UNFCCC WIM TASKFORCE ON DISPLACEMENT ACTIVITIES III.1-3:

1. BACKGROUND

Data-related challenges and related knowledge gaps are hindering the capacity of countries to meaningfully monitor, measure and manage risk and losses related to population displacement associated with the adverse impacts of climate change. This includes issues to do with the availability, quality and accessibility of data, the definitions and approaches behind its collection and capture, as well as the capacity - knowledge, tools and resources- to collect and analyse it. At the same time, there are good practices, developed methodologies and guidance on the collection of displacement-related data and assessments that may be drawn on and adapted to the needs of particular countries and contexts.

Such data and knowledge is necessary for the development and implementation of evidence-based policy and action to avert, minimised and address displacement. In the context of the UNFCCC system and the implementation of the Paris Agreement, this includes National Adaptation Plans, Nationally Determined Contributions and climate financing instruments, technology transfer and capacity strengthening for countries and populations.

At the same time, displacement is an issue that cuts across other policy agendas and commitments at national to global levels. Displacement-related data and knowledge required for climate action can both draw on and contribute to progress on data and assessment issues in implementing the Sustainable Development Goals, the Sendai Framework targets on disaster risk reduction, the Global Compacts on refugees and migrants and the Agenda for Humanity, for example.

In order to inform recommendations to the UNFCCC Conference of the Parties on integrated approaches to address gaps and challenges, the Warsaw International Mechanism's Task Force on Displacement has identified several activities on the theme of data and assessment (work plan section III).

WIM Task Force on Displacement work plan section III: Data and Assessment

Desired impacts:

- Systematic data collection and monitoring of displacement and its impacts at local, national, regional and international level to inform comprehensive needs and risk assessments for the formulation of policy and plans, is strengthened
- The capacity to undertake systematic data collection is strengthened

Activity 1: Providing an overview of data sources, common methodologies and good practice for displacement-related data collection and assessment, as relevant to different contexts and regions.

Activity 2: Providing global baseline of climate-related disaster displacement risk, and package by region.

Activity 3: Analysing available data on disaster-related displacement and its impacts in different regions and groups of countries in specific circumstances (e.g. LDCs) related to sudden and slow onset events.

2. ACTIVITY III.1:

Providing an overview of data sources, common methodologies and good practice for displacement-related data collection and assessment, as relevant to different contexts and region.

Accounting for displacement associated with disasters

The only global data set on disaster displacement currently available is the one provided by IDMC, monitoring and collecting information for all reported disasters from governments, the UN, IFRC and national Red Cross and Red Crescent societies, NGOs and international media outlets. IDMC applies no threshold when doing so, either in terms of the number of people displaced or the distance they have travelled. Its database includes records of one up to 15 million IDPs. The following summarises lessons with regard to data sources, common methodologies and good practice for disaster displacement data collection, collation and analysis.

Estimates for displacement associated with disasters are best generated by event rather than by country. IDMC generates a single "new displacement" estimate for the total number of people displaced by each event. It is important to note that this figure is not necessarily the same as the peak number of IDPs, but instead aims to provide the most comprehensive cumulative figure for those displaced with minimal double-counting. It is recommendated to try to collect data from a number of reports on the same disaster, each specifying whether its figures refer to individuals or households, the reporting terms and sources used, the publisher, the title of the source document and the date of publication. When possible, triangulation is done for figures using competing reports. Sometimes, however, estimates are derived from a single report. In others, they are the aggregation of a number of reports that together cover the wide geographical area affected.

In determining national and global estimates, it is vital that the data selected represents the most comprehensive figure from the most reliable source available for that event at the time when data was collected.

Reporting bias

Methodology and data may be subject to different types of reporting bias, some of which are detailed below.

Unequal availability of data: Global reporting tends to emphasise large events in a small number of countries where international agencies, funding partners and media have a substantial presence, or where there is a strong national commitment and capacity to manage disaster risk and collect information.

Under-reporting of small-scale events: These are far more common, but less reported on. Disasters that occur in isolated, insecure or marginalised areas also tend to be under-reported because access and communications are limited.

"Invisible" IDPs: There tends to be significantly more information available on IDPs who take refuge at official or collective sites than on those living with host communities and in other dispersed settings. Given that in many cases the vast majority fall into the second category, figures based on data from collective sites are likely to be substantial underestimates.

Real-time reporting is less reliable, but later assessments may underestimate: Reporting tends to be more frequent but less reliable during the most acute and highly dynamic phases of a disaster, when peak levels of displacement are likely to be reached. It becomes more accurate once there has been time to make more considered assessments.

Estimates based on later evaluations of severely damaged or destroyed housing will be more reliable, but they are also likely to understate the peak level of displacement, given that they will not include people whose homes did not suffer severe damage but who fled for other reasons.

IDMC estimates for some disasters are calculated by extrapolating from the number of severely damaged or destroyed homes or the number of families in evacuation centres, applying national average household size.

Estimating average household size

Primary sources often report the number of homes rendered uninhabitable or the number of families displaced, which we convert into a figure for IDPs by multiplying the numbers by the average household size (AHHS). There is, however, no universal dataset with updated and standardised AHHS data for all countries. Given the potentially significant influence of AHHS on estimates, the data and methodology used to calculate it has to be updated on a regular basis.

The AHHS and therefore estimates are subject to a margin of error, which means that by applying a particular value one may underestimate or overestimate real figures. If possible the AHHS should be reviewed and updated every year and, as a general rule, when data is expressed in household or family units, the number of displaced people according to the AHHS for the year when the data is captured should be estimated. This applies particularly to figures obtained from historical or retrospective research, notably in protracted or prolonged displacement cases where using a contemporary household size without accounting for demographic changes would have lead to an underestimate for an event that occurred in 2008

Evacuation data

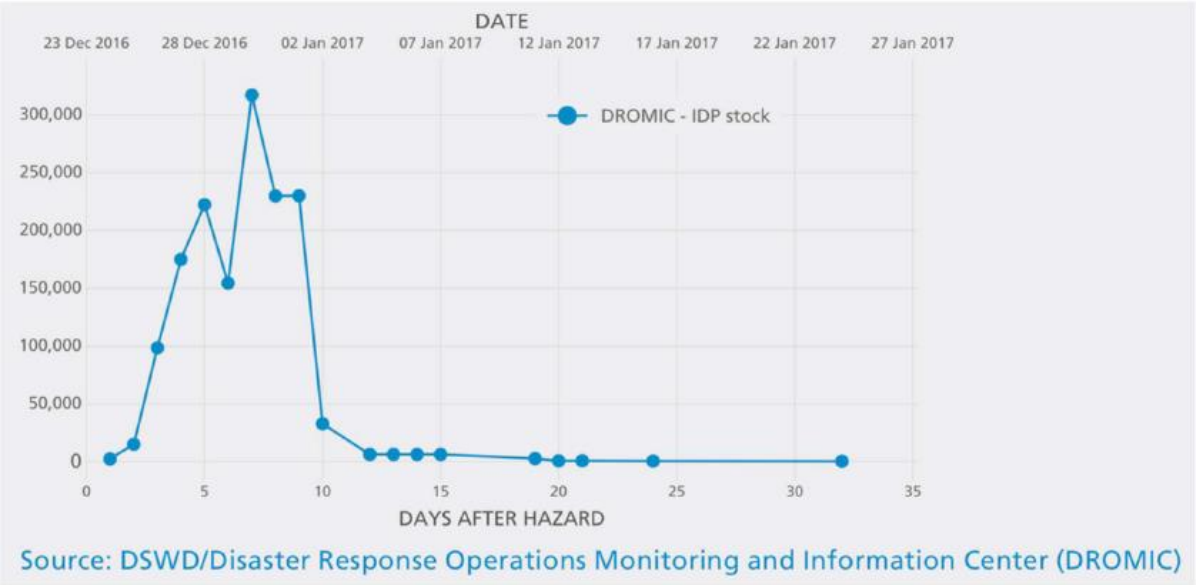
Displacement estimates often use data on mandatory evacuations and people staying in official evacuation centres. On the one hand, the number of people counted in evacuation centres may underestimate the total number of evacuees, as others may take refuge elsewhere. On the other, the number of people ordered to evacuate may overstate the true number, given that some are likely not to heed the order. The potential for such

discrepancies is much greater when authorities advise rather than order evacuation, and as a result they should not be included in national or global estimates.

Length and severity of displacement

In the absence of reliable reporting on returns, local integration and relocations, it is not currently possible to clearly determine the numbers, length and severity of displacement in a globally comparable manner. In fact, of all the time-series data IDMC has in its global database, in only five of the more than 130 events did collection continue until the number of displaced people reached zero.

Two were in the Philippines, and the others were in Indonesia, Tonga and India. As is clear from the data from Nock-Ten in the Philippines (below), it is not always straight forward to estimate the number of new displacements; also a common challenge for events such as seasonal floods that have multiple waves of displacement.



Dispacement data for typhoon Nock-Tem (locally known as Nina), number of IDPs at a given moment in time.

This represents a major blind spot, with significant implications for people who remain displaced but not counted, and those responsible for protecting them. The fact that data collection ended while people were still displaced in more than 130 displacements further underscores the need for much greater investment in monitoring displacement over time in all countries.

Monitoring Disaster Displacement: flows vs stocks

The language used to describe how we account for internal displacement can seem abstract. Behind all of our figures are people whose lives have been threatened and disrupted, in many cases severely, by traumatic events. Most displaced people flee their homes and places of residence as a last resort and only in response to life-threatening situations.

Most displacement figures and statistics refer to “stocks” or “flows”. They can be defined as follows:

Flows: Processes, such as the rate at which people are newly displaced or return over a given period of time. When we use housing destruction as a proxy for displacement this is a flow since we don’t necessarily know precisely when the homes were destroyed. Flow data could also include the number of people who have been evacuated “since” a specific date or during a fixed period of time.

Stocks: The number of people in a given situation and/or location at a particular moment in time. For example, this could refer to the number of people in a specific shelter or evacuation centre on a particular date or the number of people sheltering outside of shelters on that same date.

There are several challenges when monitoring displacement stocks and flows. One of the key data and knowledge gaps we face refers to: what happens to people once they have become displaced? Time series information about the stock of displaced people as well as data on the outflows from that stock are vital for measuring the extent to which the global target of reducing internal displacement by 50 per cent by 2030 is being achieved. Most importantly, without longitudinal or time series data, it is impossible to know how many people remain displaced in the weeks, months and sometimes years after a disaster.

Source of data

Displacement data in the context of disasters is collected by a wide range of partners on the ground (figures 1 and 2). The process of obtaining data on internal displacement remains a major challenge despite various UN General Assembly resolutions encouraging governments to collect and share their data with IDMC. In the context of disasters national and local authorities are often the lead in collecting and storing data, with UN agencies also reporting on events. However, media remains an important source of information for the triangulation of figures or also for “catching” small cases of displacements. In fact, these “disasters” are not always the reported by the humanitarian community and countries have not always the capacity to collect information.

Fig 1. Disaster displacement data sources by country

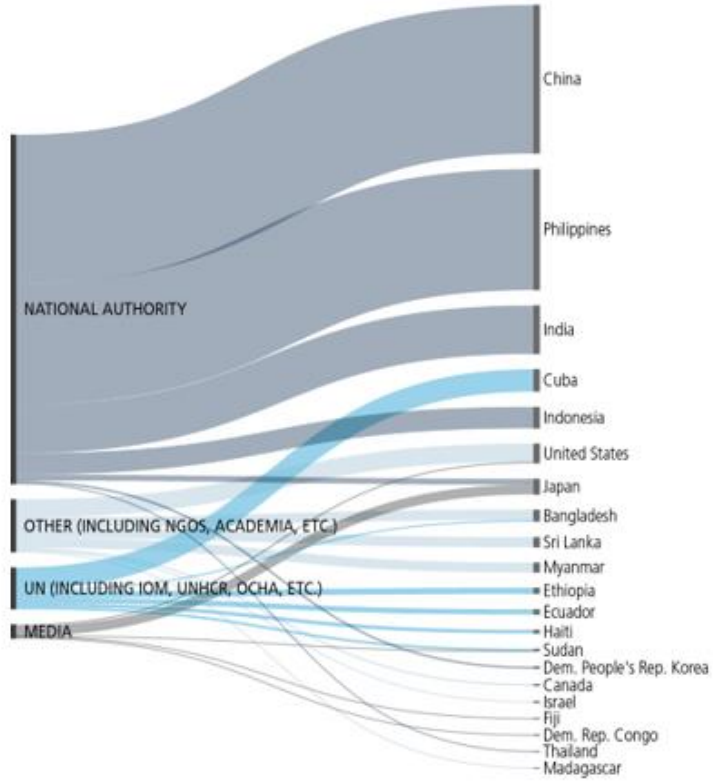
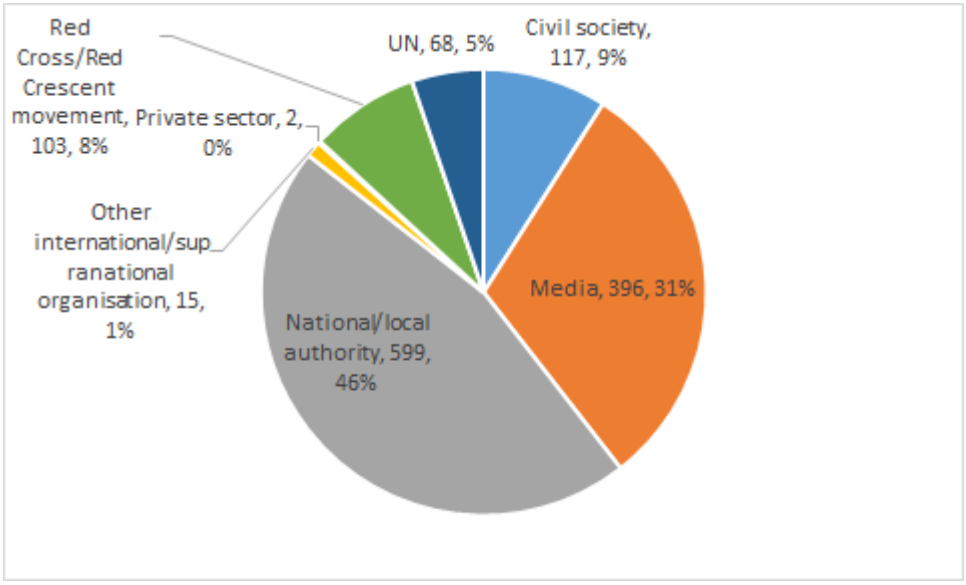


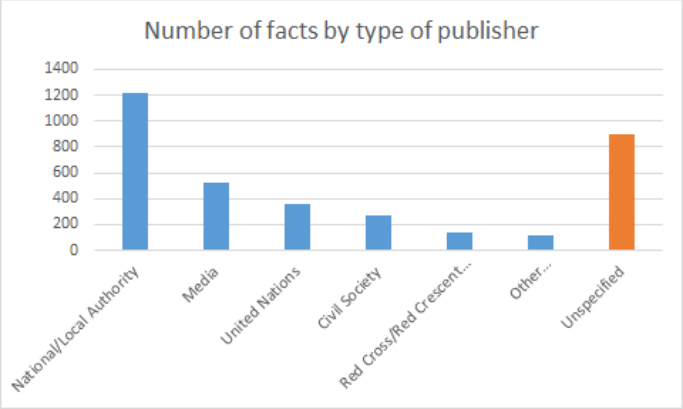
Fig 2. Disaster displacement data sources sources by category



Publishers vs Sources

Sources and publishers are recorded in the database as the same kind of object. However, it is important to differentiate between them. The source originates an IDP figure. It is whoever counted, estimated, or stated the IDP figure. The publisher is the one responsible for the document and the one quoting the source, particularly if it's a media report. Or where the information is found and where the information is coming from quoted.

