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CHILDREN DISPLACED IN A CHANGING CLIMATE

preparing for a future already underway

Acknowledgements

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The link between climate change and displacement is complex. Yet it is clearer than ever that the climate is shifting patterns of displacement.¹ Although weather events, such as floods and storms, are natural phenomena and a single event cannot be directly attributed to climate change, there is widespread consensus that human-induced climate change is affecting the frequency, intensity, geographic range, duration, and timing of extreme weather events. Therefore, no weather is entirely 'natural' anymore, but rather occurs in the context of a changing climate. Large-scale disasters, which in the past, occurred only occasionally, are now more frequent. In fact, with every additional one degree Celsius of warming, the global risks of displacement from flooding are projected to rise by approximately 50 per cent.²

Millions of children are already being driven from their homes by weather-related events, exacerbated by climate change. Decisions to move can be forced and abrupt in the face of disaster, or the result of pre-emptive evacuation – where lives may be saved, but many children still face the challenges that come with being uprooted from their homes. In the context of slow-onset climate processes, displacement can be driven by an interplay of socio-economic, political, and climate-related factors. Decisions to move often occur in a context of constrained life choices and eroding livelihoods, where children and young people are trapped between aspirations and hopes, a duty of care to their families and communities, and pressures to leave home.

Displacement – whether short-lived or protracted – can multiply climate-related risks for children and their families. In the aftermath of a disaster, children may become separated from their parents or caregivers, amplifying the risks of exploitation, child trafficking, and abuse. Displacement can disrupt access to education and healthcare, exposing children to malnutrition, disease, and inadequate immunization. Furthermore overcrowded and under-resourced evacuation sites may be located in climate-vulnerable areas.

Yet to date, children displaced by weather-related events have been statistically invisible. Existing displacement data are rarely disaggregated by age, and in contexts where extreme weather events collide with rapid urbanization, fragility and conflict, children on the move are even more likely to slip through the cracks unnoticed. The lack of data hampers efforts to identify children most at risk to help them recover, thrive, and build resilience against future climate-related challenges.

To shine a light on the growing number of children displaced by weather-related events, which are growing in intensity and frequency, and identify those most at risk, the United Nations Children’s Fund (UNICEF) and the Internal Displacement Monitoring Centre (IDMC), in partnership with the Patrick J. McGovern Foundation, analysed past child displacements linked to weather-related disasters from 2016–2021 and – based on IDMC’s risk model – estimated the risk of child displacement in future.

The report analyses the most common weather-related hazards that lead to the largest number of displacements: **floods, storms, droughts and wildfires**. Together, these hazards account for over 99 per cent of all weather-related displacements recorded by IDMC since 2016, while hazards such as extreme heat, erosion and landslides, make up the rest.³ Due to lack of available data, the analysis does not assess the full range of weather-related events that can contribute to displacement– particularly in relation to slower-onset climate processes. Therefore, these findings represent conservative estimates, and the actual numbers of climate-related displacements of children are likely to be much higher.

These new insights can help governments, United Nations agencies, civil society, and affected communities, to identify children at risk of weather-related displacement, map the areas most affected and most importantly, target efforts and resources to the most vulnerable, with the aim of protecting children’s futures from the impacts of displacement as the climate continues to change.

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The faces of child displacement



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Distressing images of children forced to flee their homes **because of acute weather-related disasters**, such as floods, storms and wildfires, are becoming increasingly commonplace. In August 2022, disastrous floods covered nearly one third of **Pakistan**, causing billions of dollars in damage to crops, houses and other buildings, and severely affecting the lives of 33 million people, many of whom were displaced from their homes.⁴ The consequences have been especially horrific for children, many of whom have been left without safe drinking water and are living in unsanitary conditions. Meanwhile, on another continent, more than 280,000 people were affected by floods in **Sudan**. Families were left stranded as almost 17,000 houses were destroyed and another 44,000 damaged.⁵

→ Abdul's story



Khalid Abdul Azim is an eighth-grade pupil at Wad Al-Shafie Elementary School in Sudan. Together with his family, Abdul Azim spent several weeks living in the open after his village was flooded, following heavy rains.

"We moved our belongings to the highway where we lived for weeks. We could only access the village using a boat for more of our belongings. Many houses were damaged including ours," says Abdul Azim.

Not only was his home destroyed, but Abdul Azim's school was damaged, too. About 140,000 school-age children across Sudan were unable to access their schools owing to the floods. The effects of the flooding remained visible in schools across the country and delayed the start of the school year. The gates to Abdul Azim's school opened in late October, a few weeks after the originally scheduled start date.⁶

"I am glad we are back in school, but there is a delay in completing the curriculum. By this time, we would have completed several units, but we have barely covered one or two," says Abdul Azim.⁷

Like Abdul Azim, children living in many other parts of the world are feeling the impacts of the changing climate. Those in **Latin America and the Caribbean** are among the most vulnerable in the world to being driven from their homes by acute weather-related disasters. From 2014 to 2018, 3.4 million people were internally displaced across the Caribbean due to a series of catastrophic tropical cyclones. When storms – such as hurricanes Harvey, Irma, Maria and Dorian – make landfall, they can cause catastrophic damage to homes, infrastructure and economies and leave some areas virtually uninhabitable.⁸

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→ Juana's story



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In the aftermath of hurricanes Eta and Iota, nine-year-old Juana Jennifer Tzoy was displaced from her home in **Guatemala** when her town was completely submerged in water. Juana must now travel by boat to visit communities around Campur, where she used to live with her family. Approximately 310,000 people were forced to live in shelters across Guatemala following the hurricanes, which devastated 387,960 homes across the country.⁹

In fact, weather-related hazards – especially floods and storms – account for most displacements recorded, globally.¹⁰ However displacement resulting from acute and large-scale disasters may be only the tip of the iceberg. The **slow-onset effects of climate change**, such as desertification, glacial retreat, increasing temperatures, land and forest degradation, loss

of biodiversity, ocean acidification, salinization and sea level rise are already driving people from their homes and will likely have an increasingly greater impact in the future.¹¹

For communities affected by the drought in the **Horn of Africa**, losing their livestock and grazing areas means that moving may no longer even be an option.¹² **Somalia** is witnessing a two-year historic dry spell – a situation not seen in more than 40 years – and an expected fifth failed rainy season is projected to displace many more families, with famine looming on the horizon. This devastating drought reached unprecedented levels in 2022, with 1 million people registered as displaced within the country.¹³ Those who can still make it to feeding stations are the ‘lucky ones’, while those trapped by immobility may be the most vulnerable.

→ Khadijo and Sabirin's story

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Khadijo Mohamed is a mother and farmer from Dinsoor Town in the Bay region of Somalia. She sits outside her makeshift tent on the outskirts of Mogadishu recounting the journey she has been forced to take as her home region teeters on the edge of famine.

“We were farmers and used to live a comfortable life in our house because we planted maize, beans and other crops, and we used to have cows that we got milk from before the drought hit,” Khadijo explains.

Like thousands of other families across Somalia, Khadijo has watched crops fail, livestock perish and the community's water supplies evaporate. She fled to Mogadishu in search of food and water for her four youngest children.

“We hoped for rain the next year, but it also became drought. It became three consecutive droughts. When it became three consecutive droughts, we boarded a car and left. We entered the town,” she recounts.

The journey to Mogadishu was brutal. They had no food for seven days and all her children fell sick. Her youngest, two-year-old Sabirin, became severely malnourished.

Sabirin was one of 44,000 children admitted for treatment for severe acute malnutrition in August 2022. The exploding number of malnutrition cases means that, currently, a child is admitted to a health facility for severe acute malnutrition every minute.¹⁴



Khadijo and Sabirin's story

If unplanned and poorly managed, large-scale displacement events like the one that uprooted Khadijo and her family risk adding stress to already fragile places and heightening tensions around land and water resources. Furthermore, sudden and large population shifts towards less high-risk areas, including cities and urban areas, can undermine planning efforts and social cohesion.

However, a potentially worse outcome occurs when children and families are stranded in place as a result of poverty, age, disability, or legal barriers, leaving them highly exposed and vulnerable to increasingly hazardous climatic conditions.

For displaced children such as Sabirin, unexpected, high-risk displacement without early warning systems can result in loss of life, interrupted access to critical care and services, and elevated protection risks.

However, many of the displacements recorded by IDMC are the result of government-led evacuations. In such situations, evacuations are an emergency mechanism to move people out of harm's way and can help save

lives. This shows that displacement is not necessarily a negative outcome of disasters, but to the contrary, can have protective value. That said, for evacuees whose houses are severely damaged or destroyed, prolonged displacement can increase their vulnerability. In recent years, wildfires in Australia, Greece and the United States have resulted in unprecedented numbers of evacuations. In 2020, Cyclone Amphan triggered close to 5 million evacuations across Bangladesh, Bhutan, India and Myanmar.¹⁵

As Abdul Azim, Juana, and Khadijo and Sabirin's stories illustrate, displacement can have significant social and economic consequences for children, their host communities and those who become trapped in harm's way. These impacts vary based on resilience and capacity to cope at the individual, community and national levels – as well as the type and length of displacement. Without accurate information, governments and communities cannot adequately plan and prepare for or respond to disasters, or ensure that evacuation plans are child-sensitive and well devised.

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How many children have been displaced?

Almost 135 million internal displacements linked to more than 8,000 weather-related displacement events were recorded by IDMC between 2016 and 2021. For the most part, these data were child blind, with only a very small proportion of data on displacements disaggregated by age and sex.

To bridge this gap, this research overlaid these internal displacement data points with the latest demographic gridded population data, providing insights on where the most children have been displaced – and a glimpse into the experience of children on the move in climate disaster-affected areas.



43.1

million internal weather-
related displacements
of children over the last
six years

20,000

child displacements
per day

95%

of recorded child
displacements due to
weather-related events
were driven by floods
and storms



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Based on the analysis, there were **43.1 million internal displacements of children linked to weather-related disasters over the last six years – the equivalent to approximately 20,000 child displacements per day.**

Almost all – 95 per cent – of recorded child displacements were driven by floods and storms. These comprised 19.7 million child displacements due to floods and 21.2 million due to storms between 2016 and 2021.

Where were children most affected?

The research findings tell two very different stories. Three countries dominate the results based on absolute numbers: **the Philippines, India and China**, with a combined total of almost 23 million child displacements due to weather-related events between 2016 and 2021. There were 9.7 million child displacements in the Philippines alone, 6.7 million in India and 6.4 million in China. In addition to their locations and geographic profiles being prone to floods and storms, these countries' sizes and populations also help explain the large numbers of displacements.

While the Philippines, India and China are at high risk of weather-related disasters – and may become increasingly so as the impacts of climate change intensify¹⁶ – all three countries

implement pre-emptive evacuations in times of disaster, which, when managed properly, can be effective in saving lives¹⁷ and mitigating the damage caused by displacement.*

As the data do not distinguish between pre-emptive evacuation and displacement in response to disaster, it is unclear how many of these children were in fact evacuees. Pre-emptive evacuations are more likely to be implemented (and recorded) for floods and major storms such as cyclones, typhoons and hurricanes – and in countries with effective early warning, disaster risk reduction (DRR) and data systems in place.

However, when we look at the greatest number of displacements relative to the size of the child population, a very different picture emerges.

South Sudan and Somalia experienced the greatest number of child displacements from floods relative to the size of their child population, equivalent to about 12 per cent in South Sudan and 11 per cent in Somalia. Both countries implement and record far fewer pre-emptive evacuations, suggesting that children living in these countries may be even more vulnerable to displacement risk. Small Island Developing States and countries in the Horn of Africa have had the greatest proportion of their child population displaced. **Dominica, Saint Martin (French part), Sint Maarten (Dutch part), the Northern Mariana Islands, Cuba** and

* It is important to note that lives saved by moving out of harm's way are also regularly lost as a result of chaotic mass evacuations and dire living conditions in evacuation centres or temporary shelters. Overcrowding, lack of privacy and poor hygiene are just some of the commonly encountered challenges children in evacuation centres face.

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Vanuatu recorded the most child displacements from storms relative to the size of their child populations. In Dominica, the number of displacements of children over the last six years was equivalent to 76 per cent of the child population, while in Cuba, it was 31 per cent. Such large proportions of the child population experiencing displacement has significant implications for how health care, education and protection services for children must be run.

Droughts triggered more than 1.3 million internal displacements of children across 15 countries between 2016 and 2021. More than half – 730,000 – were recorded in **Somalia**, with another 340,000 in **Ethiopia** and 190,000 in **Afghanistan**. Unlike in the floods and storms analysis, the data on droughts show mostly actual displacements as a consequence of the disaster. Pre-emptive evacuations in drought contexts are extremely rare, so it is likely the majority of these displacements occurred without early warnings and efforts to minimize the impacts of displacement.

