



Dina Belicario stands in front of her house, which was flattened by Typhoon Phanfone in the Philippines on Christmas Eve 2019. Photo: April Bulanadi/Oxfam.

# UN HUMANITARIAN APPEALS LINKED TO EXTREME WEATHER, 2000–2021

## Technical note

This note explains the data and calculations underlying the research on UN humanitarian appeals and extreme weather in Oxfam's *Footing the bill* [briefing paper](#). All figures should be regarded as indicative of orders of magnitude, rather than exact reflections of reality. This analysis is intended to contribute to a discussion about the links between climate-induced extreme weather, rising climate impacts and humanitarian need, particularly in low-income countries. It is not intended to be a definitive international account of humanitarian need linked to extreme weather. It is hoped that future work may build on the first steps taken here.

# 1 METHODS

UN humanitarian appeals represent the largest combined request for humanitarian aid. They bring together UN and non-governmental agencies to assess needs and develop response plans. Our source for UN humanitarian appeals was OCHA's financial tracking service database. We accessed the data on 6 January 2022 from the appeals and plans data page. Our key variables of interest were 1) current requirements US\$, 2) Funding in US\$, and 3) the name of the appeal/plan. We determined funding shortfalls (in US\$) by subtracting the funding received for each appeal from its stated requirements.

Our sources of information for details of the appeals were Humanitarian Response Plans (HRPs), which are prepared for each individual appeal. The plans articulate the shared vision of how to respond to the assessed and expressed needs of the affected populations. The Humanitarian Response website hosts these plans.<sup>1</sup> It must be noted that not all emergencies have UN-tracked appeals – these only represent a subset of need, focusing on crises that are beyond the response capacity of states.

In this research, we use 'extreme weather' as a catch-all term to include the three categories of weather and climate events used by the IPCC. These categories are: 1) extremes of atmospheric weather and climate variables (temperature, precipitation, wind); 2) weather and climate phenomena that influence the occurrence of extremes in weather or climate variables, or are extremes themselves (monsoons, El Niño and other modes of variability, tropical and extratropical cyclones); and 3) impacts on the natural physical environment (droughts, floods, extreme sea levels, waves and coastal impacts, as well as other physical impacts, including cryosphere-related impacts, landslides, and sand and dust storms).

We used the terms in Box 1 relating to these categories to identify whether extreme weather was a factor in HRPs via a systematic keyword search within each plan.

## Box 1: Terms used in systematic keyword searches within HRPs

- Climate
- Drought/dry
- Flood/floods/flooding
- Rain/precipitation
- El Niño/La Niña
- Heat
- Cold
- Temperature
- Weather
- Natural disaster
- Storm/cyclone/hurricane/monsoon/typhoon/tornado

- Landslide
- Fire
- Glacier/glacial
- Thaw/melt
- Sea level

This list pertains to the type of events that have been identified by the IPCC as potentially worsening due to a changing climate. Not all extreme weather in the 2000–2021 period can be attributed to climate change. In a context in which the climate is changing and the frequency and intensity of extreme weather is increasing, the research seeks to understand the impact this might be having on UN humanitarian appeals linked to extreme weather.

We searched HRPs to determine if extreme weather was a factor in the appeal (yes or no), and if extreme weather was a major or contributing factor in the appeal. We deemed extreme weather to be a major factor if it was mentioned as a key crisis factor or priority response at the outset of the plan, and a contributing factor if it was only referenced throughout.

Where extreme weather was a major factor, we counted 100 percent of the appeal value; where extreme weather was a contributing factor, we counted 50 percent of appeal value in our upper-end estimate and 30 percent in our lower-end estimate. Estimated ranges are presented in the findings to reflect this discounting approach.

We used the international disasters database EM-DAT to cross-reference the extreme weather events detailed in the HRPs and to gain a fuller understanding of the number of people impacted by extreme weather events between 2000 and 2021. EM-DAT is a global database of natural and technological disasters which contains data on the occurrence and effects of more than 21,000 disasters around the world, from 1900 to present. We compared EM-DAT data on weather-related disasters from 2000–2021 with the data gathered from the HRPs to see how many extreme-weather-related disasters took place but were not referenced in HRPs, and how many people were affected.

