

World Risk Poll 2021

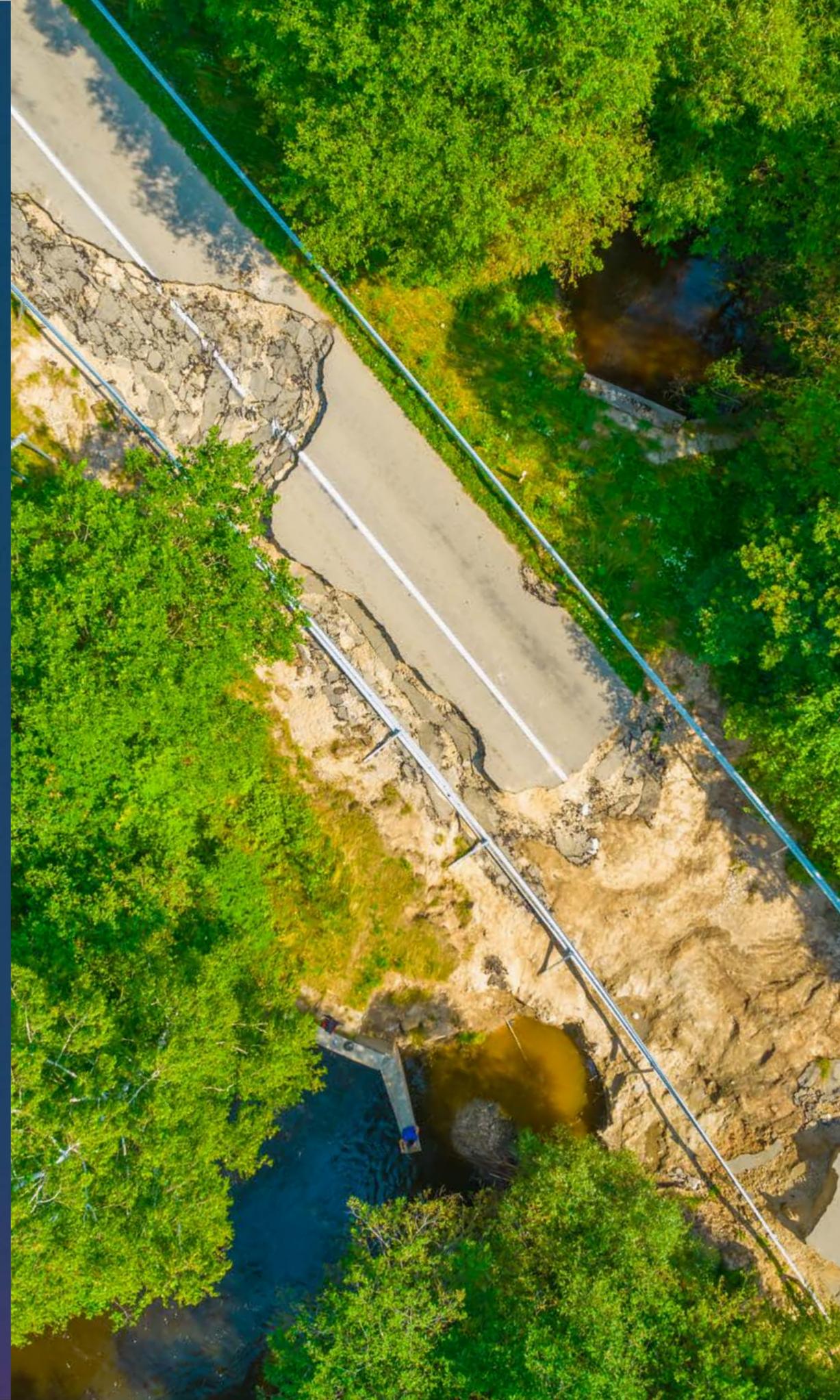
Focus On: Critical infrastructure resilience and perceptions of disaster preparedness

What the data tells us:

- 57% of people reported losing access to at least one form of critical infrastructure in the last year. This rises to 75% among people who have experienced a disaster in the previous five years.
- Globally, more people think their national government is better prepared than their local government to deal with a future disaster, by 51% to 48% – a 3 percentage point difference. However, there are significant regional and national differences.
- Loss of access to critical infrastructure impacts perceptions of local government preparedness more than for national governments. For example those who experienced a disaster in the previous five years, and lost access to clean water supplies had greater confidence in national government preparedness, by 7 percentage points.

What we can do about it:

- All actors involved in the planning and delivery of critical infrastructure services, whether local or national government or private sector suppliers, must work together as closely and cohesively as possible to improve resilience and minimise supply disruption during disasters.
- Foster individual, household and community level resilience, encouraging the uptake of household disaster planning in communities and ensuring people know what to do if access to critical infrastructure services is disrupted.
- Ensure that both efforts to improve infrastructure resilience, and what to do if it does fail, are clearly communicated to the public in communities at risk.



Introduction

For individuals and communities, resilience embodies the capacity to adapt, persevere, and thrive in adversity, challenges, or unexpected crises. Natural hazards represent one of these unexpected crises, and resilience is often crucial in determining whether these challenges progress into becoming a disaster.

Understanding people's experiences of crises and, importantly, their perceptions of how they and others are prepared to deal with these disasters may be a valuable way of identifying both communities that are resilient and those that are not.

The United Nations Office for Disaster Risk Reduction's Sendai Framework for Disaster Risk Reduction, adopted in 2015¹, represents a pivotal global initiative to mitigate the impact of disasters and enhance resilience in the face of natural and man-made hazards. Enabling knowledge transfer from resilient communities to less resilient communities could be a powerful tool.

Lloyd's Register Foundation has had a strong interest in resilience since we published our Foresight Review of Resilience Engineering in 2015². A key focus of the review was on building the resilience of infrastructure sectors such as electricity, water, transportation, telecommunications, healthcare, and food which are critical to preserving life and supporting a rapid return to normality.