Fig3. Facts per type of publisher



Despite best efforts, a comprehensive picture of disaster displacement worldwide does not yet exist. This means that our global baseline is still a significant underestimate. Key gaps include the lack of data on all relevant phenomena, our limited ability both to obtain and analyse all of the information that does exist and to systematically identify new incidents of displacement. Without this information, we do not have an accurate measure of how many people have become internally displaced, the reasons they have fled and how long they remain displaced for.

3. ACTIVITY III.2

Providing global baseline of climate-related disaster displacement risk, and package by region[1]

Displacement in the context of climate change is a global issue. If displacement is only understood by analysing what has happened in the past, protection and assistance measures will only be able to address current situations. In other words, when displacement is only accounted for and addressed after it happens, responses are largely limited to humanitarian, relief and protection interventions.

If, on the contrary, retrospective analysis is complemented with probabilistic analyses and metrics - assessments of the likelihood of certain displacement events taking place within a specific future timeframe - new opportunities for action open up. First, decision-makers are able to understand the probability of future displacement events, meaning that preparedness can be significantly improved. Second, by understanding the different layers of displacement risk - the type and scale of displacement that may occur at different intervals and frequency - governments and others in the development sector can target their investments in support of effective risk reduction.

Displacement associated with conflict is influenced by highly volatile political, socioeconomic and cultural conditions specific to each situation, making it difficult to assess from a probabilistic point of view, but that associated with sudden-onset natural hazards has components that science can estimate and model. Doing so provides useful information that can be used to identify and address the drivers of disaster risk, and with it reduce the likelihood of displacement taking place.

Disaster risk assessments typically consider rare, high-intensity hazards that occur only once every 250, 500, 1,000 years or more. That means that most of the disasters that could take place have not yet happened.[2] In order to account for such events, we have adopted a probabilistic approach to measuring risk. We then combine this with empirical data on more common, low-intensity hazards for which we have recorded the number of people displaced.[3]

[1] The following is based on IDMC's report "Global disaster displacement risk", available at http://internal-displacement.org/publications/global-disaster-displacement-risk-a-baseline-for-future-work . For more information on the methodology, please see: http://internal-displacement.org/monitoring-tools/displacement-risk

[2] UNISDR, Global Assessment Report, 2015, available at https://goo.gl/c58HM3

[3] IDMC, Global internal displacement database, available at https://goo.gl/35RcfT

By combining the prospective data presented in this report with our retrospective figures, and by analysing the broad socioeconomic and political dynamics that play a role in the underlying drivers of displacement, we can better understand how it happens and how to reduce it. This in turn will help to address displacement risk across its whole "gestation cycle" rather than only from point zero when displacement actually starts.

How displacement associated with disasters comes about

Internally displaced people (IDPs) are described as "persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalised violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognised State border."[4] The definition is based on two core parameters, the forced nature of the movement and the internal dimension of the flight.

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

They may also be displaced in order to avoid the potential impacts of a hazard before it strikes, often in the form of emergency evacuations. These may be planned, ordered or recommended and facilitated officially, or they may be the spontaneous response of exposed populations based on their own information and perceptions of risk. Either way, they are usually undertaken as a measure of last resort. Evacuations accounted for more than eight million, or over a third of the displacements associated with disasters that we reported in 2016.

As reported elsewhere, most people displaced by disasters remain within their home countries, which makes their plight a predominantly national responsibility.[5] Their displacement also tends to be short-term. Even when housing is damaged or destroyed, people generally return to rebuild.[6]

Depending, however, on the extent of the damage and the vulnerability of the affected population, IDPs may cross borders. Such movements may be intentional, or accidental when borders are porous and not clearly marked. Significant cross-border displacement was

[4] OCHA, Guiding Principles on Internal Displacement, 1998, available at https://goo.gl/ii8tby
[5] IDMC, Global Report on Internal Displacement, available at https://goo.gl/KhF4un
[6] United Nations University, Linking Environmental Change, Migration & Social Vulnerability, 2009, available at https://goo.gl/LXsLEj; Jon Barnett and Michael Webber, Accommodating Migration to Promote Adaptation to Climate Change, 2010, available at https://goo.gl/GXGJrH

reported in the Greater Horn of Africa during food crises and famines that were driven at least in part by drought in 2010 and 2011 and again between 2015 and 2017.[7]

The current and projected data on IDPs crossing borders because of disasters is limited, making it difficult to assess the implications of such population movements, but it is an important topic addressed in the Nansen Initiative's protection agenda and the Platform on Disaster Displacement, at which regional and global policy and research agendas are being discussed and integrated.[8]

A combination of international governance arrangements and national accountability mechanisms is needed to reduce displacement and the future risk of it. In developing such a framework, it is important to recognise that climate change and variability is only one of a number of components in the complex and growing phenomenon of displacement associated with disasters. Risk drivers such as badly planned and managed urbanisation, poverty and inequality and poor governance also play a significant role, and can change more quickly and have a greater influence on displacement risk and trends.

This raises the importance of risk-sensitive development and climate resilient interventions. It is only via an ethic of prevention and risk reduction as a cross-cutting topic spanning different sectors and levels that displacement risk will be successfully reduced.

The concept of risk

The concept of risk relates to the evaluation of the likelihood of negative outcomes and the efforts made to mitigate them. Risks are an inevitable part of life, but action can be taken at the individual, community, national and regional level to reduce them and develop contingency plans. The evaluation of risk is the starting point for translating perceptions into mitigating actions.

The concept of risk applies to many aspects of daily life at the individual level. People have vaccinations before travelling to reduce the risk of disease. They wear helmets while cycling to avoid injuries, and invest in pension plans to mitigate the risk of losing income. There are dozens of similar examples at the local and national level, from public health issues such epidemics and the side effects of medication; and environmental concerns such species extinction and biodiversity loss; to national security matters such as terrorist attacks, nuclear

[7] IDMC, Reducing Displacement Risk in the Greater Horn of Africa : A baseline for future work, 2017, available at https://goo.gl/zGjfsp

[8] Nansen Initiative, Disaster-induced cross-border displacement: global consultation, available at https://goo.gl/Q2HvDi; Platform on Disaster Displacement - PDD, available at https://goo.gl/bF9mQj; Nansen Initiative, global consultation - annex III, 2015, available at https://goo.gl/9S3dLf

proliferation and the breakdown of ceasefire agreements; and political, economic and financial considerations such as exchange rate crises, sovereign debt defaults and membership of supranational organisations such as the European Union.

Common to each is the perception that something undesirable may occur at some point in the future. Two important features are inherent in the concept of risk:

- the likelihood or probability that something will occur
- the anticipatory focus of thought and attention on the future

In terms of understanding and managing disaster risk it is vital to recognise that the disasters natural hazards trigger are not acts of God that occur in a vacuum, and that much can be done to mitigate the risks they pose and reduce the losses they cause. For disaster displacement risk in particular, it is also important to understand that displacement associated with disasters is mainly linked to the exposure and vulnerability of the population in question and a lack of coping capacity of communities, local and national governments and other stakeholders. Knowledge and understanding of its main drivers are the foundation for defining effective measures to reduce future displacement risk.

Why measure displacement risk?

Several global policy agendas reinforce the notion that displacement needs to be understood and addressed through a risk lens, and two include provisions to address and reduce displacement risk. By adopting the 2015 Sendai Framework for Disaster Risk Reduction, UN member states agreed "to build resilience and reduce disaster risk, including … displacement risk".[9] In December of the same year, the parties to the UN Framework Convention on Climate change (UNFCCC) adopted the Paris Agreement, which tasked the convention's Warsaw International Mechanism with convening a task force to "develop recommendations for integrated approaches to avert, minimize and address displacement related to the adverse impacts of climate change."[10] In order to know if the risk of displacement has been reduced or averted, it must first be measured.

The UN secretary general's Agenda for Humanity establishes a core responsibility to "leave no one behind", with a specific goal of reducing the global caseload of IDPs by half by 2030.[11]

[9] UN, Sendai Framework for Disaster Risk Reduction, 2015, paragraph 28(d), available at https://goo.gl/AgQc4P
[10] UNFCCC, decision 1/CP.21, 2015, paragraph 49, available at https://goo.gl/ViGEXk
[11] UN, One humanity: shared responsibility, 2015, core responsibility three, paragraphs 81-85, available at https://goo.gl/rYDzVN

This target recognises that in order to do so, "efforts should be made to prevent all new forced displacement", which in turn requires an understanding of displacement risk and its drivers.[12]

In addition to avoiding the upheaval of people's lives and the need to safeguard their rights, there is also an economic imperative to reduce displacement risk. There are both direct and indirect costs associated with displacement, even if they have not yet been fully accounted for. They may manifest as the cost of sheltering and assisting those who have lost their homes, and as less obvious impacts such as loss of productivity and the interruption of children's education, the latter having the potential to reduce future productivity and earnings.[13]

The measurement of displacement risk is not simply a way to report against a global policy target. It can also help governments and civil society to anticipate and better prepare for future events. Assessments such as the one reported here will inform decision-makers in adopting measures that go beyond providing IDPs with humanitarian assistance and protection to better plan and intervene with sustainable development activities that will prevent displacement and reduce displacement risk.

The figures presented here aim to provide an order of magnitude of future displacement situations, allowing decision-makers to take risk-informed decisions that will prevent and reduce the risk of displacement before it happens. They are an initial analysis and a solid foundation. That said, there are several questions and lines of inquiry we were not yet able to pursue, such as how the magnitude of risk has evolved over time in both absolute and relative terms, as well as how it might change over time due to impacts of climate change. We know where risk is concentrated but we have not yet analysed where it is increasing most quickly - or why. We also did not yet have the opportunity to analyse in depth the latent structural drivers of displacement risk.

Key DRR concepts

Hazard

"A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation. Hazards may be natural, anthropogenic or socionatural in origin. Natural hazards are

[12] *Ibid*, paragraph 83.

[13] Duflo E, Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment, American Economic Review, September 2001, pp.795-813; Colclough C, The impact of primary schooling on economic development: a review of the evidence, World Development 10:3, March 1982, pp.167-185; Psacharopoulos G, Returns to investment in education: A global update, World Development 22:9, September 1994, pp.1,325-1,343; Brookings Institution, The Effects of Investing in Early Education on Economic Growth, Policy Brief #153, April 2006, available at https://goo.gl/tx1vwE

predominantly associated with natural processes and phenomena … Several hazards are socionatural, in that they are associated with a combination of natural and anthropogenic factors, including environmental degradation and climate change."
Hazards may be sudden-onset or slow-onset. The former are sudden shocks such as floods, cyclones or earthquakes, while the impacts of the latter are gradual and linked to an accumulation of effects, as in the case of climate change and drought.

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

Vulnerability
"The conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards."[14]

Average annual displacement (AAD)
The average number of people expected to be displaced each year considering all events that could occur over an extended timeframe. Results are provided in absolute terms - the anticipated number of IDPs each year, and relative to the population size - the number of people per 100,000 inhabitants expected to be displaced each year. AAD should be considered as an indicator of the potential magnitude of displacement, not as an exact value. It is a compact metric with low sensitivity to uncertainty.

Total number of people at risk of displacement

This section describes and analyses absolute displacement risk, as revealed by AAD figures. The absolute numbers illustrate which countries, regions and income groups are likely to suffer more displacement associated with sudden-onset hazards than others.

[14] UNGA, Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction, December 2016, available at https://goo.gl/Ct59Dm

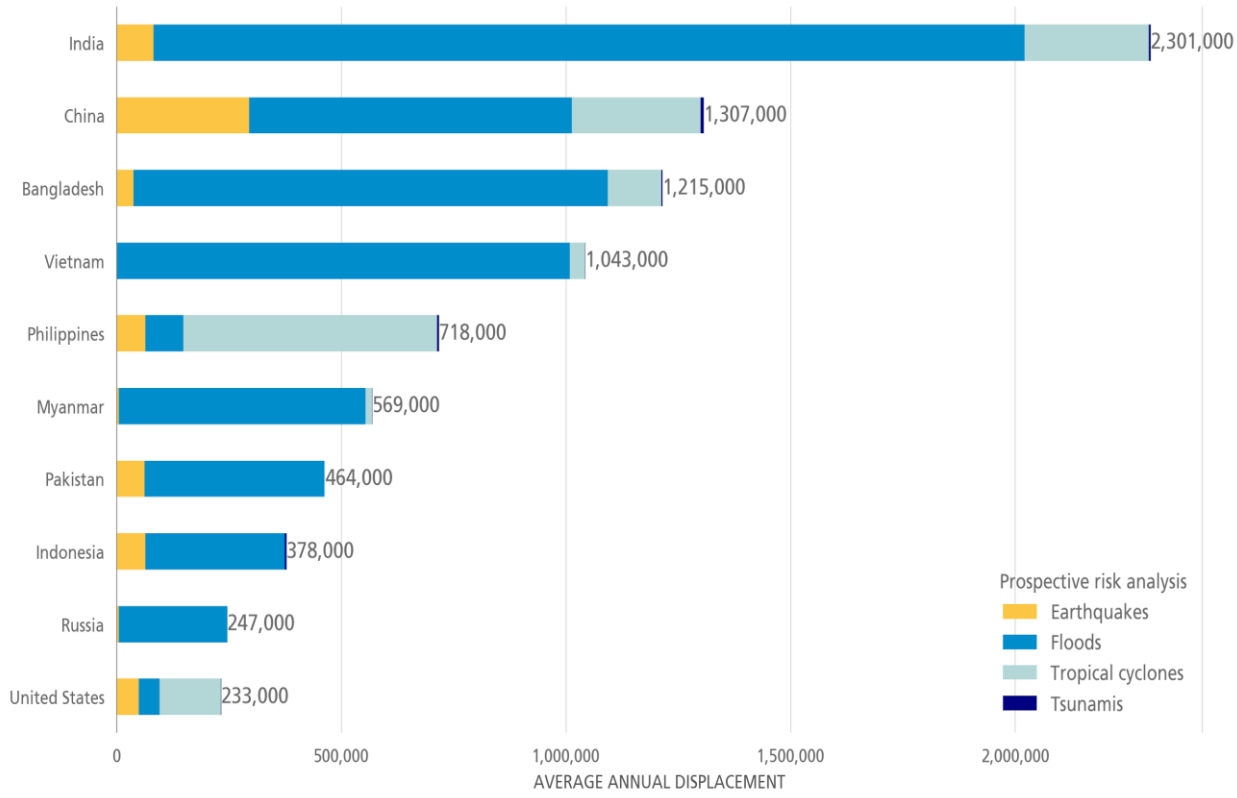


Figure 4: Absolute AAD for sudden-onset disasters, based on prospective risk assessment. Source: IDMC

We estimate that global AAD is 13.9 million. This represents a significant challenge disaster risk, carrying both human and economic costs. Figure 4 shows the 10 countries with the highest projected absolute AAD. Those with large populations, ranging from 52 million people in Myanmar to 1.4 billion in China, predominate. This highlights the fact that population exposure is a key component of displacement risk. More people are likely to be displaced by disasters in countries with large populations.

The first eight countries in the chart are all lower-middle to middle income countries in south and south-east Asia, a region with densely-populated cities and other settlements. They are among the 50 countries in the world with the largest populations living in urban areas.[15] Their urban areas are often located in flood-prone river basins, along seismic fault lines or in coastal areas exposed to cyclones and storm surges.

[15] UNDESA, World Urbanization Prospects, 2014, available at https://goo.gl/5YSQeD

The majority of displacement in these countries will be caused by flooding. Comparatively little will be caused by earthquakes, tsunamis and the winds and storm surges associated with tropical cyclones.