We used the US Bureau of Labor Statistics' Consumer Price Index (CPI) to adjust for inflation. 2021 was used as the base year and all years were adjusted using the corresponding CPI for 2021. When totalling requirements and shortfall of the appeals associated with extreme weather (both major and contributing), we included the total values in USD for appeals where extreme weather was a major factor, and we discounted the appeal values where extreme weather was a contributing factor (as set out above).

Lastly, it must be acknowledged that while climate change is clearly leading to an increase in extreme weather events, particularly in recent years as evidenced by the Intergovernmental Panel on Climate Change, other factors are also at play in rising humanitarian appeal needs. These include increasing conflict, displacement and chronic poverty – meaning that when extreme weather events hit, the impacts on countries and communities are worse. Over the period assessed, demographic trends such as more people moving to coastal regions also have a bearing on the number of people

affected. A more extensive analysis is needed to further unpack these multiple drivers and interactions between them.

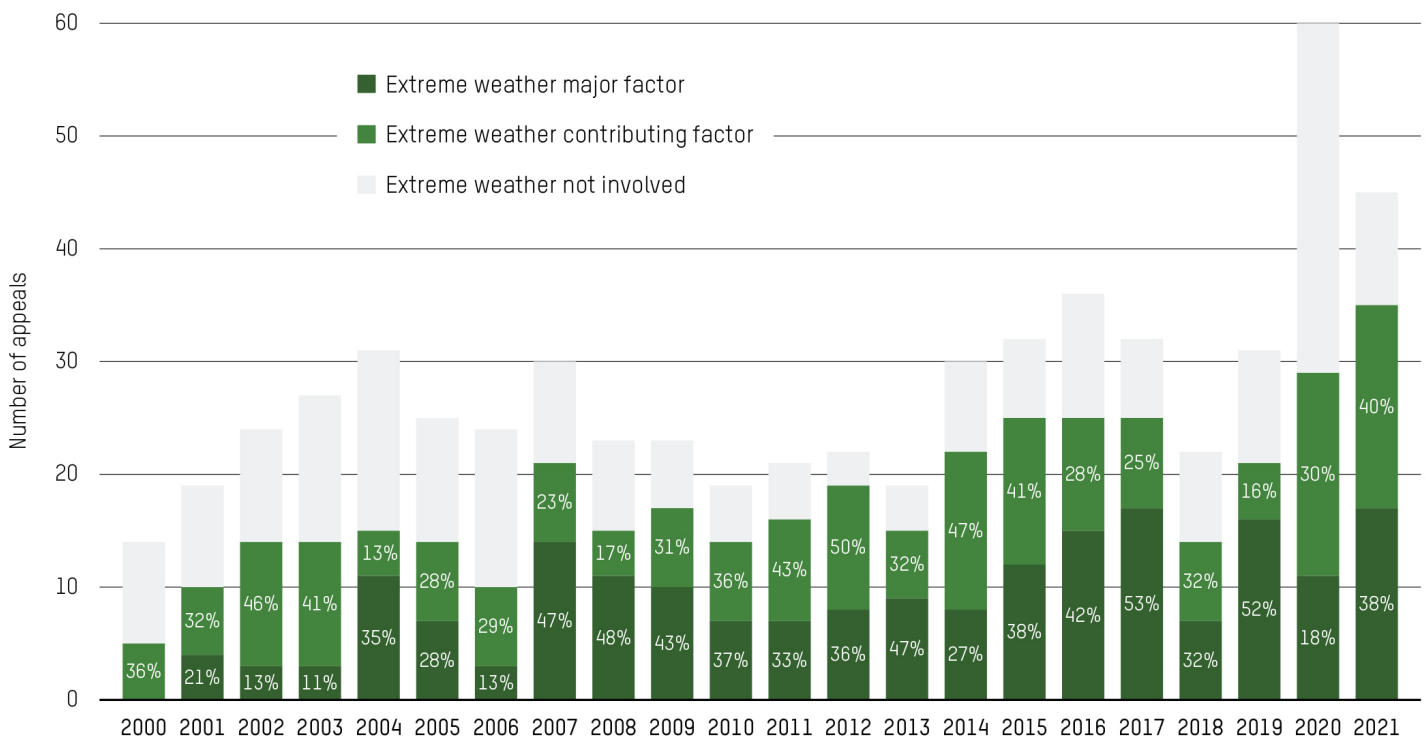
## 2 FINDINGS

### ASSESSING UN HUMANITARIAN APPEALS 2000–2021

Figure 1 indicates that the overall proportion of appeals linked to extreme has increased over time, though the trend is not linear year-on-year and peaks in 2012 (86 percent). Appeals not linked to extreme weather were primarily relating to contexts where prolonged conflict was outlined as a major factor, and many of the appeals where extreme weather was both a contributing factor and major factor also included conflict as a driver.<sup>2</sup>