The World Risk Poll represents an ideal tool to explore people's experiences and perceptions of risk and to begin understanding resilience at a granular level, especially in countries where such data is not routinely collected or available. Resilience formed a core part of our 2021 Poll and a wider discussion of these concepts can be found in our 'A Resilient World? Understanding vulnerability in a changing climate' report³.

Ensuring the safety of critical infrastructure will continue to be a core goal of the Foundation, and assessing resilience – both of infrastructure and of people and communities more broadly – will be a major element of our upcoming 2023 and 2025 World Risk Polls.

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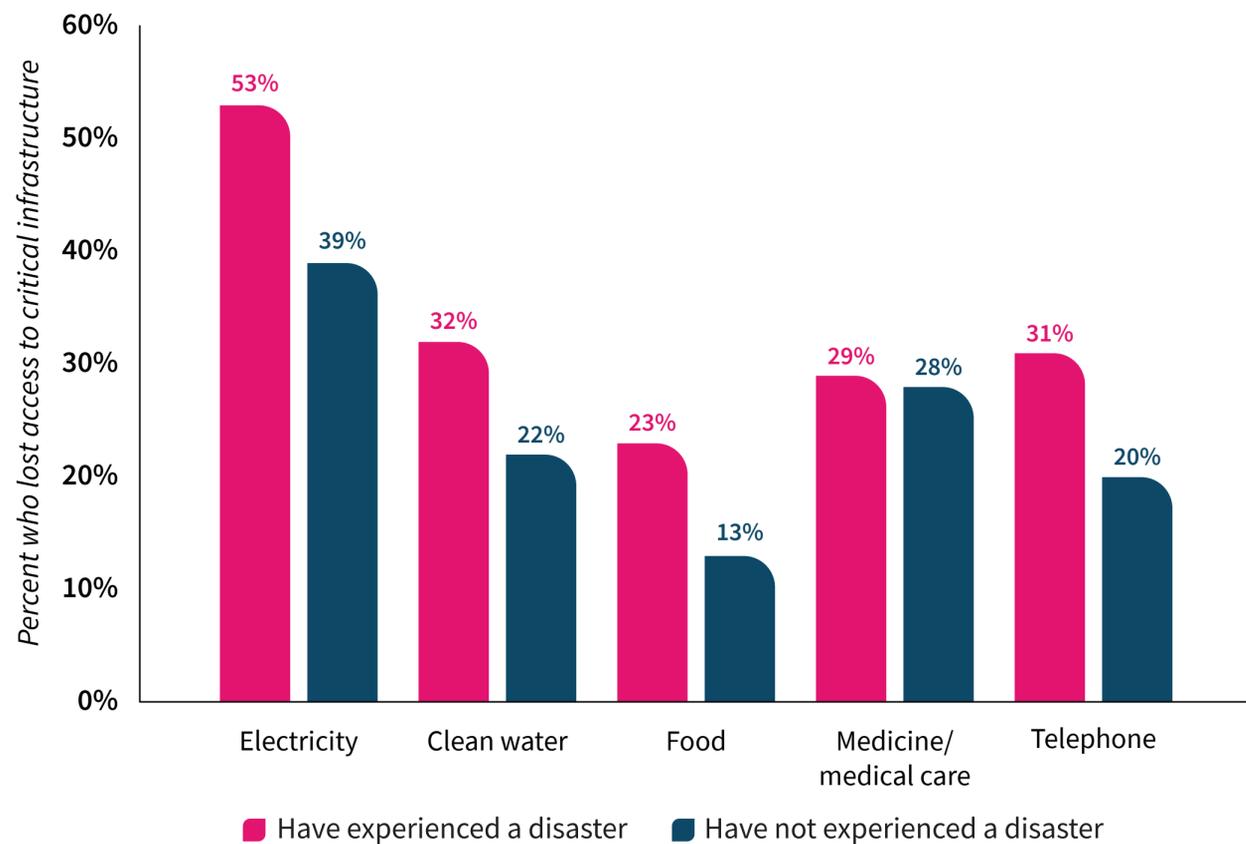
people who have experienced a disaster have also lost access to critical infrastructure for more than a day.

Critical infrastructure resilience and disaster experience

Loss of essential services during a disaster can have profound and far-reaching consequences for affected communities. Natural hazards like hurricanes, earthquakes, or floods can disrupt critical infrastructure such as power grids, water supply systems, healthcare facilities, and transportation networks. This loss of services can lead to a breakdown in normality, making it challenging for people to access medical care, clean water, and shelter, thereby increasing the risk of injury, illness, and even death.

Additionally, unreliable communication and transportation services can hinder emergency response efforts, making it harder for authorities to coordinate rescue and relief operations. In the aftermath of a disaster, restoring these essential services becomes a top priority to help communities recover and rebuild, emphasising the importance of disaster preparedness and resilience in vulnerable regions.

Chart 1 Experience of a disaster arising from a natural hazard is linked to increased loss of access to critical infrastructure



Survey questions:

In the past 5 years, have you personally experienced a disaster?

Have you lost access to (electricity, clean drinking water, food, medicine or medical care, or a telephone) for more than a day in the past 12 months?

