

Enhancing the Capacity for Impact-based- Forecasting for Resilience

Asia Pacific Disaster Resilience Network (APDRN)

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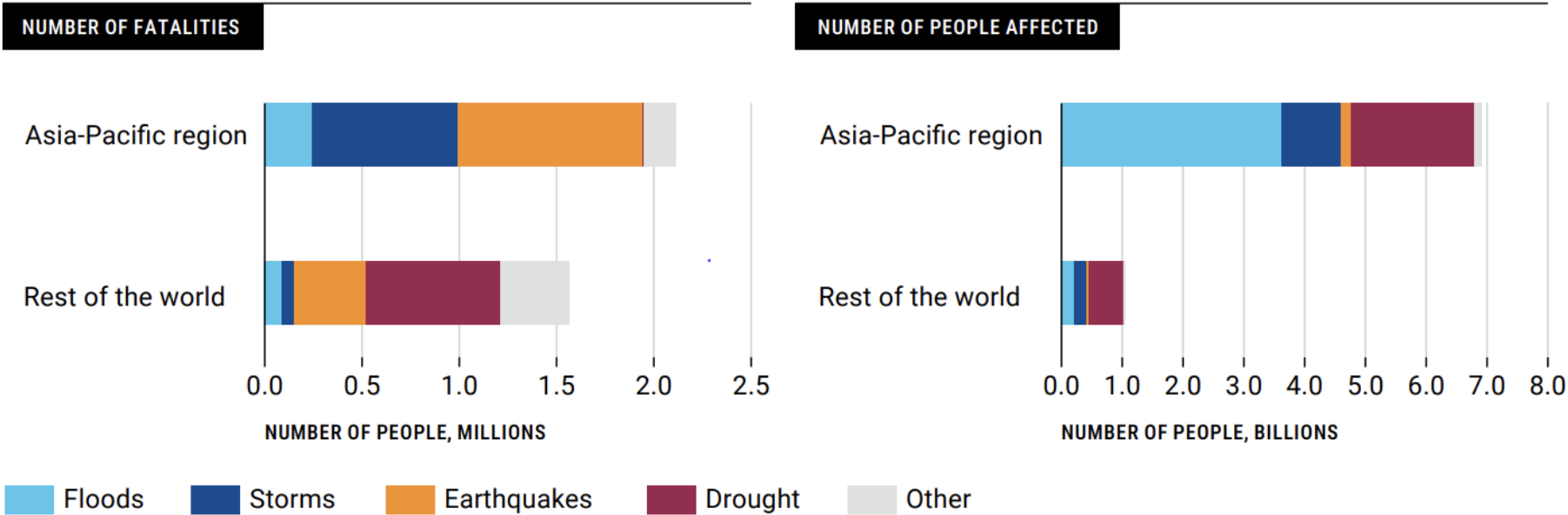
2 December 2021, 16th Integrated Workshop of ESCAP/WMO Typhoon Committee

Climate-related hazards have greatly affected countries in the Asia-Pacific region.

Since 1970, around **half of Asia-Pacific fatalities** and **most of the affected** from natural disasters were from tropical cyclones/floods/droughts.



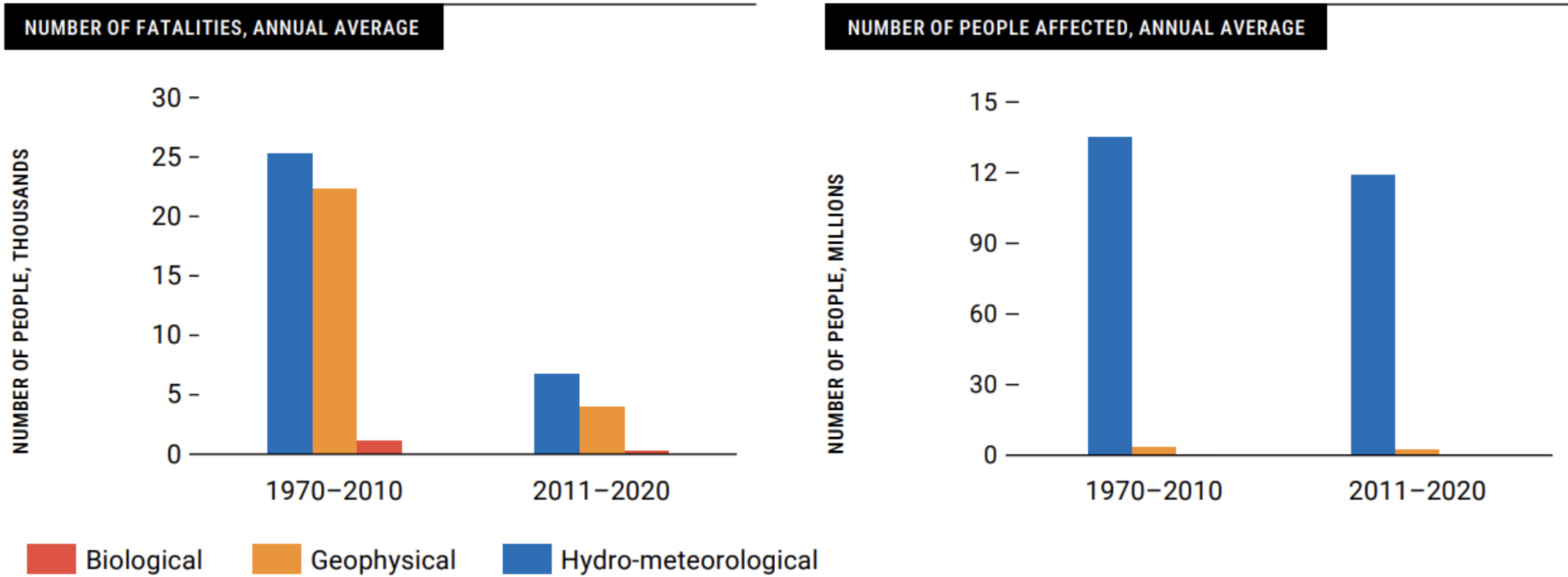
Number of fatalities and people affected in the Asia-Pacific region and the rest of the world, 1970-2020



