthermore, the figures provided in this report do not include displacement related to slow-onset hazards or complex emergencies where natural hazards are an important driver of displacement risk in combination with other factors.

The need for improved data on displacement

Many countries have developed, or are developing, information systems for improved disaster risk management. However, governments and international humanitarian development actors need to systematically collect and publish reliable information on the situation of displaced people. This includes developing a common set of indicators for recording and reporting on displacement and which allow different datasets to be used together. This is critical as a first step in identifying needs, prioritising assistance and informing solutions that protect displaced people and those at risk from future disasters.



Annexes

1. Methodology and sources 2012

Limitations and scope

This report presents global estimates for the number of individuals newly displaced in 2012 by rapid-onset disasters related to natural hazard events and compares findings from 2008 – 2011. Using the same general scope and approach as in previous years¹⁰¹ some adjustments have been made to the structure of IDMC's Disaster Induced Displacement Database (DiDD), sources of information and process followed.

Estimates are presented at the global, regional and national levels. Displacement related to a range of weather-related and geophysical hazards are included and disaggregated. The scale of displacement by country is calculated as a proportion of overall population. Summaries of the findings are provided by region and sub-region. The quantitative information is complemented and interpreted with further qualitative research on different events and countries by IDMC.

The disasters or events included in this study are associated with rapid-onset hazards categorised as hydrological, meteorological, climatological and geophysical (see Table 1.1). Drought continues to be excluded while IDMC is developing methodology to building knowledge of how drought-related displacement might be identified, reported on and modelled. A fuller definition of these terms can be found in previous reports. The highlighted hazards in the figure below are those associated with disasters included in the IDMC dataset. As in previous years, this does not include drought or other slow-onset disasters nor biological hazards.

The IDMC dataset for 2008-2012 includes displacement data for 125 countries. For 2012 disasters, IDMC identified disaster-induced displacement in 82 countries. The EM-DAT database includes a higher number of 95 countries affected by the same type of disasters in the same period of time. Differences between the countries included by EM-DAT and IDMC include 18 disaster-affected countries in EM-DAT where IDMC did not identify displacement but where EM-DAT reports disasters. It may be that displacement occurred due to disasters in these countries, but that relevant information was not available or accessible. In addition, IDMC identified displacement in eight countries where EM-DAT does not report any disasters in 2012.¹⁰²

It is widely agreed that the vast majority of people displaced by natural hazard-induced disasters are IDPs. The IDMC global data does not show the destinations of displaced people, including return to original locations, relocation or integration into their places of displacement. Thus it cannot distinguish between IDPs and displaced people who may have crossed a national border.

The dataset does not provide global information on duration of displacement, whether people have been repeatedly displaced or the number of people living in protracted displacement situations. Nor does the dataset permit global disaggregation of the data by sex and age. This is possible for some events only due to limited information collected and reported. These are very important gaps in terms of identifying IDP populations who are likely to be particularly at risk due to their displacement and in need of protection and sustainable solutions to their situations.

Process and sources

For 2012 events, IDMC researchers compiled a preliminary list of disaster events using media and humanitarian reporting sources, as well as ADRC/Glide and the IFRC/DMIS and blog entries. The International Disaster Database (EM-DAT), maintained by the Centre for Research on the Epidemiology of Disasters (CRED)¹⁰³, was used to cross-check event locations and dates. The estimate of displacement for each disaster event identified is reached through analysis of secondary data from a wide range of sources. These include government and donor reports, UN agencies, IOM, IFRC, the Dartmouth Floods Observatory database, the Asian Disaster Reduction Centre's Glide database, Pacific Disaster Net, non-governmental organisations and the media.

In January 2013, IDMC and IOM signed a Memorandum of Understanding of cooperation in the production of the global estimates. As global lead agency for Camp Coordination and Camp Management in disasters, IOM works towards the improvement of data, knowledge and increased visibility of IDPs in natural disaster contexts. The use and analysis of IOM data by IDMC adds value to the data collected by IOM country offices operating in natural disaster situations. Detailed data provided by IOM field missions has strengthened IDMC's access to information and directly informed the selection of the estimates for many of the 2012 events identified, including smaller events on which information is harder to obtain. IOM has greatly facilitated access to data through closely collaborating with governments in countries where it has a presence.