This analysis comes with a caveat – **slow-onset displacement due to events like droughts is likely radically underreported.**

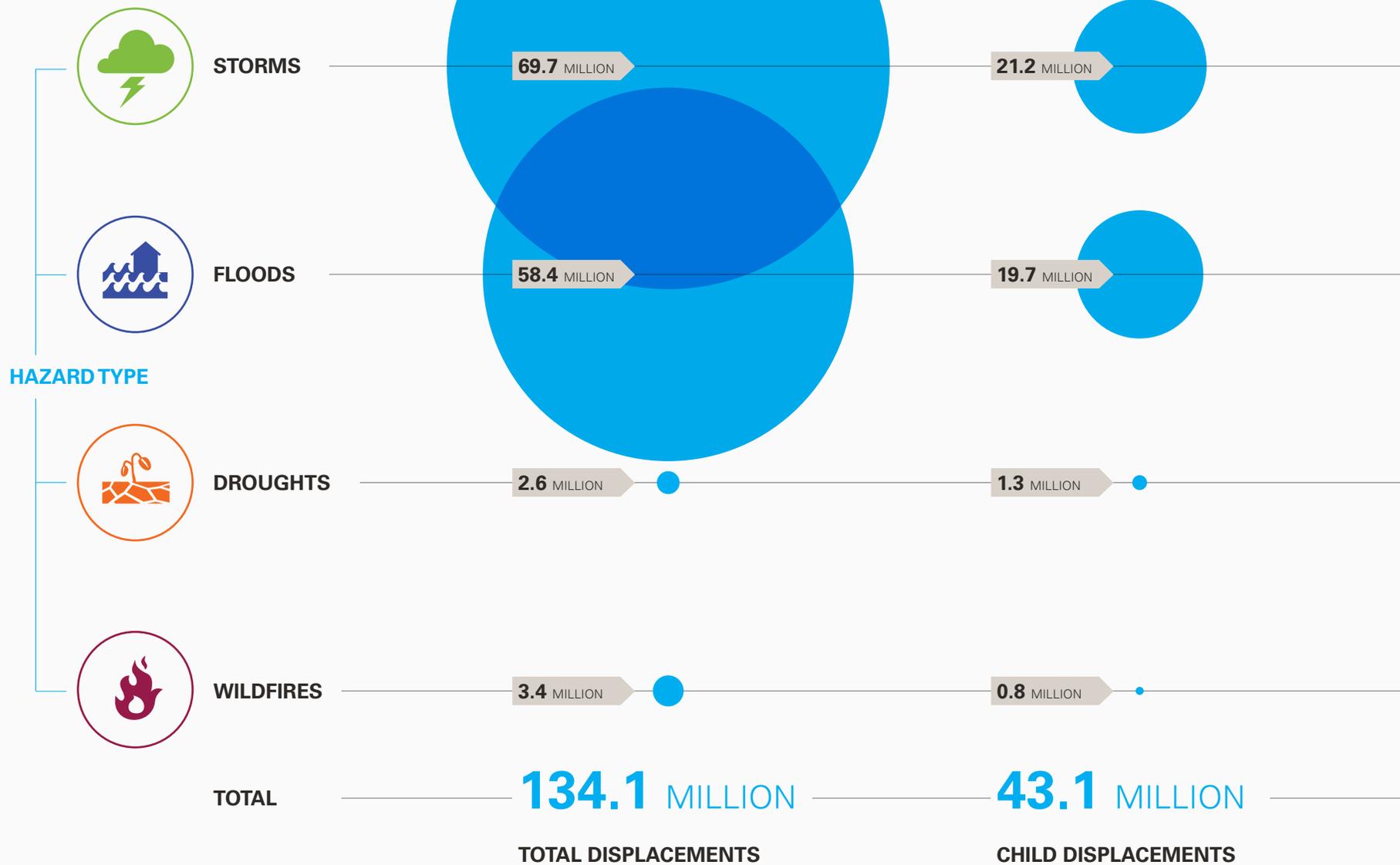
There is currently no global estimation of the level of future displacement associated with slow-onset disasters and the data for historical displacements related to droughts are incomplete. Further, displacement linked to slow-onset disasters is often driven by a combination of aspirations and socio-economic factors.

Drought conditions can intensify disputes over scarce resources, reduce economic opportunities and strain public institutions and infrastructure – and in countries affected by fragility and conflict, and with poor data collection and monitoring capacities, displacements can be even more difficult to measure.¹⁸

Finally, the analysis of displacements caused by wildfire illustrated that weather-related disasters exacerbated by the changing climate affect low- and high-income countries alike. Wildfires triggered 810,000 new child displacements, with more than a third occurring in 2020 alone. The **United States, Canada and Israel**, which all have robust early warning and DRR systems, as well as strong data systems in place, recorded the most child displacements, many of which were pre-emptive evacuations.

Looking at past displacement trends, several different country typologies come into focus: Some countries are at high risk of weather-related disasters – which may grow in frequency and intensity as the climate changes – but are taking measures to minimize displacement risk. Others, **where disaster risk is high, but pre-emptive evacuations are few and far between, are where children and their communities may be most vulnerable.** It is in these countries, where risk mitigation, adaptation and preparedness – including embracing pre-emptive evacuations and other climate mobility options to save lives and minimize any disruption to children’s access to essential services – will be most critical.

ESTIMATED NUMBER OF DISPLACEMENTS BY HAZARD TYPE BETWEEN 2016 AND 2021



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Note: Total displacement numbers (all ages) as reported by IDMC in its *Global Internal Displacement Database*. Child displacement numbers estimated based on location of disasters (IDMC database) and the corresponding proportion of children in the population for that location (*WorldPop*). The totals may not exactly match the sum of the values shown owing to rounding.

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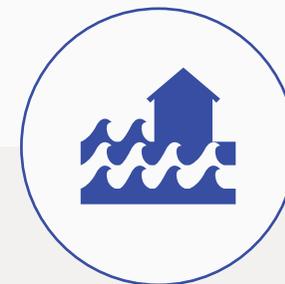
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The following section comprises maps and analyses of the four weather-related hazards that caused the greatest number of child displacements – more than 43 million – between 2016 and 2021: floods, storms, droughts and wildfires. The maps show the geographic distribution of the disasters and the scale of the associated child displacements. Each dot represents one disaster event and the size of the dot indicates the estimated number of child displacements.

As the maps indicate, some areas were more prone to displacements than others, owing to the frequency and severity of hazard events and the number of children exposed to the hazards. These so-called ‘hotspots’ were identified by a spatial analysis of the distribution (i.e., closeness) of hazard events and the number of displacements triggered.* Identifying hotspots to help guide disaster risk reduction (DRR) and resilience-building efforts to protect children and their communities from displacement is a key strategy to prepare for the impacts of climate change.

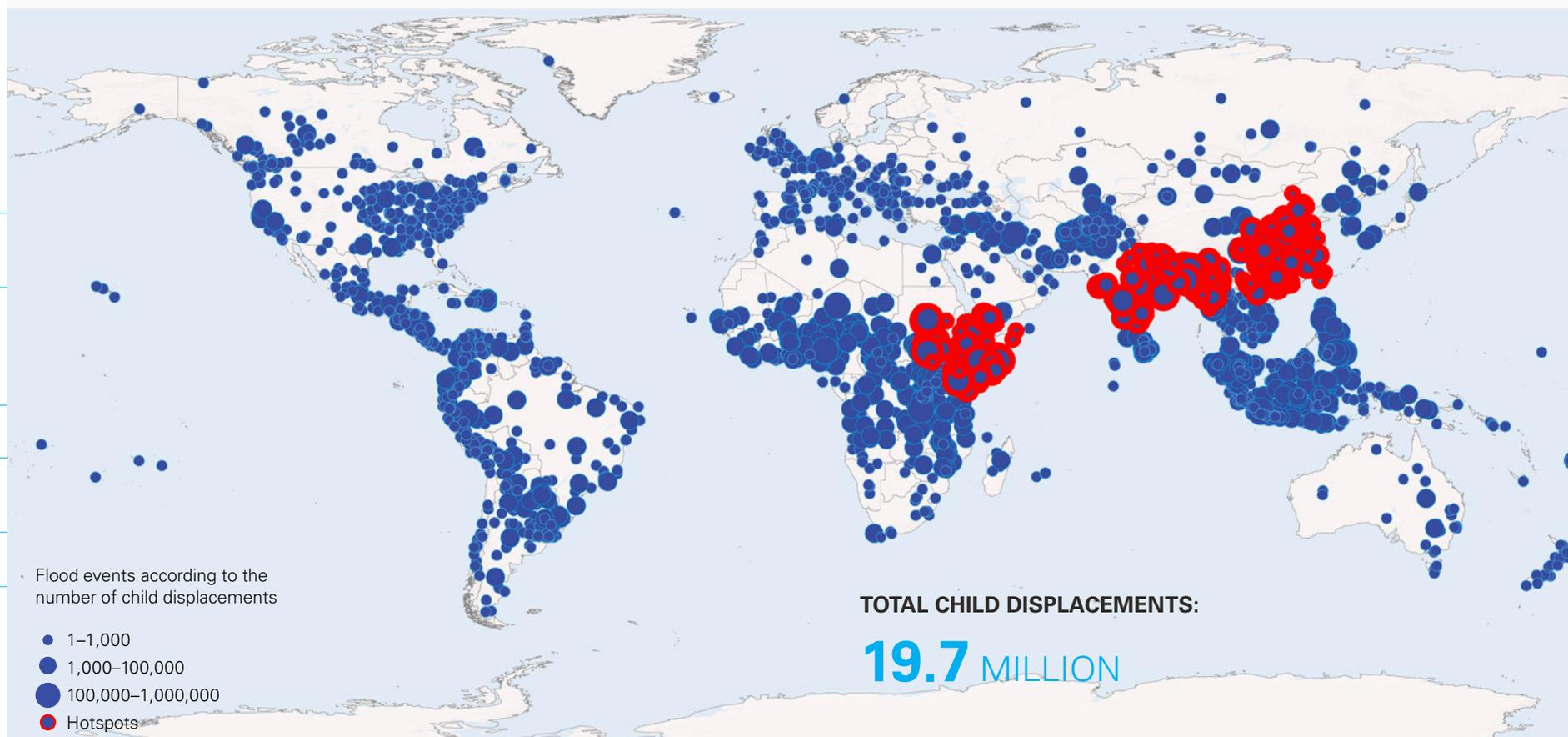
* A hotspot analysis is a spatial analysis and mapping technique that identifies clusters of spatial phenomena – in this case, the distribution and scale of displacement events recorded in 2016–2021. For the purpose of this study, a combination of Kernel density estimation and the Getis Gi* measure was used for the visual and statistical identification of hotspots (including p-levels). For details, see the [documentation for the Hotspot Analysis Plugin for QGIS](#).

Floods



Flood: A general term for the overflow of water from a stream channel onto normally dry land on a floodplain (riverine flooding); higher-than-normal water levels along the coast, in lakes or in reservoirs (coastal flooding); or the ponding of water at or near the point where the rain fell (flash floods).¹⁹

Fig. 1: **Child displacements triggered by floods (2016–2021)**

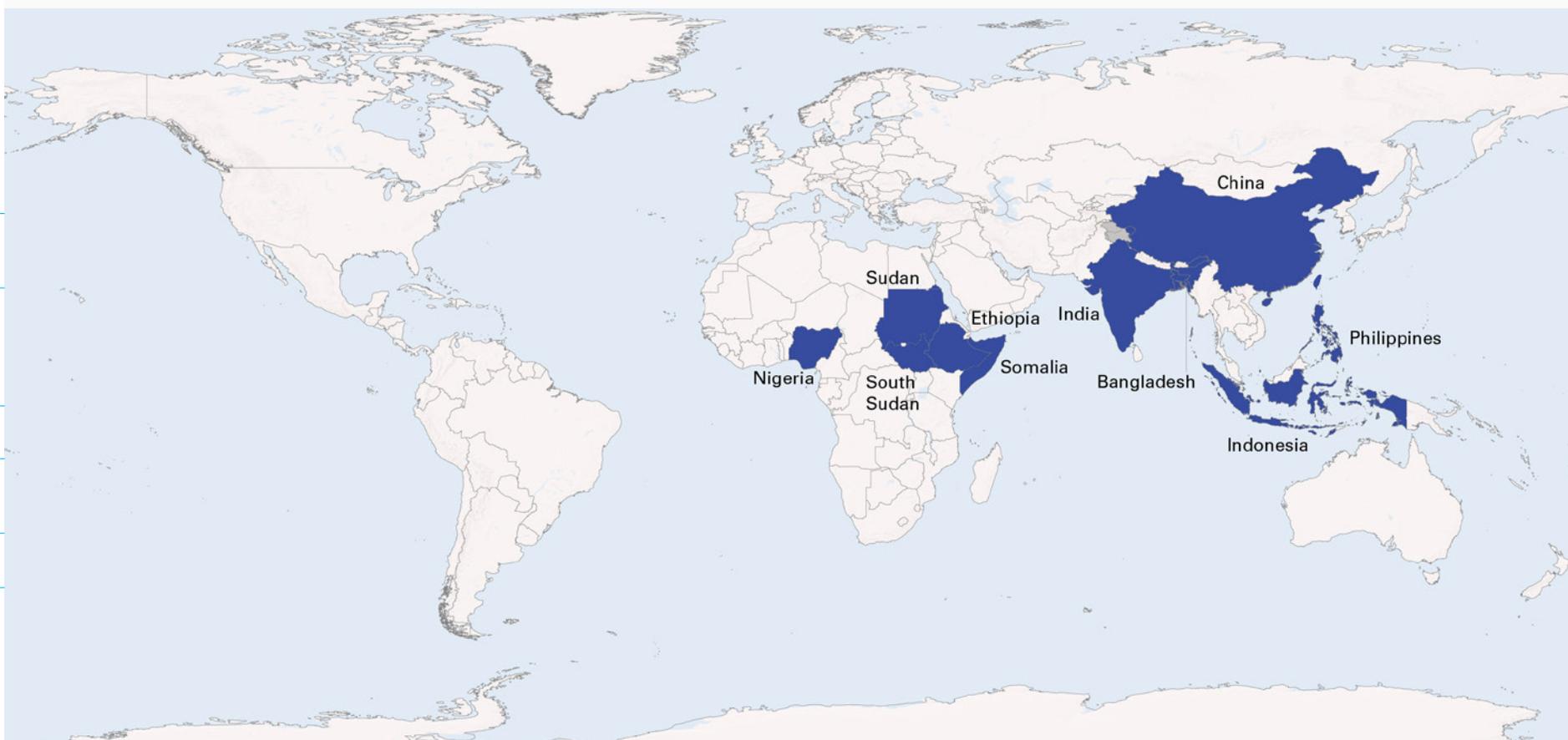


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Floods triggered an estimated 19.7 million displacements of children across the globe between 2016 and 2021. Hotspots are mostly located in Southern and Eastern Asia, with **India** (3.9 million), **China** (3.7 million) and **the Philippines** (1.3 million) being the most affected countries in terms

of absolute numbers. Most displacements recorded in the region occurred during the summer monsoon season, which runs from April to September.²⁰ However, many of the displacements recorded were pre-emptive evacuations, where children were moved out of harm's way before the disaster struck.

Fig. 2: **Top 10 countries with the most child displacements triggered by floods (2016–2021)**



Note: This map does not reflect a position by UNICEF on the legal status of any country or territory or the delimitation of any frontiers. The dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. The final boundary between the Sudan and South Sudan has not yet been determined. The final status of the Abyei area has not yet been determined.