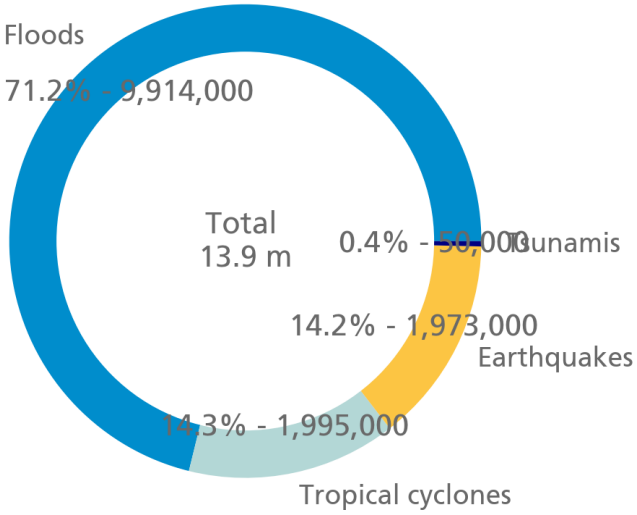


Figure 5: AAD by hazard type. Source: IDMC

The importance of exposure as a component of displacement risk can also be seen in figure 5, which illustrates the distribution of risk by sudden-onset hazard type for all of the countries modelled. Floods account for almost three-quarters of the total modelled displacement, or an average of almost 10 million globally each year.

This may be for a number of reasons. First, flooding occurs almost everywhere in the world, while other hazards - such as tropical cyclones, earthquakes and tsunamis - are more location-specific. Floods also have a shorter return period, which means they are more frequent. They tend to be less devastating than earthquakes, but when added together they cause more displacement overall. With the exception of Philippines, which sits in the path of Pacific cyclones and so is highly vulnerable to them, and the US which suffers the impacts of those in the Atlantic, the other eight countries in figure 6 will witness high numbers of people displaced by floods in any given year.

Secondly, large numbers of people live in dense settlements in areas such as flood-prone river basins, because such areas tend to be places of high economic activity. Cities themselves can also contribute to flood risk, particularly those without adequate drainage, natural water storage, levees and floodwalls to manage rising floodwaters and run-off.

In contrast, exposure to tropical cyclones in coastal areas and earthquakes along seismic fault lines is relatively low. Exposure to tsunamis is very low because they are the result of a very specific set of geophysical and hydrological circumstances.

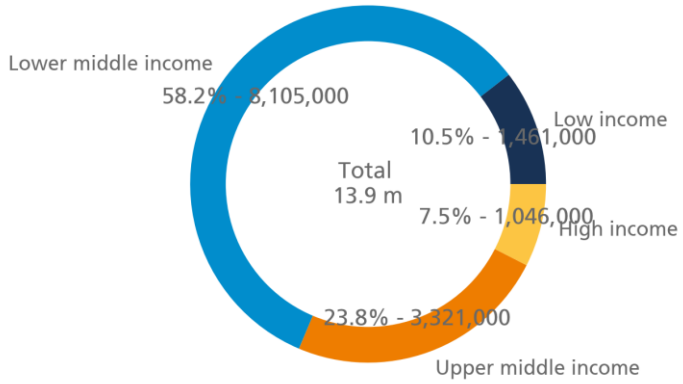


Figure 6: AAD by income group. Source: IDMC with World Bank data

Figure 6 shows the breakdown of displacement risk by income group. AAD is higher in upper-middle and lower-middle income countries, which together account for more than 80 per cent of the modelled displacement.

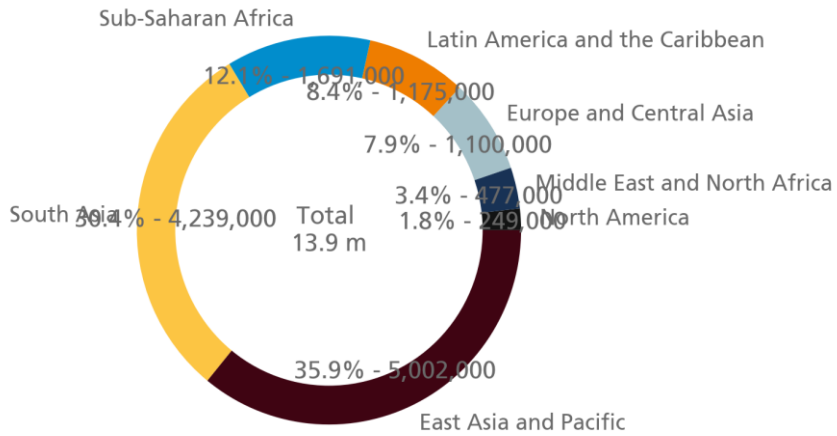


Figure 7: AAD by region. Source: IDMC, with World Bank data

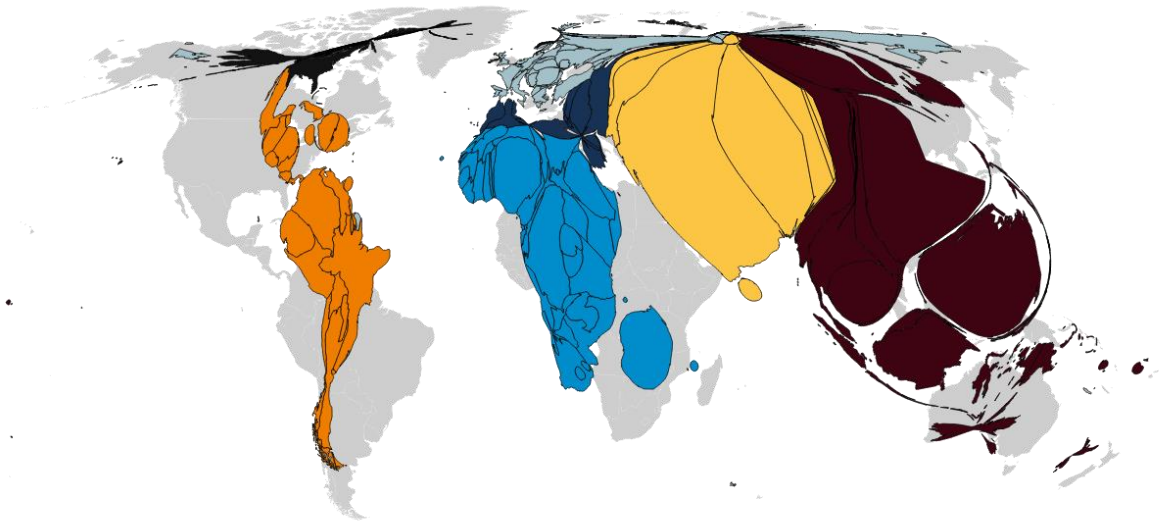


Figure8: Map of AAD by country and region. Source: IDMC with World Bank data

Figure 7 shows that AAD is highest in the South Asia and East Asia and Pacific regions, which together account for two-thirds of the total modelled displacement. This is also highlighted in figure 8, where the size of the countries and regions have been adjusted on the map to reflect AAD. South Asia and East Asia and Pacific are expanded significantly, while North America and the Middle East and North Africa are much smaller.

Our data shows that displacement associated with disasters will mainly affect developing countries. This represents a significant challenge for efforts to improve disaster resilience and reduce displacement risk, but it can also be interpreted as an opportunity to invest before disasters and the displacement they are likely to trigger take place. Given, as mentioned above, that most of the disasters that could happen have not occurred yet, our prospective figures reveal an order of magnitude for future displacement in certain countries. They also show the extent to which each hazard type is likely to contribute to overall displacement risk.

This is a sound basis on which to start to establish the necessary governance arrangements to avoid potentially disastrous events and invest in measures to reduce future risk, rather than adopting a “business as usual” approach that will inevitably mean further displacement takes place.

Hydro-meteorological hazards dominate all charts. This highlights the need to adapt to such events, particularly considering that climate change and variability will add to their complexity and intensity. The good news is that hydro-meteorological hazards such as floods and

cyclones can be predicted. This means that the projected displacement presented above can be reduced if pre-emptive DRR measures are taken.

Simple and low-cost early warning systems are well proven to avoid loss of life and assets, and to reduce forced displacement. There is also plenty of evidence and expertise on flood monitoring and risk reduction that can be applied in countries at high risk, particularly in regions such as south and south-east Asia. If investments in DRR and climate resilience are made now as part of overall sustainable development planning, the scale of future displacement associated with disasters will be dramatically reduced.

Not all displacement is bad
The high numbers of IDPs recorded are an obvious cause for concern, but displacement should not always be considered a negative outcome. Our historical estimates of evacuations reflect many lives saved by pre-emptive population movements based on timely early warnings.

Displacement risk relative to population size

Looking at displacement risk relative to countries' population size reveals very different but equally important information in terms of vulnerability and coping capacity. A new layer of displacement risk emerges which, as with that highlighted by our absolute figures, has significant implications for policy-makers.

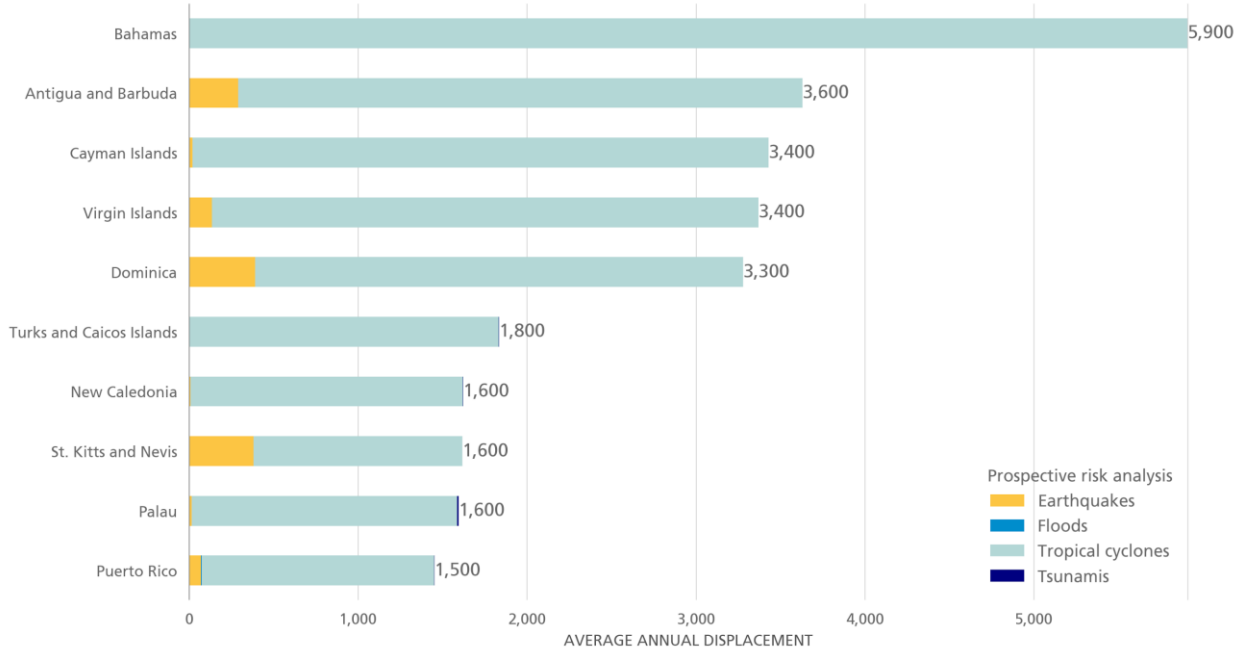


Figure 9: AAD relative to population size. Source: IDMC with UN Population Division data

Figure 9 shows the 10 countries with the highest relative AAD. They are all small island developing states (SIDSs), either in the Caribbean or the Pacific, and they are highly vulnerable to earthquakes and tropical cyclones. The chart highlights the fact that, despite their lower absolute risk compared with more populous countries, SIDSs will experience very different and highly significant consequences in terms of displacement relative to their population size. The Bahamas, for example, can expect an annual average of 5,900 people per 100,000 inhabitants, or 5.9 per cent of its population, to be displaced by tropical cyclones.

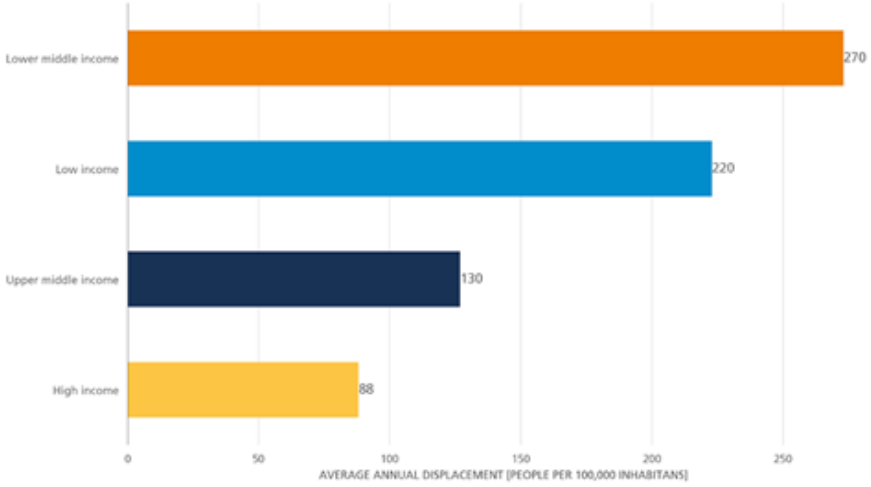


Figure10 : AAD relative to population size by income group. Source: IDMC with World Bank data

Figure 10 reveals that as with absolute AAD by income group, when measured relative to population size the lower-middle income category has the highest rate. Low income countries have a proportionately higher rate when their population size is taken into account. The fact that they tend to have poor coping capacity when it comes to disasters is a concern, because it also means that people are likely to remain displaced for longer, particularly in the absence of insurance or adequate social safety nets. Upper-middle income countries, by contrast, have a lower relative AAD rate.

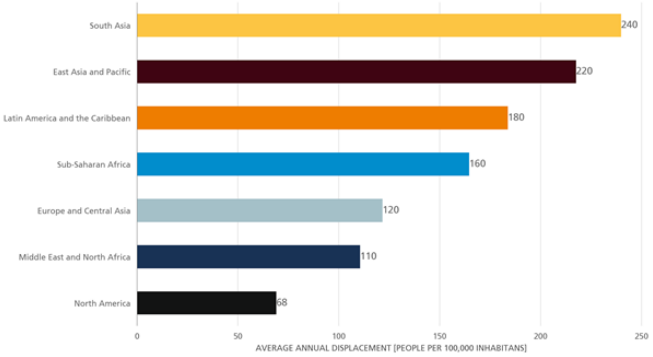


Figure 11: AAD relative to population size by region. Source: IDMC with World Bank data

As shown in figure 11, a similar pattern emerges when relative AAD is viewed by region. South Asia and East Asia and Pacific still have significant displacement relative to population size, while regions such as Latin America and the Caribbean and Sub-Saharan Africa have higher AAD rates.

