

Disasters in Asia - The People's Perspective

1 - Experience & Impacts

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Lloyd's Register Foundation
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Understanding of Risk



IPUR Research Brief

SUMMARY

- Almost a third of people (31%) in Asia experienced harm caused by extreme weather or other natural hazards in the last five years, according to the World Risk Poll. This is a far greater proportion of the population than estimates from international disaster events databases.
- The Philippines was the most affected country/territory, where 80% of people reported experiencing harm from natural hazards, followed by Hong Kong, Afghanistan, Bangladesh and Cambodia.
- Disasters worsen disruptions in access to all five essential goods and services tracked in the survey - electricity, water, transport, food and telephone networks. The effects of disasters are greatest in middle-income countries where infrastructure is adequate to supply services under normal conditions, but networks are not yet sufficiently resilient to shocks from extreme weather.
- Survey data provide a valuable complement to government records of disasters. They strengthen the case for greater investment in climate change adaptation and resilience.



Experience of Disasters

Asian countries face an intensity of natural hazards unmatched in the rest of the world. Of the disasters linked to natural hazards that took place worldwide in 2021, 40% of events, 49% of deaths and 66% of the total population affected were in Asia. In 2021 alone, floods in China affected 14.5 million people, drought affected 11 million people in Afghanistan, and Typhoon Rai affected 10.6 million people in the Philippines.

This Research Brief analyses people's perspectives on these hazards, drawing on new survey data from the LRF World Risk Poll and disaster event data.

Figure 1.1 gives a snapshot of disasters caused by natural hazards in the Asian region in the last five years.

The number of people affected by disasters is rising over time, despite investment in protective infrastructure, as extreme weather events intensify and populations grow in exposed areas.

The number of fatalities from disasters has dropped dramatically worldwide over the last four decades but thousands of lives are still lost in Asia each year as a direct result of natural disasters.

In 2021 large-scale floods in India, China and Afghanistan killed 1,999 people, and Typhoon Rai and Cyclone Seroja killed 457 and 226 people respectively. Unfortunately, 2021 was not an exceptional year - events of this magnitude occur every year.