Figure 1 also shows the proportion of appeals where we assessed extreme weather to be a major factor, and where we assessed it to be a contributing factor. These proportions vary year-on-year, but with an overall upward trend. An estimated 12% of all appeals between 2000 and 2002 involved extreme weather as a major factor. Between 2019 and 2021, an estimated 32% of total appeals involved extreme weather as a major factor.<sup>3</sup> Note that in 2020, the high number of appeals related to COVID-19 accounts for the higher proportion of non-weather-related appeals that year compared with the overall trend.

**Figure 1: Proportion of UN humanitarian appeals involving extreme weather, 2000–2021**



As seen in Box 2, almost two-thirds of appeals across the period (there were 609 in total) were assessed to involve extreme weather as a major and contributing factor. Of total appeals, an estimated one-third involved extreme weather as a major factor.

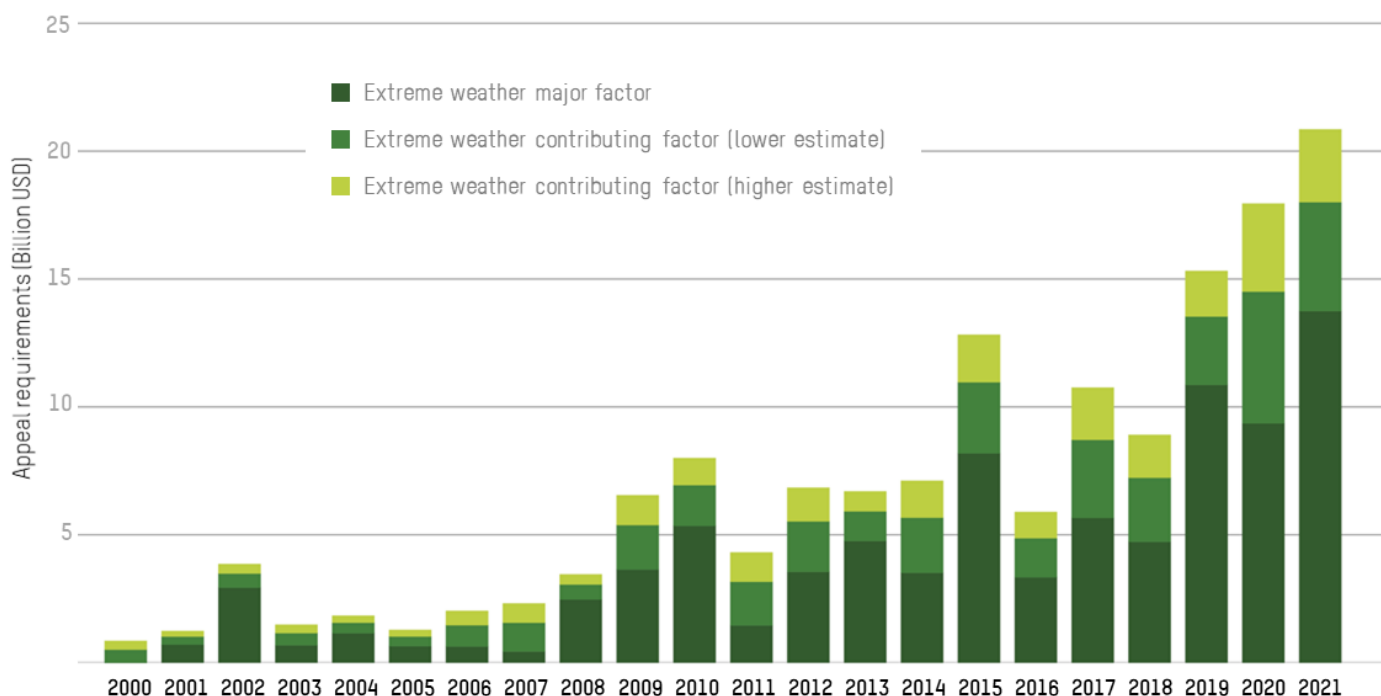
**Box 2: Proportion of appeals over the period 2000 to 2021 where extreme weather is a factor**