Source: Data from EM-DAT – The International Disaster Database. Available at <https://www.emdat.be/> (accessed on 4 May 2021).

Number of fatalities has reduced, but number of people affected has not.

Number of fatalities and people affected in the Asia-Pacific region, 1970-2020



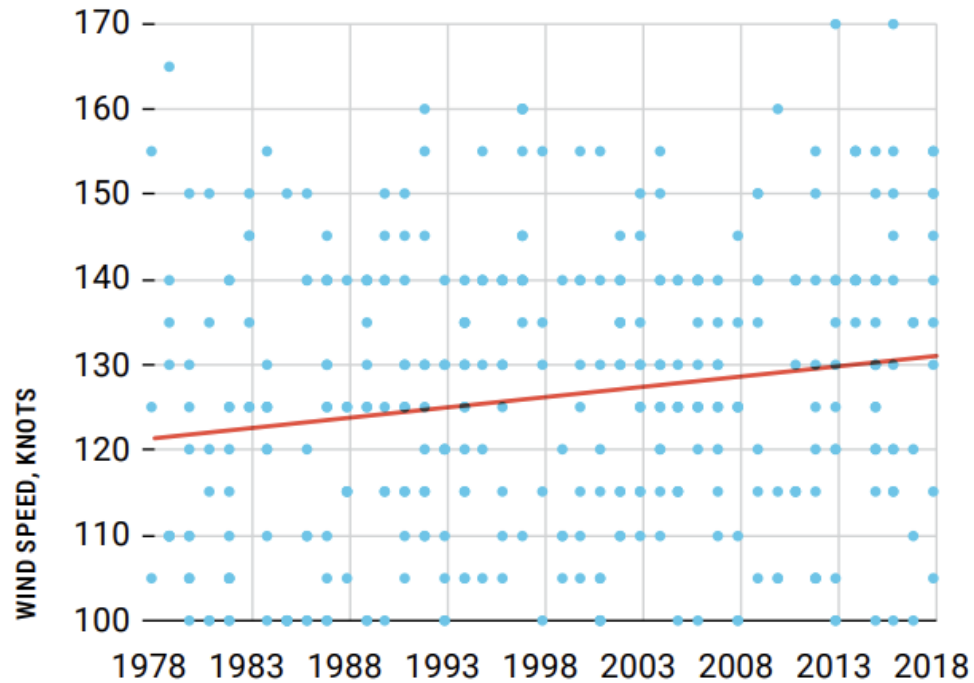
Source: Data from EM-DAT – The International Disaster Database. Available at <https://www.emdat.be/> (accessed on 4 May 2021).

Intensity of tropical cyclones in the Western North Pacific...