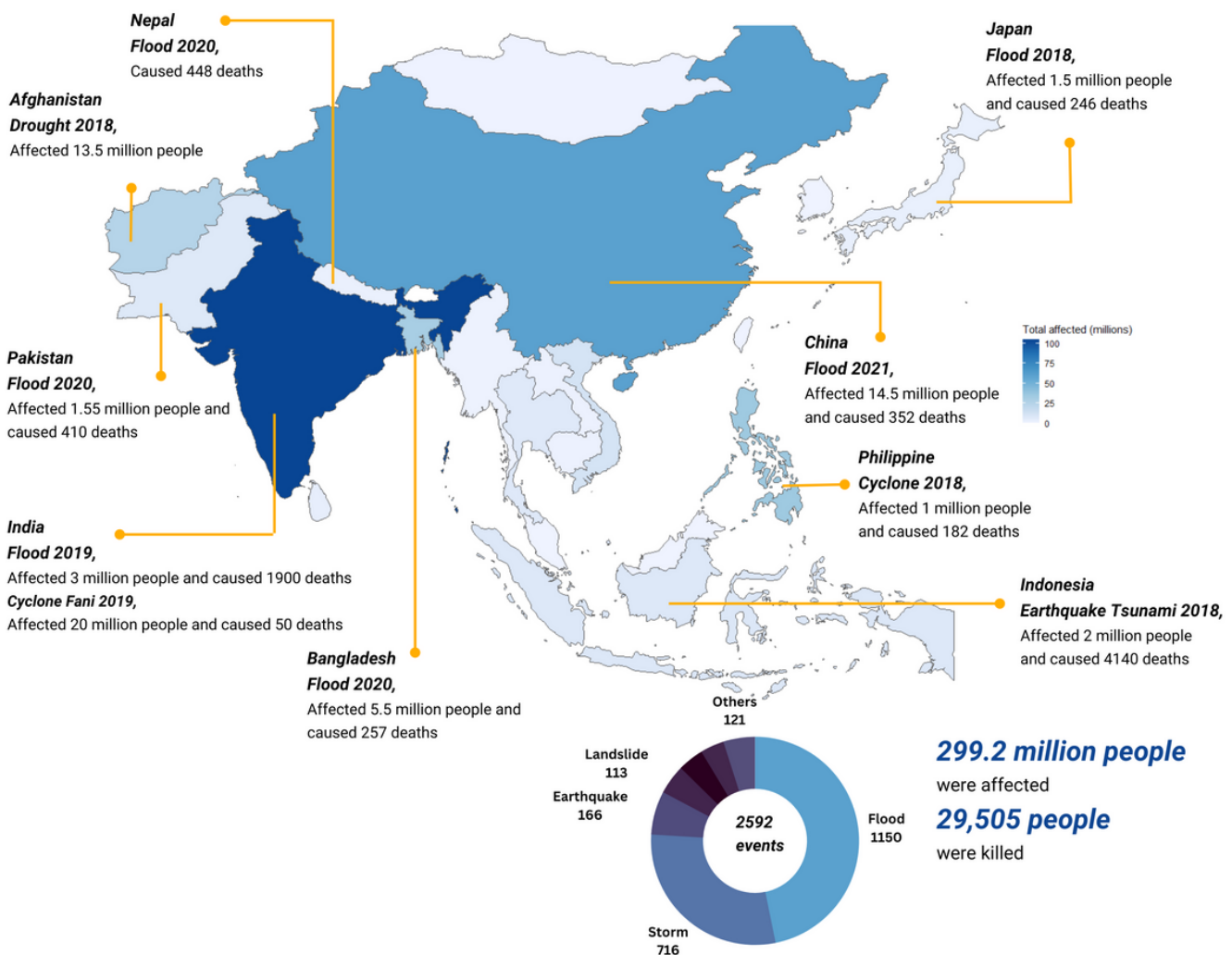


Figure 1.1 Climate and weather-related disaster in 2016-2021 in Asia.

Data Source: EM-DAT

Data for Figure 1.1 are drawn from EM-DAT, the most comprehensive global database of disasters, and they provide a reliable picture of severe disasters worldwide. However, EM-DAT only records major disasters which meet at least one of the following criteria: cause 10 or more deaths, affect 100 or more people or are linked to a declaration of a state of emergency or an appeal for international assistance.

The database does not include the hundreds of smaller-scale events which nevertheless cause harm to people's lives and livelihoods. Until now, it has been difficult to get a better picture of the extent of harm caused by these event because of a lack of consistent, comparable cross-national data.

The LRF World Risk Poll, conducted in 2021, begins to fill this data gap. This unique global survey provides deeper insight into people's experience of disasters through questions on their risk perceptions, preparedness, warnings, and information. The survey was conducted with nationally representative samples of 1000 respondents per country in more than 100 territories around the world.

The World Risk Poll data demonstrate that the proportion of people impacted by natural hazards is even higher than previously thought. 31% of people in Asia reported experiencing harm from natural hazards in the last five years (Figure 1.2).



Figure 1.2 Percentage of respondents experienced a disaster for the last 5 years (2016-2021).

Data Source: WRP

The Philippines stands out as the country most exposed to these hazards - 80% of respondents in the Philippines had experienced harm from a disaster, followed by Hong Kong, Afghanistan, Bangladesh and Cambodia, where more than 40% of the population experienced harm.

In terms of the type of disaster, floods affect the most people, followed by storms (cyclones, typhoons, hurricanes etc.), while a severe drought in Cambodia also stands out in terms of its relative impact on the population. (Note that the survey was conducted before the 2022 floods in Pakistan which affected 15% of the national population).

Comparing WRP data with the EM-DAT record shows a clear correlation between the two data sources but the proportion of people reporting harm in the survey is consistently higher than the disaster event data, both across countries and types of disaster (Figure 1.3. See also Additional Materials online).

