

Digital technologies for disaster risk management in Asia and the Pacific:

Opportunities and challenges in specific context of COVID-19 recovery

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Webinar on Digital Technologies for Disaster Risk Management
(Virtual Launch of APCICT Academy Module on ICT
for Disaster Risk Management)
27 August 2020



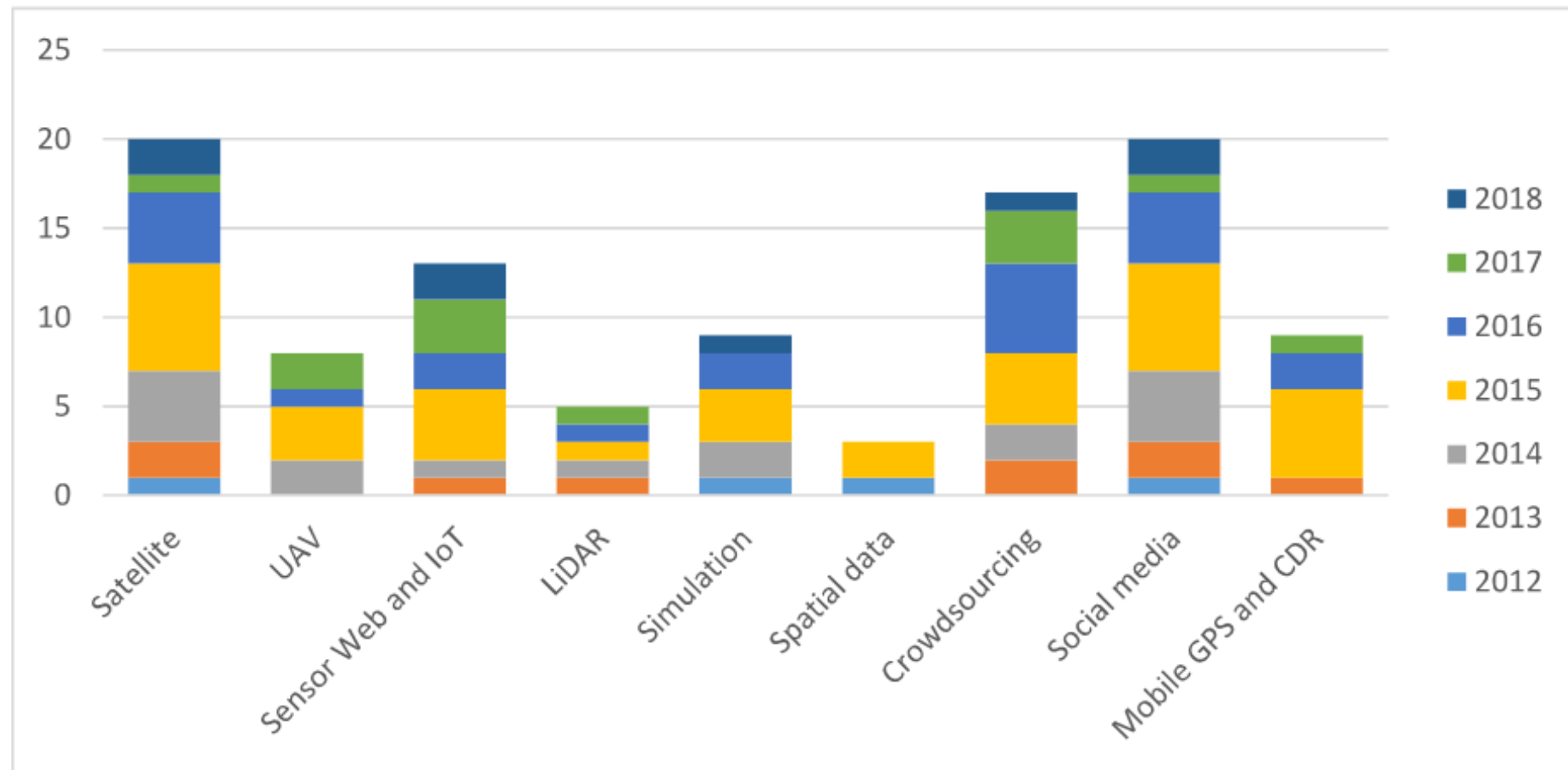
#1. Key Question

What are the key trends and practices on

how digital technologies are being used for DRM

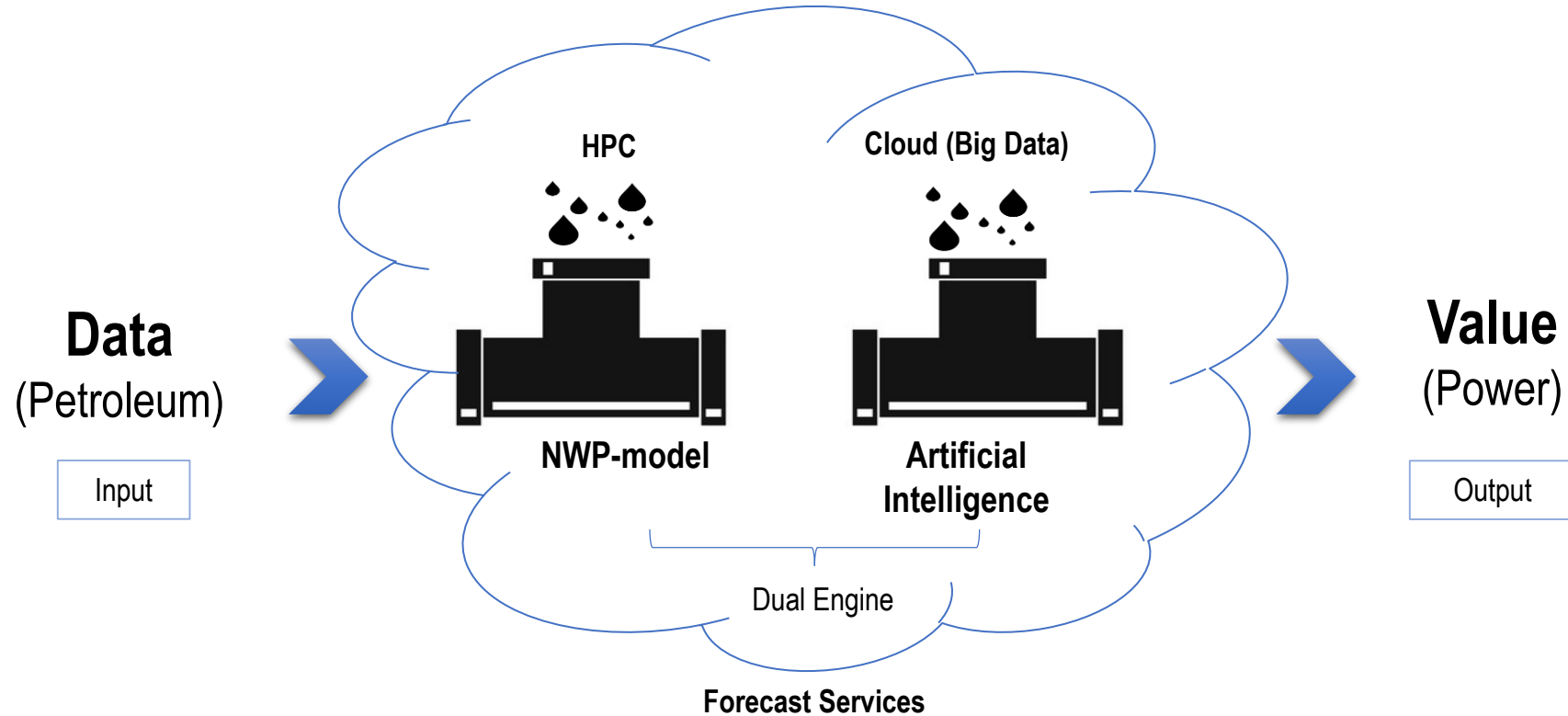
in the region?

Trend: Increasing use of Satellite imagery, crowdsourcing, and social media for disaster risk management.