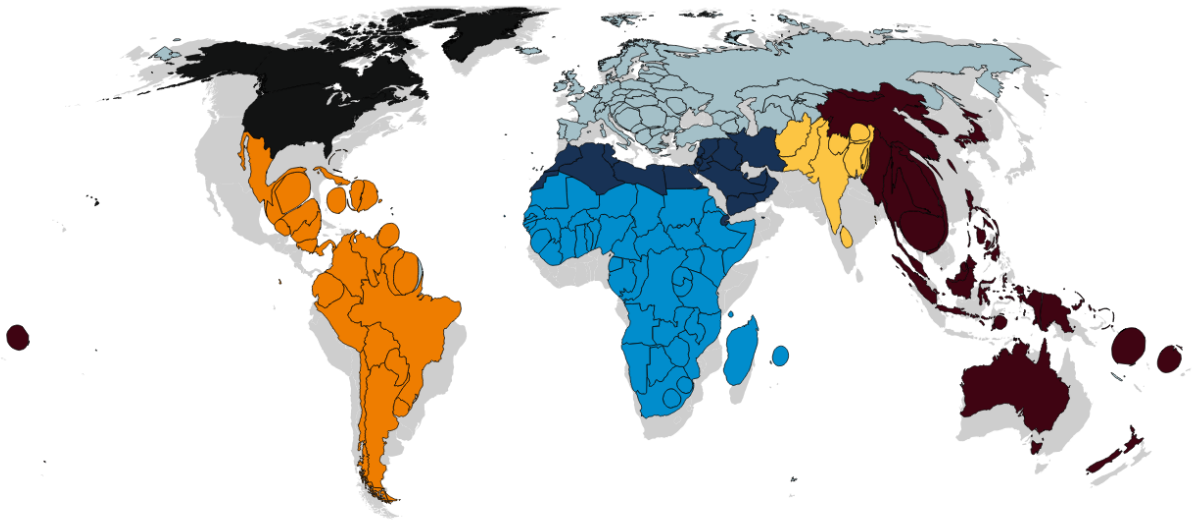


Figure 12: Map of AAD relative to population size by region. Source: IDMC with World Bank data

This is clearly be seen in figure 12, where countries' sizes are displayed according to their relative AAD. It is striking to see how some, such as SIDSs in the Caribbean and the Pacific, increase in size dramatically, while North America shrinks.

Understanding the drivers of displacement risk

Policy-makers need to better understand the context in which displacement risk is concentrated both in absolute and relative terms if they are to put in place more effective policies to prepare for, respond to and recover from such events.

In order to better understand this context we used the INFORM risk index, "a composite indicator that identifies countries at risk of humanitarian crisis and disaster that would overwhelm national response capacity".[16]

We considered the following main components of the index:

[16] INFORM risk index 2017, available at https://goo.gl/wJI7s7

- *Natural hazards and exposure*: This represents events that might occur and exposure to them. The main metric considered is the annual average exposed population (AAEP) or, when hazard maps for different return periods are not available, annual exposed population (AEP). The hazards included are earthquakes, tsunamis, floods, tropical cyclones and drought.

- *Socioeconomic vulnerability*: This quantifies what makes a population vulnerable when faced by a hazard. It is calculated using development, deprivation, inequality and aid dependency as components. It considers country-level indicators such as the UN Development Programme (UNDP)'s human development index, the GINI index - which represents the income or wealth distribution of a nation's residents, and is the most commonly used as a measure of inequality - and the total official development assistance per capita in the last two years.

- *Institutional lack of coping capacity*: This evaluates governments' priorities and institutional capability in implementing DRR activities. It is calculated on the basis of the Hyogo Framework for Action's self-assessment reports, the World Bank's government effectiveness index and Transparency International's corruption perception index.

Analysis in relation to INFORM's components helps to put displacement risk into context and as such to better suggest effective policy entry points to reduce it.

Natural hazards and exposure

The primary driver of increasing absolute displacement risk is population growth, particularly in areas prone to hazards. In its 2012 report on disasters and climate change, the Intergovernmental Panel on Climate Change (IPCC) concluded that "exposure and vulnerability are key determinants of disaster risk and of impacts when risk is realized" and that disaster impacts in the near future would be driven by changes in those determinants.[17]

Exposure has risen fastest in the most vulnerable countries over the past 40 years, and the trend is projected to continue through to 2050. IPCC also found that "rapid urbanisation and the growth of megacities, especially in developing countries, have led to the emergence of highly vulnerable urban communities, particularly through informal settlement and inadequate land management".[18] This is a perilous combination of factors that has increased

[17] IPCC, Summary for Policymakers, 2012, available at https://goo.gl/H5Doa9

[18] *Ibid*

displacement risk significantly. Informal settlements combine high exposure with high vulnerability, because despite being close to income-earning opportunities they tend to be located on marginal land that is too prone to risk for formal commercial or residential development.[19]

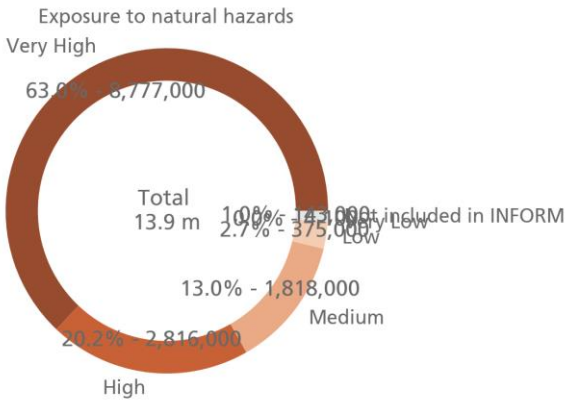
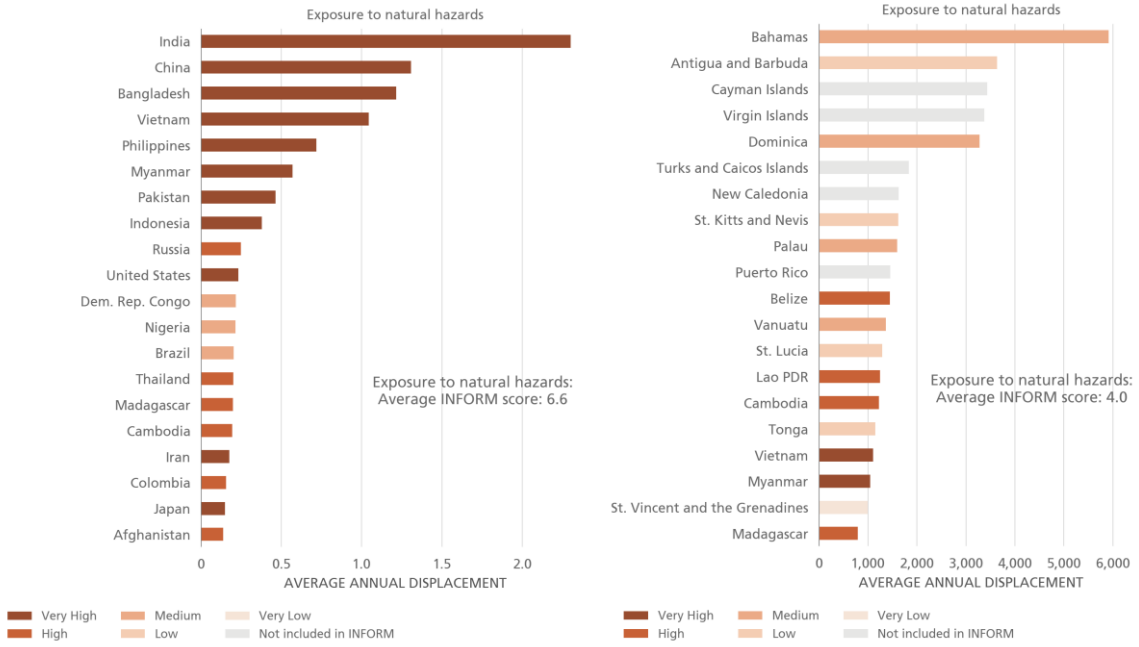


Figure 13: Absolute AAD by INFORM's natural hazards and exposure classification. Source: IDMC with INFORM data

This is supported by figure 13, which shows that more than 80 per cent of global displacement risk is concentrated in countries that INFORM ranks either "very high" or "high" in terms of exposure to natural hazards.



[19] IDMC, Disaster-related Displacement risk: measuring the risk and addressing its drivers, 2015, available at https://goo.gl/5pYPDR

Figure 14: Countries with the highest absolute AAD (left) and relative AAD (right) by INFORM's natural hazards and exposure classification. Source: IDMC with INFORM data

Of the 20 countries with the highest absolute AAD, INFORM ranks 11 "very high" in terms of their exposure to natural hazards, as shown in the left-hand panel of figure 14. They are mainly countries in South Asia and East Asia and the Pacific, such as India, China, the Philippines and Japan, but INFORM also ranks the US "very high" because a significant proportion of the population is exposed to floods and tropical cyclones. The only country in the Middle East ranked "very high" is Iran, where a significant proportion of the population is exposed not only to geophysical hazards such earthquakes and tsunamis, but also to riverine floods.

The right-hand panel of figure 14 suggests that overall exposure is not the main driver of displacement risk when population size is accounted for. INFORM only ranks two of the 20 countries with the highest AAD per capita as "very high" risk. SIDSs - which have fewer people exposed to natural hazards in absolute terms but a much larger proportion of their total populations at risk of displacement, mainly from tropical cyclones - are at the top of list.

Socioeconomic vulnerability

If exposure continues to increase, the only way to mitigate displacement risk is to reduce vulnerability. This means tackling the factors related to low levels of human development, and high levels of inequality and aid dependency that combine to increase a population's vulnerability to disasters. Left unattended, these factors could constitute a vicious cycle. Shocks induced by natural hazards tend to increase inequality and aid dependency, which in turn could make vulnerability to future hazards worse.

Poverty and inequality also limit people's means to increase their resilience and reduce their vulnerability. Standard insurance products to protect homes from fire, flooding and storm damage are not a viable option for people living in informal settlements or slums.

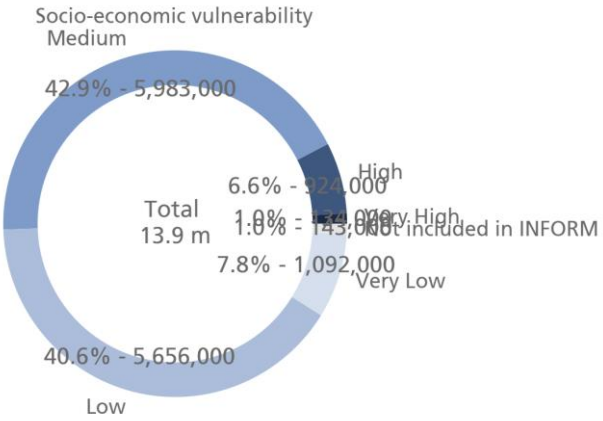


Figure 15: Absolute AAD by INFORM's socioeconomic vulnerability classification. Source: IDMC with INFORM data

Socioeconomic vulnerability seems to be less correlated with AAD in absolute terms, with only about eight per cent of the total displacement risk concentrated in countries INFORM ranks either "high" or "very high" risk, as shown in figure 15.

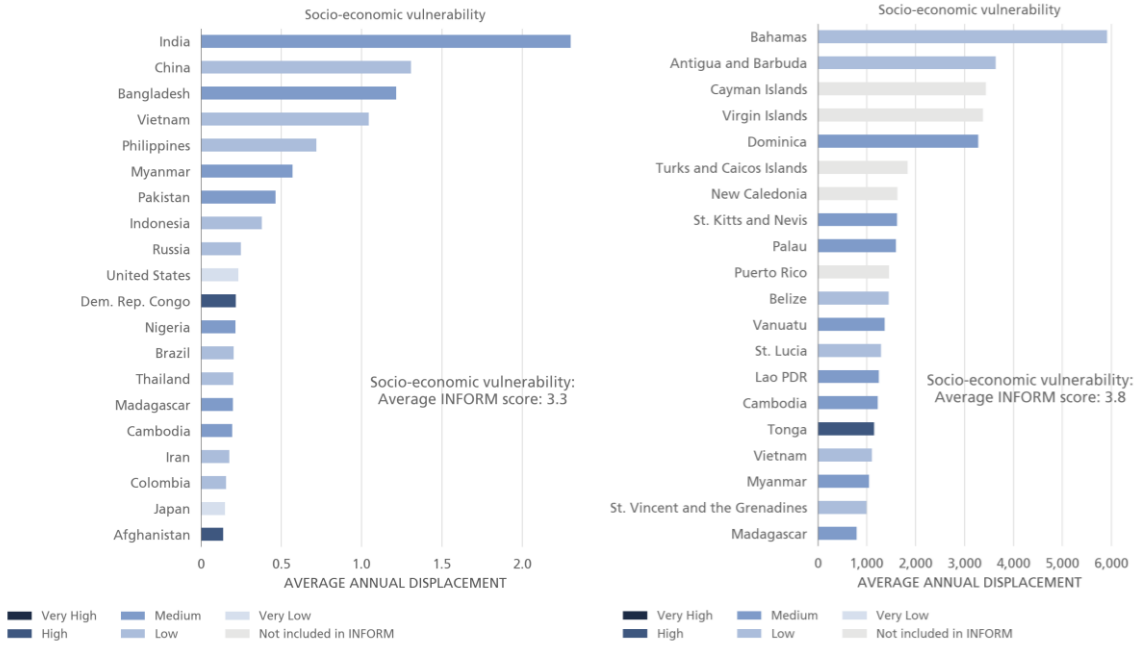


Figure 16: Countries with the highest absolute AAD (left) and relative AAD (right) by INFORM's socioeconomic vulnerability classification. Source: IDMC with INFORM data

When INFORM's average score for socioeconomic vulnerability is considered, the figure for countries that head the list for relative AAD - shown in the right-hand panel of figure 16 - is higher than for those that head the list for absolute AAD, which are shown on the left. This

means that vulnerability mainly correlates with a population's overall risk, i.e. the relative risk.

Institutional coping capacity

Displacement risk is an inevitable element of disasters that should be prepared for, and there are a number of measures that institutions and individuals can adopt to mitigate it in the future[20]. Displacement risk is highest in lower-middle and low income countries, where the people affected tend not to have the capacity to respond to, and recover from disasters. As such, local and national institutions are mainly responsible for developing contingency plans to foster communities' resilience and their capacity to respond[21].

Coping capacity usually refers to institutions' ability to react to a hazard once it has struck, mainly during the emergency response phase. As IPCC has said, however, an "effective response also requires substantial ex ante planning and investments in disaster preparedness and early warning".[22]

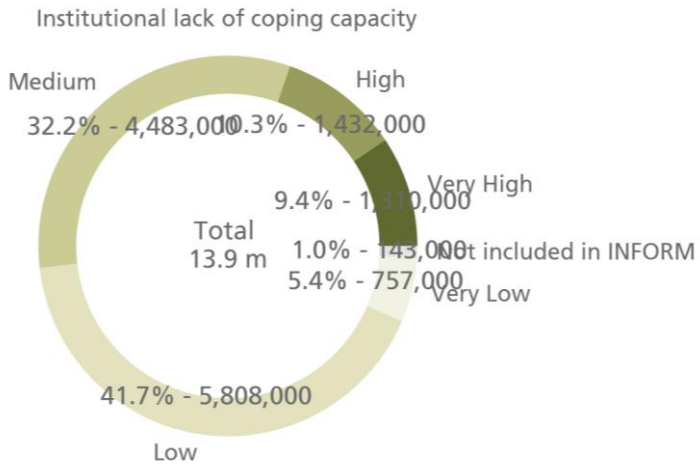


Figure 17: Absolute AAD by INFORM's institutional lack of coping capacity classification. Source: IDMC with INFORM data

Around 20 per cent of global AAD is concentrated in countries that INFORM ranks either "high" or "very high" in terms of their institutional lack of coping capacity, as shown in figure 17. Of the countries ranked "very high", Myanmar, the Democratic Republic of the Congo and Afghanistan have the highest AAD.