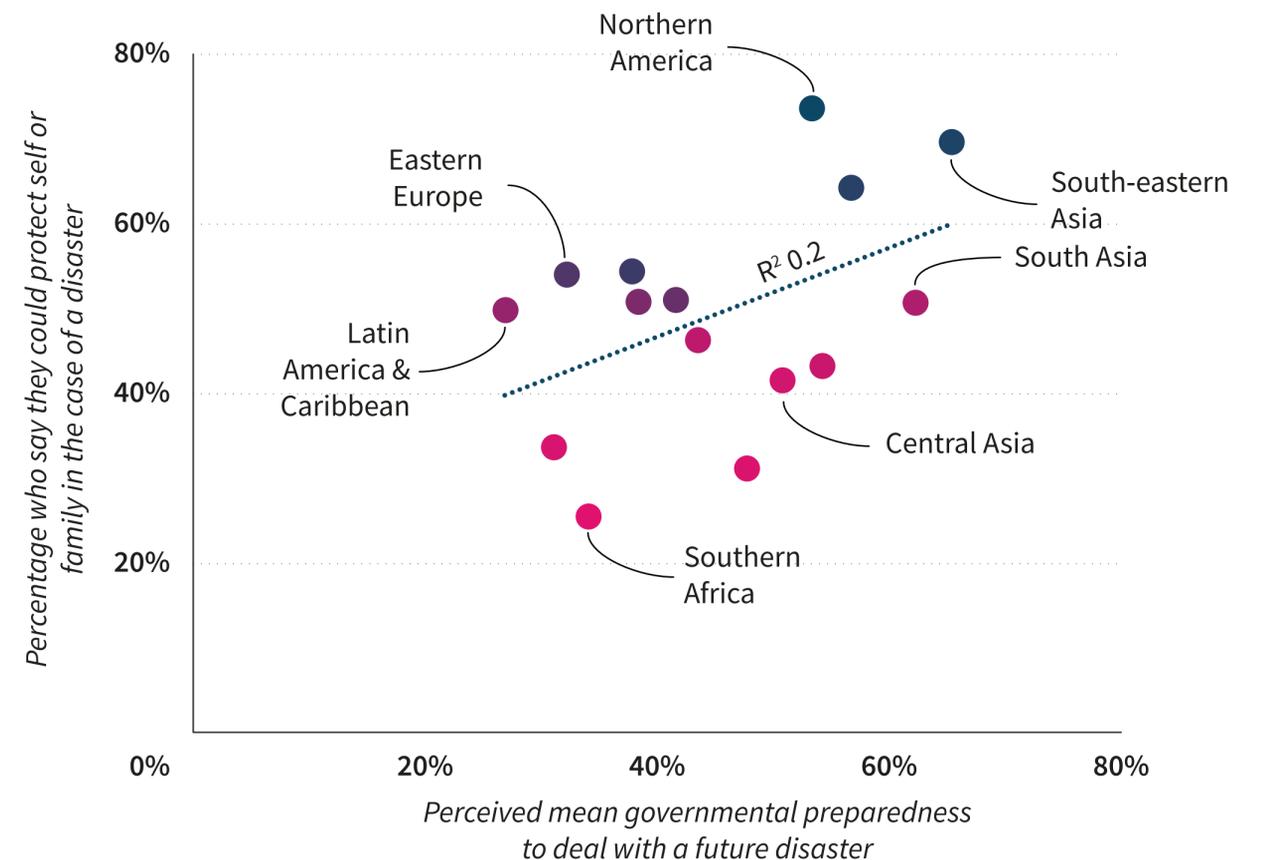
The Poll shows that those who experienced a disaster in the last five years were more likely to report losing access to one of five critical services (clean water, food, medical care/medicine, electricity, and telephone service). Going without electricity was the most common occurrence, with over half of those who experienced a disaster in the last year reporting going without for more than a day. Conversely, going without food was the least frequently reported, although nearly a quarter of those who had experienced a disaster still reported this experience.

Preparedness to deal with disasters

Provision of these services is usually reliant on national and local government agencies as well as other public and private entities. Understanding how people view the preparedness of these providers may suggest areas where critical infrastructure resilience is lacking. The Poll asked respondents how prepared their national or local government was to deal with a disaster.

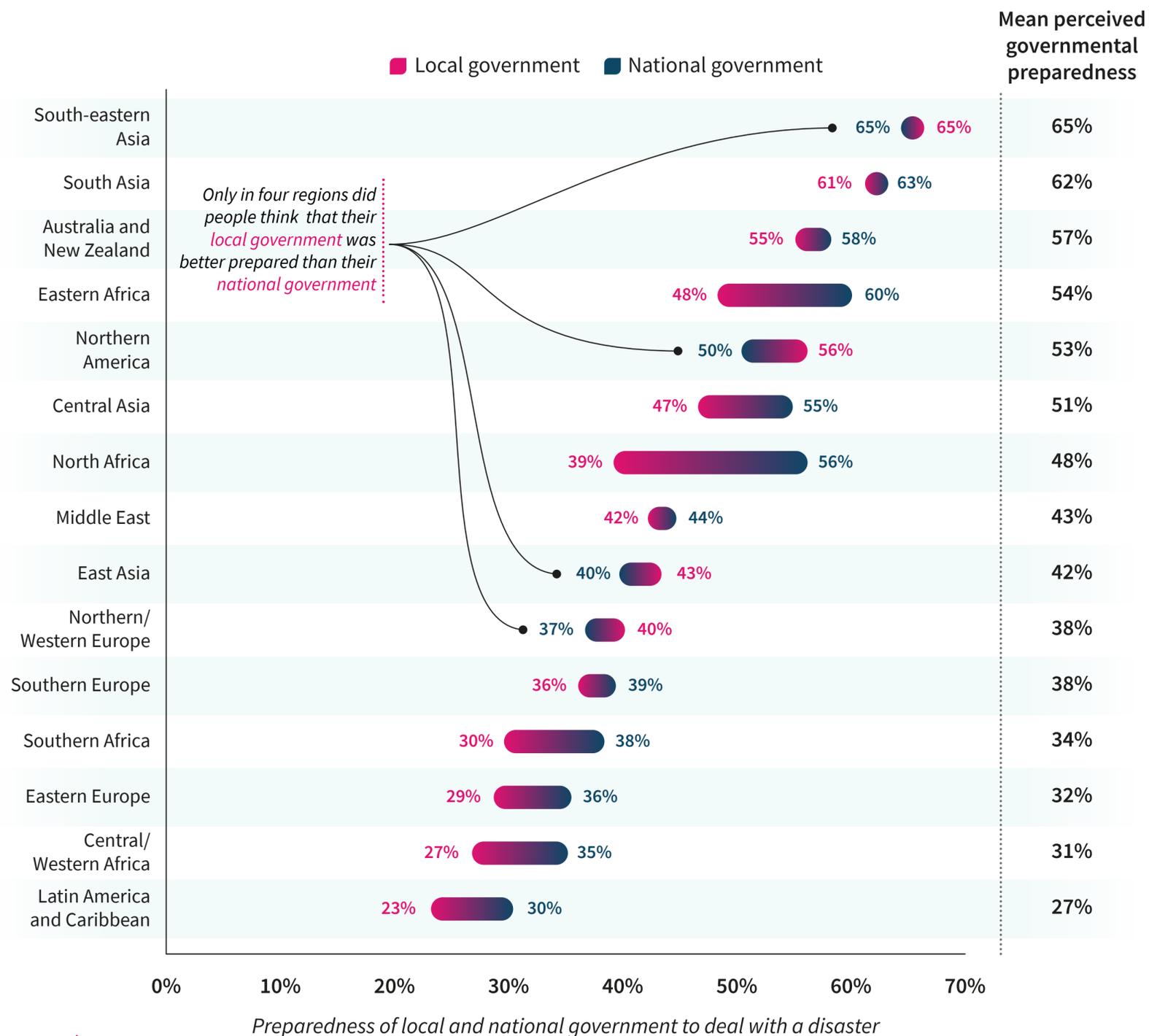
The mean of these responses (mean perceived governmental preparedness) correlated strongly with an increased confidence that respondents could protect themselves or their families in the face of a future disaster.