The divergence between the two datasets may be due in large part to the thresholds in defining disaster events in the EM-DAT data, compared to the wider interpretation of harm from extreme weather among survey respondents. The thresholds lead to undercounting of total disaster impacts as they exclude a large number of small-scale extensive disasters (UNDRR 2022). The survey data therefore provide a valuable complement to existing datasets when estimating numbers of people affected.

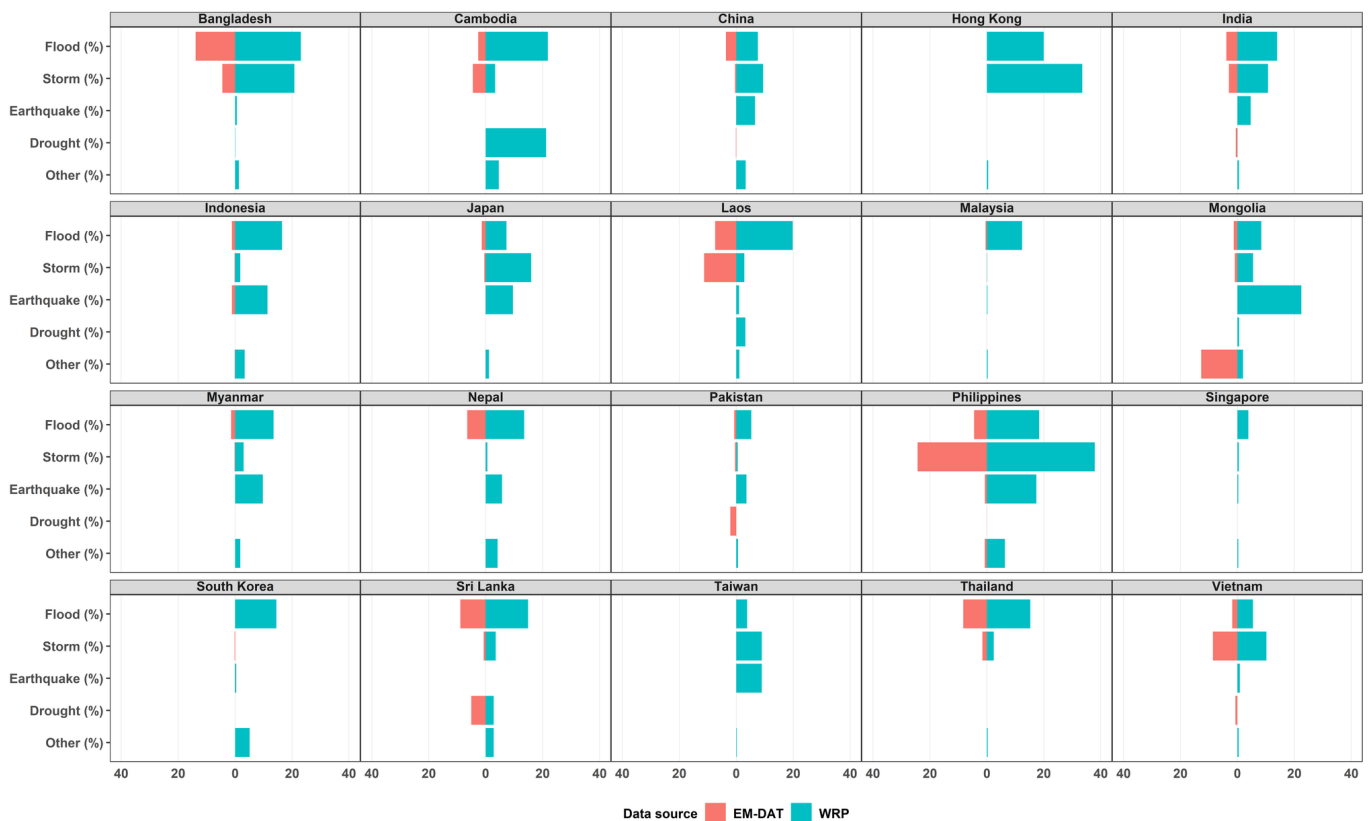


Figure 1.3 Comparison between WRP and EM-DAT data, by country/territory and types of disasters.
 Note: EM-DAT population affected/ population

Disasters and Disruptions

WRP data can also help to shed light on the nature of the harm that people experience as a result of extreme weather. These impacts may include power cuts, transport disruption (damage to roads, blocked roads etc), disruption to communication networks and so on.