*Appeals (2000 to 2021) where extreme weather is a major and contributing factor*  
 395  
 (65 percent of total appeals)

*Appeals (2000 to 2021) where extreme weather is a major factor*  
 200  
 (33 percent of total appeals)

Funding requirements for humanitarian appeals linked to extreme weather events have increased significantly over the past two decades: the average funding requirements over the last three years (2019–2021) are eight times higher than they were 20 years ago (2000–2002 average). We compared three-year averages at the beginning and the end of the two decades to estimate the overall trend and iron out year-to-year variability. Figure 2 looks at requirements (in USD) of appeals involving extreme weather, in 2021 real terms. Box 3 gives further details of requirements and shortfalls.

**Figure 2: Funding requirements for UN humanitarian appeals linked to extreme weather, 2000–2021**

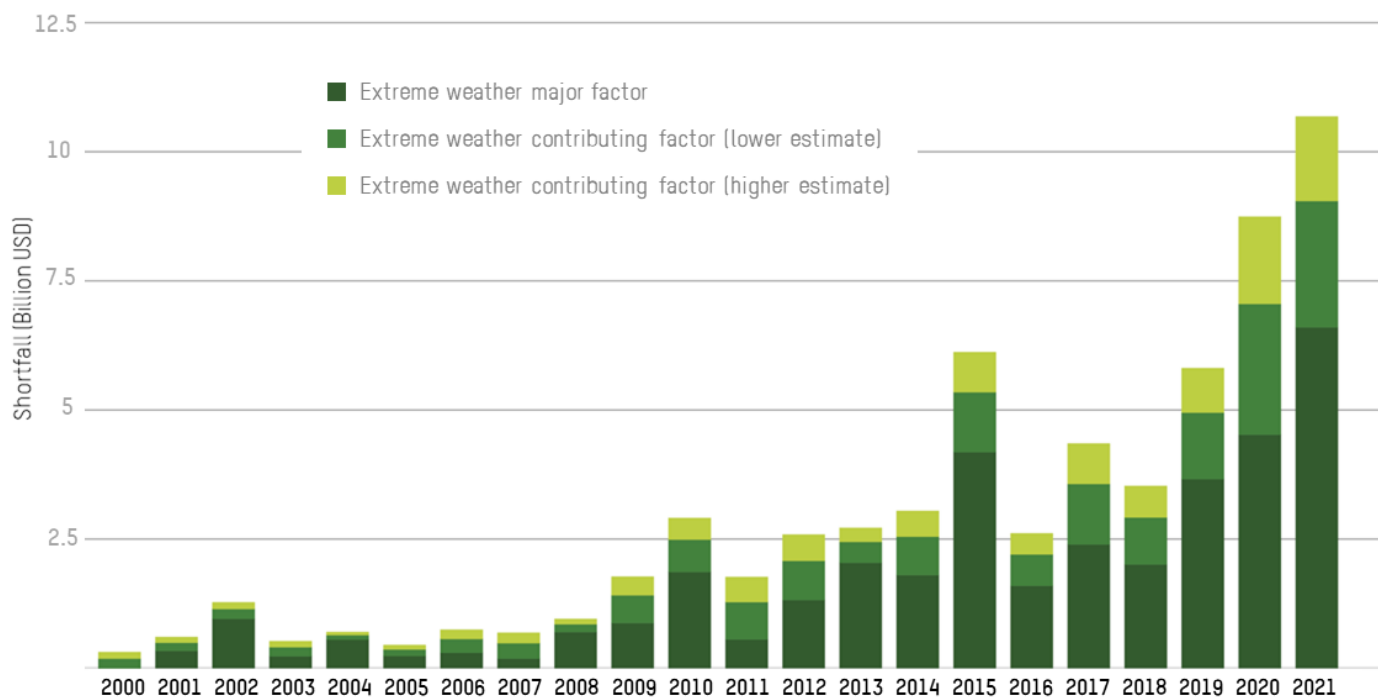


**Box 3: Changing requirements and shortfalls for appeals linked to extreme weather (in USD)**

Period	Extent to which extreme weather involved	Average requirements	Average shortfall
2000–2002	Appeals where extreme weather was major factor	\$1,214,391,590	\$430,524,110
2000–2002	Major factor + 30 percent of value of appeal where extreme weather was contributing factor	\$1,694,334,270	\$609,347,024