Chart 2 Confidence in government preparedness is linked with an increased feeling of personal agency in the case of a disaster



The data shows varying levels of confidence in the preparedness of national and local governments to manage a disaster across different regions. South-eastern Asia and South Asia have the highest confidence levels at 65% and 62%, respectively. In comparison, Latin America and the Caribbean and Central/Western Africa have the lowest confidence levels at 27% and 31%, respectively.

Chart 3 Preparedness of local or national government to deal with a future disaster



Survey questions:

Do you think your local or national government are well prepared to deal with a disaster in your country, or not?

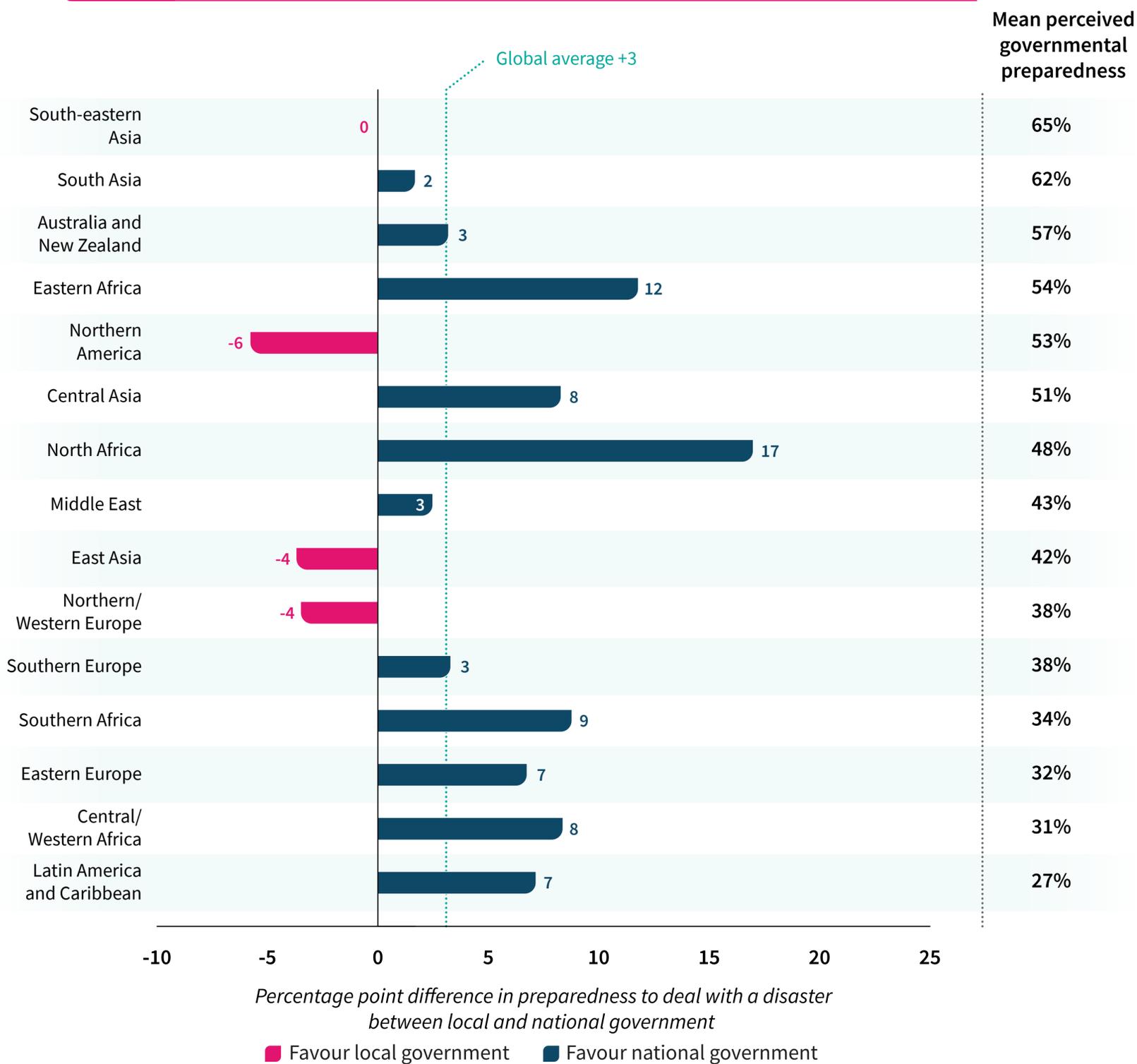
Looking at the data in more detail provides some interesting context. Among the five countries with the highest mean confidence in government preparedness, the United Arab Emirates and Singapore are the countries where respondents reported the lowest levels of disaster experience. However, these countries flank Bangladesh, the Philippines, and Indonesia, countries with much higher disaster experiences, with more than 4 in 5 people in the Philippines reporting experiencing a disaster.

