Disasters in Asia - The People's Perspective

2 - Warnings & Preparedness

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IPUR Research Brief

SUMMARY

- Early Warning Systems are effective in reducing harm from natural hazards but their roll-out needs to be accelerated to meet the global goal of universal access by 2027.

- Survey data provide a valuable 'ground truth' about the reach of early warning systems, complementing official statistics.

- Across Asia, 70% of people received a warning, ranging from 95% in Hong Kong to 39% in Afghanistan and Nepal, according to World Risk Poll data.

- In the Asian region, less than half of households (40%) have a plan for what to do in the event of a disaster. In just two countries - Philippines and Cambodia - do more than three-quarters of households have a plan.

- Preparedness among public institutions in the Asian region is positively correlated with personal preparedness. However, in a small number of countries, higher levels of personal preparedness appear to compensate for poor institutional preparedness.

Introduction

When terrible floods struck Pakistan in August 2022, many people barely had time to grab a few essential belongings and hurry to road embankments before floodwaters inundated their houses. 1600 people were killed and more than 33 million people were affected by those floods. That toll could have been lower if more people had received advance warnings and actionable advice to protect themselves and their families.
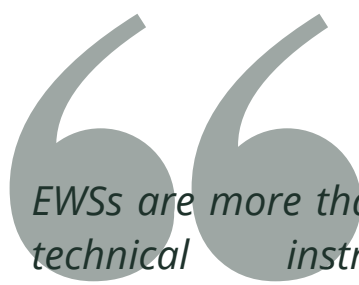
Can people in Asia count on receiving a warning before disaster strikes and do they have a plan of action when a warning is issued? This Research Brief gives the people's perspective on these questions. The findings paint a worrying picture of gaps in access to useful, actionable information in the run-up to extreme weather events. The tragic experience of Pakistan in 2022 reinforces the urgent need to improve warnings and pre-emergency planning at the household level.

Early warning systems: A global overview

EWS are multi-level, integrated systems involving multiple actors. Figure 2.1 illustrates the components of a standard national early warning system. Meteorological information is collected by sensors, satellites etc, and then transmitted to national meteorological agencies for analysis and generation of weather forecasts.