2000–2002	Major factor + 50 percent of value of appeal where extreme weather was contributing factor	\$2,014,296,057	\$728,562,301
2019–2021	Appeals where extreme weather was major factor	\$11,326,695,513	\$4,929,170,795
2019–2021	Major factor + 30 percent of value of appeal where extreme weather was contributing factor	\$15,573,390,109	\$7,018,152,601
2019–2021	Major factor + 50 percent of value of appeal where extreme weather was contributing factor	\$18,404,519,840	\$8,410,807,138

As Figure 3 and Box 3 show, estimated funding shortfalls increased almost twelve-fold when comparing the averages of 2000–2002 with 2019–2021, rising from the millions to the billions, while shortfalls for all appeals, including those not involving extreme weather, increased ten-fold.

**Figure 3: Funding shortfalls of appeals linked to extreme weather**

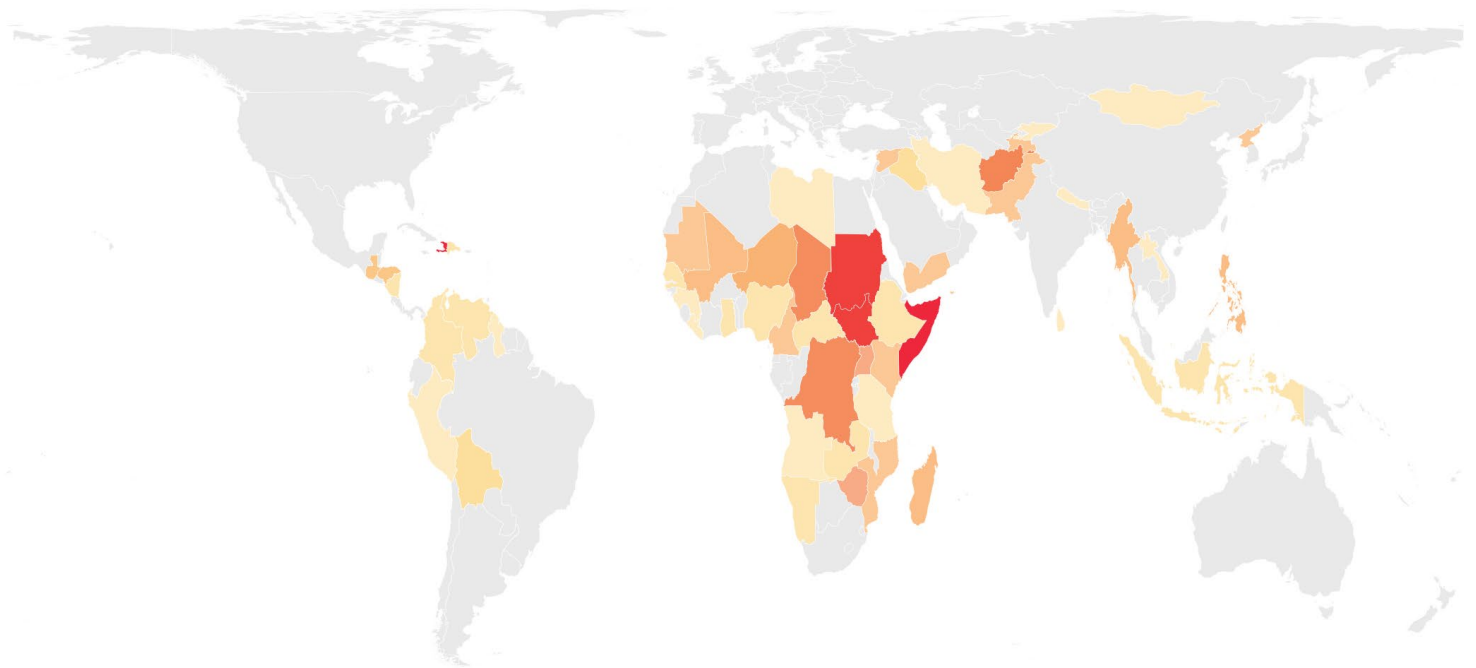


We estimate that over the past five years, UN humanitarian appeals linked to extreme weather were only 54 percent funded on average, resulting in an estimated funding shortfall of between \$28–33bn over the period. Being only half-funded over the past five years, this indicates that for every \$2 needed for UN weather-related appeals, donor countries are only providing around \$1. Focusing in on 2021, requirements for appeals involving extreme weather were between \$18.3 bn and \$21.3 bn, and the shortfall was between \$9bn and \$10.6bn.