In more severe and prolonged disasters, people may experience shortages in water supplies or food. Of course, these disruptions are not only caused by extreme weather. They may also be the result of poor quality or badly maintained infrastructure, insufficient capacity, supply chain problems etc.

For the individual, it may not always be clear what the causes of these disruptions are and whether they are linked to natural hazards. We analyse the survey data on disaster experience together with data on experience of disruptions to uncover the relationship between disasters and disruptions.

Looking first at experience of disruptions, electricity cuts stand out as the most frequently experienced type of service disruption in the region (Figure 1.4). In all south Asian countries and in the Philippines, more than half respondents had experienced disruptions to their electricity supply in the previous two years.

Disruptions to phone services were generally less common, but in Afghanistan and Myanmar more than 50% of people had experienced disruptions in the last two years.

Afghanistan stands out clearly as the country in which basic needs and services are not reliably available to the population. 88% of people there have experienced electricity disruptions in the last 12 months. More than half the population experienced disruptions to access to medical and telephone services, and more than a third to food and water supplies.

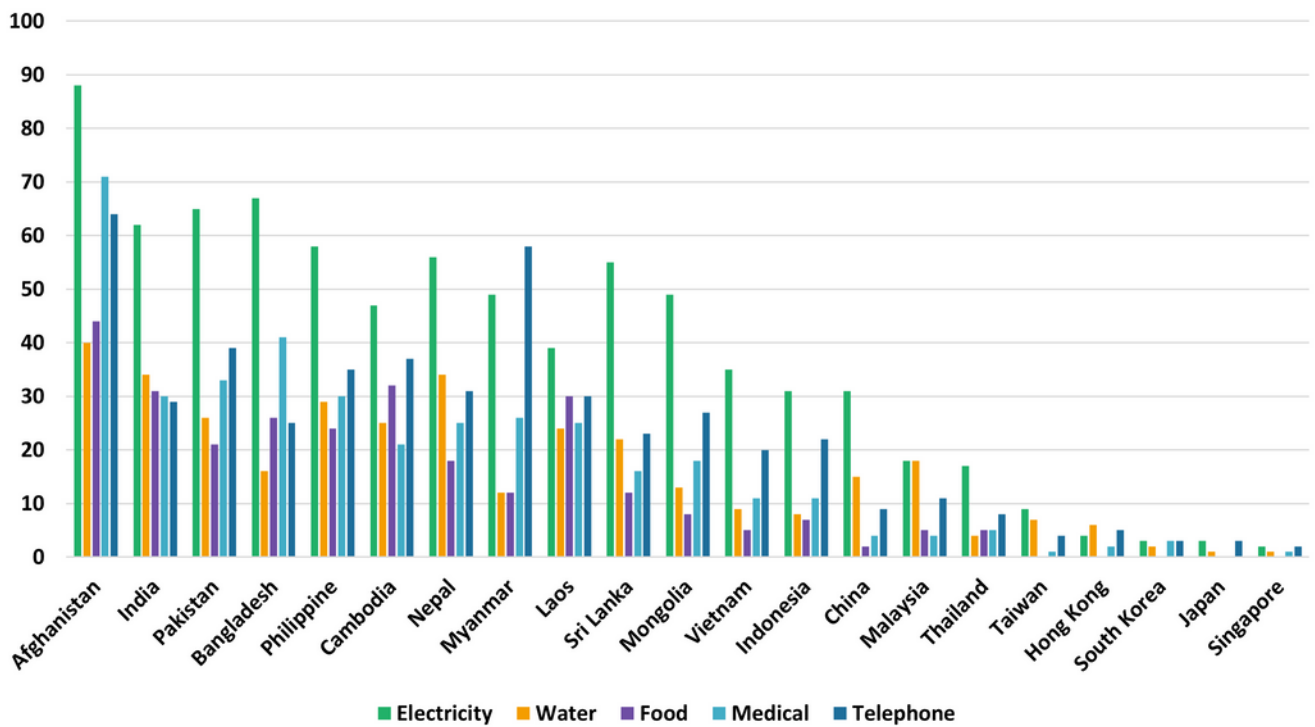


Figure 1.4 Proportion of population experiencing disruption by country/territory.

We calculate a Disruption Intensity Index (DII) which combines experience of different types of disruption.¹ Overall, countries' ranking in disruption intensity aligns with their GDP per capita (Table 1.1). High income countries/territories experience very few disruptions while low-income countries experience frequent disruptions to multiple services. The DII underlines further the extent of deprivation in access to reliable basic services in Afghanistan.

Table 1.1 Top 6 countries by disruption intensity

Afghanistan	0.61	Bangladesh	0.35
India	0.37	Philippines	0.35
Pakistan	0.36	Cambodia	0.32

A few countries have poorer reliability than would be expected for their level of economic development (see Additional Materials online). For example, disruption intensity is higher in India and the Philippines than would be expected given their level of income. This







suggests a need for greater investment in network reliability and capacity in these countries.