Meteorological information feeds into hazard models which incorporate additional sources of data (hydrology, elevation, land use etc.) to generate forecasts of local impacts and issue warnings. These are then transmitted from national agencies down a chain of communication to local decision–makers and individuals.
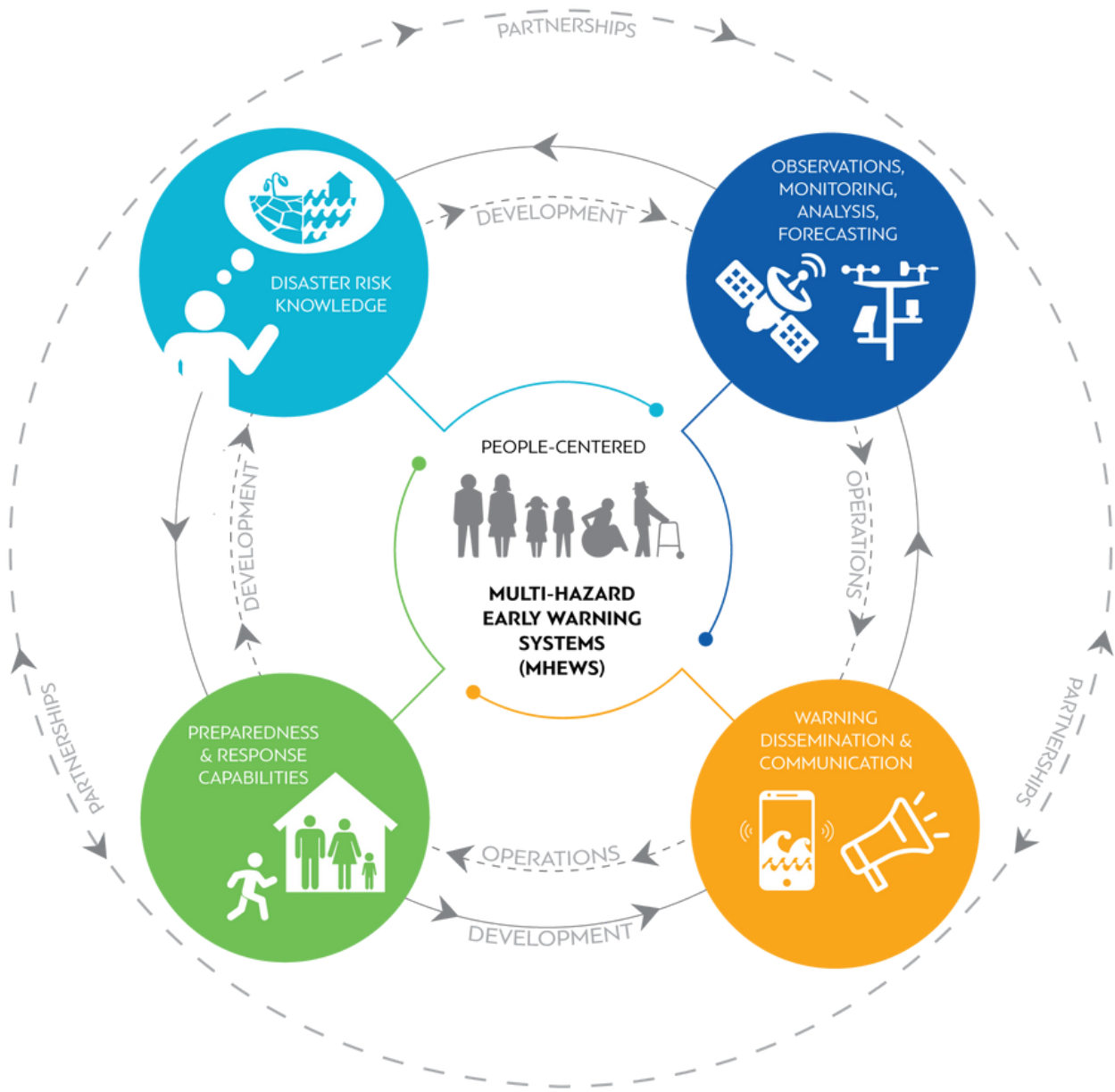
EWS therefore require both centralised and decentralised components, and a people-centred approach in "the last mile" to ensure that everyone is able to understand and is ready to act on warnings (UNDRR 2019).

EWSs are more than scientific and technical instruments for forecasting hazards and issuing alerts. They should be understood as sources of scientifically credible, authoritative and accessible knowledge.

These integrate information about and from areas of risk that facilitate decision-making (formal and informal) in a way that empower vulnerable sectors and social groups to mitigate potential losses and damage from impending hazard events.

- (UNDRR 2019)

Figure 2.1: Structure of an Early Warning System. Source: WMO

At the global level, laudable progress has been made in developing extreme weather EWS in recent decades, driven by two positive trends.

First, the reach, specificity, accuracy and lead times in weather forecasts on which warnings rely have improved enormously: five-day forecasts are more accurate today than one-day forecasts were 50 years ago (Golding 2022).

Second, mobile communications and internet access enable warnings to travel faster and further, even into remote communities.

Investments in warning systems are regarded as among the most cost-effective climate change adaptation actions and disaster reduction policies. The 2019 Global Commission on Adaptation report found that EWS generated a more than tenfold return on investment, the highest of all measures covered in the study (GCA 2019).

GCA estimates that spending US$800 million on EWS in developing countries could reduce climate-related disaster losses by US$3-16 billion per year.

Furthermore, EWS magnify the benefits of investments in physical infrastructure in reducing lives lost and disease from extreme weather events, according to the IPCC Sixth Assessment Report on impacts, adaptation and vulnerability (IPCC 2022).

Despite evidence on their value, many countries still do not have adequate EWS. Data collected in 2022 by the World Meteorological Organization shows almost one third of the world's population is still not covered by an EWS (see Figure 2.2).