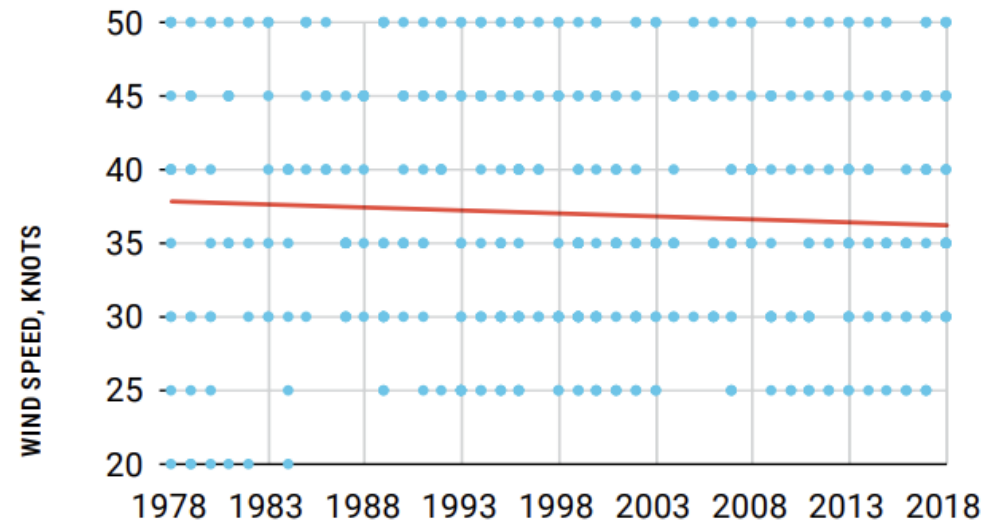
The strongest cyclones, which have a maximum surface wind speed of 100 knots or more, seem to have been getting stronger.