[20] IPCC, Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation, 2012, available at https://goo.gl/jJYdzZ
[21] IDMC, Global Report on Internal Displacement, available at https://goo.gl/KhF4un
[22] IPCC, Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation, 2012, available at https://goo.gl/jJYdzZ

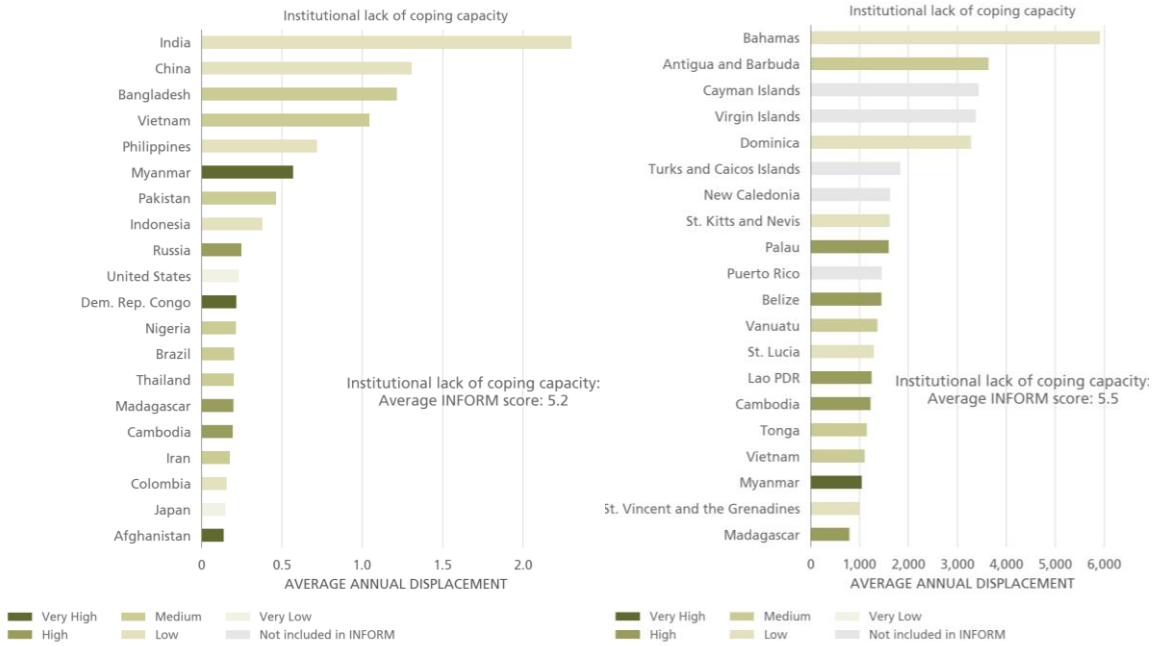


Figure 18: Countries with the highest absolute AAD (left) and relative AAD (right) by INFORM's institutional lack of coping capacity classification. Source: IDMC with INFORM data

As observed for socioeconomic vulnerability, countries that head the list for relative AAD - shown in the right-hand panel of figure 18 - score higher in terms of institutional lack of coping capacity than those that head the list for absolute AAD, shown on the left. This highlights the fact that their vulnerability and limited capacity to reduce disaster risk are the overriding factors that determine displacement risk, rather than exposure.

Human and economic impact of disasters

Our global risk model focuses on the human impact of sudden-onset disasters, providing a global baseline for the displacement they trigger. Natural hazards, however, are not only a human but also an economic burden. The UN Office for Disaster Reduction (UNISDR) analyses the economic losses caused by disasters triggered by sudden-onset events in its The 2015 Global Assessment Report (GAR).[23]

Similarly to AAD, average annual loss (AAL) quantifies expected economic losses annualised over an extended timeframe. It determines the amount of money that countries would have to set aside each year to cover the cost of future disasters in the absence of insurance or other disaster risk financing mechanisms. AAL only takes into account the direct economic impact of disasters - damage to homes, services, roads and other infrastructure. It does not

[23] UNISDR, Global Assessment Report, 2015, available at https://goo.gl/c58HM3

include indirect and long-term impacts such as the loss of jobs and productivity, land degradation and reduced access to education, healthcare and other economic, social and cultural rights.

Displacement adds to the economic impact of disasters in a number of ways. High levels of population exposure and vulnerability increase the need for emergency measures and costly evacuation and resettlement plans, and IDPs are most likely to lose access to their main economic, social and cultural rights, including employment, education and healthcare. There is also evidence of hundreds of thousands of people living in protracted displacement for years following disasters in countries as different as Japan in the case of its 2011 earthquake and tsunami, and Haiti in the case of its 2010 earthquake, which further increases their economic impact.[24]

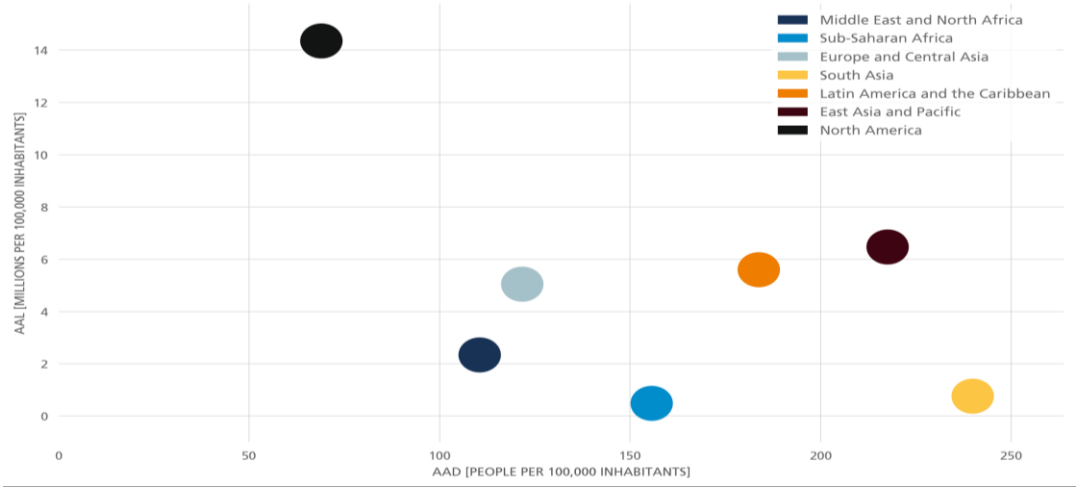


Figure 19: Correlation between relative AAD and relative AAL by region. Source: IDMC with World Bank and UNISDR data

We decided to look at relative rather than absolute economic loss to better reflect the human perspective. This tells us the losses populations are exposed to, rather than giving a purely economic view of the exposure of countries' assets. Relative economic loss is usually reported either as a percentage of social expenditure, capital investment or capital stock lost.

As figure 19 shows, relative AAD is significantly higher than relative AAL in Sub-Saharan Africa and South Asia. The disasters that strike the countries in these regions have a

[24] IDMC, Recovery postponed: The long-term plight of people displaced by the 2011 Great East Japan Earthquake, tsunami and nuclear radiation disaster, 2017, available at https://goo.gl/GqHdqT; IDMC, Global Report on Internal Displacement, 2016, available at https://goo.gl/Aq66rK

predominantly human impact. These countries also tend to have less capacity to cope with the effects of disasters and the highest levels of vulnerability.

Nor is the "disaster market" profitable for insurance companies, making recovery harder and slower. Parametric insurance and risk transfer products could be effective tools to help countries in these regions to recover, and the analysis presented in this report provides a helpful basis for them to do so.[25]

Countries in regions such as North America and Europe, by contrast, have to deal with extremely high economic losses in addition to a sizable displacement risk.

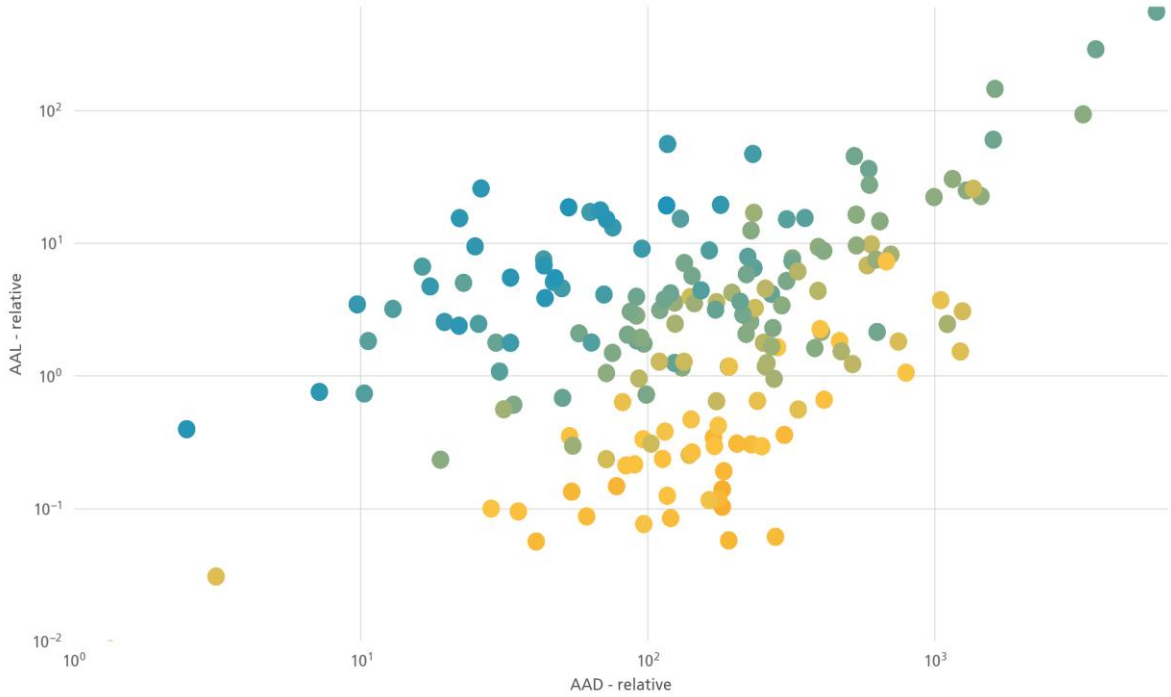


Figure 20: Correlation between relative AAD and relative AAL by UNDP's human development index ranking. Source: IDMC with World Bank and UNDP data

The large variance between relative AAD and AAL should not be interpreted solely in relation to income, but rather from a broader development perspective. To highlight this we looked at the correlation between the two and the human development index.[26] UNDP created the index to "emphasize that people and their capabilities should be the ultimate criteria for assessing the development of a country, not economic growth alone". It is a composite index that includes life expectancy, education and per capita income indicators.

[25] GFDRR, Innovation in Disaster Risk Financing for Developing Countries: Public and Private Contributions, 2011, available at https://goo.gl/9ny2Ss
[26] UNDP, Human Development Index, available at https://goo.gl/Yj5igA

Figure 20 shows a clear pattern. Higher displacement risk and lower economic loss risk is associated with lower development. This highlights the fact that a purely economic approach to DRR is not an effective way of reducing the human impacts of displacement. Governments and others in the development sector should invest in the overall development of the country, including education, health and life expectancy.

In order to estimate the economic and the human impact of disasters at the country level we calculated the ratio between AAL and AAD. This reveals the average amount of money lost per person displaced each year by sudden-onset disasters. Figure 21 shows the 20 countries with the greatest economic loss per person displaced, all of which the World Bank categorises as high income. In Liechtenstein almost $1m is lost for each person displaced, making DRR a mainly economic rather than humanitarian and development priority.

The only two regions not represented in the list are Sub-Saharan Africa and South Asia. Sub-Saharan countries, however, dominate the list of those with the lowest economic loss per person displaced, as shown in figure 22. Liberia's economic loss per IDP is almost 4,500 times lower than Liechtenstein's. All of the countries on the list fall into the World Bank's low income group, except for Cambodia which is categorised as lower-middle income.

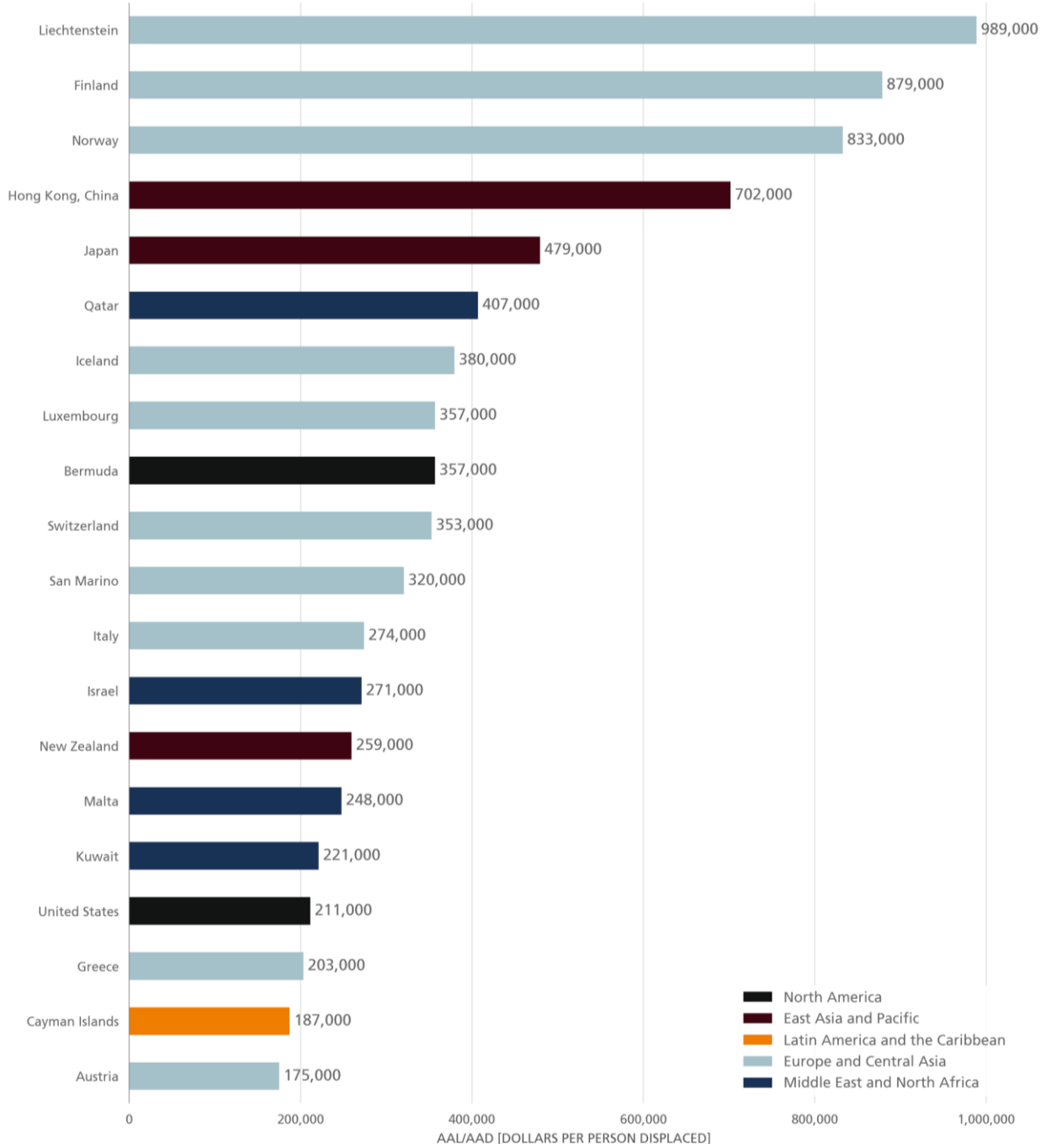


Figure 21: Countries with the highest average economic loss per person displaced each year by sudden-onset disasters. Source: IDMC and UNISDR