Coverage is particularly low in least developed countries and small island developing states. Regionally, the situation is most severe in Africa where 60% of people are not reached by a warning system (WHO 2022).
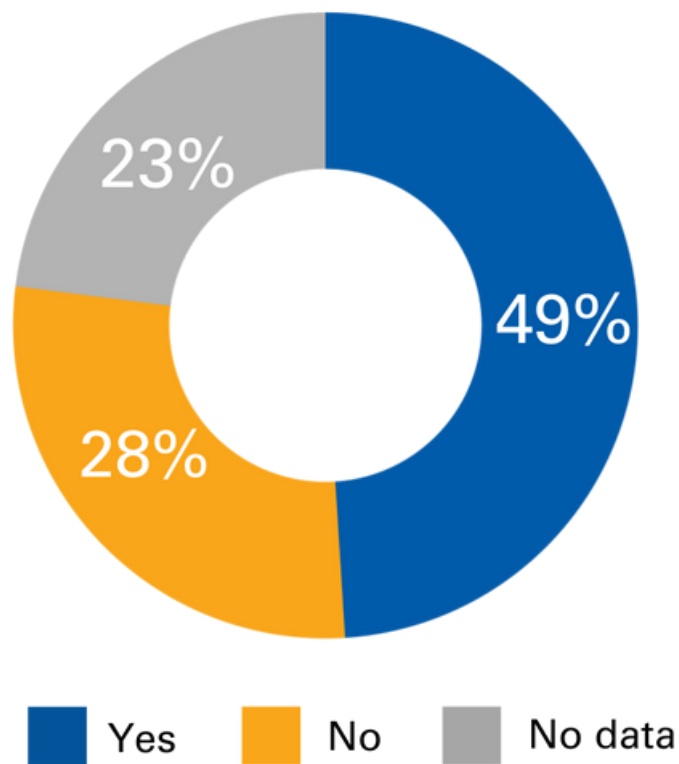

Figure 2.2 Population covered by multi-hazard early warning system, 2022.   Source: WMO

In 2015, UN member countries adopted a target to increase the availability and access to multi-hazard early warning systems as part of the the Sendai Framework for Disaster Risk Reduction. However, progress has been slow and uneven.

This has prompted a renewed push by UN Secretary General Antonio Guterres. In March 2022, he announced an ambitious new target: that everyone on earth should be protected by early warning systems against extreme weather and climate change within five years, with the priority to protect the most vulnerable first (WHO 2022b).

Progress towards this goal is being tracked through national reporting mechanisms, with governments estimating the reach of public systems.

The World Risk Poll data allow us to augment official information on progress towards EWS goals with the public's perspective.

EWS Coverage

According to the WRP data, the majority of people across Asia did receive a warning from some source prior to an extreme weather event and in 10 of 21 countries/territories covered, more than three-quarters of people received a warning.

The greatest reach was in Hong Kong, where 95% of people received a warning, followed by Philippines and Vietnam (both 92%) and South Korea (91%). The lowest reach was in Afghanistan and Nepal, where only 39% of people received warning.

Table 2.1 Proportion of population who received a warning by country/territory			
Hong Kong	95%	India	73%
The Philippines	92%	Sri Lanka	69%
Vietnam	92%	Indonesia	66%
South Korea	91%	Myanmar	60%
Bangladesh	84%	Malaysia	58%
Thailand	83%	Mongolia	48%
Taiwan	82%	Pakistan	47%
Laos	79%	Singapore	41%
Japan	78%	Afghanistan	39%
Cambodia	77%	Nepal	39%

Warnings are easier to disseminate when there is universal access to communication networks and to the internet. Comparing data on mobile phone coverage with warnings confirms that the countries with lowest warning rates also have low mobile access, and countries with the highest warning rates generally have high mobile access (Figure 2.3).