At the other end of the scale, Afghanistan has the lowest mean confidence in government preparedness. This placement is perhaps unsurprising as polling occurred during the US troop withdrawal from Afghanistan in 2021. Similarly, polling in Lebanon occurred after the 2020 Beirut port explosion, which, although directly impacting only a relatively small area of the country, further exposed tensions with governance that had been ongoing since the 17 October Revolution. It is clear, however, that there is no strong correlation between disaster experience and perceptions of government preparedness.

Table 1 Perceived preparedness of local and national governments to deal with a disaster and experience of disaster.

	Mean perceived governmental preparedness	Percent experienced a disaster	Disaster experience ranking (of 119 countries)
United Arab Emirates	80%	5%	117th
Bangladesh	75%	48%	11th
Philippines	75%	82%	1st
Indonesia	73%	34%	26th
Singapore	73%	4%	118th
Romania	17%	12%	104th
Bolivia	16%	22%	56th
Paraguay	15%	38%	23rd
Lebanon	15%	12%	99th
Afghanistan	12%	46%	13th

Chart 4 Regional percentage point difference between confidence in local and national government to deal with a disaster



National or local government: who is better prepared for disaster?

The perception of whether resilience falls within the remit of national or local government can be nuanced and context-dependent. While some people may view resilience as primarily the responsibility of national governments due to their role in protecting national security and responding to large-scale crises, others may emphasise the importance of local government in building community-level resilience and leveraging local insight and connections.

This perspective highlights the role of local authorities in addressing immediate safety concerns, disaster preparedness, and the maintenance of critical infrastructure. Furthermore, perception often varies based on government structures, cultural norms, political ideologies, and the specific nature of resilience-related challenges. The level of decentralization of emergency management in the country would arguably also play a role. An optimal approach typically involves a collaborative effort between national and local governments (as well as community and private sector actors), recognising that each level has a crucial role in enhancing resilience at different scales, ensuring their populations' overall wellbeing and safety.

Whilst the mean perception of preparedness for national and local government can give insight into overall levels of confidence, we can begin to understand some of this context by looking at the percentage point difference between the two.

Globally, a slight majority of people thought their national government was better prepared by 51% to 48% – a 3 percentage point difference. This was apparent in most regions, with those in Africa, particularly North Africa, greatly favouring national government. Only three regions favoured local government: East Asia, Northern and Western Europe and Northern America.

Survey questions:

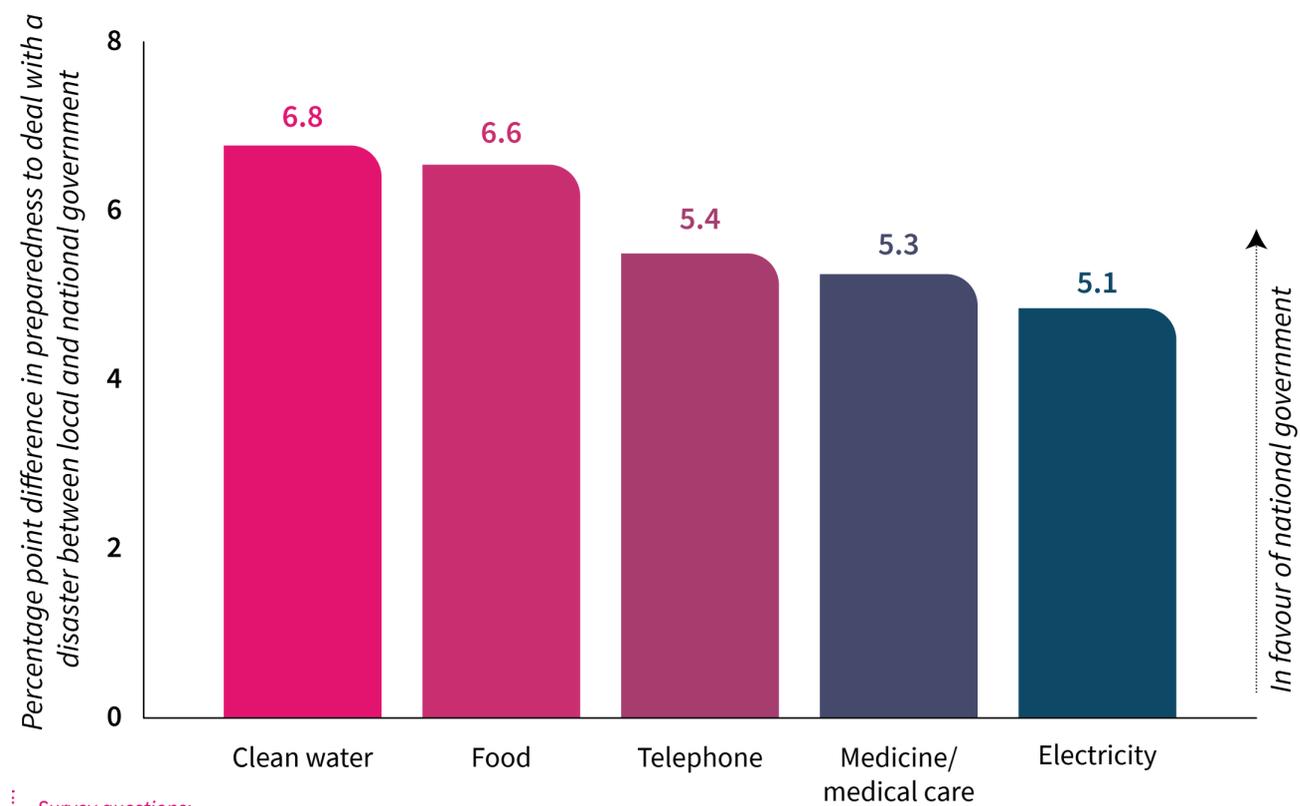
Do you think your local or national government are well prepared to deal with a disaster in your country, or not?