Examining the relationship between experience of disruptions with individual socio-demographic characteristics and GDP per capita confirms the strong and significant negative relationship with GDP per capita, and with the individual's level of education. Poorer households and those living in rural areas also experience higher disruption intensity (See Additional Materials online).

Disasters undoubtedly worsen disruptions. Examining the correlation between experience of disaster and experience of disruption shows a clear relationship between these phenomena, and that the link exists for all types of disruptions (Table 1.2).

The size of the effect is similar across types of disruption, suggesting that these different basic needs which rely on different infrastructure networks are actually similar in their vulnerability to extreme weather impacts.

Table 1.2 Correlation between disruption and experience of a disaster

		Experience of a disaster	No experience of a disaster	Difference	Correlation with experience of disaster
	Any type of shortage	64.17	46.01	18.16*	0.1680*
	Electricity	50.2	34.19	16.01*	0.1517*
	Water	24.58	15.04	9.54*	0.1148*
	Food	21.67	10.66	11.01*	0.1464*
	Medical	25.93	14.19	11.74*	0.1419*
	Telephone	31.22	18.66	12.56*	0.1390*

*Shows significance at $p < 0.05$. All variables are coded so that higher values reflect more of the construct.

¹The index is constructed at the individual level using Principal Components Analysis. The index is calculated based on the first principal component of the five disruption variables and then normalised to a range from 0, representing no disruption, to 1, representing disruption to all five services/goods.

We compare the relationship between disasters and disruptions at the country level. Disasters have comparatively lower impact on disruptions in high income territories (Hong Kong, Japan and Taiwan) which have high quality, resilient infrastructure and low-income countries with weak infrastructure.

The countries with the greatest difference in disruption levels between those who have experienced a disaster and those who have not are Indonesia, Thailand and Vietnam (Figure 1.5). These are all dynamic middle-income countries which have invested heavily in infrastructure in recent years, greatly extending access to basic services, improving reliability and strengthening supply chains. As a result, disruptions to basic services are not pervasive but infrastructure networks may not yet have adequate buffers to deal with extreme weather events. Increasing network resilience will be a high priority for this group of countries in the future.