In Bangladesh, Laos and Cambodia, authorities may face extra challenges in disseminating warnings because of the comparatively low rates of mobile penetration, but in all three countries warnings reached more than three-quarters of the population.

However, in some countries, the reach of warning systems lags well behind mobile access, as in Mongolia, Malaysia and Myanmar. Singapore also has a low rate of warning compared to mobile access but this is likely to be related to the nature of extreme weather events in Singapore's highly urbanised environment. Singapore is mainly affected by flash floods due to intense rainfall events which develop and subside very rapidly.

61%

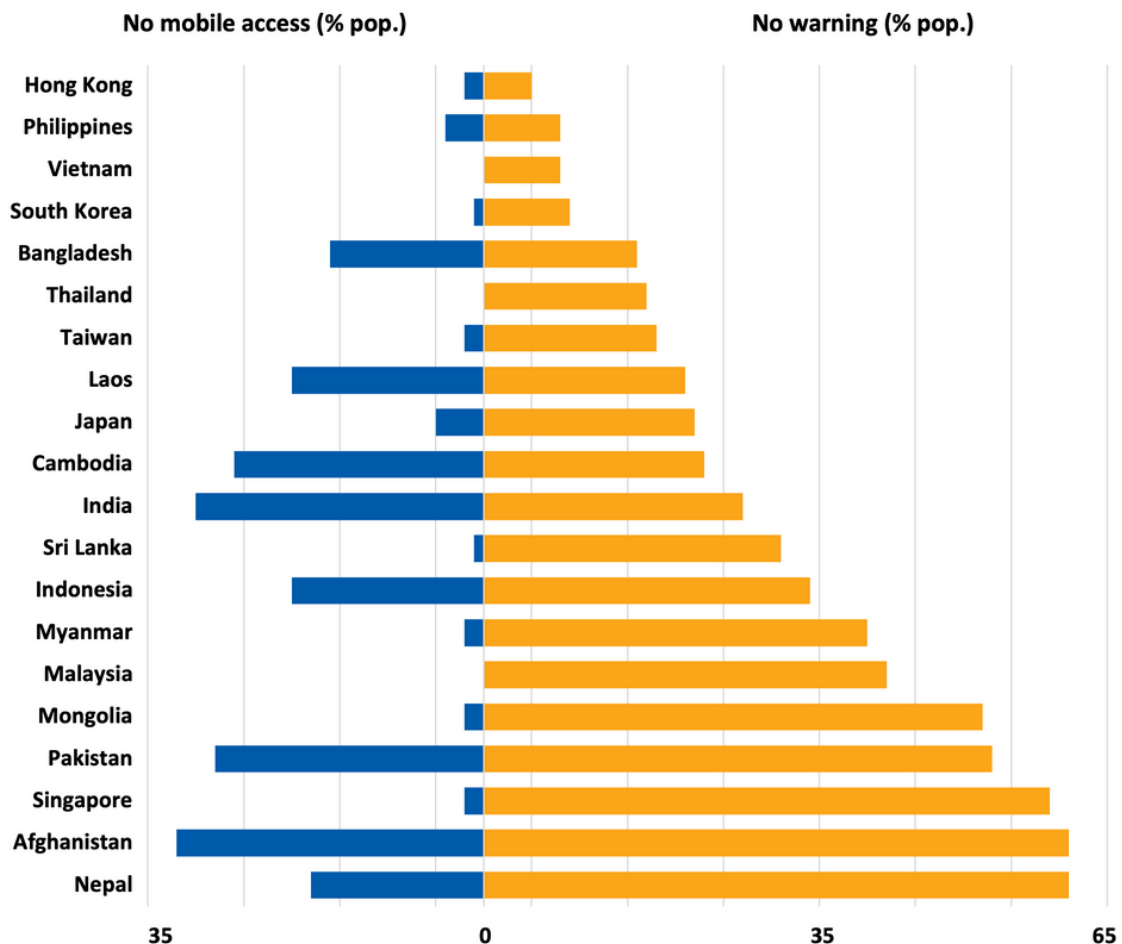## PERCENTAGE OF PEOPLE IN NEPAL WHO RECEIVE NO WARNING IN THE EVENT OF A DISASTER

Figure 2.3: Reach of warnings and access to mobiles.