Critical infrastructure resilience: who is accountable?

At the global level, those who have experienced a disaster and lost access to any of the five types of critical infrastructure polled are slightly more likely (than those who have not) to perceive their national government as being more prepared than local government, a 5 percentage point difference. There were some slight differences when this was broken down by the type of critical infrastructure, with losing access to clean water and food eliciting the most negative view of local government preparedness relative to national government preparedness, with a 6.8 and 6.6 percentage point difference respectively.

Chart 5

Percentage point difference in favour of national government preparedness to deal with a disaster, amongst those who have experienced a disaster and lost access to critical infrastructure



Survey questions:

Do you think your local or national government are well prepared to deal with a disaster in your country, or not?

Have you lost access to (electricity, clean drinking water, food, medicine or medical care, or a telephone) for more than a day in the past 12 months?

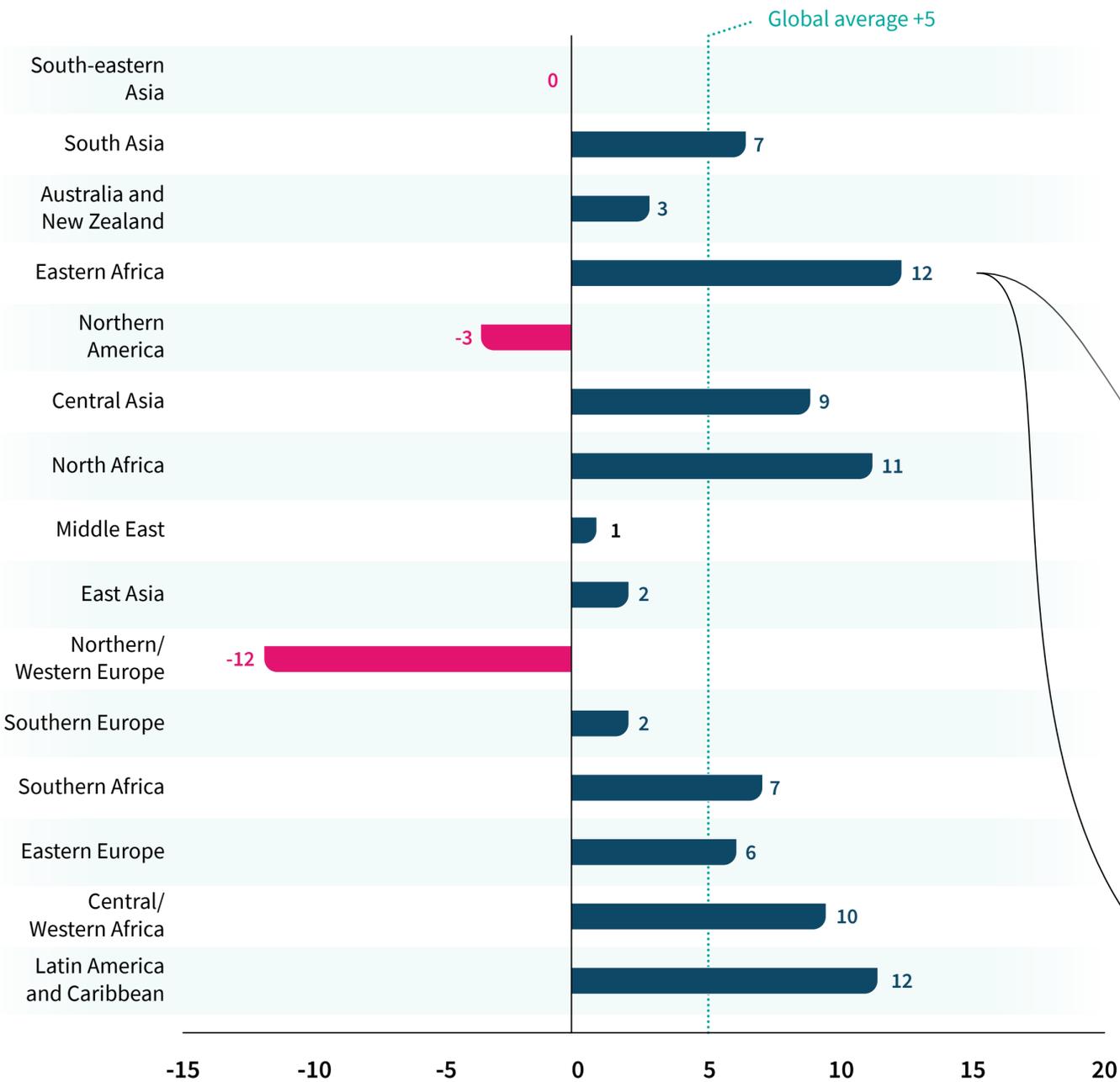
At the regional level, a similar picture to that seen for the global average emerges. However, there are some striking shifts; for example in North Africa with a 6 percentage point reduction (17 to 11) in those who view the national government as better prepared to deal with a disaster. Conversely, Northern and Western Europe saw an 8 percentage point (-4 to -12) shift towards seeing local government as being more prepared. These regional differences can suggest where people who have experienced a disaster perceive a relative weakness in their national or local government preparedness.