Figure 4 is a heat map of the number of appeals linked to extreme weather between 2000 and 2021. Somalia has the highest with 22 (one for every year except 2010, and two separate appeals in 2006). There were over 70 countries with appeals linked to extreme weather over the 22-year period (some appeals are multi-country) and of these, 13 countries had over 10 appeals associated with extreme weather. These were Kenya, Burkina Faso, Zimbabwe, Burundi, Niger, Uganda, South Sudan, Chad, DRC, Afghanistan, Haiti, Sudan and Somalia.

**Figure 4: Where UN humanitarian appeals linked to extreme weather are concentrated**



1  22

UN appeals are an important, but by no means comprehensive, measure of humanitarian need, or loss and damage, following a disaster. They focus on the most in-need regions of the world and crises that are beyond the capacity of states to respond, and at times are unable to capture small and medium crises.<sup>4</sup>

## EXTREME-WEATHER-RELATED DISASTERS BEYOND UN APPEALS

The scale of extreme-weather-related disasters over the period 2000–2021 is greater than those which have UN humanitarian appeals associated with them. Figure 5 shows that the estimated number of extreme weather events covered by UN humanitarian appeals is a small share of those listed on EM-DAT. When comparing them with disasters on EM-DAT over the past two decades, we found that UN humanitarian appeals may have only covered around 7.5 percent of extreme-weather-related disasters in low- and middle-income countries.