Local governments play a critical double role in EWS: they are both decision-makers who use forecasts and alerts as the basis for actions in the run-up to extreme weather events, like issuing evacuation orders, and they are also a source of warnings covering the 'last mile' to communities and households.

From the people's perspective, are local governments in Asia playing an effective role in warning dissemination?

Figure 2.4 shows the proportion of people who received a warning from their local government. Local governments contributed to warning dissemination in every country in the region but in only two countries - Hong Kong and the Philippines - did their warnings reach more than three-quarters of the population.

Local governments were least effective in reaching people in Afghanistan and Pakistan, with less than 10% of the population in those two countries receiving a warning from local government.
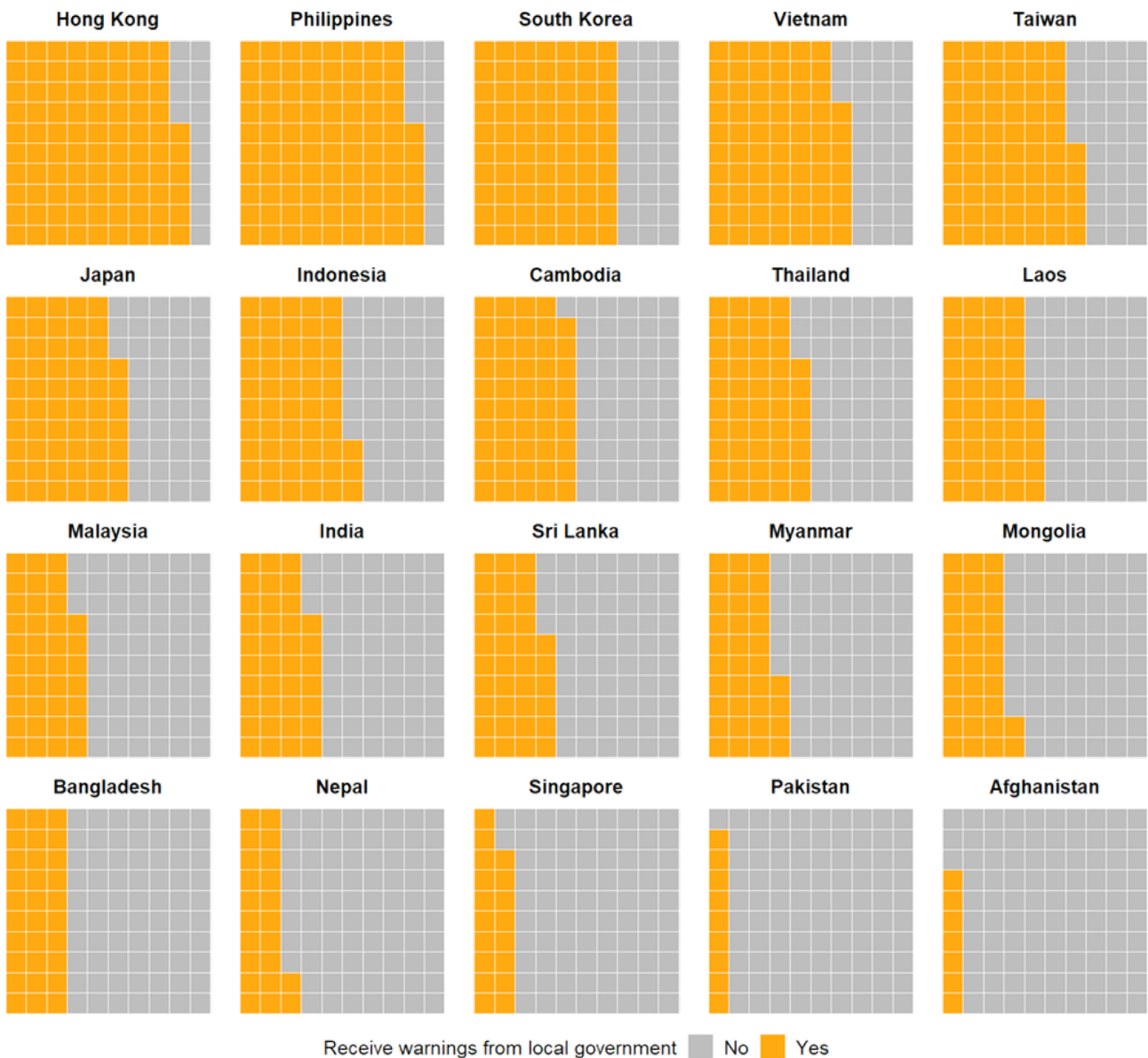