The estimated figure for each disaster was drawn based on cross-checking of reported locations and dates to ensure that figures were associated with the same disaster and period of time and double counting was avoided or minimised. The aim is to provide an inclusive picture of the displaced population as possible while assessing the reliability of multiple sources for each event. Terms used to describe displacement included 'displaced', 'evacuated', 'homeless' and 'fled'. In some cases, estimates were calculated based on the number of houses destroyed or rendered uninhabitable, multiplied by the average household size.

To identify the extent of displacement caused over 100 disaster events that started in 2012 were included in the dataset and reviewed in depth, regardless of how many persons were reported as affected. Previous studies limited the sample to disasters affecting 50,000 persons or more. In 2011 the sample was extended to include events

affecting at least 3,000 persons. For 2012, reported displacement was identified in 82 countries, increasing the number of countries included in the 2011 dataset. The entire dataset for five years includes data on 125 countries where displacement was reported.

IDMC will continue to publish annual global estimates of the scale and location of displacement associated with disasters. New methodologies are being developed to fill knowledge gaps. Once tested and peer-reviewed, they will enable future estimates to better identify patterns of displacement, including displacement associated with slow-onset disasters; the risk and likely magnitude of displacement within a given country or other geographical area; disasters at smaller scales and displacement situations over time. As well as leading to a better understanding of the displacement that has already occurred, new methodologies will help policy-makers prevent and prepare for disaster-induced displacement.

2. 2012: Largest disaster-induced displacement events

Table A2.1: Disasters causing the largest scale displacement events in 2012

The following table shows all disasters that displaced 100,000 people or more in 2012 listed in order from the largest to smallest events. For further information on displacement data for 2012 events at all scales, please email: idmc@nrc.ch

Country	Event	Source*	Displaced	Date
India	Monsoon floods (1st period)	Media: AFP ¹ [Govt: Central Water Commission]	6,900,000	June/ July
Nigeria	Rainy season floods	Govt: NCFRMI ²	6,088,580	September/ October
China	Typhoon Haikui floods	IFRC ³ China Red Cross and Red Crescent National Society	2,079,000	August
India	Monsoon Floods (2nd period)	Media : AFP [Govt: Assam DMA ⁴]	2,000,000	August/ September
Philippines	Typhoon Pablo (Bopha)	IOM/DTM ⁵ [Govt: NDRRMC ⁶]	1,931,970	December
Pakistan	Monsoon floods	UNOCHA ⁷	1,856,570	August/ September
Philippines	Floods - southwest monsoon and typhoon effects	UNOCHA	1,553,080	June/August
China	Monsoon floods (2nd period)	IFRC [Govt: Provincial government]	1,419,900	June/July
China	Twin typhoons Saola and Damrey/floods	IFRC: Red Cross Society of China	867,000	August
USA	Hurricane Sandy	Govt: FEMA ⁸	775,761	October
Bangladesh	Monsoon Floods	NGO:OXFAM/PSI	600,000	June
China	Typhoon Kai-Tak	Media: Xinhua News Agency [Govt: Ministry of Civil Affairs, National Commission for Disaster Reduction]	530,000	August

Table A2.1 (continued)

Country	Event	Source*	Displaced	Date
Niger	Rainy season floods	UNOCHA/ IRIN ⁹	530,000	July/August
Chad	Rainy season floods	UNOCHA/ IRIN	500,000	July/October
China	Monsoon floods (1st period)	IFRC: Red Cross Society of China	443,000	April/May
Cuba	Hurricane Sandy	UN Country Team	343,230	October
South Sudan	Rainy season floods	UNOCHA	340,000	June/ July
Japan	Floods and landslides	Media :BBC [Govt]	250,000	July
DPRK (North Korea)	Monsoon floods	Media: Huffington Post [Govt: Official Korean Central News]	212,000	June/July
India Cyclonic	Cyclonic storm Nilam	Media: The Indian Express and the Siasat Daily [Govt]	210,000	October
Magadascar	Cyclone Giovanna	Media: [Govt: National Disaster Management Agency]	190,000	February
Philippines	Negros Oriental Earthquake	Govt: NDRRMC	187,320	February
China	Earthquake in Yunnan, Guizhou provinces	Media: South China Morning Post	185,000	September
Peru	La Niña Floods	Govt: INDECI ¹⁰	138,422	January – March
China	Typhoon Son Tinh	Media : Xinhua News Agency	136,000	October

* Source of reported displacement estimate selected following cross-checking of multiple sources. See Annex 1 for explanation of methodology used.