Wind speeds of tropical cyclones in the Western North Pacific, 1978-2018

TROPICAL CYCLONES WITH MAX SURFACE WIND OF 100 KTS OR MORE

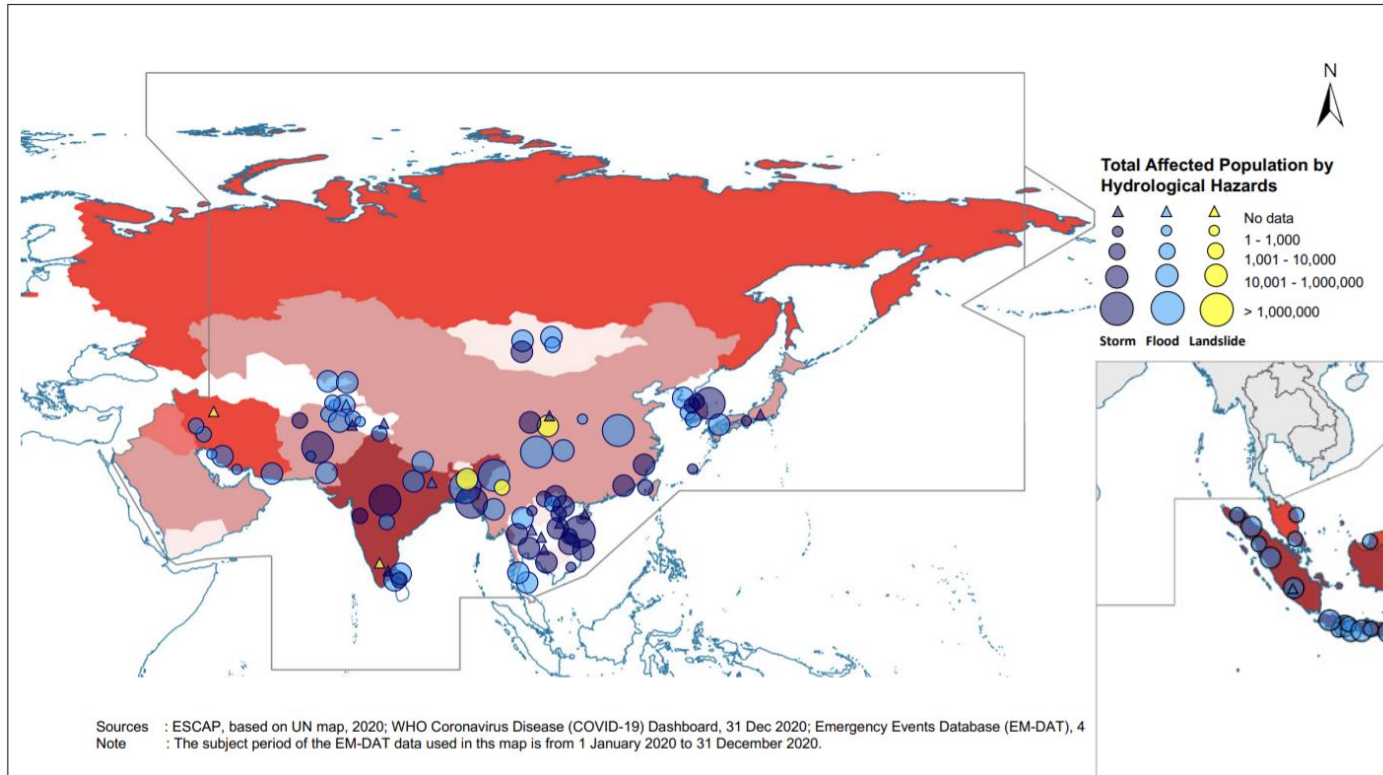


TROPICAL CYCLONES WITH MAX SURFACE WIND OF 50 KTS OR LESS



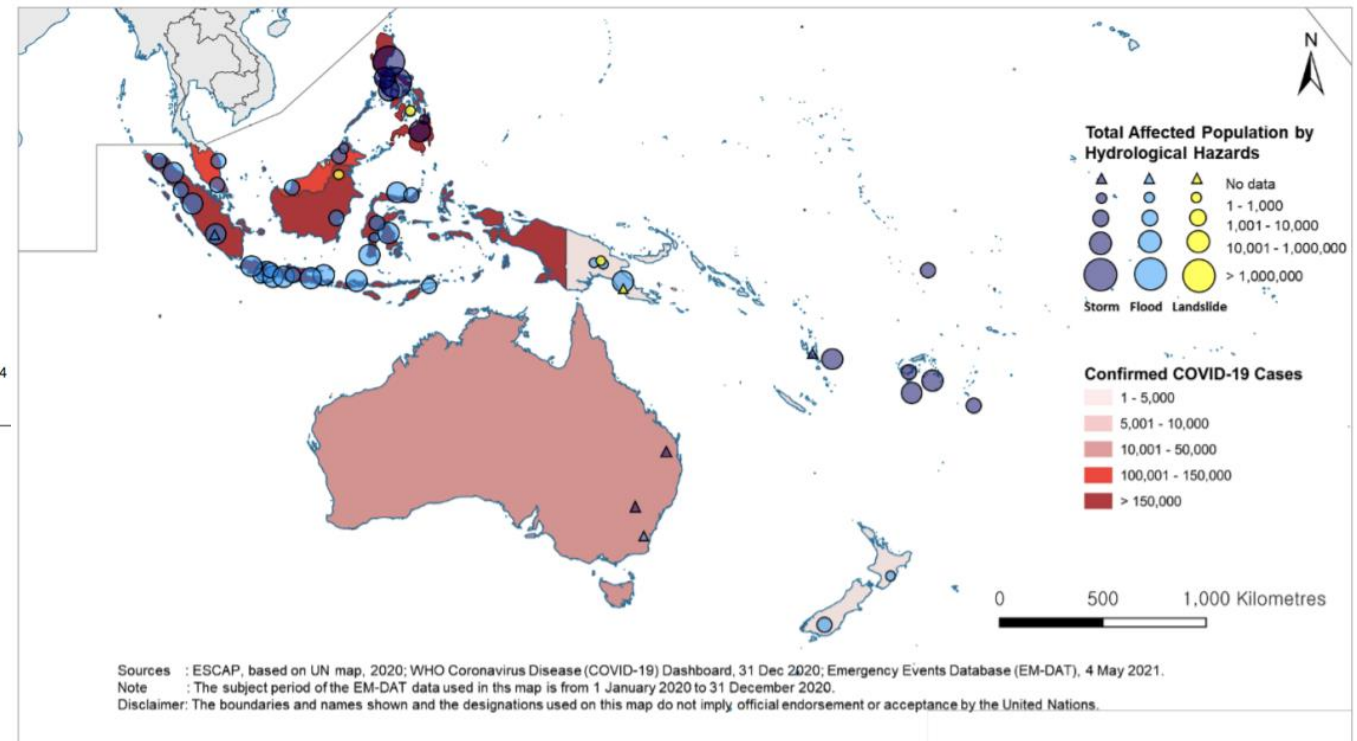
Source: Data from Joint Typhoon Warning Center (JTWC), Annual Tropical Cyclone Reports.

Climate-related hazards converging with COVID-19



Countries have faced **cascading risks** from the pandemic & other hazards.

WMO (2021) State of the climate in Asia 2020 & State of the climate in SW Pacific 2020



Impact-based forecasting can provide valuable information for policymakers, stakeholders and the public to address these risks.

ESCAP mandates

2015

ESCAP Resolution 71/12 Strengthening Regional Cooperation Mechanism for the Implementation of the SFDRR 2015-2030 in Asia and the Pacific

- To guide actions... **to strengthen** disaster risk modelling, assessment, mapping, monitoring and **multi-hazard early warning systems...**, particularly those related to **hydrometeorological issues**, by deepening existing regional cooperation mechanisms...