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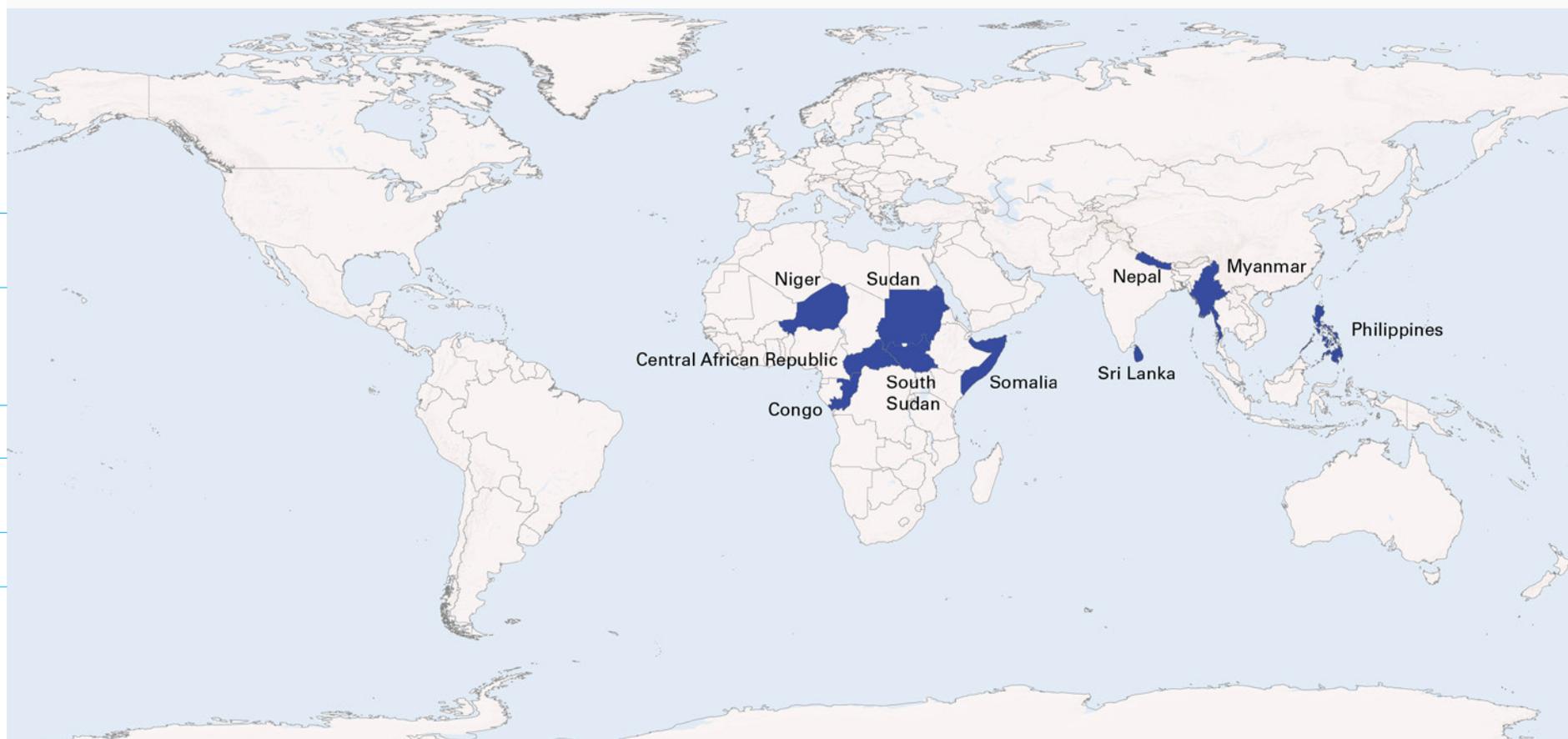
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Based on the number of child displacements relative to the total child population, countries in East Africa have been most severely affected by floods. In relative terms, **South Sudan** and **Somalia** recorded the most child displacements due to floods, equating to 11.8 per cent and 10.7

per cent of the child population, respectively.²¹ In addition to having high displacement figures in the analysis, the displacements recorded in South Sudan and Somalia are less likely to be pre-emptive evacuations than other countries such as China, India and the Philippines.²²

Fig. 3: **Top 10 countries with the most child displacements triggered by floods relative to child population (2016–2021)**



Note: This map does not reflect a position by UNICEF on the legal status of any country or territory or the delimitation of any frontiers. The dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. The final boundary between the Sudan and South Sudan has not yet been determined. The final status of the Abyei area has not yet been determined.

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Numbers are higher in countries such as the Philippines where reporting is better and there are more pre-emptive evacuations due to

good early-warning systems, and tracking and monitoring. This results in far higher caseloads but potentially less vulnerable populations.

ESTIMATED NUMBER OF CHILD DISPLACEMENTS DUE TO FLOODS BETWEEN 2016 AND 2021

Global

19.7 million child displacements due to floods

TOP 10 in absolute numbers

India: 3.9 million
China: 3.7 million
Philippines: 1.3 million
Somalia: 990,000
Bangladesh: 950,000
Indonesia: 930,000
Ethiopia: 920,000
South Sudan: 660,000
Nigeria: 650,000
Sudan: 570,000

TOP 10 relative to the child population^a

South Sudan: 11.8% (660,000)
Somalia: 10.7% (990,000)
Philippines: 3.2% (1.3 million)
Niger: 3.1% (430,000)
Congo: 3.1% (87,000)
Myanmar: 2.7% (430,000)
Sudan: 2.6% (570,000)
Central African Republic: 2.4% (74,000)
Sri Lanka: 1.8% (110,000)
Nepal: 1.8% (190,000)

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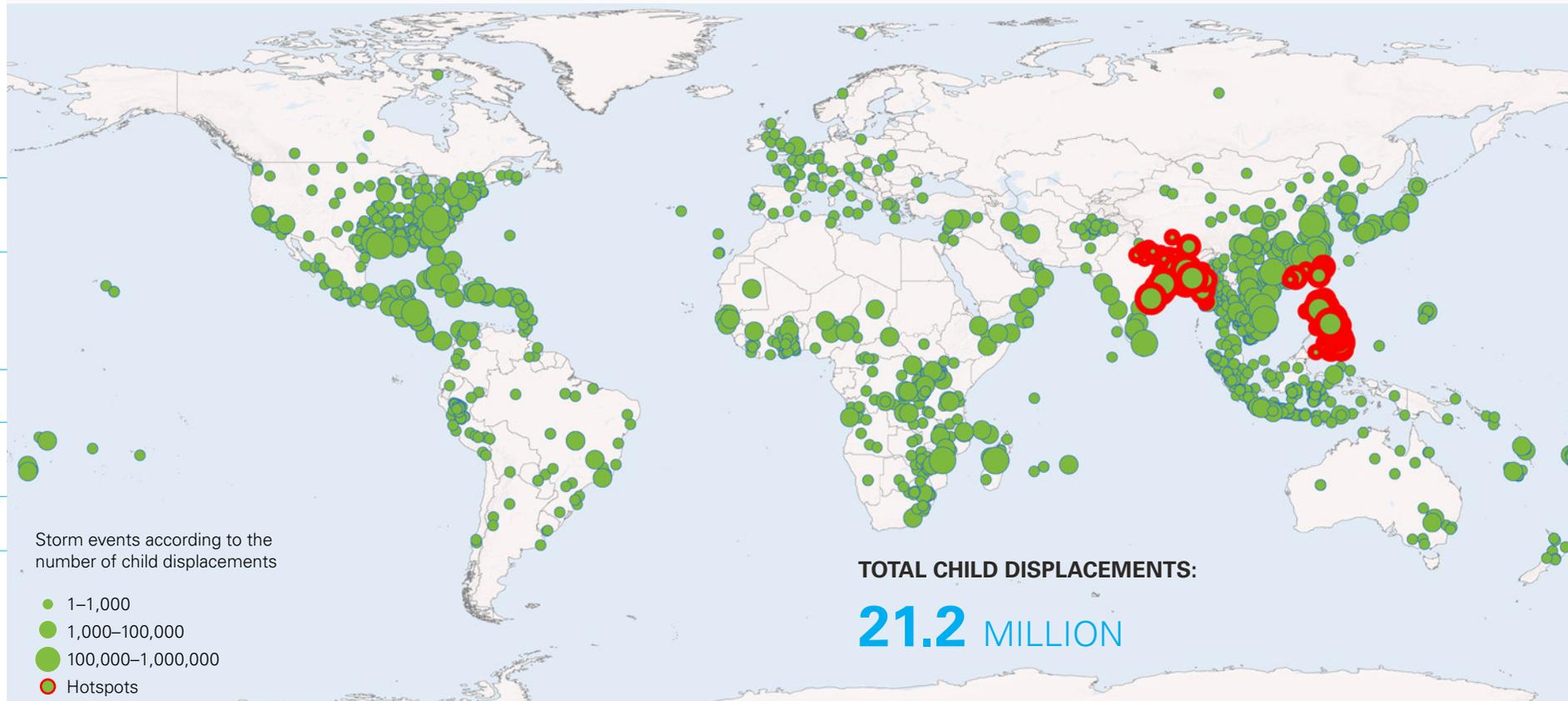
^a Relative numbers are given here to provide a notion of the magnitude of the displacement risk for a child between 2016 and 2021. The numbers do not describe the share of children displaced during this period as the same child may have been displaced several times and thus contributed more than once to the number of displacements.

Storms



Storm: A tropical storm originates over tropical or subtropical waters. It is characterized by a warm-core, non-frontal synoptic-scale cyclone with a low-pressure centre, spiral rain bands and strong winds. Depending on their location, tropical cyclones are referred to as hurricanes (western Atlantic, northeast Pacific), typhoons (western Pacific) or cyclones (South Pacific and Indian Ocean).²³ Also included here are tornadoes, blizzards (winter storms), sand/dust storms and storm surges.

Fig. 4: **Child displacements triggered by storms (2016–2021)**



Note: This map does not reflect a position by UNICEF on the legal status of any country or territory or the delimitation of any frontiers. The dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. The final boundary between the Sudan and South Sudan has not yet been determined. The final status of the Abyei area has not yet been determined.

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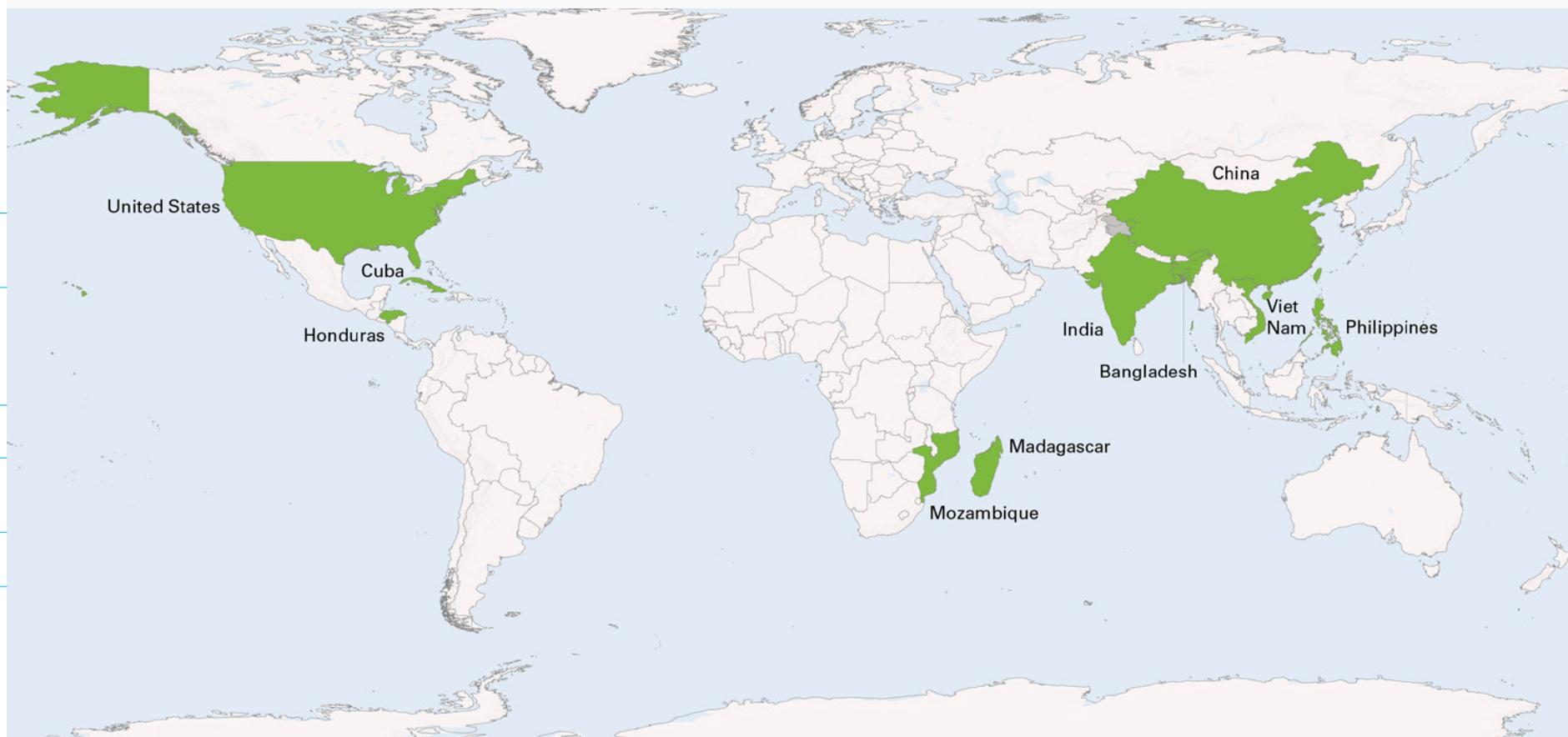
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Storms caused an estimated 21 million new displacements of children between 2016 and 2021. In absolute numbers, the majority were recorded in **the Philippines** (8.3 million), **India** (2.8 million) and **China** (2.6 million), while Small Island Developing States and other areas in the Caribbean and Pacific were the most affected countries in relative terms.

In **Dominica**, the number of displacements were equivalent to 76 per cent of children. Other instances of high proportions of child displacement include 37 per cent in **Sint Maarten (Dutch part)** and 31 per cent in **Cuba**. In **Vanuatu**, a total of 36,000 children were displaced – the equivalent of 25 per cent of the island’s child population.