80%

PERCENTAGE OF PEOPLE WHO EXPERIENCE DISASTER IN THE PHILIPPINES

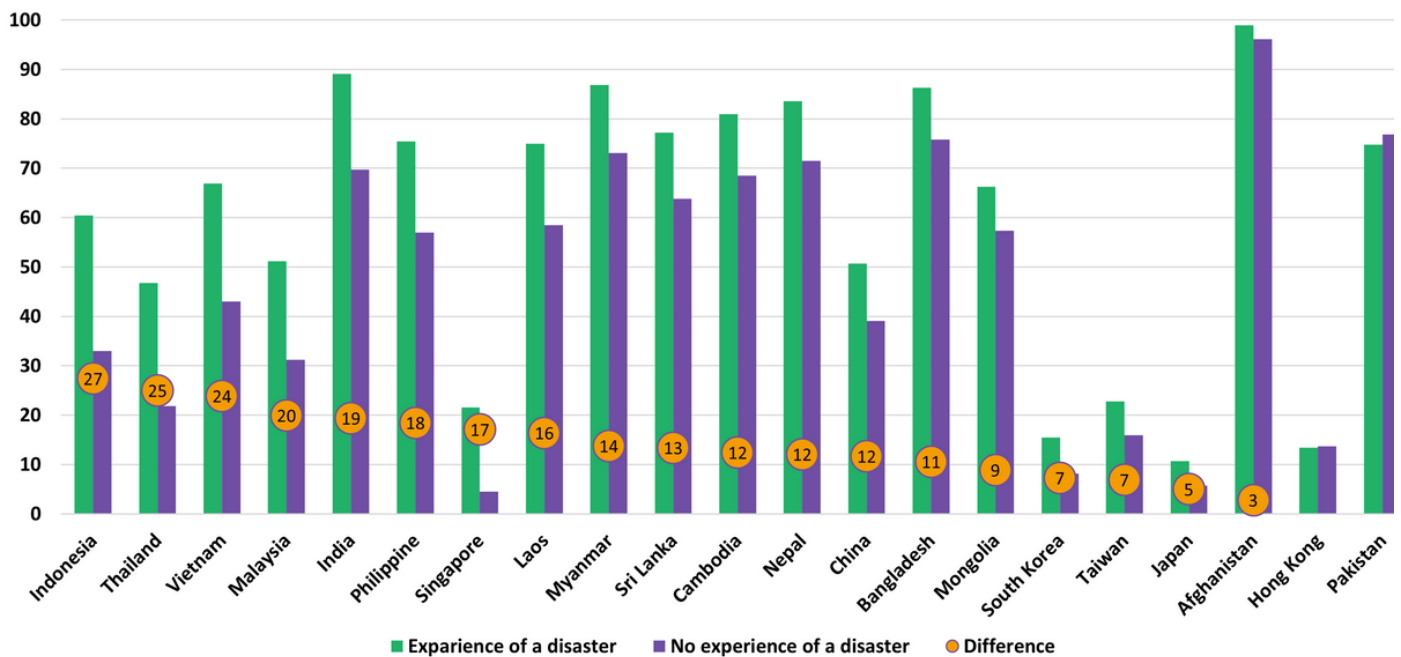


Figure 1.5 Disruption of basic needs and disaster experience by country.

Reflections & Recommendations

Survey data is an extremely valuable complement to disaster loss databases, especially to fill in the gap on impacts of localised, smaller-scale and extensive disasters which cause considerable harm.

A better understanding of the harm caused could drive policy-makers to regulate, plan and invest in order to halt the rise in numbers of people affected by disasters and for the public to demand more such action.

The UN should support countries to conduct national level surveys using a standardized survey instrument to fill this data gap. In advanced economies, data already collected on disaster impacts should be consolidated and made available to the public to build an evidence base to guide disaster reduction efforts.

Disasters cause harm to people in many different ways - damage to physical and mental health, destruction of property. In this chapter, we have focused on the disruptions caused in access to basic goods and services.

We found that in lower income countries, these disruptions are frequent and pervasive, even when there are no disasters.

In these countries, the priority is to raise access and system capacity to benefit the population as a whole. In middle-income countries, where disruptions are more closely linked to disasters, the priority is to assess vulnerabilities of critical infrastructure to natural hazards and to build in resilience during retrofits and investments in new assets.

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