Figure 2.4: Reach of warnings from local government by country/territory.

Personal Preparedness

For warnings to be effective in reducing harm, people have to be prepared and ready to act on them. In the event of an evacuation order, this would include knowing where to go and the route to take, and having a plan for how family members would get there, or in cases where authorities advise people to shelter at home, having important documents and an emergency kit containing food, water, medicines, batteries etc at the ready. In countries where disasters are frequent, like the Philippines, information and communication campaigns on personal preparedness are conducted regularly. To what extent has this advice been taken up across the region?

Figure 2.5 Emergency planning communication in the Philippines. Source: UNICEF 2022

Across Asia, less than half of households (40%) have a plan for what to do in the event of a disaster. The Philippines has the highest rate, 85%, reflecting efforts by government, civil society and the media to encourage people to prepare plans, followed by Cambodia and Vietnam. The lowest proportion of household plans are found in Pakistan and Hong Kong.

The latter finding could be surprising given the frequency of severe storms in Hong Kong. The low rate of household planning there may be due to the perception that government agencies are well prepared, infrastructure in the territory is resilient and the public is familiar with sheltering at home during typhoons. As a result, the local population is usually able to resume daily activities quickly after storm events.

Table 2.2: Households with a disaster plan and who feel "well prepared" to deal with a disaster		
	Have a plan	**Family well prepared**
Philippines	85	76
Cambodia	77	57
Vietnam	71	62
Laos	58	75
Indonesia	57	67
Malaysia	56	63
Thailand	54	57
Bangladesh	48	77
Taiwan	45	45
Sri Lanka	43	64
Myanmar	42	56
Japan	39	40
Nepal	35	70
Afghanistan	33	25
India	31	77
Singapore	31	50
South Korea	31	50
Mongolia	26	19
China	25	NA
Hong Kong	15	53
Pakistan	15	30

Note: Family well prepared question was not posed to respondents in China.

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Having a plan for sheltering or evacuation is only one aspect of disaster preparedness. In the longer-term, households can improve their resilience by strengthening and weather-proofing their properties, investing in back-up power and communications equipment, purchasing insurance or taking part in mutual savings and insurance schemes, or potentially moving to a les hazard-prone area. The appropriate mix of actions will depend on the household's income level, local infrastructure and the nature of the extreme weather risks in the area.

The WRP provides insight these varied aspects of household readiness by asking respondents whether they feel prepared for a disaster. However, it is important to note that this question captures their own perceptions of the risk and the adequacy of their response and does not necessarily reflect their actual ability to protect themselves from a disaster.

Mongolia, Afghanistan and Pakistan stand out as the countries in which people had least confidence in their own preparedness.

This finding is particularly troubling in the light of the tragic events in Pakistan which took place just months after the survey was completed.

Government Preparedness

To be prepared for natural hazards, all levels and agencies of government need to have response plans in place, up-to-date and tested. A high level of preparedness implies having emergency responders ready with equipment and supplies, able to reach affected populations quickly, and to be able to sustain support to communities throughout the recovery period.

Countries organise their disaster risk reduction and response in different ways, some focusing resources and skills at the national level, while others put more emphasis on local governments to take a lead in emergency response. The appropriate structure will depend on national institutions and context. The critical point is that there should be clear allocation of responsibilities and responders should have adequate training and resources for implementation.