Fig. 5: **Top 10 countries with the most child displacements triggered by storms (2016–2021)**



Note: This map does not reflect a position by UNICEF on the legal status of any country or territory or the delimitation of any frontiers. The dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. The final boundary between the Sudan and South Sudan has not yet been determined. The final status of the Abyei area has not yet been determined.

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Fig. 6: Top 10 countries and areas with the most child displacements triggered by storms in relative terms (2016–2021)



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Storms are common across East Asia and the Pacific, affecting highly populated areas where communities are forced to flee, either ahead of the storm or as a result of its impacts. Cyclone Amphan led to 1.5 million child displacements across India, Bangladesh, Myanmar and Bhutan in May 2020, whereas Typhoon Rai, also known as Odette, caused 1.5 million child displacements across the Philippines, Palau and Viet Nam in December 2021.

Throughout 2020, typhoons were aggravated by La Niña, which brought wetter than normal conditions to the region. The La Niña phenomenon is a naturally occurring driver of the earth’s climate system, but now occurs against a background of human-induced climate change, which makes extreme weather events more frequent and intense.^{24, 25, 26}

Where storms and typhoons coincide with periods of seasonal flooding, children face the greatest risk of weather-related displacement.

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Understanding how seasonal phenomena and the impacts of climate are affecting weather-related displacement hotspots is key to informing efforts to prevent, prepare for and respond to weather-related displacement.²⁷

Countries with similar geographies and climate risks can have very different displacement outcomes.

In fact, some child displacements may be due to a lack of early warning and DRR systems in areas at high risk of weather-related disasters.

Countries such as **the Philippines** and **Bangladesh** are considered high risk and are greatly affected by weather-related displacement owing to their geography and seasonal and regularly recurring hazards. However, these countries are also taking steps to manage disaster risks with early warning systems and DRR plans. Pre-emptive evacuations are used to successfully reduce the number of injuries and lives lost when a disaster strikes. These evacuations are often reported as displacements; therefore, they contribute to higher overall displacement figures for some countries.

Other countries are becoming high risk owing to accelerating climate change, which is causing the likelihood of risks such as extreme weather to increase. The Pacific islands of **Vanuatu** and **Fiji** will be increasingly affected by the more gradual effects of climate change such as sea-level elevation, erosion and more frequent extreme events. Cyclone Harold caused around

80,000 displacements in Vanuatu in 2020, including 34,000 child displacements, amounting to nearly a quarter of the population. Cyclone Winston struck Fiji in 2016, leading to 21,000 child displacements. High emissions climate scenarios suggest that devastating rare flooding events in Vanuatu and Fiji, which currently occur an average of once every 250 years, are likely to occur every 5-25 years by the end of the century.²⁸ Although both countries are relatively small, these islands are taking the threat of climate change seriously, with relocation plans for communities most at risk and robust monitoring and early-warning systems.²⁹

Cuba is regularly struck by hurricanes, with Hurricane Irma in 2016 displacing 310,000 children, but it is similarly taking steps to prepare and build community resilience. All Cubans are taught what to do when a hurricane approaches from an early age.³⁰ Disaster preparedness, prevention and response are part of the national curriculum and people of all ages take part in drills, simulation exercises and other training. The island's civil defense system and meteorological institute are pillars of its disaster risk management system and every individual is expected to help their community to weather the storm. Around 1.7 million people were evacuated before and during Irma, keeping them safe from the destruction caused by the hurricane. This demonstrated that, when employed as a resilience measure, pre-emptive evacuations can have positive outcomes.³¹

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Conversely, **some countries are at a moderate or high risk of climate hazards but lack sufficient coping capacity, which makes communities and children particularly vulnerable.** In addition to extreme weather events, **Haiti** is simultaneously coping with violence, poverty and repeated disasters, including earthquakes. Disasters tend to cause more damage in Haiti than in the neighbouring Dominican Republic because there has been less investment in risk mitigation in Haiti.

In **Mozambique**, Cabo Delgado – one of the poorest conflict-ridden regions in the country – is often affected by cyclones, such as Idai and Kenneth in 2019.³² A number of factors combined made Idai and Kenneth among the most devastating disasters the country has

experienced. In the face of storms of such magnitude, local early warning systems proved ineffective and very few people were evacuated from high-risk areas before the cyclones made landfall. Most people moved during or after the storms, once their homes had been damaged or destroyed.³³ Poor communities were disproportionately affected and had little capacity to recover and rebuild.³⁴ Since Idai and Kenneth, important improvements have been made to Mozambique's early warning systems.

Looking ahead, distinguishing between the countries most at-risk but with the capacity to cope and those with limited capacity to prepare for and mitigate risks will be critical in targeting resources to the most vulnerable children and communities.

ESTIMATED NUMBER OF CHILD DISPLACEMENTS DUE TO STORMS BETWEEN 2016 AND 2021

Global

21.2 million child
displacements
due to storms

TOP 10 in absolute numbers

Philippines: 8.3 million
India: 2.8 million
China: 2.6 million
Bangladesh: 2.3 million
United States: 950,000
Viet Nam: 900,000
Cuba: 670,000
Mozambique: 410,000
Honduras: 370,000
Madagascar: 190,000

TOP 10 relative to the child population^a

Dominica: 75.8% (13,000)
Sint Maarten (Dutch part): 36.5% (2,800)
Northern Mariana Islands: 36.2% (4,600)
Saint Martin (French part): 35.2% (3,100)
Cuba: 31.4% (670,000)
Vanuatu: 24.9% (36,000)
Philippines: 20.1% (8.3 million)
United States Virgin Islands: 19.9% (1,200)
Fiji: 13.6% (43,000)
Palau: 12.9% (580)

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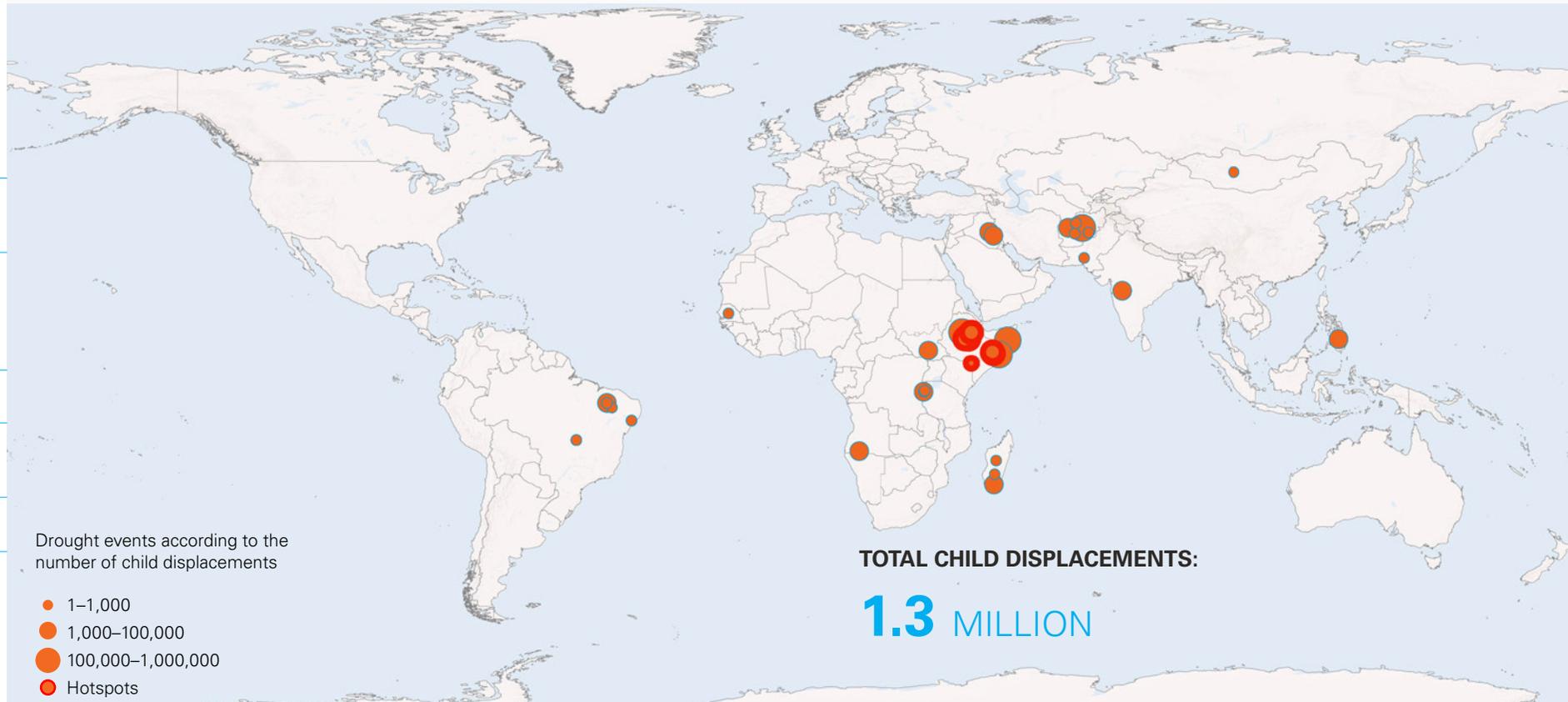
^a Relative numbers are given here to provide a notion of the magnitude of the displacement risk for a child between 2016 and 2021. The numbers do not describe the share of children displaced during this period as the same child may have been displaced several times and thus contributed more than once to the number of displacements.

Droughts



Drought: An extended period of unusually low precipitation that produces a shortage of water for people, animals and plants. Drought is different from most other hazards in that it develops slowly, sometimes even over years, and its onset is generally difficult to detect. Drought is not solely a physical phenomenon because its impacts can be exacerbated by human activities and water supply demands.³⁵

Fig. 7: **Child displacements triggered by droughts (2017–2021)***



Note: This map does not reflect a position by UNICEF on the legal status of any country or territory or the delimitation of any frontiers. The dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. The final boundary between the Sudan and South Sudan has not yet been determined. The final status of the Abyei area has not yet been determined.

** Different to the other hazards data on displacement triggered by droughts have been collected only since 2017.*

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Droughts triggered more than 1.3 million child displacements across 15 countries between 2017 and 2021. More than half – 730,000 – were recorded in **Somalia**, 340,000 in **Ethiopia** and 190,000 in **Afghanistan**.

It is important to treat data on droughts with caution, especially when comparing them to other hazards that may seem more important in terms of scale, as very few reliable data exist.³⁶ Because

drought-related displacement usually occurs slowly, only 40 events were recorded in IDMC's database. For instance, while countries such as Angola, Chad and Namibia experienced recent dry spells, there are fewer data to link these events to forced population movements. Internal displacement is rarely included in drought-related surveys and evaluations by governments or humanitarian organizations, making the full impact of a drought difficult to assess.³⁷

Fig. 8: Top 10 countries with the most child displacements triggered by droughts (2017–2021)*



*Note: This map does not reflect a position by UNICEF on the legal status of any country or territory or the delimitation of any frontiers. The dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. The final boundary between the Sudan and South Sudan has not yet been determined. The final status of the Abyei area has not yet been determined. * Different to the other hazards data on displacement triggered by droughts have been collected only since 2017.*

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Ethiopia and Somalia appear to be the countries most exposed to drought displacement, but they are also the countries where data on droughts are most complete. IDMC published its first drought displacement estimates in 2018 and conducted extensive surveys in both countries, allowing for a more in-depth analysis.

It is often difficult to distinguish between displacements that were caused by a drought from those caused by other social and economic factors. Drought-related displacement is not always sudden, forced or linked to a single event, which makes it difficult to track. Movement is often a response to cumulative changes that unfold over extended periods – for example, as a result of recurring droughts that slowly degrade ecosystems and threaten the livelihoods that depend on them. Such movement might be considered labour migration as a form of adaptation to change, or it might be considered displacement, in response to events such as drought-related famine. In the context of slow-onset events, it is much harder to distinguish between

displacement and migration, which has implications for interpreting data and making estimates.

In Somalia, pastoral agriculture is particularly important, and the increasing frequency and intensity of droughts has forced both nomadic and sedentary communities to move. Many pastoralists have left their homes as the drought conditions make keeping cattle difficult.³⁸ The risks to children displaced by droughts extend beyond threats to their physical well-being and protection. Despite growing pressure on infrastructure and services and rising rent prices because of the increasing demand, evidence suggests that people displaced because of weather-related reasons often move to urban and peri-urban settlements that are also home to people displaced by conflict and violence.³⁹ In these environments, children also experience emotional distress, caused by factors such as fear of family separation, water-related conflict, mounting tensions and pressures within households, a lack of emotional support and increased workloads.

→ Hibo and Ayesha's story



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Hibo is 10 years old. Years of drought in Somalia forced her family to leave their home in Guriel in search of food and water. Weak and frail, it took Hibo 10 days to reach the Kaharey camp for internally displaced persons, where she now lives.

Consecutive years of below-average rainfall in the Horn of Africa have created one of the worst emergencies of the past 40 years. The scale of the displacement is immense – and growing rapidly.

Ayesha, an 18-year-old mother living in another internal displacement camp explains, *“We arrived at this camp seven days ago, hoping things will be better. My family has lost all our cattle and camels. They all died because we had no water to give them. We have nothing.”*

Adolescent girls such as Ayesha and Hibo, face particular risks from migration, including adolescent pregnancy and violence. And while

the drought takes hold slowly, there are few opportunities to move safely before becoming displaced.