For example, whilst people have a relatively high level of confidence in their national government's preparedness across Africa, people are much more sceptical about their local government's preparedness. In these regions, supporting a properly implemented and country-specific approach to decentralisation of disaster response planning coupled with investments in local community resilience may improve outcomes and public confidence⁴.



Conversely, national governments in Northern and Western Europe and Northern America may need to improve or better communicate their capacity to maintain critical infrastructure resilience at the national level while supporting local developments, especially providing medical care and food supplies. However, it is important to note that the relative occurrence of critical infrastructure failure in these regions was low.

Chart 6 Regional percentage point difference between confidence in local and national government to deal with a disaster, amongst those who have experienced a disaster and lost access to critical infrastructure



Survey questions:
 Do you think your local or national government are well prepared to deal with a disaster in your country, or not?
 Have you lost access to (electricity, clean drinking water, food, medicine or medical care, or a telephone) for more than a day in the past 12 months?
 In the past 5 years, have you personally experienced a disaster?

Percentage point difference in preparedness to deal with a disaster between local and national government, amongst those who have experienced a disaster and lost access to critical infrastructure

■ Favour local government ■ Favour national government

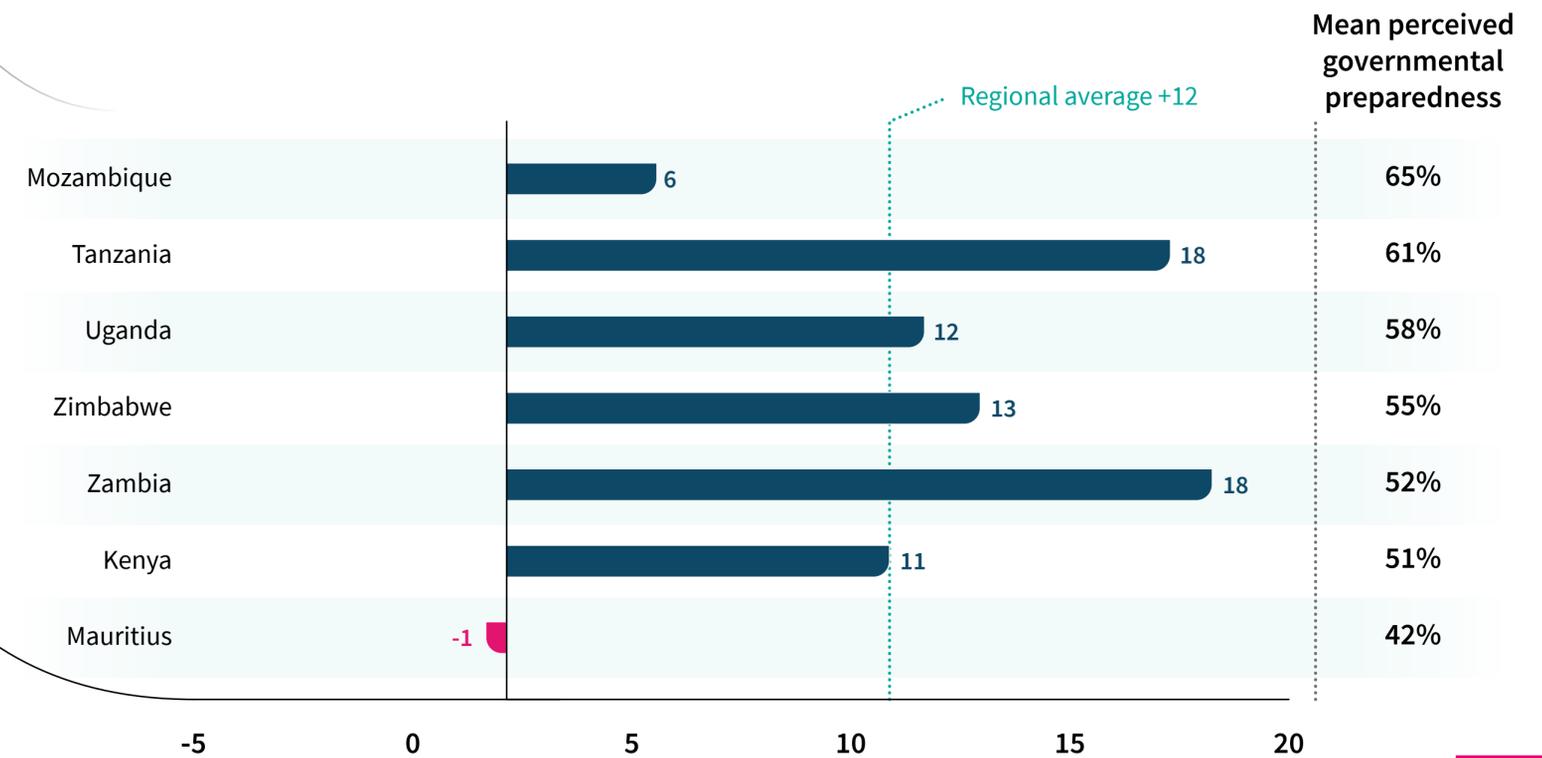
Focus on Eastern Africa

Whilst regional-level stats provide interest, they are perhaps too high-level to help target interventions. They can also mask significant variation at the country level. For example, in the above section, Eastern Africa had the largest percentage point gap in favour of the national government being more prepared than local at 12 percentage points.

In analysing the data within Eastern Africa, it is evident that most countries place higher trust in their national governments. Tanzania leads the way with the highest confidence level, followed by Zimbabwe and Uganda. However, the outlier in this dataset is Mauritius, which demonstrates a lower level of confidence in its national government. Interestingly, Mauritius is also the country on the list with the lowest mean confidence in government preparedness, so although the gap may be more significant in Tanzania, the preparedness of both arms of government is seen more favourably.