**Figure 5: UN humanitarian appeals compared with the number of extreme-weather-related disasters, 2000–2021**

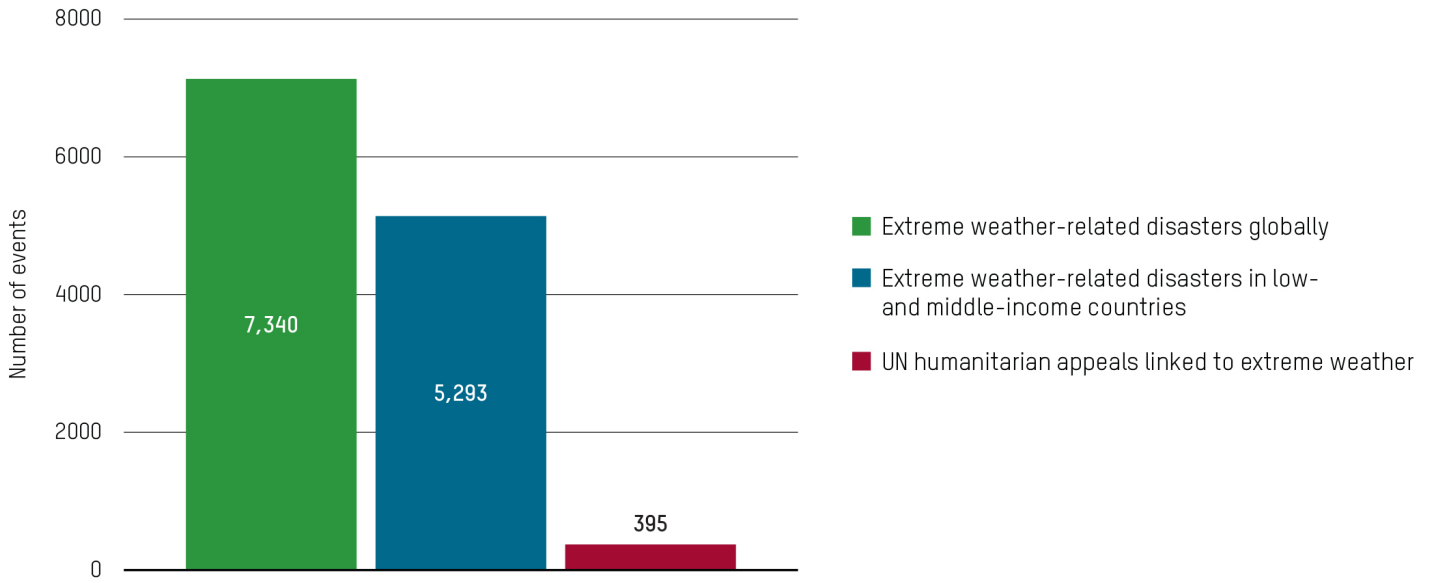
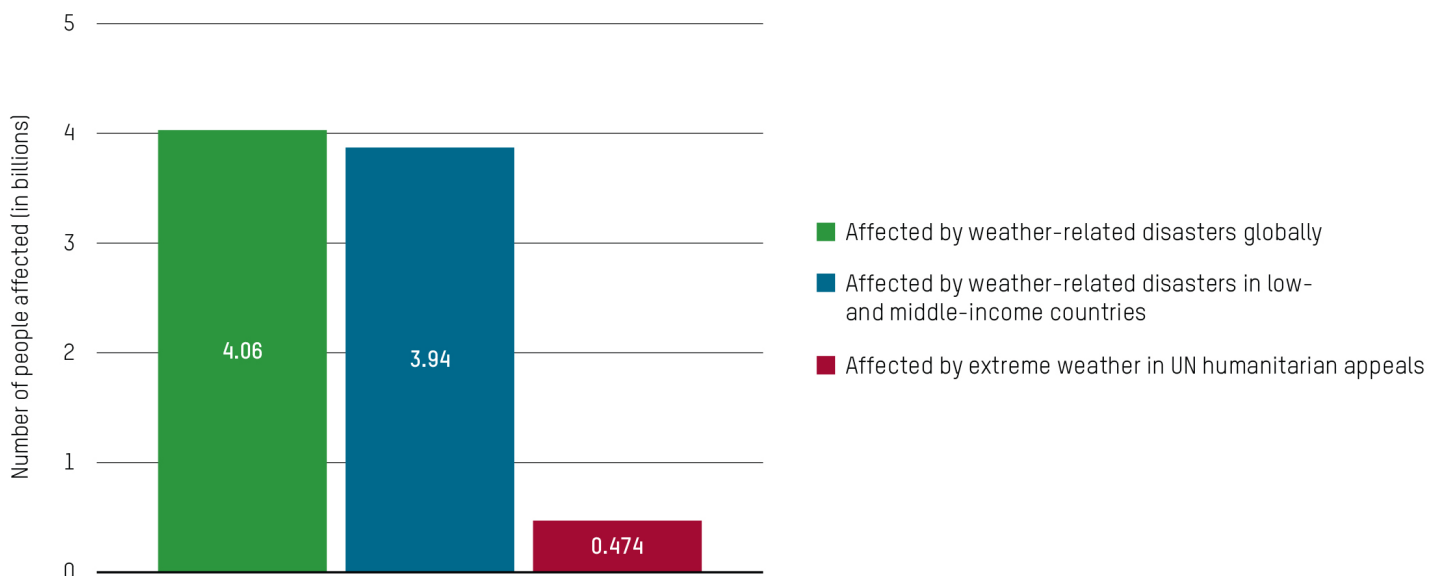


Figure 6 shows the estimated difference in the number of people listed as affected. From 2000 to 2021, an estimated 3.94 billion people were affected by these disasters in low and middle income countries, but only an estimated 474 million people were captured in UN humanitarian appeals.<sup>5</sup> Meaning that approximately one in eight people affected by extreme weather over the period were captured under UN appeals.

It is important to note that both the UN appeal and EM-DAT figures are not a full picture of people affected by weather-related disasters, as numbers of people affected on both databases are not always provided due to lack of monitoring and reporting of such statistics.<sup>6</sup> The number of those affected (as listed on EM-DAT) is an estimated seven times higher than those estimated to be affected in the UN humanitarian appeals linked to extreme weather.

**Figure 6: Number of people affected by weather-related disasters, 2000–2021**





# NOTES

Please reach out to the author of this report for further details of the dataset that underlies this research.

1 <https://www.humanitarianresponse.info/>

2 This picture is also reflected in the OCHA Global Humanitarian Overview (2022):  
<https://gho.unocha.org/>

3 There were 115 total appeals between 2000 and 2004, of which 21 involved extreme weather as a major factor. Between 2017 and 2021 there were 190 appeals, of which 68 involved extreme weather as a major factor.