It is in contexts such as Somalia where embracing migration as an adaptation strategy for children and young people becomes most critical. Current livelihoods may become untenable or increasingly undesirable for young people today, and, with the right information and skills, moving may become the best option for many. Migration can provide opportunities for children and young people to pursue aspirations, diversify their skills and contribute to their new community. In the context of the urgent low-carbon transition that industrialized economies must make, there will be significant skills and workforce gaps that the migration of young workers between cities or countries can help fill. Furthermore, supporting the upskilling of young people to fill jobs focused on sustainability can help us move towards a low carbon economy.⁴⁰

ESTIMATED NUMBER OF CHILD DISPLACEMENTS DUE TO DROUGHTS BETWEEN 2017 AND 2021

Global

1.3 million child displacements due to droughts

TOP 10 in absolute numbers

Somalia: 730,000
Ethiopia: 340,000
Afghanistan: 190,000
India: 20,000
Iraq: 12,000
Angola: 4,000
Burundi: 3,800
Madagascar: 2,900
Brazil: 2,600
South Sudan: 2,200

TOP 10 relative to the child population^a

Somalia: 8.0% (730,000)
Afghanistan: 1.0% (190,000)
Ethiopia: 0.6% (340,000)
Iraq: 0.1% (12,000)
Burundi: 0.1% (3,900)
South Sudan: <0.1% (2,200)
Angola: <0.1% (4,200)
Madagascar: <0.1% (2,900)
Mongolia: <0.1% (210)
Philippines: <0.1% (2,200)

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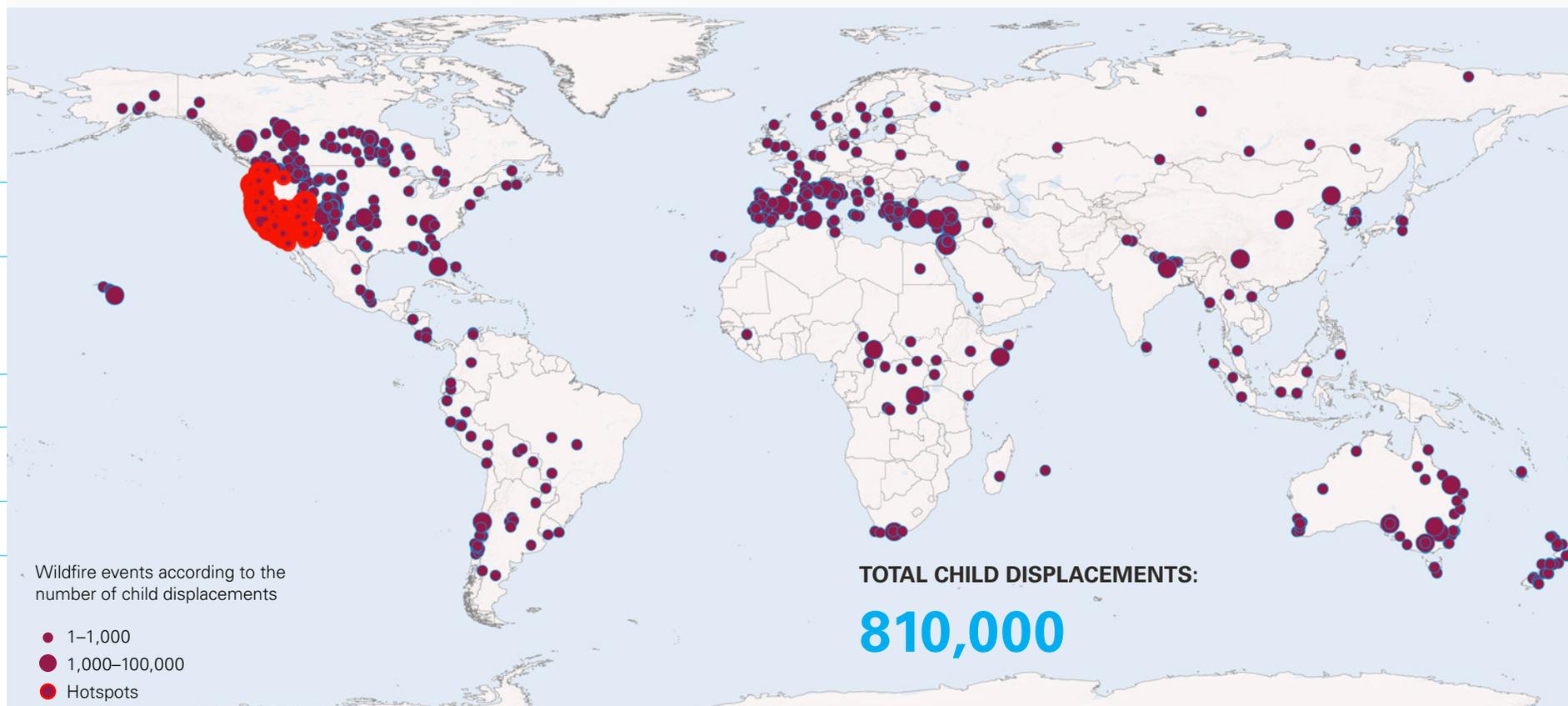
^a Relative numbers are given here to provide a notion of the magnitude of the displacement risk for a child between 2017 and 2021. The numbers do not describe the share of children displaced during this period as the same child may have been displaced several times and thus contributed more than once to the number of displacements.

Wildfires



Wildfire: Any uncontrolled and non-prescribed combustion or burning of plants in a natural setting such as forest, grassland, brush land or tundra that consumes the natural fuels and spreads based on environmental conditions (e.g., wind or topography). Wildfires can be triggered by lightning or human actions.⁴¹

Fig. 9: **Child displacements triggered by wildfires (2016–2021)**



Note: This map does not reflect a position by UNICEF on the legal status of any country or territory or the delimitation of any frontiers. The dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. The final boundary between the Sudan and South Sudan has not yet been determined. The final status of the Abyei area has not yet been determined.

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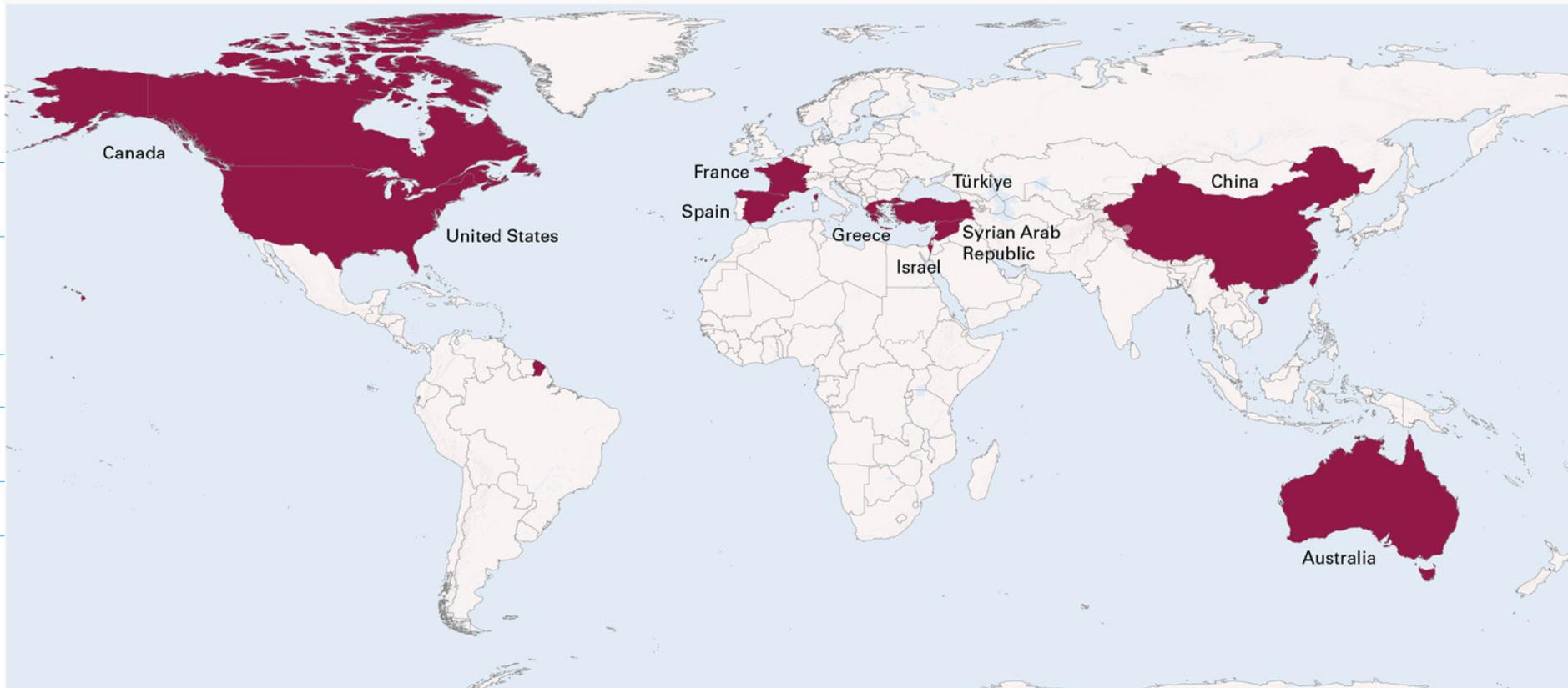
Extreme weather events exacerbated by climate change affect children in low- and high-income countries alike. Yet the risk mitigation measures in place to reduce the impact on children can vary greatly.

Between 2016 and 2021, 810,000 new child displacements due to wildfires were recorded, including 280,000 in 2020 alone.

The top three countries with the largest number of child displacements were **the United States** (610,000), **Canada** (47,000) and **Israel** (31,000).

Since data first became available in 2008, wildfires have triggered around 3.3 million displacements globally, of which almost 90 per cent have taken place in **the Americas**.

Fig. 10: **Top 10 countries with the most child displacements triggered by wildfires (2016–2021)**



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Urbanization and the expansion of agriculture mean that humans are in increasingly close contact with wildland, increasing the risk and impacts of wildfires. Rising temperatures associated with climate change combined with deforestation and the use of slash-and-burn practices also increase the risk of drought and fires, exacerbating the risk of displacement.^{42, 43} The rising numbers and severity of wildfires, not only in **North America** but also in the **Amazon region**, will lead to larger-scale displacements in the future.⁴⁴ As the impacts of climate change intensify, it is not only the magnitude of disasters that determine their

toll, but also their frequency and the time between them that is needed for communities to recover.

The analysis highlighted a large area of wildfire hotspots on the west coast of the United States. This was also reflected in the many displacement events and new displacements recorded in the United States during the time period studied. Between 2016 and 2021, more than 610,000 child displacements were estimated in the United States – most of them pre-emptive evacuations. The majority occurred in California, affecting children such as Mia and Maia.

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→ Mia and Maia's story



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One gusty October evening in 2017, the Bravo family narrowly escaped the Tubbs Fire, which burned parts of Napa and Sonoma counties in California. From the back of the family's minivan that night, sisters Mia and Maia watched flames surround their trailer in Glen Ellen. They abandoned their belongings, including Mia's favorite doll, and left without their cat, Misi, who was spooked by the fire. The only thing the family saved was the three-month-old baby's blanket.

The family drove away, weaving through dark roads illuminated by burning trees and flaming tumbleweeds. Mia was quiet. Maia vomited.⁴⁵

"I was afraid, in shock," Maia recalls. *"I would stay up all night."*

As wildfires grow more intense, frequent and widespread,⁴⁶ **many children who live through them are experiencing lasting psychological trauma such as anxiety, depression and post-traumatic stress disorder.** Children may also develop sleep or attention problems or struggle in school. If not managed, their emotional

trauma can affect their physical health, potentially leading to chronic health problems, mental illness and substance use.

State-led mental health screenings in California from January 2020 to September 2021 found that children were at higher risk of toxic stress or trauma if they lived in the state's northern counties, a primarily rural region that has been struck by large wildfires in recent years.⁴⁷

Most displacements triggered by wildfires were pre-emptive evacuations organized by disaster risk management agencies at the federal and state level. In the United States, there are a variety of support programmes for people affected by disasters, including those displaced. The Federal Emergency Management Agency, for example, provides support in the form of temporary housing and financial assistance. Nonetheless, the mental and physical impacts on children forced to leave their homes because a fire is near – whether they have an early warning or are displaced once the disaster strikes – are significant.

People whose homes have been destroyed face long-term impacts and many struggle with the cost of rebuilding and are unable to do so before the next disaster strikes.^{48, 49, 50}

For example, following the destructive 2018 wildfires in California, IDMC data show that only 728 of the 9,000 homes destroyed in the city of Paradise have been rebuilt more than two years after the fires.⁵¹

ESTIMATED NUMBER OF CHILD DISPLACEMENTS DUE TO WILDFIRES BETWEEN 2016 AND 2021

Global

810,000 child displacements due to wildfires

TOP 10 in absolute numbers

United States: 610,000
Canada: 47,000
Israel: 31,000
Türkiye: 22,000
Australia: 19,000
Greece: 13,000
Syrian Arab Republic: 10,000
China: 9,600
Spain: 6,700
France: 5,700

TOP 10 relative to child population^a

Israel: 1.0% (31,000)
United States: 0.8% (610,000)
Greece: 0.7% (13,000)
Canada: 0.7% (47,000)
Australia: 0.3% (19,000)
Syrian Arab Republic: 0.1% (10,000)
Türkiye: 0.1% (22,000)
Spain: 0.1% (6,700)
Portugal: 0.1% (1,300)
New Zealand: 0.1% (750)

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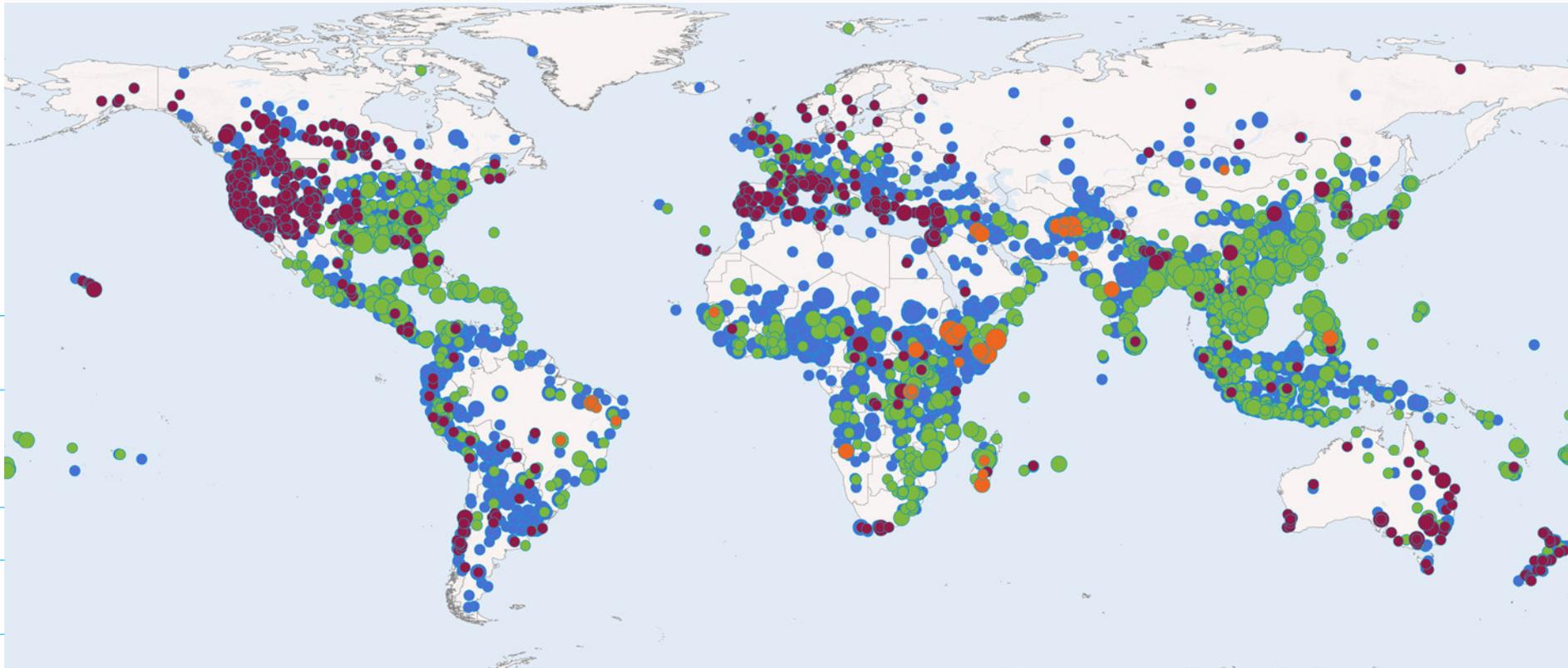
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^a Relative numbers are given here to provide a notion of the magnitude of the displacement risk for a child between 2016 and 2021. The numbers do not describe the share of children displaced during this period as the same child may have been displaced several times and thus contributed more than once to the number of displacements.