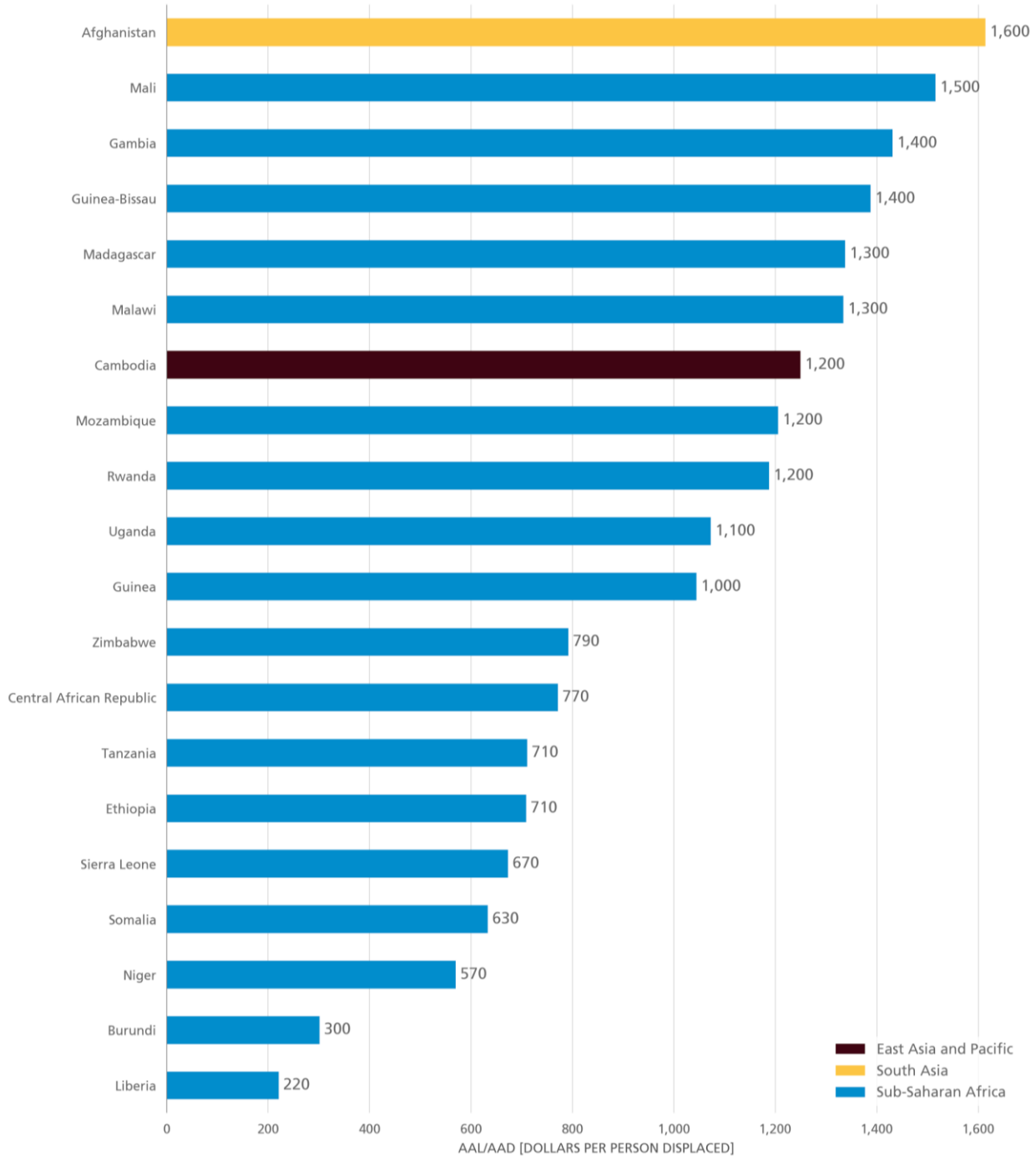


Figure 22: Countries with the lowest average economic loss per person displaced each year by sudden-onset disasters. Source: IDMC and UNISDR

Conclusion

The above provides a baseline for policy-makers working to consider in the context of the Warsaw International Mechanism for Loss and Damage of the UNFCCC. A number of features of displacement risk that are relevant for Parties are illustrated here.

Absolute displacement risk mainly correlates with high levels of population exposure to natural hazards and that risk is mainly associated with floods and tropical cyclones that affect highly urbanised countries in the lower-middle and upper-middle income groups. When relative displacement risk is considered, floods and tropical cyclones remain the principal cause of displacement, but mainly in low and lower-middle income countries. Rather than exposure, socioeconomic vulnerability and institutional lack of coping capacity drive the risk.

A first comparative analysis of the economic and human impacts of disasters also shows that comprehensive DRR and coping strategies should also address displacement associated with natural hazards.

A number of questions important to the understanding, reduction and management of displacement risk in the context of disasters and climate change remain unanswered. These include:

- What is the risk at the subnational level? Are there displacement risk "hotspots"? If so, where are they and what explains the concentration of risk there?
- Is displacement risk increasing or decreasing? What are the main factors behind any trends identified?
- Economic loss risk associated with disasters is disproportionately concentrated in urban areas. Is that true of displacement risk as well?
- What is the relative significance of the different components or drivers of displacement risk? Which sub-components best explain the processes that result in exposure and vulnerability to hazards?
- Do these factors vary when the drivers of extensive and intensive displacement risk are compared? These concepts are discussed further below
- What is the displacement risk associated with slow-onset hazards and gradual processes such as drought, desertification and sea-level rise?
- What is the displacement risk caused by conflict, violence and the combination of human and natural hazards?

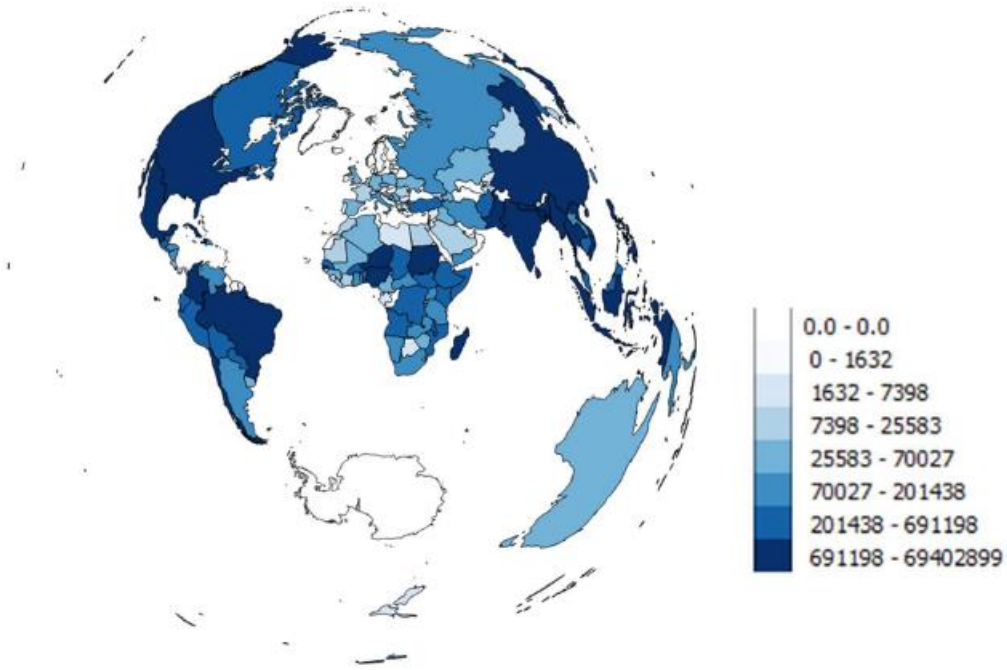
- What metrics (e.g. displaced person-days) are needed to understand the volume and duration of displacement and measure this risk?
- How will the impacts of climate change and socioeconomic and demographic trends affect that risk?
- For those responsible for developing and managing national disaster loss databases, what data should be collected, how often and for how long?

4. Activity III.3

Displacement in the context of disasters – a review of global scale, trends and patters

Geographical distribution of disaster displacement over the period of 2008-2016

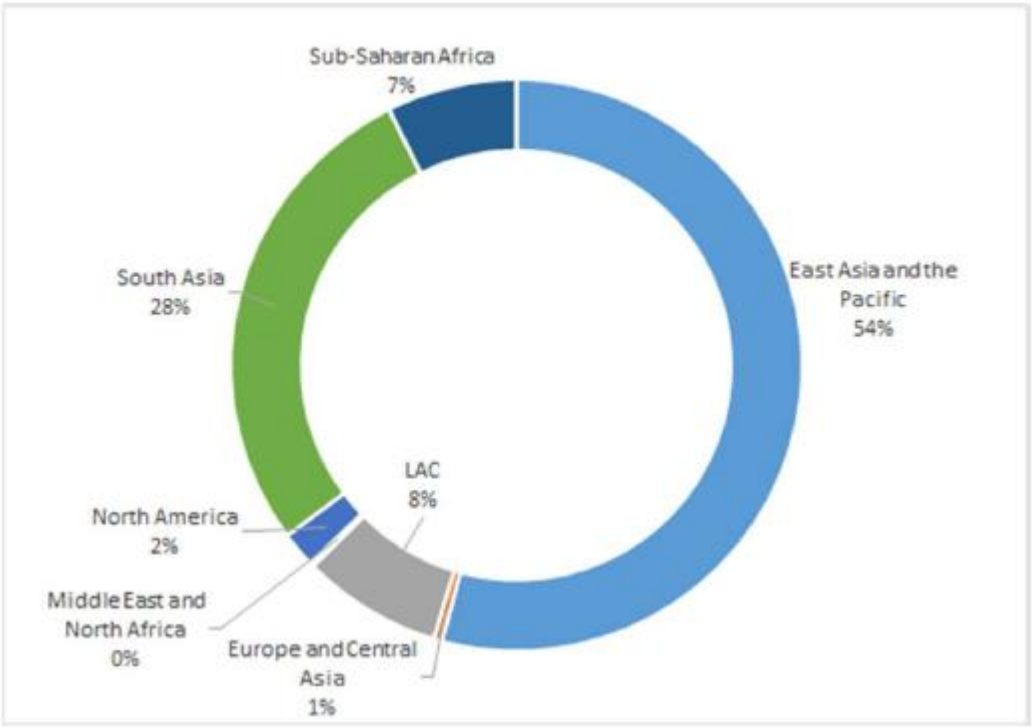
Disaster displacement is a truly global phenomenon, as illustrated below. Only a few countries and territories have not experienced disaster displacements in the past decade. The only currently existing source for global disaster displacement figures is the disaster displacement data base of the Internal Displacement Monitoring Centre, which presents the results from its monitoring work in its annual Global Report on Internal Displacement.[27]



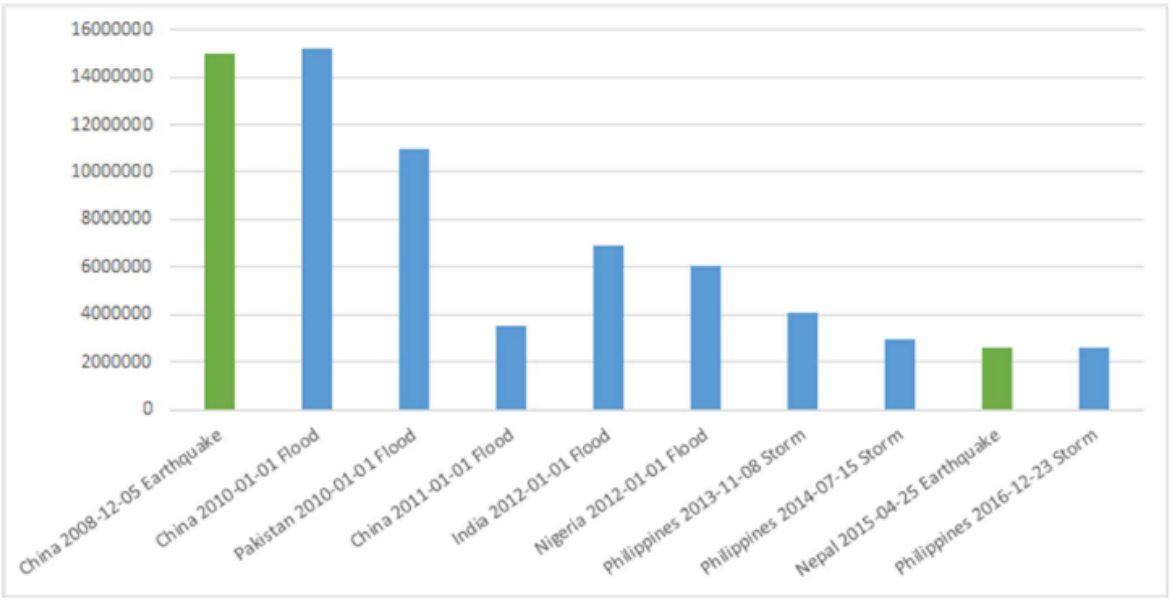
Current global estimates cover disasters triggered by sudden-onset hydro-meteorological and climatological hazards such as floods, storms, wildfires and extreme winter conditions; and geophysical hazards such as earthquakes, volcanic eruptions and landslides. They do not include displacements associated with slow-onset disasters such as drought and environmental degradation. Nor do they cover those associated with technological and biological hazards, such as industrial accidents and epidemics, except when they are triggered by a natural hazard. The displacement caused by radiation exposure in Fukushima following the Tohoku earthquake and tsunami in 2011 is one such example.

More than 80% of all new disaster displacements between 2008 and 2016 occurred in the Asia and Pacific region (East Asia and the Pacific and South Asia). During this period, IDMC recorded approximately 187 million displacements, the equivalent to the population of Nigeria.

[27] http://www.internal-displacement.org/global-report/grid2018/

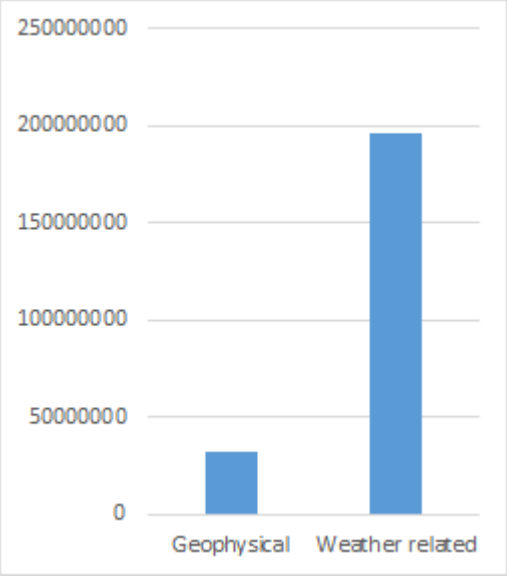


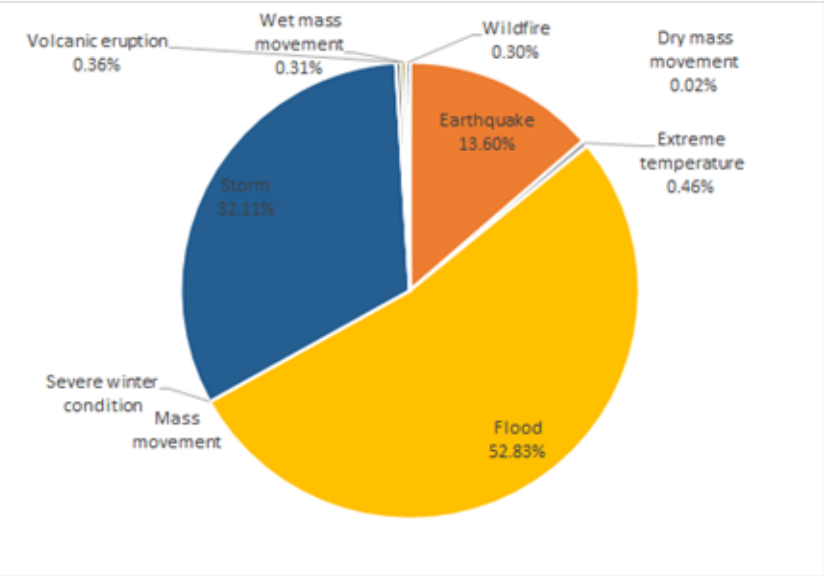
Majors disaster displacements (top 10)



During this nine-year period, ten events accounted for 30% of the total displacement with all but one of these disasters occurring in Asia.