4 S. Swithern. (2018). *Underfunded appeals: Understanding the consequences, improving the system*. Expert Group for Aid Studies. [https://eba.se/wp-content/uploads/2019/02/2018-09-Devinit-Appellsystemet\\_webb\\_Tillganp.pdf](https://eba.se/wp-content/uploads/2019/02/2018-09-Devinit-Appellsystemet_webb_Tillganp.pdf)

5 According to the World Bank, around 85percent of the world's population live in low- and middle-income countries. World Bank. (2022). *Population, total – Low & middle income, High income*. <https://data.worldbank.org/indicator/SP.POP.TOTL?locations=X0-XD>

6 Swithern. (2018). Op. cit.

© Oxfam International June 2022

This paper was written by Lyndsay Walsh. Oxfam acknowledges the assistance of Tracy Carty, Didier Jacobs, Development Initiatives, John McGrath, Marc Cohen, Lauren Stewart, Franziska Mager, Ruth Mayne, James Morrissey, Lydia Poole, Helen Bunting and Pauline Chetcuti in its production. It is part of a series of papers written to inform public debate on development and humanitarian policy issues.

For further information on the issues raised in this paper, please email [lwalsh1@oxfam.org.uk](mailto:lwalsh1@oxfam.org.uk)

This publication is copyright but the text may be used free of charge for the purposes of advocacy, campaigning, education, and research, provided that the source is acknowledged in full. The copyright holder requests that all such use be registered with them for impact assessment purposes. For copying in any other circumstances, or for re-use in other publications, or for translation or adaptation, permission must be secured and a fee may be charged. Email [policyandpractice@oxfam.org.uk](mailto:policyandpractice@oxfam.org.uk).

The information in this publication is correct at the time of going to press.

Published by Oxfam GB for Oxfam International under ISBN 978-1-78748-913-4 in June 2022.

DOI: 10.21201/2022.8977

Oxfam GB, Oxfam House, John Smith Drive, Cowley, Oxford, OX4 2JY, UK.

## OXFAM

Oxfam is an international confederation of 21 organizations, working with its partners and allies, reaching out to millions of people around the world. Together, we tackle inequalities to end poverty and injustice, now and in the long term – for an equal future. Please write to any of the agencies for further information or visit [www.oxfam.org](http://www.oxfam.org).

Oxfam America ([www.oxfamamerica.org](http://www.oxfamamerica.org))

Oxfam Aotearoa ([www.oxfam.org.nz](http://www.oxfam.org.nz))

Oxfam Australia ([www.oxfam.org.au](http://www.oxfam.org.au))

Oxfam-in-Belgium ([www.oxfamsol.be](http://www.oxfamsol.be))

Oxfam Brasil ([www.oxfam.org.br](http://www.oxfam.org.br))

Oxfam Canada ([www.oxfam.ca](http://www.oxfam.ca))

Oxfam Colombia ([lac.oxfam.org/countries/colombia](http://lac.oxfam.org/countries/colombia))

Oxfam France ([www.oxfamfrance.org](http://www.oxfamfrance.org))

Oxfam Germany ([www.oxfam.de](http://www.oxfam.de))

Oxfam GB ([www.oxfam.org.uk](http://www.oxfam.org.uk))

Oxfam Hong Kong ([www.oxfam.org.hk](http://www.oxfam.org.hk))

Oxfam IBIS (Denmark) ([www.oxfamibis.dk](http://www.oxfamibis.dk))

Oxfam India ([www.oxfamindia.org](http://www.oxfamindia.org))

Oxfam Intermón (Spain) ([www.oxfamintermon.org](http://www.oxfamintermon.org))

Oxfam Ireland ([www.oxfamireland.org](http://www.oxfamireland.org))

Oxfam Italy ([www.oxfamitalia.org](http://www.oxfamitalia.org))

Oxfam Mexico ([www.oxfammexico.org](http://www.oxfammexico.org))

Oxfam Novib (Netherlands) ([www.oxfamnovib.nl](http://www.oxfamnovib.nl))

Oxfam Québec ([www.oxfam.qc.ca](http://www.oxfam.qc.ca))

Oxfam South Africa ([www.oxfam.org.za](http://www.oxfam.org.za))

KEDV ([www.kedv.org.tr](http://www.kedv.org.tr))