Compound Hazards

Fig. 11: Weather-related displacements by size and hazard (2016–2021)



Floods

- 1–1,000
- 1,000–100,000
- 100,000–1,000,000

Storms

- 1–1,000
- 1,000–100,000
- 100,000–1,000,000

Droughts

- 1–1,000
- 1,000–100,000
- 100,000–1,000,000

Wildfires

- 1–1,000
- 1,000–100,000

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WEATHER-RELATED DISPLACEMENTS OF CHILDREN BY REGION (2016–2021)

Child displacements by hazard and region (2016–2021)

Region	Storms		Floods		Droughts		Wildfires		All hazards	
	Numbers	Share by region	Numbers	Share by region	Numbers	Share by region	Numbers	Share by region	Numbers	Share by region
East Asia and Pacific	12,000,000	58%	6,700,000	34%	2,400	0.2%	31,000	3.9%	19,000,000	44%
South Asia	5,300,000	25%	5,700,000	29%	220,000	16%	510	0.1%	11,000,000	26%
Sub-Saharan Africa	910,000	4.3%	6,200,000	31%	1,100,000	82%	12,000	1.5%	8,200,000	19%
Latin America and the Caribbean	1,700,000	7.9%	620,000	3.1%	2,600	0.2%	7,400	0.9%	2,300,000	5.3%
North America	950,000	4.5%	110,000	0.5%			660,000	82%	1,700,000	4.0%
Middle East and North Africa	31,000	0.1%	400,000	2.0%	12,000	0.9%	44,000	5.4%	490,000	1.1%
Europe and Central Asia	5,400	0.0%	75,000	0.4%			51,000	6.3%	130,000	0.3%
Total by hazard	21.2 million	100%	19.7 million	100%	1.3 million	100%	810,000	100%	43.1 million	100%

Combining multiple hazards, **East Asia and the Pacific is the region with the most weather-related child displacements in absolute numbers**, followed by South Asia. The most child displacements were recorded in the Philippines – a total of 9.7 million – over the last six years. However, other regions, such as **Latin America and the Caribbean, have also been particularly affected in relative terms**. In Dominica, weather-related child displacements in the past six years are equivalent to 76 per cent of the child population,^a with considerable implications for preparedness and DRR plans.

^a Based on the available data, it is possible that some children experienced multiple displacements.

ESTIMATED NUMBER OF CHILD DISPLACEMENTS DUE TO ALL HAZARDS COMBINED BETWEEN 2016 AND 2021

All hazards combined (floods, storms, droughts and wildfires)

43.1 million child
displacements

TOP 10 in absolute numbers

Philippines: 9.7 million
India: 6.7 million
China: 6.4 million
Bangladesh: 3.3 million
Somalia: 1.7 million
United States: 1.7 million
Ethiopia: 1.3 million
Indonesia: 960,000
Viet Nam: 930,000
Cuba: 670,000

TOP 10 relative to the child population^a

Dominica: 76% (13,000)
Sint Maarten (Dutch part): 37% (2,800)
Northern Mariana Islands: 36% (4,600)
Saint Martin (French part): 35% (3,000)
Cuba: 31% (670,000)
Vanuatu: 25% (36,000)
Philippines: 23% (9.7 million)
British Virgin Islands: 20% (1,200)
Somalia: 19% (1.7 million)
Fiji: 15% (46,000)

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Although looking back at past displacements helps to understand the location of disasters and how many child displacements occurred, it leaves out some important considerations. The short six-year time frame can exclude risks of rarer but more severe disasters. Extreme disasters occur infrequently, maybe only every 100, 500 or even 1,000 years. Although these disasters are uncommon, when they do occur, they can lead to dramatic losses of life and displacements.

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To fill this gap in the historical analysis, we have taken advantage of the **disaster displacement risk model developed by IDMC in 2017**. The risk model uses information on hazards (e.g., cyclones), exposure (people and buildings) and vulnerability (fragility of buildings) to estimate displacement risks in the future. The model takes into account the risk of medium- to large-scale events, that is, disasters that occur more frequently but lead to relatively few displacements, and ‘once-in-a-lifetime’ disasters (or even ‘once-in-a-century’ or ‘once-in-a-millennium’ disasters), which can lead to large-scale displacements. Using this information, we can estimate how many people could be displaced on average in any given year in the future. This number – the average annual displacement (AAD) – should not be understood as the number of displacements that can be expected to occur every year. It is rather an average of the number of displacements caused by all kinds of events that could occur over a long time frame. A single large disaster event – such as a once-in-a-millennium flood – will result in far more displacements than the AAD. By expanding the time horizon, the AAD metric becomes more concrete and tangible: It can tell us how many displacements we could expect in the next 10, 20 or even 50 years.^a

An important difference between this model and the analysis of historic displacements is that the hazards considered in the risk model

are narrower – a consequence of how the model is computing the risks. For example, while the historic displacement data usually do not differentiate between coastal flooding and riverine flooding (and include other forms of flooding such as flash floods), the displacement risk model considers only riverine floods. Therefore, it is not possible to directly compare the displacement numbers between the two types of analysis.

Another difference is that the risk model does not include pre-emptive evacuations. This is because the model estimates future displacements based on the extent of the damage and destruction that hazard of different intensities are likely to cause. Pre-emptive evacuations can – depending on the hazards and the country’s level of preparedness – constitute a large proportion of the recorded displacements (e.g., for wildfires in the United States, cyclones in the Philippines). Most of the evacuees may be able to return to their houses after the hazard subsides and their displacement may last for only a short while, while others may find their homes, schools, health facilities and other infrastructure destroyed and become trapped in protracted displacement. Since the risk model does not account for pre-emptive evacuations, the resulting numbers are a significant underestimate of the actual number of children likely to be displaced in the future.

^a In general, AAD, both in its original form as an annual value and accumulated over a period of time, should be considered as an indicator of the potential magnitude of displacement, not as an exact value. The AAD is an average value based on past conditions that may change in the future. For example, people may move in or out of an area at risk or inhabit different types of buildings, which both have an influence on exposure and vulnerability.

LOOKING TO THE FUTURE

The hazard likely to trigger the most child displacements in the future is riverine floods, with an average of **almost 3.2 million children displaced every year**. This would represent **almost 96 million displacements over the next 30 years**. **Cyclonic winds are the second most impactful hazard**, with the potential to cause more than **10.3 million child displacements** over 30 years. Finally, **storm surges could be responsible for 7.2 million child displacements** over this period.

The figures are very different when looking at countries using relative versus absolute numbers. Given their large population, India, Bangladesh, Viet Nam, the Philippines and China are the five countries with the most predicted future displacements of children owing to all hazards combined (riverine flood, cyclones and storm surges). However, in relative terms, the British Virgin Islands, the Bahamas and Antigua and Barbuda are the countries that will see their child populations most affected by disaster displacement.

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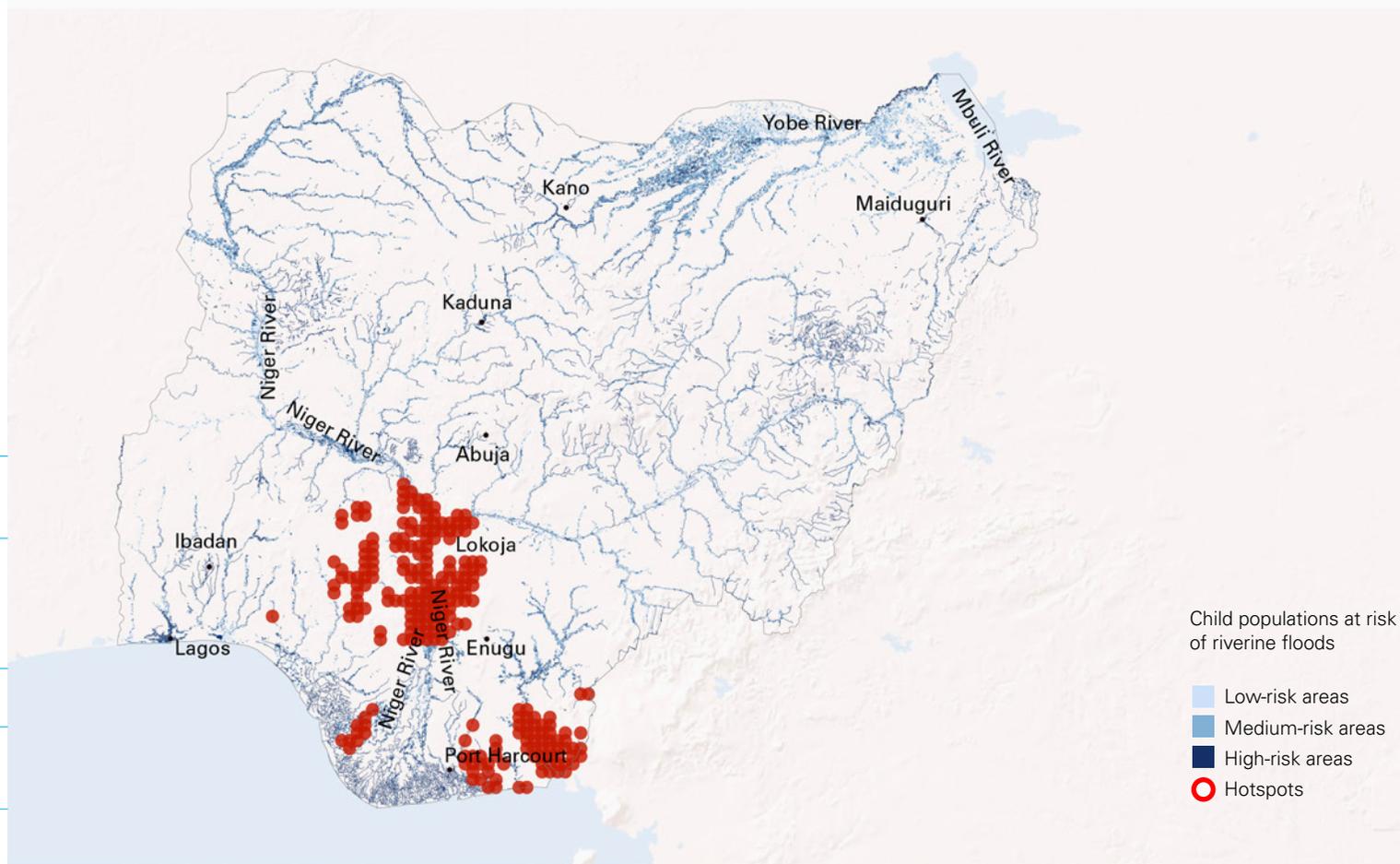
Similar to the analysis of historic displacements, the model developed for this study allows us to identify areas that carry a high risk of being affected by specific hazards in the future and have a large child population, thus allowing expected hotspots of future child displacements to be identified. Determining the geographic locations of potential future disasters and the scale of the expected child population affected can help countries prepare for disaster-related displacement and mitigate the risks and impact on children and their communities.

However, it is important to remember that this analysis does not take into account the area's vulnerability nor the potential mitigation measures in place to prevent the hazard from affecting the population, such as the degree to which houses are resistant to disasters.

The following pages provide analyses of three country-specific examples of future risk: riverine floods in Nigeria, storm surges in the Philippines and cyclonic winds in Bangladesh.

Riverine floods in Nigeria – Risk model

Fig. 12: Risk of child displacement triggered by riverine floods in Nigeria as estimated by risk model



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Blue areas show the extent of floods with a 100-year return period combined with the density of the child population. The darker the shade of blue, the greater the risk of children being affected by riverine floods. Red dots represent hotspots where a high risk of riverine floods and a large child population put a very large number of children at risk of displacement. Map based on data from GAR 2017, WorldPop, GHSL 2022. This map focuses on riverine floods with a 100-year return period. The return period is a measure of the severity of an event and the likelihood of it occurring. Events with a shorter return period are less extreme but more likely to occur in any given year, whereas events with longer return periods are more extreme but less likely to occur in any given year. A 100-year return period hazard can be understood as a medium hazard event that has a 1 per cent annual chance of occurring – or on average (over a long period) occurs once every 100 years. See <https://www.gfdr.org/en/100-year-flood> for a more detailed description.

Note: This map does not reflect a position by UNICEF on the legal status of any country or territory or the delimitation of any frontiers.