2017

ESCAP Resolution 73/7 Enhancing regional cooperation for the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in Asia and the Pacific

- Continue to support and facilitate **multi-hazard early warning systems, impact-based forecasting** and disaster risk assessment to strengthen regional cooperation mechanisms;

2021

7th Session of ESCAP Committee on Disaster Risk Reduction & 3rd ESCAP Disaster Resilience Week

- Thematic expert meeting on the implementation of the health aspects of the Sendai Framework for Disaster Risk Reduction – **recognized impact-based forecasting as an important measure**
- Committee recommended ... to promote multi-hazard early warning systems, including through **impact-based forecasting approach for the detection of hazards with reasonable lead time...**

Impact-based forecasting

- A structured approach for **combining hazard, exposure and vulnerability data** to **identify risk** and support decision-making
- Moving from broadcasting ***what the weather will be*** to ***what the weather will do***
- Synthesizing weather information with exposure and vulnerability information to **identify the range of risks faced over an area**
- Impact-based forecasting, in different timescale, can help decisions of relevant stakeholders.



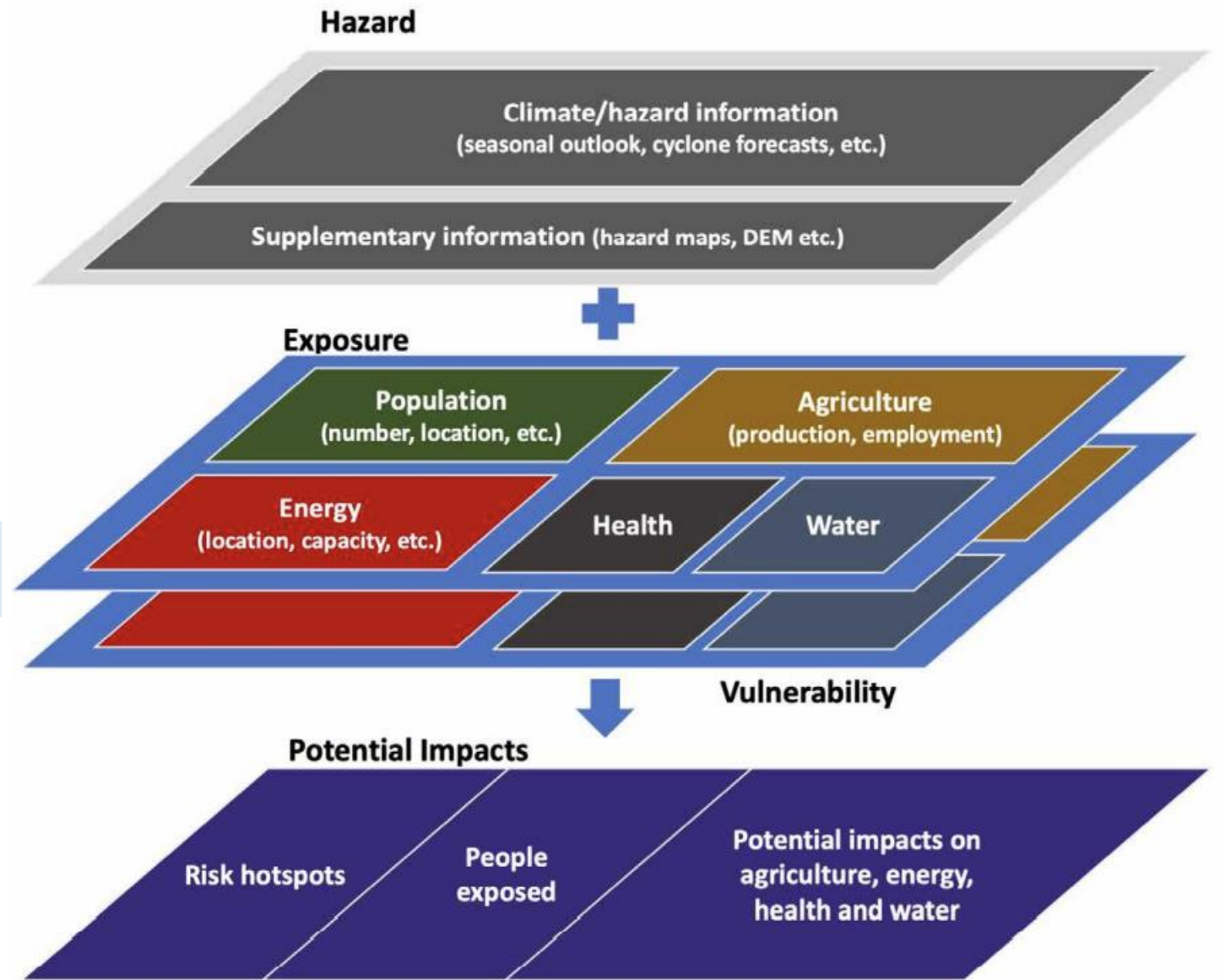
Source: ESCAP(2018) Asia-Pacific Disaster Report 2017