Source: **Manzhu Yu et al** reviewed articles by major data sources (2012-2018)

Gridded, Smart and Impact Based and Risk Informed Early Warning



Source: CMA (2017)

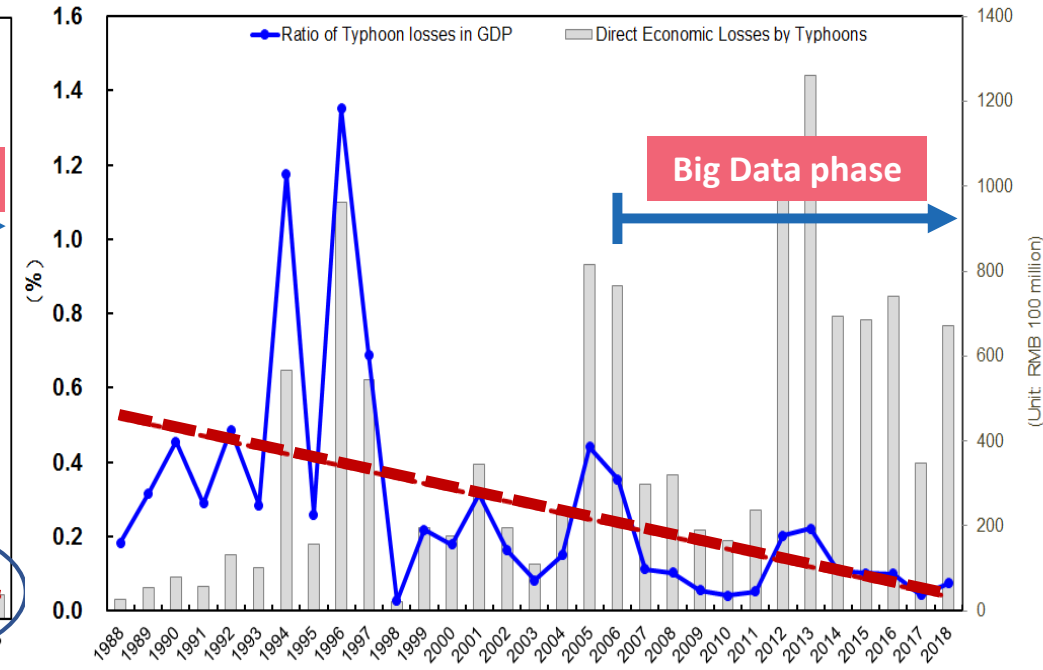
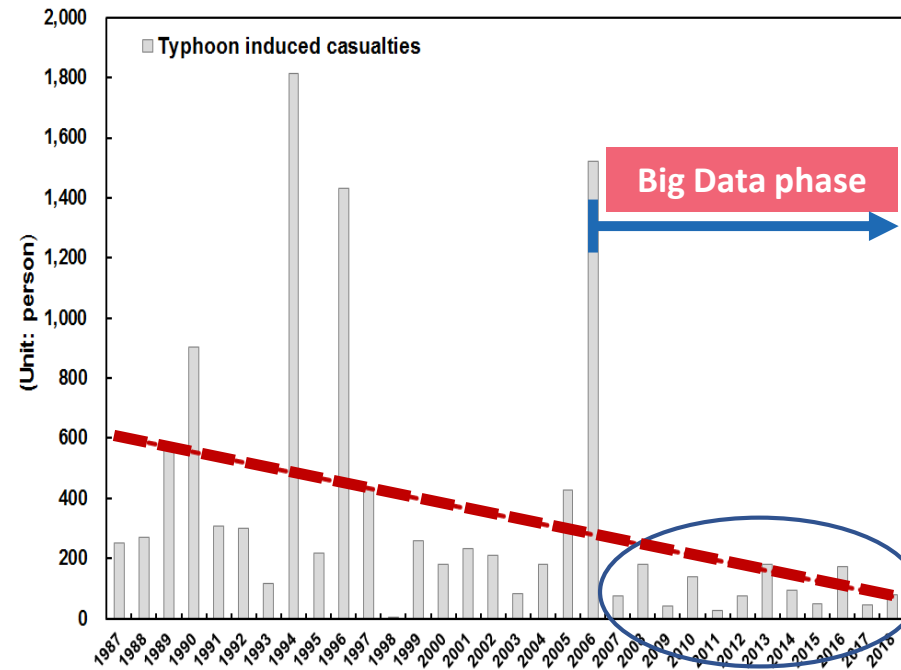
Dual Engines for Meteorological Services:
Numerical Weather Prediction model + AI (Big Data Application)