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Nigeria is located at the confluence of two major West African rivers, the Niger and the Benue. Heavy precipitation upstream in Cameroon, Mali and the Niger during the rainy season often triggers flooding. Nigeria is the most populated country in Africa, and thousands of young Nigerians are displaced every year because of flooding, with many more at risk of displacement in the future.

Between 2016 and 2021, flooding caused an estimated 650,000 child displacements across the country. The **areas most affected by flood displacement were around urban centres and rivers**. The main event generating displacement was widespread flooding in August 2018, which displaced 320,000 children. This sole event represents almost half of the child displacements recorded in six years. This means that being ready to respond to extreme flooding events, especially during the rainy season between April and October, is important.⁵²

Looking to the future, the risk model analysis shows that **more than 3.1 million children in Nigeria alone could be displaced by riverine floods over the next 30 years – about 100,000**

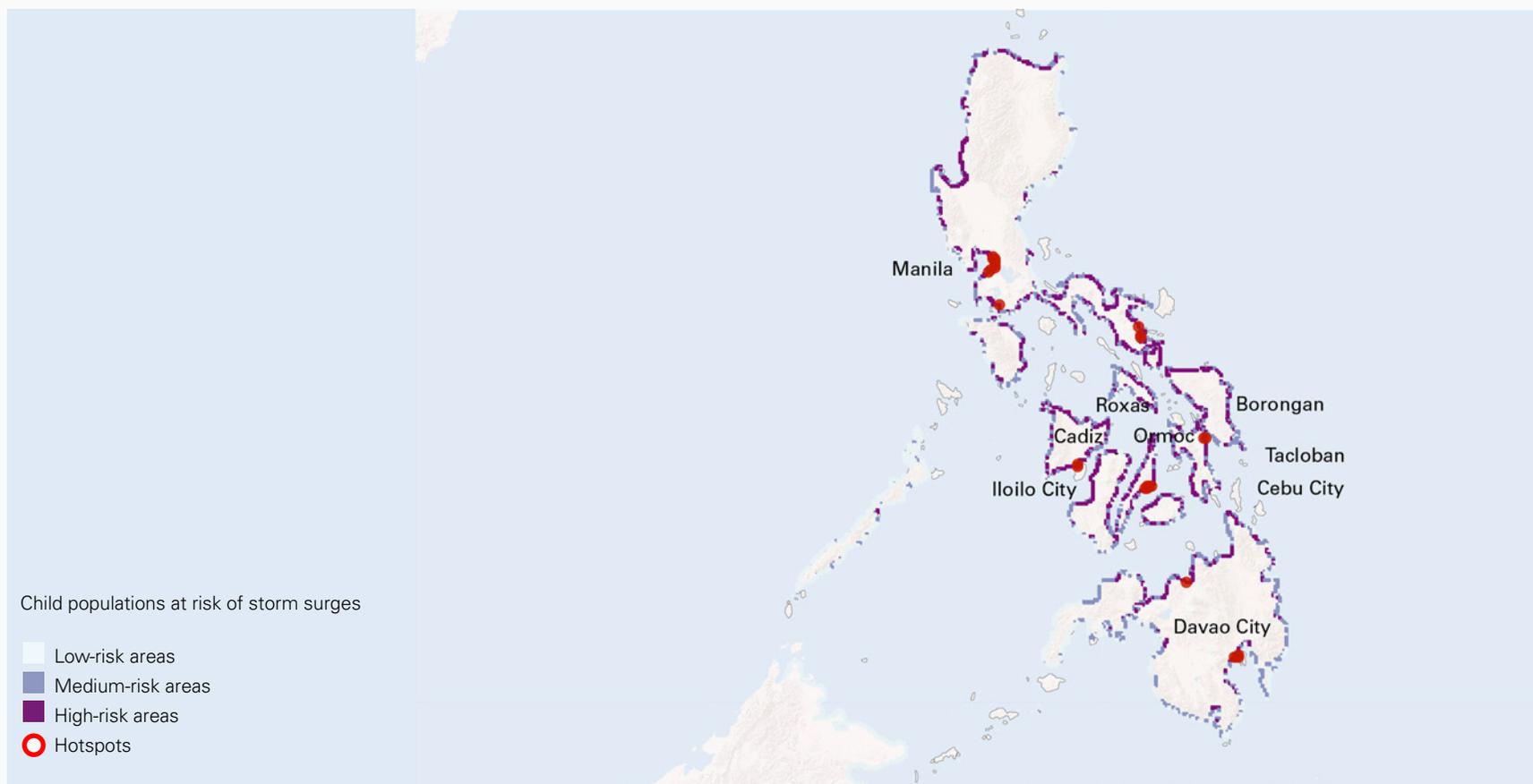
in any given year. This represents a similar annual figure to the observed displacements, but it is actually a significant underestimate as it refers to riverine floods only. In contrast, the historical analysis takes into account potential displacements triggered by coastal flooding and flash floods.⁵³ Population growth, rapid urbanization and climate projections are expected to further increase the risk and numbers of child displacements in the coming years.⁵⁴

Hotspot areas for future displacement can be identified along the country's rivers, mainly around the Niger and the Cross River and their tributaries, with the areas around the delta of Port Harcourt and Lokoja possessing the greatest risk of child displacement. This is consistent with the hotspot pattern from the historical displacement analysis.

As the analysis shows, it is crucial to invest in flood mitigation measures in every region of the country to prevent child displacement – especially in fast-growing peri-urban areas. The deadly 2022 floods, affecting 2.6 million children and displacing around 2.4 million people across 34 states, are a clear reminder of this pressing need.^{55,56}

Storm surges in the Philippines – Risk model

Fig. 13: Risk of child displacement triggered by storm surges in the Philippines as estimated by risk model



Violet areas show the extent of storm surges with a 100-year return period combined with the density of the child population. The darker the shade of violet, the higher the risk of children being affected by storm surges. Red dots represent hotspots where a high risk of storm surges and a large child population put a very large number of children at risk of displacement. Map based on data from GAR 2017, WorldPop, GHSL 2022. This map focuses on storm surges with a 100-year return period. The return period is a measure of the severity of an event and the likelihood of it occurring. Events with a shorter return period are less extreme but more likely to occur in any given year, whereas events with longer return periods are more extreme but less likely to occur in any given year. A 100-year return period hazard can be understood as medium hazard event that has a 1 per cent annual chance of occurring – or on average (over a long period) occurs once every 100 years. See <https://www.gfdrr.org/en/100-year-flood> for a more detailed description.

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The Philippines' location and topography places it at a high risk of storm surges, where an abnormal rise of the tide is caused by strong winds and low atmospheric pressures during a tropical cyclone. Combined with high tides, storm surges can have devastating impacts on children living in coastal areas – uprooting them from their homes, washing away schools and disrupting access to clean water, sanitation, health care and other services.⁵⁷ According to our displacement risk model, **2.5 million children across the Philippines are at risk of being displaced during the next 30 years by storm surges.**

The analysis of data from historical tropical cyclones, along with available geographical information about the Philippines, suggests that most of the country's coastline is likely to be hit by a storm surge in the future, sometimes affecting highly populated areas such as Manila or Cebu City.⁵⁸ The hotspot analysis identified locations where large numbers of children are at risk of displacement due to storm surges – a combined effect of the frequency of hazard events, severity of the events, vulnerability of the area and the numbers of exposed children living there. These hotspots are concentrated around large cities, including Davao, Cebu and Manila.

However, as the map shows, the entire coastline of the Philippines is exposed, with potential for massive repercussions for children.

Based on the historical data analysis, 44,000 child displacements triggered by storm surges were reported between 2016 and 2021. On 18 December 2020, Tropical Depression Krovanh, also known as Tropical Depression Vicky in the Philippines, hit Davao and Caraga with a storm surge, displacing 36,000 children. However, this relatively low number compared with the number of child displacements linked to typhoons may be because the distinction is not always made between the storm and its related impacts, such as storm surges, when displacements are recorded.

Although the Philippines has a robust system in place to both prevent and respond to disasters, including monitoring systems, early warnings, evacuation protocols and available shelters,⁵⁹ the sheer number of children who could be potentially displaced by a single disaster event raises important questions about the capacity of shelters, schools and other services to absorb displaced populations in locations that lend themselves to hosting displaced populations after a disaster strikes.

PROMISING PRACTICE IN THE PHILIPPINES

The Philippines is one of the few countries to systematically collect disaster displacement data. The Disaster Response Operations Monitoring and Information Center collects data on the number of people evacuated and the number staying in shelters or with relatives over time and disaggregates this information by age, sex and location.⁶⁰ Important guidelines and innovations have also been developed to mitigate disaster risk and manage response efforts after a disaster strikes. For example, a village early-warning system in the Philippines incorporates sound and visual signals to improve accessibility.⁶¹



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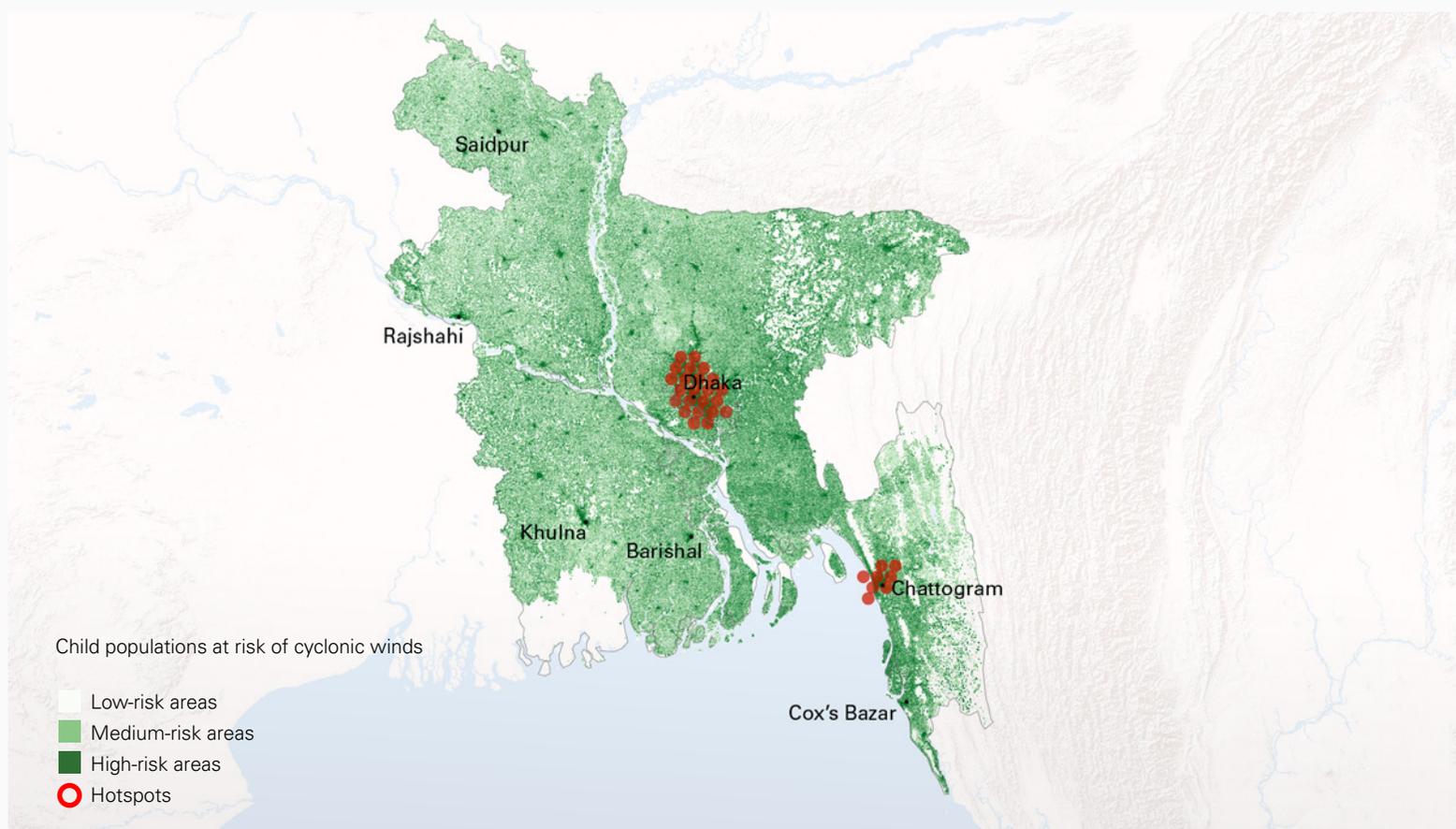
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Cyclonic winds in Bangladesh – Risk model

Fig. 14: Risk of child displacement triggered by cyclonic winds in Bangladesh as estimated by risk model



Green areas show the extent of cyclonic winds with a 100-year return period combined with the density of the child population. The darker the shade of green, the higher the risk of children being affected by cyclonic winds. Red dots represent hotspots where a high risk of cyclonic winds and a large child population put a very large number of children at risk of displacement. Map based on data from GAR 2017, WorldPop, GHSL 2022. This map focuses on cyclonic winds with a 100-year return period. The return period is a measure of the severity of an event and the likelihood of it occurring. Events with a shorter return period are less extreme but more likely to occur in any given year, whereas events with longer return periods are more extreme but less likely to occur in any given year. A 100-year return period hazard can be understood as medium hazard event that has a 1 per cent annual chance of occurring – or on average (over a long period) occurs once every 100 years. See <https://www.gfdr.org/en/100-year-flood> for a more detailed description.

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Bangladesh has historically been a high-risk country for weather-related displacement – and this risk is only growing as the impacts of climate change accelerate, demographics change and rapid urbanization continues. According to the Global Climate Risk Index 2021, Bangladesh is among the top 10 countries most affected by extreme sudden-onset events in the past 20 years.⁶² Based on the displacement risk model, in total, **1.1 million children in Bangladesh could be displaced by cyclonic winds over the next 30 years.** This figure represents estimations of long-term displacements due to damage to homes that leaves them uninhabitable – the number could be much higher when accounting for pre-emptive evacuations.