ESCAP approach for Impact-based Forecasting

Global Framework
for Climate Services of WMO
(<https://gfcs.wmo.int/>)

Priority areas

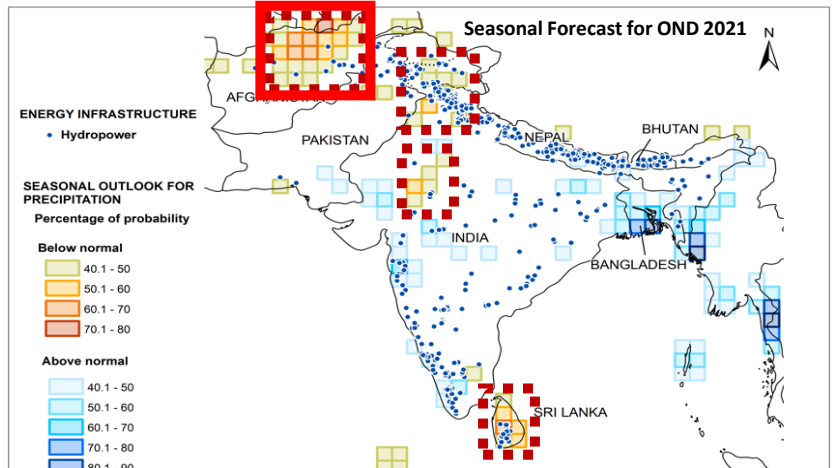
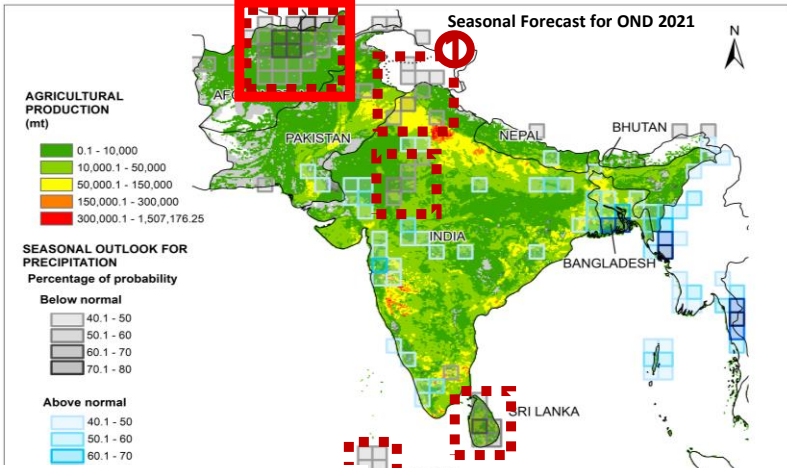
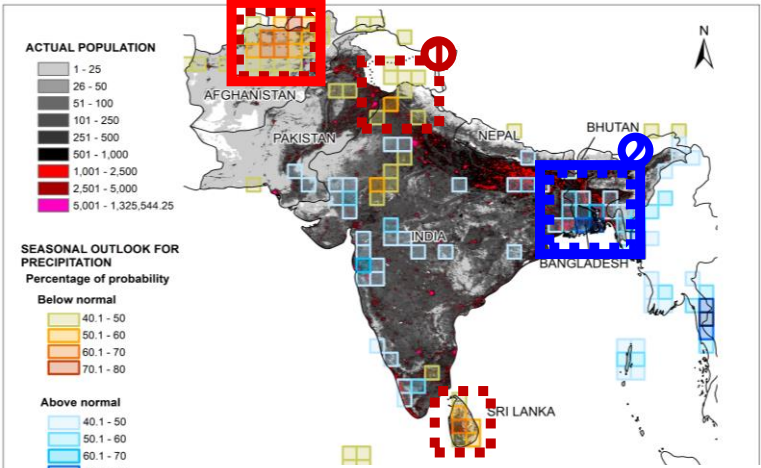
- Agriculture and food security
- Disaster risk reduction
- Energy
- Health
- Water