Climate and weather-related disasters regularly account for most (86%) of the global total with almost 196 million displacements recorded.





Of these hydro-meteorological events, floods account for more than half of the displacements (52%), following by storms (32%).

Massive earthquakes, which can displace several million people, occur infrequently, resulting in significant annual variance in earthquake-relate displacements. During the nine-year period covered by our data, we observe that earthquakes caused about 14% of the displacements. Given the nature of these figures – and owing to the fact that they were not attributed to pre-emptive mass evacuations as is sometimes the case with floods and storms – earthquake related displacements can result in prolonged displacement and increasing vulnerability for those affected. Finally, volcanic eruptions, wildfires, landslides have generated massive displacements, accounting for only 3% of the total, but it represents more than 2.2 million people.

Drought: the missing hazard

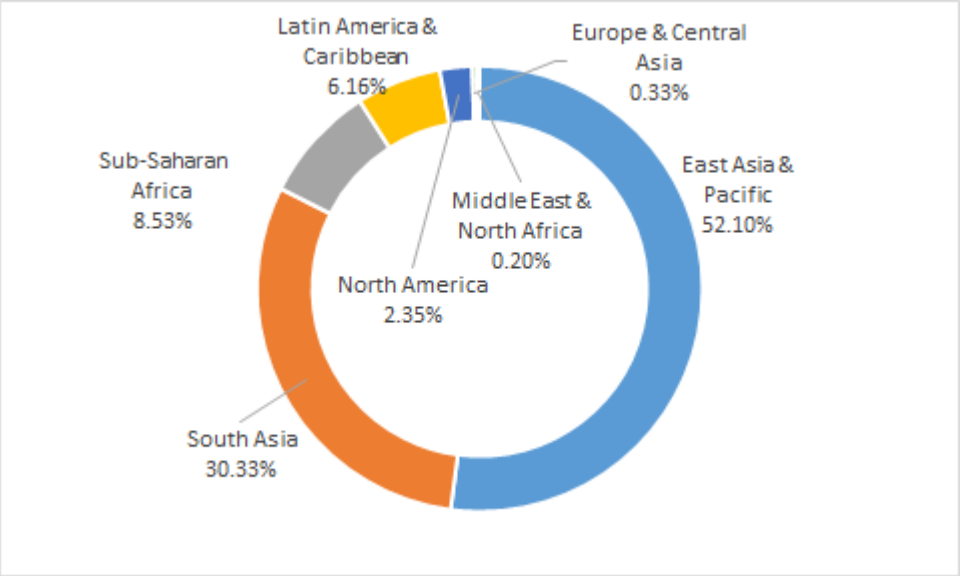
Given the droughts that affected hundreds of millions of people in Asia and Africa, IDMC has attempted to collect quantitative data on the displacement associated with these events. Despite these ongoing efforts, we have struggled to produce global figures are comparable from across countries and across drought events. In 2017, for example, IDMC obtained data on drought-related population movements in Cambodia, Ethiopia, India, Mozambique, Somalia and South Sudan; but the evidence obtained hardly painted a complete or coherent picture: in India and Cambodia, the way the data was reported made it difficult to distinguish displacements from seasonal labour migration. In South Sudan, the

displacements were due to food insecurity which was partly influenced by a meteorological drought and more likely influenced by insecurity, as farmers reportedly could not access and harvest their crops. In Ethiopia, Mozambique and Somalia, the observational data and contextual evidence suggest that the reported displacements were likely due to a combination of drought and conflict.

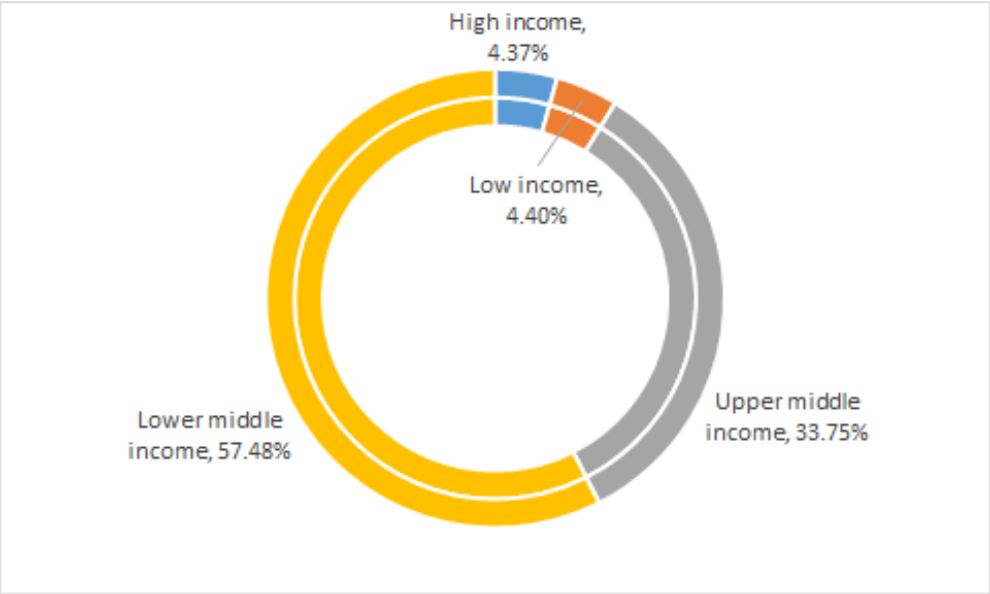
Given the multiple and interlocking factors, the different definitions and reporting terms, there are currently no global estimates for people displaced by drought.

Regional overview:

More than 82% of all new disaster displacements between 2008 and 2016 occurred in the Asia and Pacific region (East Asia and the Pacific and South Asia). During this period, IDMC recorded approximately 161 million displacements, the equivalent to the population of Bangladesh.



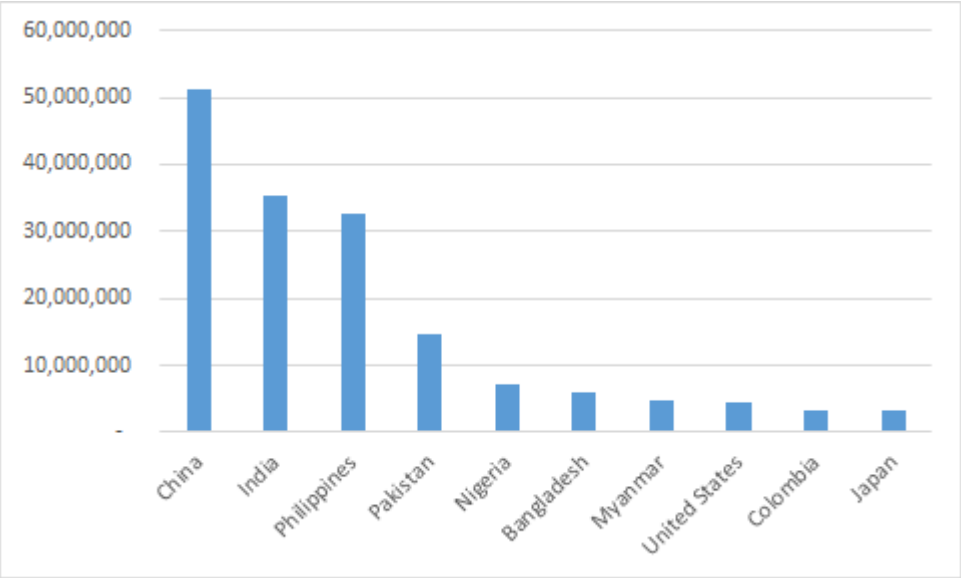
91% of the displacements between 2008 and 2016 occurred in lower and upper middle income.



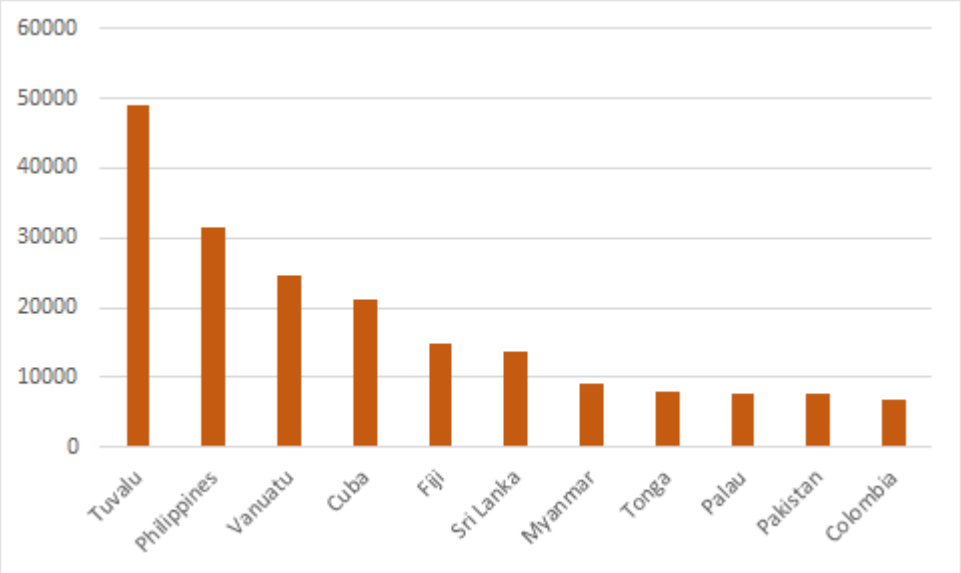
Relative and absolute displacement figures

In absolute terms, the large and populous countries of China, India and the Philippines accounted for the highest numbers of displacements. When we assess displacement in relation to the size of each country's, however, the data tell a different story, with the several small island states at the top of the list. In the countries with the highest relative risk, we see that much of the population has been exposed and vulnerable to the same hazard event (e.g. Cyclones Pam and Winston, Hurricane Irma, the Haiti and Nepal Earthquakes).

Absolute N° of new displacements - 2008-2016



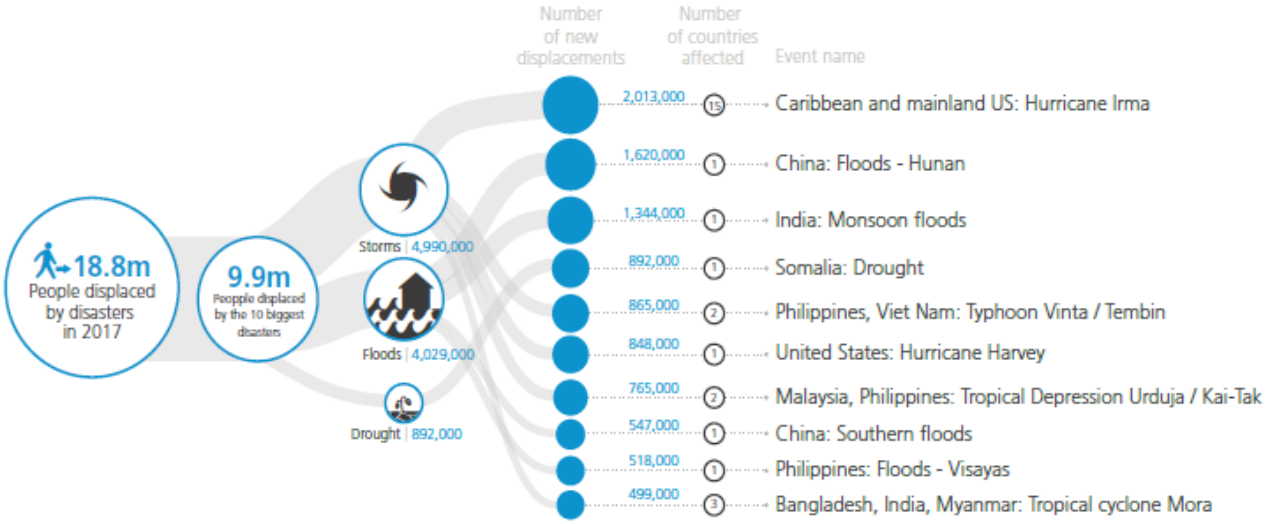
Relative to population (100,000) N° of new displacements - 2008-2016



Disaster displacement in 2017[28]

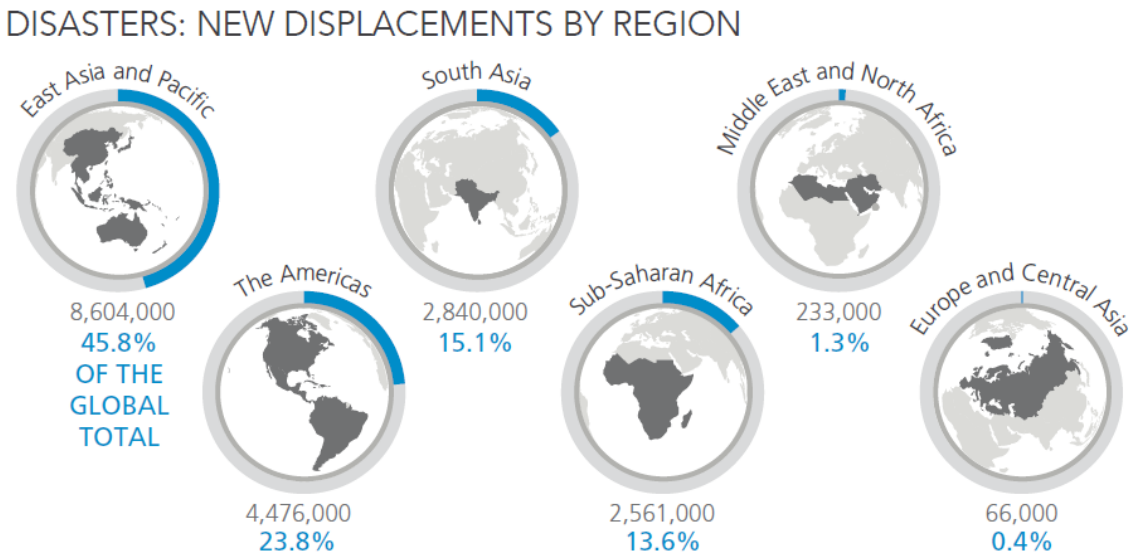
18.8 million new displacements by disasters were recorded in 135 countries over the year. Disaster events in 2017 struck countries with very different income levels and capacities to prevent and respond to displacement, meaning that while some IDPs were able to return home quickly, many remained and are likely to remain displaced for weeks, months or years, depending on the extent of the damage and losses wrought.

Out of the total 18.8 million, 9.9 million new displacements (more than half of the total) were triggered in only 10 disaster events, all of which were weather-related hazards, mainly tropical cyclones and floods.



Tropical cyclones and storms in East Asia and Pacific, the Americas and South Asia, triggered most of the displacement (7.5 million). Floods triggered further 8.6 million. This greatly contributed to the accumulation of disaster displacement in these regions.