Children across the entire country are at risk of being affected by cyclonic winds (see the green shading throughout the map in Figure 14), a consequence of both the fact that cyclonic winds can reach all areas of the country and the high and relatively evenly distributed population density of Bangladesh. The areas in red on the map represent hotspots for child exposure to cyclonic winds. These are mainly located around Dhaka, the capital and largest city, with a population of almost 22 million people, and Chattogram, the second largest city. Urban areas – especially those located along the coast or river basins – are where high-density population, rapid urbanization and recurring disasters collide.⁶³

Tropical cyclones represented over 70 per cent of the total weather-related child displacements in Bangladesh between 2016 and 2021, totalling over 2.3 million displacements. Child displacements – including pre-emptive evacuations – peaked in 2019 when 1.3 million displacements were triggered by nine storm events across the country. Cyclones Bulbul in November and Fani in May were responsible for the majority, causing 700,000 and 550,000 child displacements, respectively. Although these children’s lives were forcefully interrupted, many of these displacements can be attributed to pre-emptive evacuations and were only temporary in nature.

Cyclone Amphan made landfall between West Bengal in India and the Hatiya Islands in Bangladesh on 20 May 2020, triggering 750,000 child displacements across the country. Wind speeds reached 130–140 km/h, causing the mass destruction of houses, schools, roads and other infrastructure in coastal districts. Crops and health facilities were also devastated, contributing to child malnutrition, separation from families and caregivers, and increased risk of child labour and violence.⁶⁴

While Bangladesh already has an established network of shelters, early warning systems and evacuation plans in place, demographic and urban growth combined with climate change are putting pressure on the national and local governments to increase on efforts to prevent and mitigate the risk of displacement and its negative effects.^{65,66}

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The hotspot mappings of past disaster displacements together with the future risk analysis provide a guide to where weather-related displacements of children may occur now and in the years to come. As the impacts of climate change intensify, we can expect more frequent and more severe weather-related disasters, increasing the risk of child displacement in the hotspots identified.

However, it is important to consider displacement risk data alongside data on child poverty, conflict and fragility to identify the most vulnerable children. Fragile and conflict-affected countries are already grappling with overlapping crises – including large numbers of internally displaced people and refugees – straining the countries’ capacities to cope with additional displacement caused by disasters. Changing population dynamics mean that the size of the population at risk is predicted to grow in some hotspot countries and regions. For example, Western Africa can expect a significant population increase and migration to urban centres, which are often located in coastal areas with a high risk of weather-related displacement.⁶⁷

The modelling also exposed critical gaps in the available data, especially in contexts affected by displacement associated with slow-onset processes. Droughts, for example, are usually the result of multiple factors, making it difficult to isolate the climatic event as the trigger. The sustainable and systematic collection of data over time is critical to provide a clearer picture of displacement linked to slow-onset hazards. Additional investments to address these gaps is critical to guide forecast-based climate and mobility policies, map and prepare hotspots for climate displacement, and support informed choices to adapt, stay or move by children and families.

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Where were children most affected by weather-related displacement?

Through analysing past displacement trends and available information on preparedness and coping capacities, three different country typologies emerge:

- 1. High risk, but with good coping capacity:** Countries like the **Philippines** and **Bangladesh** are high risk and highly affected by weather-related displacement owing to their geography and seasonal and regularly recurring hazards. However, they are also taking steps to manage disaster risks with early warning and DRR systems. Pre-emptive evacuations are used to successfully reduce the number of injuries and lives lost when a disaster strikes. These evacuations are often reported as displacements and contribute to higher overall displacement figures for some countries; however, depending on the specific situation, many of the evacuees may still end up facing long-term displacement if their homes, roads and infrastructure are destroyed.

-
- 2. Increasing risk due to climate change:** Countries such as Vanuatu or Fiji are becoming increasingly affected by accelerating climate change, which increases displacement risks linked to extreme weather. Research on these two countries suggests that devastating floods, which currently occur only once every 250 years on average, are likely to occur every 5-25 years by the end of the century.⁶⁸ Although both these countries have robust monitoring and DRR systems,⁶⁹ the growing impacts of climate change have serious implications for planning and preparing for displacement that may affect children multiple times throughout their childhood.
- 3. Moderate or high risk, but with limited capacity to cope:** Some countries are at **moderate or high risk of weather-related extremes also face the compounding factors of high rates of poverty, conflict and other hazards, which leave children and their communities particularly vulnerable**. For example, **Haiti** is high risk and is also dealing with conflict, violence, poverty, earthquakes and limited investment in risk mitigation and preparedness. In **Mozambique**, poor communities are disproportionately affected with little capacity to recover from consecutive disasters. It is in these countries, where risk mitigation, adaptation and preparedness – including embracing pre-emptive evacuations and other climate mobility options to save lives and minimize any disruption to children’s access to critical services – is most urgent.

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To improve outcomes for children and young people at risk of future displacement and to deliver on the commitments made under the Paris Agreement, Sendai Framework, Sustainable Development Goals, and Global Compacts for Migration and Refugees – governments, donors, development partners and the private sector should join forces to prioritize the following actions:

1. **PROTECT** children and young people from the impacts of climate change and displacement by **ensuring that child-critical services – including education, health, social protection and child protection services – are shock-responsive, portable and inclusive**, including for those already uprooted.
 - **Adapt services in hotspot locations to be resilient to the impacts of climate change and prepared to reach and protect the most vulnerable before, during and after disaster strikes.** Designing services and infrastructure based on a displacement risk analysis with flexibility and surge capacity to absorb displaced populations is key. Furthermore, ensuring that school structures are not used as evacuation sites is important to minimize disruptions to education following displacement.
 - **Design services to be portable and able to follow children as they move** within countries or across borders. This means prioritizing portable skills and education certification, and online access to identity documents, health records and other information that enables children to reunite with family, maintain access to healthcare, continue to learn and stay connected with their communities.
 - **Set up services to be equitable and inclusive.** Poorer children who already face economic disadvantage are more likely to live in hotspot locations and face disproportionate impacts from climatic events. Addressing inequities means setting up systems and capacity for shock-responsive social protection, including cash transfer mechanisms to support children affected by climate shocks.

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2. **PREPARE** children and young people to live in a climate-changed world by improving their adaptive capacity and resilience and enabling their participation.

- **Equip children and young people in hotspot locations with the portable skills needed to build livelihoods elsewhere in a climate-changed world.** This entails strengthening the ecosystem that supports children and young people to develop green skills and entrepreneurship in green sectors. It also includes green jobs generation, including as part of efforts to make the agriculture, energy, construction and mining sectors more sustainable
- **Educate and empower children and young people to meaningfully engage in climate policy and action.** Providing children with knowledge of climate change and resilience techniques through climate education is critical to enabling children and young people – including those on the move or in hotspot locations – to effectively influence climate policies, budgets and plans. It is important to ensure that children and young people are directly informed about and shaped by the lived experiences, priorities and knowledge of communities affected by climate change and displacement.

3. **PRIORITIZE** children and young people – including those already uprooted from their homes – in climate, humanitarian and development policy, action and investments.

- **Prioritize child-sensitive DRR, community early-warning systems and anticipatory action to minimize risk.**

Leverage displacement-sensitive situational and risk analysis to inform DRR and preparedness plans. When hazards strike, displaced children and young people may face specific challenges and barriers that need to be considered in national and local DRR policies and plans. It is also critical to ensure community early-warning systems are equipped to reach displaced populations and communities in hotspot locations.

Engage local governments, affected communities, and children and young people themselves in DRR and planning for displacement. Ensuring a whole-of-society approach and partnering with local actors, communities and displaced children and young people – and those living in hotspot locations – is critical.

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Establish flexible financing and pre-arranged partnerships to prepare for displacement.

Anticipatory action to broker public–private partnerships and establish prearranged financing and resources to expand services and absorb displaced populations following a disaster can help prepare for future displacement crises.

- **Strengthen data systems to plan for, track and monitor the weather-related displacement of children and leverage innovative technologies to help predict and simulate disasters.**

Where possible, **data should be disaggregated by age, sex, location, ethnicity, household income and other key social and demographic variables to inform more targeted and effective investment and interventions** by governments, humanitarian and development partners.

As many climate-related crises are predictable, **investment to scale up both governments’ and humanitarian actors’ forecasting and risk analysis capabilities for strengthened anticipatory action, preparedness and resilience building is critical.** Leveraging data on infrastructure and past disasters can help predict the damage when different disasters hit.

- **Recognize the connection between human mobility, displacement and climate change.**

Manage mobility options by expanding inclusive, fair and accessible migration pathways for children, families and young people living in hotspot locations. The option to move safely, voluntarily and with dignity from weather-related hotspots to cities or across borders can provide opportunities for young people to adapt to a changing climate as they pursue their aspirations and livelihoods. Planning for pre-emptive evacuations and relocations ahead of time with and for affected communities will also be critical.

Include migrant and displaced children and young people, and their specific protection and assistance needs, in local, national, regional and international climate strategies, plans and policies. This includes National Adaptation Plans, Nationally Determined Contributions, DRR strategies and wider frameworks for sustainable development.

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- **Scale up child-responsive and mobility-sensitive climate finance.**

Ensure that the money flows to priority countries to strengthen capacities to prepare and cope. This includes increasing climate funding and financing through the Green Climate Fund, Global Environment Facility Trust Fund, Adaptation Fund and Loss and Damage Fund to the countries most at risk of the weather-related displacement of children, especially those that are also fragile or conflict-affected, where the risks are great but the coping capacity is low. It will be necessary to unlock barriers that prevent finance reaching these hotspots because of conflict or fragility.

Within these priority countries, prioritize investments to strengthen the climate resilience and portability of child-critical services through child-responsive interventions, including in education, health, food and nutrition, clean energy, water, sanitation and hygiene, child and social protection services, and disaster risk reduction.

Re-imagine existing financing models to prepare for a future that is already underway. Unlock funding to support anticipatory action on climate displacement, including for planned relocations that are child-sensitive, and ensure meaningful child and youth participation. Leveraging innovative financing instruments will reduce the likelihood of crowding out other development or humanitarian finance that children also depend on. These could include green, blue or municipal bonds; innovative insurance schemes; and debt-for-climate and debt-for-nature swaps.

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WORKING IN PARTNERSHIP WITH YOUNG PEOPLE AFFECTED BY CLIMATE- RELATED DISPLACEMENT

To complement the data analysis, UNICEF worked closely with young people experiencing first-hand the impacts of weather-related displacement in hotspot locations. A part of a joint initiative with the African Climate Mobility Initiative (ACMI), 10 youth delegates were selected through a youth innovation challenge to attend COP27 in person.⁷⁰ The delegates contributed to public events and bilateral meetings with heads of governments, United Nations agencies, innovators and business partners. They also helped launch the first-ever African Youth Declaration on Climate Mobility,⁷¹ outlining their priorities for youth-led solutions to the climate crisis and human mobility nexus.

Annex:

Key terms and concepts

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Pre-emptive evacuations: Evacuations are usually planned, recommended or mandatory and facilitated by government agencies to avoid the potential impacts of a hazard before it strikes. Pre-emptive evacuations occur before a disaster strikes and can reduce the loss of life. Pre-emptive evacuations are effective for a subset of weather-related disasters, including floods, storms and wildfires. For most evacuees, their displacement is short term and they can return safely to their homes. But if housing or infrastructure are destroyed, this can lead to longer-term displacement. IDMC includes evacuations in its monitoring of displacement. The effectiveness of evacuations saving lives and mitigating harm depends on the country's early warning systems and DRR capacities.

Weather-related disasters: A subgroup of disasters linked to weather-related events (e.g., floods, storms, droughts, wildfires, landslides and extreme temperatures) that can lead to displacement. IDMC has collected geo-

coded data on disaster displacement since 2016. Although weather-related events involve natural processes, human influence cannot be overlooked – be it human-induced effects on climate change or environmental degradation. Disasters were responsible for more than 60 per cent of the internal displacements recorded by IDMC worldwide in 2021 and more than 94 per cent of those were the result of weather-related events such as floods and storms.⁷²

Internal displacement: When people are forced to flee their homes due to armed conflict, generalized violence, violations of human rights, or natural or human-made disasters, but remain within their own country.⁷³ Internal displacement is measured according to the number of internally displaced people at a specific point in time (e.g., the end of the year), or as the number of internal displacement events, which refers to the number of forced movements of people within a time period, usually a year.⁷⁴ The number of displacements cannot be equated with the

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number of displaced people, as the same person can be displaced multiple times by the same or different events over the course of a year.

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.”⁷⁵ Hazards can have natural origins (e.g., storms, earthquakes), can be predominantly related to human activities (e.g., technological hazards such as nuclear radiation or toxic waste) or can be a combination of both (e.g., the result of environmental degradation and climate change). In this report, we focus on weather-related hazards such as floods, storms, droughts and wildfires.

Average annual displacement (AAD): The average number of people expected to be displaced each year considering all events that could occur over an extended time frame, as estimated by the displacement risk model. This report provides the AAD of children aggregated over a period of 30 years. AAD should be considered as an indicator of the potential magnitude of displacement, not as an exact value.⁷⁶

Climate change and disasters: Although weather-related events such as floods and storms are natural phenomena and a single event cannot necessarily be directly linked to climate change, there is widespread consensus that human-induced climate change is

influencing the frequency, intensity, geographic range, duration and timing of extreme weather events.⁷⁷ As a consequence, no weather is entirely ‘natural’ anymore, but rather occurs in the context of a changing climate.⁷⁸ Extreme disaster events, which in the past occurred only once within a period of many years, may now occur more frequently. For example, between 2015 and 2017, Houston, Texas, experienced a ‘1-in-500 years’ flood three years in a row, caused by events such as Hurricane Harvey in 2017.⁷⁹

Disaster displacement risk model: IDMC developed the disaster displacement risk model in 2017, based on the United Nations Office for Disaster Risk Reduction (UNDRR) model that analyses the risk of economic losses due to disasters. The risk model uses long-term climatological and other environmental data to identify areas at risk of hazards and data on physical vulnerability (such as the location and quality of buildings) to estimate the number of houses destroyed. This, taken together with the average household size, makes it possible to estimate the number of displacements. However, both the climatological and environmental data and the information on the location and quality of buildings refer to current and historic situations: the current model does not take into account the influence of climate change on the frequency and severity of future hazard events. Nor does it account for demographic changes (such as the size or age structure of populations, urbanization or migration).⁸⁰

Endnotes

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01. The faces of child displacement

02. Mapping disaster-related displacements of children

03. The hazards

04. Analysing future risk

05. Taking action

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- 80 IDMC is currently working on expanding its model to include those factors.

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