In the eyes of the public, how well are national and local governments and health service providers prepared for natural hazards? There is considerable variation across the region, as Figure 2.6 shows.

Confidence in government preparedness is highest in Bangladesh and Indonesia, where more than three-quarters of respondents thought their national government was very well prepared for disasters. Confidence was lowest in Mongolia and Pakistan where less than a quarter of people thought the government was well prepared.

Overall, public perceptions of national and local government are similar, but differences were noticeable in certain countries. Preparedness of local governments was perceived to be considerably higher than that of national governments in Japan, Taiwan and Thailand.

National governments were seen as better prepared in Bangladesh, Laos, South Korea and Vietnam. Local hospitals were generally viewed as more prepared than governments, with the exception of Bangladesh and Vietnam.

The relationship between personal preparedness and institutional preparedness of public authorities - government and health facilities - is worthy of note.

In most countries, they are positively correlated: higher personal preparedness is associated with higher perceptions of institutional preparedness and conversely in countries like Bangladesh and Indonesia, while low institutional preparedness is associated with low personal preparedness, as in Afghanistan and Mongolia.

However, in a few countries, these two different types of preparedness appear to substitute one another. In Thailand and Myanmar, for example, higher levels of personal preparedness may be helping to compensate for low perceptions of government preparedness.

In Singapore, on the other hand, where there are high levels of institutional preparedness, residents may feel that they do not need to take household-level actions and so give a lower rating for personal preparedness.
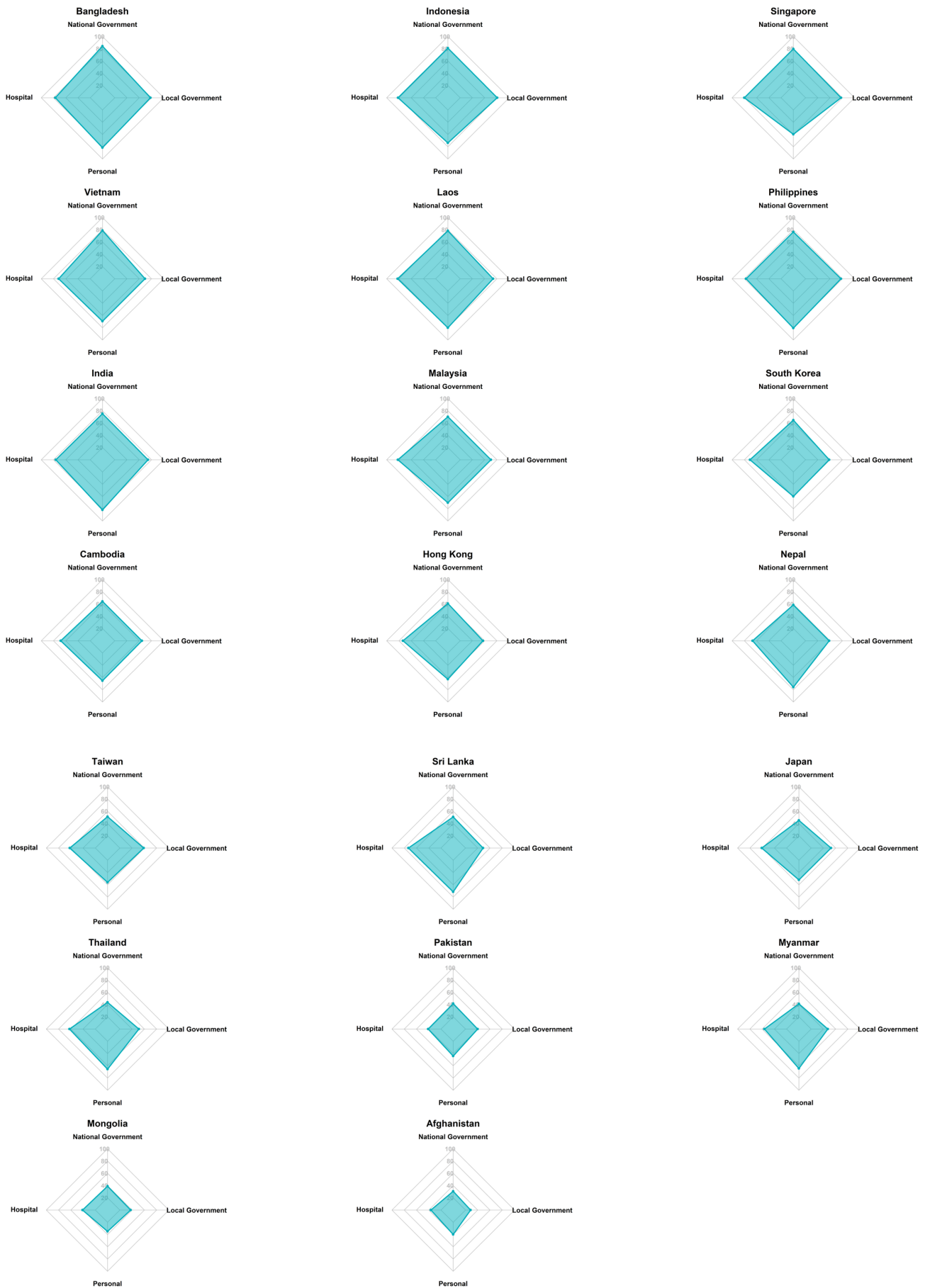
Perceptions of Preparedness in Asia