Acronym list for sources:

- 1 AFP: Agence France Press
- 2 NCFRMI: Nigeria Commissioner for Refugees, Migrants, and Internally Displaced
- 3 IFRC: International Federation of Red Cross and Crescent Societies.
- 4 DMA- Disaster Management Authority, India
- 5 IOM/DTM: International Organization for Migration/ Displacement Tracking Matrix
- 6 NDRRMC: National Disaster Risk Reduction and Management Council, Philippines
- 7 UNOCHA: United Nations Office for the Coordination of Humanitarian Affairs
- 8 FEMA: Federal Emergency Management Agency, USA
- 9 IRIN: Humanitarian news and analysis
- 10 INDECI: Instituto nacional de Defensa Civil del Perú

3. 2012: Displacement data tables for countries and geographical sub-regions

Table A3.1: Total displacement per country in 2012

The following table shows the total number of people newly displaced by one event or more in 2012 in each country where disaster-induced displacement was reported (82 countries in total). Countries are listed alphabetically. Please see Table 5.1 in the report for a listing of the top ten countries with the most people displaced.

Country Name (in alphabetical order)	Displaced in 2012	Country Name (in alphabetical order)	Displaced in 2012
Afghanistan	29,519	Kazakhstan	5,113
Angola	6,361	Kenya	97,626
Argentina	2,000	Korea, Democratic People's Republic of (North)	232,000
Australia	16,000	Madagascar	267,911
Azerbaijan	36,000	Malawi	6,182
Bangladesh	650,788	Malaysia	22,000
Benin	10,292	Mali	9,000
Bolivia, Plurinational State of	9,000	Mexico	6,500
Brazil	35,000	Montenegro	800
Bulgaria	2,100	Morocco	581
Cameroon	30,000	Mozambique	10,000
Central African Republic	17,570	Myanmar	73,840
Chad	500,000	Namibia	400
Chile	7,300	Nepal	600
China	5,730,800	New Zealand	450
Colombia	71,200	Nicaragua	3,000
Comoros	11,000	Niger	540,000
Congo, the Democratic Republic of the	23,000	Nigeria	6,111,580
Costa Rica	2,000	Pakistan	1,856,570
Cuba	351,730	Palau	151
Dominican Republic	43,383	Palestinian Territory, Occupied	1,200
Ecuador	4,796	Panama	3,400
Ethiopia	20,118	Papua New Guinea	75,000
Fiji	27,062	Peru	183,951
Gabon	1,606	Philippines	3,858,596
Gambia	7,745	Russian Federation	31,875
Guatemala	63,679	Rwanda	3,225
Haiti	85,900	Samoa	7,739
India	9,110,000	Senegal	20,000
Indonesia	103,831	Solomon Islands	1,047
Iran, Islamic Republic of	50,000	Somalia	28,000
Italy	16,850	South Africa	2,000
Jamaica	2,000	South Sudan	340,000
Japan	308,000	Spain	22,000

Table A3.1 (continued)

Country Name (in alphabetical order)	Displaced in 2012
Sri Lanka	129,092
Sudan	84,000
Taiwan, Province of China	6,000
Tajikistan	6,390
Tanzania, United Republic of	10,000
Thailand	3,400
Tonga	400
Uganda	216
United Kingdom	300
United States	900,932
Uzbekistan	224
Vanuatu	700
Venezuela, Bolivarian Republic of	1,000
Viet Nam	15,000
Total	32,366,621

Table A3.2: Displacement by region and sub-region, 2012

Sub-regions in the following tables group countries as per categories used by the UN Statistics Department.

Continent/ UN regions	2012 Displaced
Africa	8,158,413
Western Africa	6,698,617
Eastern Africa	794,278
Middle Africa	578,537
Northern Africa	84,581
Southern Africa	2,400
Americas	1,776,771
Northern America	900,932
Caribbean	483,013
South America	314,247
Central America	78,579
Asia	22,228,963
Southern Asia	11,826,569
Eastern Asia	6,276,800
South-Eastern Asia	4,076,667
Central Asia	47,727
Western Asia	1,200
Europe	73,925
Southern Europe	39,650
Eastern Europe	33,975
Northern Europe	300
Oceania	128,549
Melanesia	103,809
Australia and New Zealand	16,450
Ploynesia	7,739
Polynesia	400
Micronesia	151
Total	32,366,621

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About IDMC

The Internal Displacement Monitoring Centre (IDMC) is a world leader in the monitoring and analysis of the causes, effects and responses to internal displacement. For the millions worldwide forced to flee within their own country as a consequence of conflict, generalised violence, human rights violations, and natural hazards, IDMC advocates for better responses to internally displaced people, while promoting respect for their human rights.

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