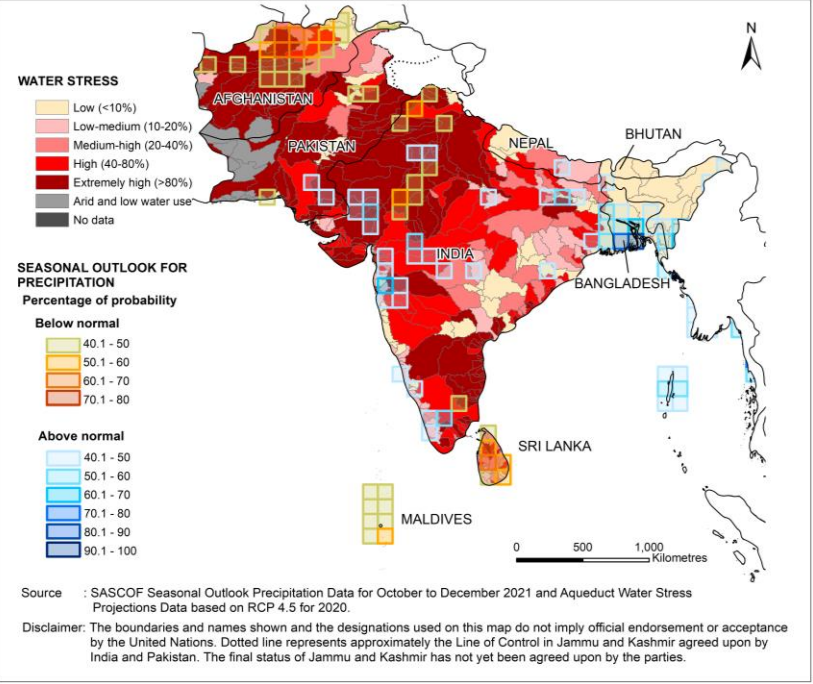
Source: ESCAP (2021) Overview of the work of secretariat and the UN system at the regional level. ESCAP/CDR/2021/INF/1



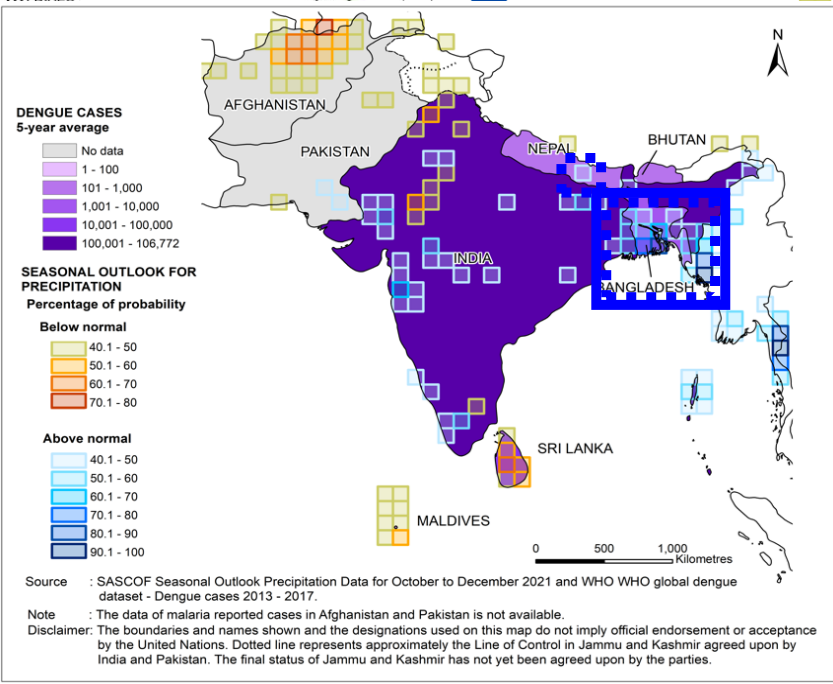
Demonstrative cases of impact-based forecasting for various sectors



Source : SASCOF Seasonal Outlook Precipitation Data
Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. 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.



Source : SASCOF Seasonal Outlook Precipitation Data for October to December 2021 and Aqueduct Water Stress Projections Data based on RCP 4.5 for 2020.
Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. 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.



Source : SASCOF Seasonal Outlook Precipitation Data for October to December 2021 and WHO WHO global dengue dataset - Dengue cases 2013 - 2017.
Note : The data of malaria reported cases in Afghanistan and Pakistan is not available.
Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. 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.

Source : Asia-Pacific Energy Portal, 2018.
Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. 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.

Asia-Pacific Disaster Resilience Network (APDRN) products

Training Manual and Working papers on IBF

Manual for Operationalizing Impact-based Forecasting and Warning Services (IBFWS)

UNITED NATIONS ESCAP
WORLD METEOROLOGICAL ORGANIZATION

Policy Brief (2/2020) – Asia-Pacific Disaster Resilience Network

When crises converge

Responding to natural disasters in South Asia during Covid-19

South Asia has been severely impacted by COVID-19 – with more than 20,000 deaths, around one million confirmed cases, and many millions of workers unemployed. The pandemic and the need for social distancing have also constrained the responses to cyclones, floods and other climate-related disasters. Nevertheless, the pandemic also brings opportunities – for directing economic stimulus packages towards investments in disaster-resilient infrastructure and services that will support a greener and more productive future.¹

COVID-19 has swept the globe. As of June 2020, it had infected more than 11 million people, and killed around 533,000. South Asia accounted for around 8.5 per cent of confirmed cases and 4.2 per cent of the deaths. And the economic fallout arising from lockdowns and social distancing has pushed the sub-region's economies into recession.