Figure 2.6 Preparedness by country/ territory.

Table 2.3 Perceptions of institutional preparedness by country/territory

	National gov well prepared	Local gov well prepared	Hospital well prepared
Afghanistan	13	10	21
Bangladesh	80	73	71
Cambodia	55	56	60
Hong Kong	51	47	67
India	69	68	70
Indonesia	76	76	77
Japan	31	41	51
Laos	73	67	78
Malaysia	63	63	77
Mongolia	24	22	26
Myanmar	26	34	45
Nepal	48	48	58
Pakistan	27	25	26
The Philippines	71	72	72
Singapore	75	72	75
South Korea	56	48	63
Sri Lanka	38	36	66
Taiwan	39	49	52
Thailand	29	39	53
Vietnam	73	62	64

Note: This question was not posed to respondents in China.

Reflections and Recommendations

The new UN goal to ensure that everyone on earth is protected by early warning systems against extreme weather and climate change within five years will give extra impetus to the valuable ongoing work by national governments and international organizations to extend the reach and effectiveness of EWS.

In order to track progress towards this goal, survey data is an important complement to standard official data sources. Survey data can help to reveal whether systems are working in practice and provide additional contextual information which can help to make systems more useful.

The WRP needs to be followed up by more regular national level surveys, ideally following a standard protocol to allow for international comparison.

The data show that concerted efforts by governments with support from international organisations can establish effective EWS even in lower income countries where mobile coverage is not universal and infrastructure networks are incomplete.

These countries provide examples of good practice which can be emulated and adapted by others in the region according to available resources and the nature of the hazards that each territory faces. Similarly, the data show that a significant proportion of households in Asia do have an emergency plan.

Information and communications efforts can extend these achievements to other countries and all socio-demographic to ensure that people are best placed to take protective actions when they do receive a warning.

The low level of government preparedness in many countries in Asia is a concern. It is important to note that the data presented here are subjective - they reflect people's perceptions of institutional preparedness, which may of course diverge from actual levels of preparedness, either because people are unaware of what actions have been taken or because they are overly optimistic about their governments.

They therefore provide a useful indication of the public's expectations of government. In order to improve accountability and performance, the public needs more accessible and reliable information about what governments are doing to prepare for disasters.

This would help people to benchmark the performance of their local and national governments against relative comparators and put pressure on them to improve where needed.

At the global level, information about investment in climate change adaptation is very limited. Reporting protocols are needed to ensure that these investments are tracked and incentivised.

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