Both countries experienced national-level disasters in 2020. Could the governmental responses to those disasters and how people perceived them influence their confidence in future preparedness?

Chart 7 Percentage point difference between confidence in local and national government to deal with a disaster in Eastern Africa



2020 Tanzanian Floods: a turning point towards disaster risk reduction?

In 2020, the East African nation of Tanzania experienced a series of significant and devastating floods. These floods were primarily attributed to unusually heavy and prolonged rainfall during the rainy season, causing rivers to overflow their banks, flash floods, and dangerous landslides. The impact of these floods was widespread and multifaceted, with severe damage to critical infrastructure across numerous regions⁵.

The Tanzanian national government reacted swiftly to the crisis, launching a coordinated response effort to address the immediate needs of affected communities⁶. This included distributing essential relief supplies such as food, clean water, and shelter materials. These initiatives played a vital role in providing immediate assistance to those in distress.

However, the relief efforts were not without challenges. Reports of delays in aid distribution, particularly in remote and inaccessible areas, highlighted logistical difficulties⁷. These challenges underscored the importance of improving the efficiency and effectiveness of aid delivery mechanisms at the local level to ensure timely assistance during such crises. Such efficiencies could be driven by developing a more robust delivery infrastructure reinforced with local-level distribution hubs⁸.

Amid adversity, some communities exhibited remarkable resilience by taking proactive measures to protect themselves against the ongoing, but also importantly, future flooding. These measures included constructing flood-resistant homes and voluntarily relocating to higher ground, with the support and coordination of governmental and other agencies⁹. The emergence of such community-driven solutions highlighted the importance of empowering communities in disaster resilience efforts.

The national government's response to the 2020 floods in Tanzania represents a crucial chapter in the nation's disaster management history. Valid concerns about the efficiency of local aid distribution, the need for infrastructure development and reinforcement, and the complexities of resettlement programs to increase resilience were raised. Furthermore, whilst individual community-level schemes generated high levels of resilience, these and previous flood events highlighted a disaster mitigation and response coordination gap¹⁰.

Learning from this experience, the national government of Tanzania has introduced a holistic National Disaster Management Strategy¹¹ focusing on disaster risk reduction as well as management. The strategy states:

“This situation [...effective and efficient disaster risk management, for sustainable development...] will be realised through commitment and collaboration of all actors and empowerment of communities and institutions on taking appropriate actions to prevent and **reduce disaster risks**, vulnerabilities and human sufferings due to disaster situations.”

*The United Republic of Tanzania Prime Minister's Office
National Disaster Management Strategy (2022 - 2027)*

This strategy incorporates aspects of regional and international agreements such as the United Nations Sustainable Development Goals, Sendai Framework for Disaster Risk Reduction and importantly the Paris Agreement on Climate Change¹² to deliver on this more holistic approach.

Tanzania scores highly for mean perceived governmental preparedness at 61%, however, confidence in national government disaster preparedness is significantly higher than that for local government, an 18 percentage point difference. This high level of confidence may be fostered by both the government's response to previous disasters, but also its willingness and desire to improve future outcomes.

Mauritius, MV Wakashio Oil Spill

In July 2020, the grounding of the MV Wakashio, a 200,000-tonne bulk carrier, off the coast of Mauritius led to a substantial discharge of approximately 1,000 tons of heavy fuel oil into the waters of the Indian Ocean. The impact of the oil spill was significant, endangering coral reefs, mangrove forests, and marine biodiversity, whilst also impacting people's way of life. Long-term repercussions for fisheries, tourism, and the broader environment necessitated ongoing monitoring and remediation and caused significant socio-economic harm¹³.

Significant criticism from the island's population of the timeliness of the governmental response came to a head with large-scale protests in the capital of Port Louis calling for the national government to resign¹⁴. Whilst the government did have an oil spill contingency plan available, officials admitted that they were insufficiently equipped to handle such a disaster, lacking much of the infrastructure required to act quickly and effectively¹⁵.

The community stepped into this gap with improvised attempts to prevent further ecological damage. However, these attempts were poorly supplied and coordinated and often ignored official instructions for people to stay away from the affected areas¹⁶.

It is clear to see here how Mauritius has a low mean perceived governmental preparedness at 42%, both globally and compared to regional neighbours. Whilst the government did have an oil spill contingency plan many aspects of it weren't actionable and were poorly communicated. This led to communities stepping into the gap, but this desire to be involved wasn't harnessed and directed, leading to a breakdown in confidence in the national government.



Engaged communities can drive resilience

These two examples highlight the willingness and potential power that community-led interventions can have in building and maintaining resilience in the face of disasters. However, where they diverge is in the level of support these interventions received, which perhaps accounts for the differing levels of confidence in government preparedness seen. In Tanzania, whilst there were issues with the final distribution of aid and support, communities could see active engagement and support from their government, increasing confidence. Conversely, in Mauritius, the government was seen as reacting poorly or slowly with little engagement of affected communities, leading to reduced engagement and, perhaps ultimately, a reduced lack of confidence in future preparedness.

Both examples point towards a model whereby providing local communities with the tools, support, and robust critical infrastructure required to manage natural hazards may be vital in building resilience and mitigating disasters.

Closing remarks

- Across many countries and regions there is a need to both improve critical infrastructure resilience, and also the public's confidence in their government's preparedness, which may in turn improve individuals' feelings of agency to deal with a disaster.
- Gaps in the perception of local and national governmental preparedness can identify areas where increased communication and collaboration between the two are needed, as well as with relevant community and private sector actors.
- Improving the resilience of critical infrastructure is important to improving public confidence in government disaster preparedness, and should be done as a critical part of broader disaster risk reduction strategies.
- Building community resilience can be a powerful tool for both risk reduction and to mitigate the impact of disasters in their early stages. However, it needs to be centrally supported, with communities feeling engaged and informed about the process to be effective and maintain confidence.

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