[28] The following is based on the 2018 Global Report on Internal Displacement, published by IDMC: http://internal-displacement.org/global-report/grid2018/

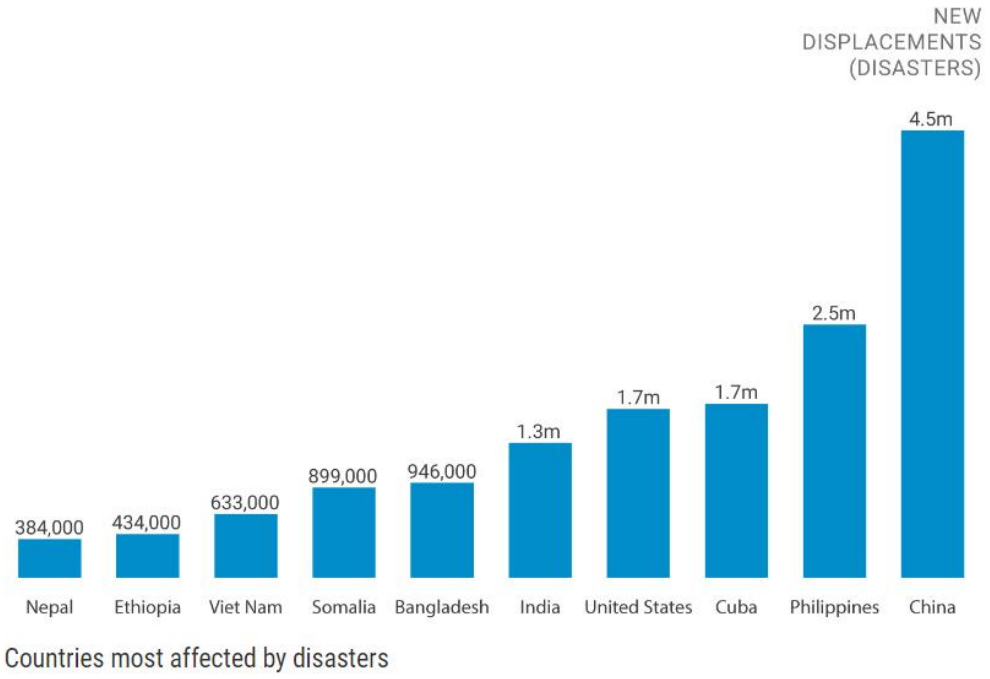


Increased monitoring

Today, more disaster events than ever are monitored for disaster related displacement. In 2017, IDMC recorded 891 displacement events in the context of disasters, compared to 646 in 2016. However, this does not mean that all events triggered major displacement. In fact, a considerable decrease on disaster displacement was observed in 2017: 18.8 million compared to 24.2 million 2016 (-23%). It important to keep in mind, though, that hazard intensity varies over time, which explains decrease or increase at a certain point in time.

Countries most affected during the year

China, Philippines, Cuba, the United States and India were the countries most affected by disaster displacement globally in 2017. Each of them reported more than one million new displacements.



1. China- Total displacement in 2017: 4.5 million

Main Source: Ministry of Foreign Affairs and Media (Xinhua)

- The Hunan floods in southern China between June and July triggered the region's largest displacement, more than 1,620,000 people.
- Further flooding displaced 547,000 in other southern provinces.

2. Philippines - Total displacement in 2017: 2.5 million

Main Source: DROMIC (National disaster management agency)

- There were 40 disaster events recorded in our database for the Philippines.
- Typhoon Vinta displaced around 434,000 people.
- Tropical storm Kai-tak, known locally as Urduja, displaced 764,000.
- Local floods also impacted the country.

3. Cuba - Total displacement in 2017: 1.7 million

Main source: Cuban Civil Defense

- Displacement was triggered by one major event: Hurricane Irma with 1.7 million new displacements recorded. The hurricane affected 12 out of 15 provinces in the country.
- Most of the disaster displacement recorded was due to pre-emptive evacuations organized by the Government, which shows Cuba's high disaster risk awareness and preparedness. Before and during Irma, people were evacuated to temporary shelters

and host families. While there were damages, people were safe, demonstrating that displacement is not always a negative outcome -- there were only 10 fatalities directly attributed to Irma in Cuba (per EM-DAT).

- However, around 30,000 houses were severely damaged.

4. United States - Total displacement in 2017: 1.7 million

Main Source: US Federal Emergency Management Agency (FEMA)

- The Atlantic hurricane season, especially hurricanes Irma, Harvey and Maria, affected the US.
- Hurricane Harvey caused unprecedented flooding in Houston, Texas, and displaced around 848,000 people.
- Hurricane Irma accounted for 202,000 new displacements, mainly in Florida.
- Puerto Rico, a non-incorporated US territory was treated separately in our database, but accounted for 86,000 new displacements due to hurricane Maria. Vulnerability remains high in Puerto Rico with a significant fraction of the population still without electricity.
- In southern California the biggest wildfires affected an area the size of New York City and Boston combined, triggering the evacuation of more than 204,000 people. Additional wildfires elsewhere in the US triggered more than 181,000 new displacements.

Caveats

Only the number on "mandatory evacuation with the combination of people sheltered" from FEMA are registered.

5. India - Total displacement in 2017: 1.3 million

Main Source: National and State Disaster Management Authority

- The monsoon season affected 8 states (India: Assam ; Bihar Gujarat; Maharashtra ; Rajasthan ; Tripura Uttar Pradesh ; West Bengal) and have generated 1,344,000 new displacements.
- About 855,000 people were evacuated and hosted in camps in the Indian state of Bihar, where flooding also hit agricultural production.

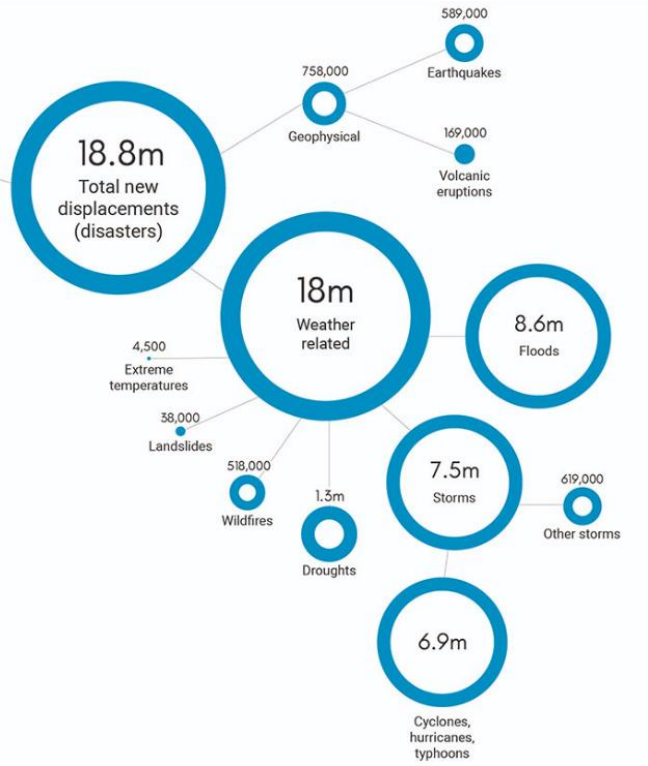
Caveats

As for many disasters, people tend to stay with relatives/other members of the community

instead of moving into relief camps. We have no proof and difficulties to track them. Figures reported for India refers to people entering in relief camps.

Major disaster displacement events in 2017

2017 was a year of cyclones. The consequences of tropical cyclones, including high speed winds, flooding and storm surges were devastating. From the 7.5 million new displacement recorded as triggered by storms, 6.9 million were triggered by tropical cyclones only (hurricanes and typhoons). Regions located in the inter-tropical zone such as East Asia and Pacific, The Americas and South Asia were impacted by tropical storms and cyclones that triggered displacement.



Atlantic Hurricane Season

Several records characterized the 2017 Atlantic Hurricane season. It was the seventh most active season since records started back in 1851 and the most active one since 2005. Hurricane Harvey was the wettest tropical cyclone recorded on US history. Hurricane Irma was the most powerful hurricane ever recorded in the Atlantic, with maximum sustained winds of 296 km/h which lasted for 37 hours, accompanied by heavy rain and storm surges.

There were a total of ten hurricanes in the season, from which six went above category 3, and affected around 20 countries and territories in the Atlantic and Caribbean basin.

In a period of a month, the three major hurricanes of the season, Harvey, Irma and Maria, displaced around 3 million people. They hit as the region was still recovering from the devastation wrought by hurricane Matthew, which IDMC reported as having displaced 2.2 million people in 2016.

Key information:

- Around 20 countries and territories were affected.
- United States: around 1 million due to Harvey and Irma (see above).
- Cuba: 1.7 million due to Irma (see above)
- Dominica: 35,000 new displacements triggered by hurricane Maria
    - The country ranked 32/135 at global level.
    - It was the highest in the world relative to its population. . 48% of the population were displaced, some of them remain displaced. Insurance penetration and coverage, coping capacity, recovery, humanitarian response will influence displacement patterns and durable solutions.
    - Main Source: Ministry of Housing, Lands and Water Resource Management
- Puerto Rico: 86,000 new displacements triggered by Hurricane Maria
    - The island ranked 22/135 – Total displacement in 2017:)
    - Main Source: FEMA (Gov) -- *Puerto Rico - which is an unincorporated US territory.*
    - The island's economic losses were estimated to amount to around 73 per cent of its GDP, and the poverty rate to have increased by 10 per cent.
    - 70,000 were evacuated from flood prone areas after the failure of the Guajataca Dam.
    - There was also significant migration to the continental US, and this is likely to continue. Some estimates suggest the island could lose around 14 % of its population by 2019 as a result of Maria's impacts

Tropical Cyclones (Typhoons) in Asia (East Asia and Pacific and South Asia)

In 2017, there were a total of 11 typhoons in the season, from which 2 were classified super-typhoon, higher than Category 4 (typhoons Noru and Jima). An estimated number of 3.8 million people was estimated to be displaced in South, and East Asia and Pacific.

- Philippines: Around 1.6 million were displaced by typhoons
    - Typhoon Vinta displaced around 434,000 people
    - Tropical storm Kai-tak, known locally as Urduja, displaced 764,000

- Viet Nam: 633,000 new displacements
    - Typhoon Doksuri caused 117,000 evacuations in the country's North Central administrative region in October.

- Typhoon Tembin 431,000 across southern provinces in December.
- Main Source: Central Steering Committee on Disaster Prevention and Control (Gov)

The Monsoon season

- Overall, the monsoon season was similar to those of previous years in terms of precipitation levels and the number of people displaced, but its impacts were still significant in a region of high exposure and vulnerability associated with poverty, inequality and unsustainable development.
- Last year, the monsoon highlighted again the negative consequences of poor planning, lack of preparedness and high vulnerability. National and local authorities struggled to provide aid to millions of people in need.
- Even intensive events such as Mora received relatively little coverage compared with the Atlantic hurricanes, despite displacing considerable numbers of people and creating greater needs in countries with lower income, resilience and capacity to respond.

  - India
    - Main Source: National and State Disaster Management Authority
    - The monsoon season affected 8 states and have generated 1,344,000 new displacements.
  - Bangladesh
    - Main Source: Ministry of Disaster Management and Relief-Government (MDRCC)
    - Flooded up to a third of the country for several weeks, and displaced 436,000 people.
    - Noted that at the very beginning of the monsoon season on Bangladesh was hit by cyclone Mora. The cyclone made landfall on 30 May 2017, displacing more than 477,000 people.
  - Nepal
    - Main Source: Red Cross
    - Recurrent flash floods and landslides destroyed nearly 89,000 homes and displaced 381,000 people across 35 districts.
    - Some, such as Biratnagar and Monrang, where flooding is relatively unusual
    - Nepal Red Cross Society said the rains were the worst in 15 years.
  - Sri Lanka
    - 127,000 people to take refuge in official shelters
    - Main Source: Disaster Management Centre (DMC) of the Ministry of Disaster Management

Other Major floods

Weather-related hazards triggered the vast majority of these new displacements, with floods accounting for 8.6 million

- China
  - Account for more than 3 million people displaced by flooding. (see above top countries)
  - Southern China: Floods June (3rd wave) - 547,000 people displaced
  - Main Source: Ministry of foreign affairs and Media (Xinhua)
- Philippines
  - Floods - Visayas; Mindanao, January 2017, 518,000 people displaced Main Source: DROMIC (National disaster management agency)
- Peru
  - Was the worst in 20 years, and displaced around 293,000 people. Main Source: INDECI (National Institute of Civil Defense)
- Niger
  - Urban flash floods in Niamey and Tillabéri 185,000 people displaced. Main Source: Civil protection
- Tajikistan
  - Asht, Darvoz, Laksh, Roshtkala and Rasht floods displaced around 3,700 people. Main Source: INDECI (National Institute of Civil Defense)

Drought: a concerning, yet under-reported issue

Monitoring drought-related displacement is a complex challenge and therefore, global figures for displacement in this context do not currently exist. For the first time, however, in 2017 IDMC was able to obtain information on displacement triggered by drought. The numbers comes from only four countries, Somalia, Ethiopia, Burundi and Madagascar, but the scale of displacements triggered by drought in these is worrisome: 1.3 million new displacements. Put into perspective, this means that drought, recorded in only four (4) countries, triggered 7% of the disaster displacement over the year, mostly in Somalia and Ethiopia.

Some figures:

- Somalia
  - Main Source: Somalia (UNHCR-led Protection & Return Monitoring Network (*PRMN*))
  - 892,000 (drought was reported by partners: 858,000 drought and 34,000 lack of livelihoods) out of the total for the country of 1,287,000.
- Ethiopia
  - Main Source: IOM-DTM
  - Drought triggered 381,000 displacements recorded.

Caveats

IDMC recorded drought figures also, in Burundi, Ethiopia and Madagascar. Though droughts affected people in several countries in 2017, including Angola, Chad, China, Mauritania, Niger and North Korea, we were able to report on drought-related displacements in only these four countries. This was due to the limited availability of clearly labeled and verifiable data on displacements caused by droughts.

Other hazards

Floods, landslides, wildfires in the Americas, Africa and Europe and Central Asia. No region was spared from disaster displacement. Exposure and urban disaster risk, a key component of disaster displacement.

Wildfires

- US & Canada
    - In southern California the biggest wildfires affected an area the size of New York City and Boston combined, triggering the evacuation of more than 204,000 people.
    - Other wildfires in the US triggered more than 181,000 new displacements
    - And in Canada around 78,000. British Columbia experienced the worst wildfires in the province's history, displacing around 65,000 people.

- Europe
    - The most intensive natural hazard recorded was a wildfire in September that forced as many as 10,000 people to leave their homes on the French island of Corsica.
    - In Portugal 6,800 displaced burning 54,000 ha alimented by cyclone Ophelia.

What is driving displacement in these regions?

- The climate extremes brought by the monsoon negatively impacted the economy, disrupted supply chains and affected the livelihoods of millions of people.
- Last year, the monsoon highlighted again the negative consequences of poor planning, lack of preparedness and high vulnerability. National and local authorities struggled to provide aid to millions of people in need.
- Beyond the nature and intensity of the hazards themselves, two factors lie behind the scale of displacement associated with disasters in East Asia and Pacific in general. The number of people and assets exposed to floods and cyclones is thought to have increased by around 70 per cent between 1980 and 2015, largely as a result of urban expansion driven by the region's booming economy.

Knowledge gaps and monitoring challenges

Evacuations: Without a clear standardization and classification of the terms used for people pre-emptively displaced, before the disasters occur (hurricanes) or terms relating of displacement occurring after a disasters (inundated areas - building destroyed by earthquakes) it is difficult to measure the consequences of disaster risk reduction measures such as prevention using early warning system.

- Time series data and disaster stock information: In the absence of reliable reporting on returns, local integration and relocations, it is not currently possible to clearly determine the numbers, length and severity of displacement in a globally comparable manner.

- Under-reporting and Extensive disasters: Small-scale events are far more common, but less reported on. Disasters that occur in isolated, insecure or marginalised areas also tend to be under-reported because access and communications are limited. A layer of disaster risk that is critical for sustainable development but that is only partially uncovered. We need to get better on accounting for internal displacement due to small-scale and recurrent disasters ("every day disasters") that while small in nature, when accumulated, are a critical obstacle for the development of communities and countries.