From March 2020, governments across South Asia imposed national lockdowns and other stringent measures to contain the spread of the pandemic and save lives. But this also disrupted supply chains and caused sudden drops in demand, pushing national economies into recessionary spirals. In South Asia, COVID-19-related measures could drive more than 130 million people into extreme poverty.

Converging crises

At the same time, families struggling to cope with COVID-19 remain exposed to climate-related disasters. In May 2020 India and Bangladesh were struck by Amphan – the most powerful cyclone in 20 years, which claimed over 100 lives and destroyed the homes and livelihoods of thousands of families. Then in June, cyclone Nisarga hit the west coast of India. In addition, during the spring there had been swarms of desert locusts in South-West Asia. And in June there were floods in the Indian state of Assam.

Climate-related disasters have different risk pathways from COVID-19, but they can intersect and converge with the pandemic in complex and destructive ways. Many communities are exposed to both, and the long-term consequences can be similar – damage to people's health and livelihoods and their prospects of escaping poverty.

How can governments respond to these cascading and converging crises? Faced with the pandemic, many countries declared states of emergency that closed schools, offices, places of worship and restaurants and locked down other public places. Many activities and business subsequently restarted but with limitations on activities that involve physical contacts or movements of people. These restrictions have also applied to disaster response measures which have also needed to ensure social distancing.

¹ This policy brief is prepared from the ESCAP's policy study, *Protecting the most vulnerable to cascading risks from climate extremes and the COVID-19 in South Asia*. Available at <https://www.unescap.org/resources/asia-pacific-disaster-resilience-network-priorities-most-vulnerable-people/climate-extremes-most-vulnerable-people/climate-extremes-most-vulnerable-people>. Peter Siskler provided technical editing.

UNITED NATIONS ESCAP
Economic and Social Commission for Asia and the Pacific

COVID-19 RESPONSE

Policy study series (1/2020) – Asia-Pacific Disaster Resilience Network

Protecting the most vulnerable to cascading risks from climate extremes and the COVID-19 in South Asia

Protecting the most vulnerable to cascading risks from climate extremes and the COVID-19 in South Asia

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COVID-19 RESPONSE

December 2020 ICT and Disaster Risk Reduction Division Asia-Pacific Disaster Report 2021, Working Paper 02

SEASONAL OUTLOOK TO SOCIO-ECONOMIC IMPACT BASED FORECASTING: Proposed Methodology and Key Results – Building on the Seasonal Forecasts of South Asia Climate Outlook Forums 2020

1 Regional Platform for Multi-hazard Early Warning System

2 Knowledge for Policy – Asia-Pacific Disaster Report, Policy Research

3 Technology Innovations and Application

4 Data and Statistics – Multi-hazard Risk Hotspot Analysis

5 Disaster-Climate-Health Nexus – Cascading Impacts and Systemic Risks

Asia Pacific Disaster Risk Network

For more information, please contact: ICT and Disaster Risk Reduction Division, Economic and Social Commission for Asia and the Pacific (ESCAP) United Nations Building, Rajadamnern Nok Avenue, Bangkok 10200, Thailand
Email: escap-ids@un.org

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Available at https://www.unescap.org/kp?f%5B0%5D=kp_category_facet%3A329

E-learning course for IBFWS

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OPERATIONALIZING IMPACT-BASED FORECASTING AND WARNING SERVICES



This manual was developed under the project “Operationalizing Impact-based Forecasting and Warning Services (IBFWS)”, to support the capacity of the Viet Nam Meteorological and Hydrological Administration (VNMHA) to provide impact-based forecasting and early warning services. The objective is to introduce impact-based forecasting and the substantive steps for producing an impact-based forecast, with a focus on the local context of Viet Nam.

ABSTRACT

Traditionally, governments have employed hazard-focused warnings to communicate impending extreme weather conditions. However, while providing scientifically accurate information is important, it is critical to communicate what people need to know to effectively respond to hazard risks. This indicates a need to communicate specific and relevant potential consequences with respect to local contexts, not just for public end-users, but as well for different sectors and agencies. The development of this communication entails synthesizing weather information with quasi-static information on exposure and vulnerability profiles to identify the range of risks in an area. The identification of different levels of risks and impacts enables the issuance of different warnings to encourage adequate responses by relevant users to reduce damage and losses.

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