Digital technologies help mitigate disaster risk

Typhoon casualties and economic losses in China, 1987-2018

Big Data Sources

- Simulation 50%
- Satellite 25%
- Sensor web and IoT 13%
- Social media 12%



Source: ESCAP based on CMA at Typhoon Committee 51 session (2019)

#2. Key Question

What are the key challenges faced by the region in **mainstreaming digital technologies** in DRM policymaking and strategies?



Institutional capacity to deliver digital services for DRM

Three Key challenges

Data

Challenges of **dealing with large variety of heterogeneous data** from different data sources- from sensors to crowdsourcing, including time series, semi-structured and invalidated data, and textural data; also noise and misinformation.

Analytics

Analytics yet to **integrate reliably and accurately Crowdsourced data**, from the disaster affected people, **into the physical sensing data** (e.g., satellite, UAV) **and authoritative data** (e.g., terrain data, census data).

Digital infrastructures

It's important for effectively **integrate huge data from multiple sources for real-time decision making** in the context of the emerging data volume of streaming videos, fast data transfer, and intuitive data visualization.

#3. Key Question

What are some recent efforts to overcome those challenges?

#4. Key Question

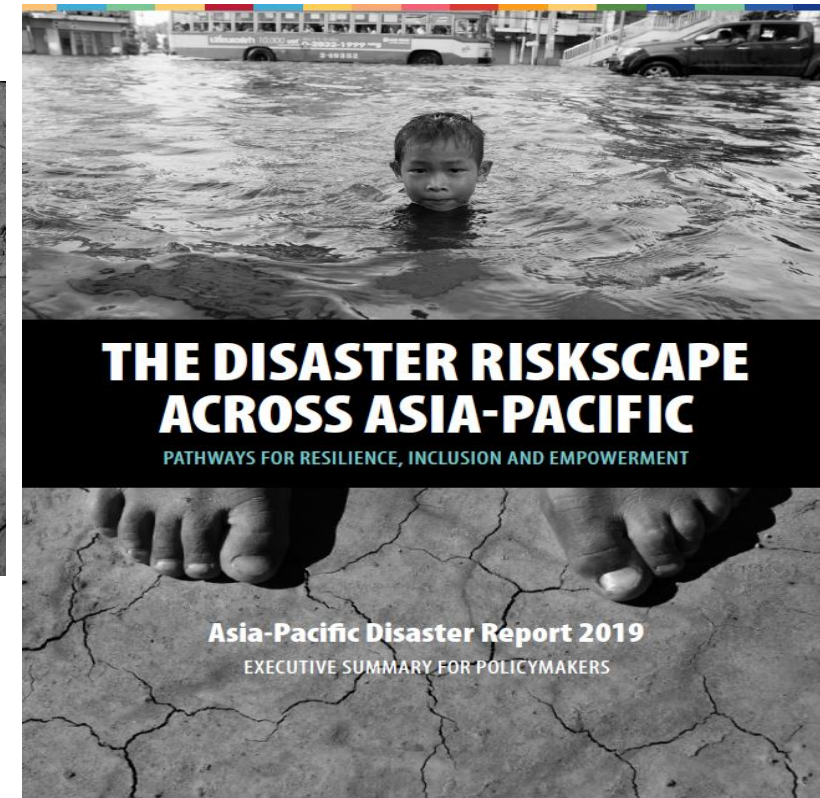
How can governments address these challenges and accelerate the use of digital technologies for DRM?





THE DISASTER RISKScape ACROSS ASIA-PACIFIC

PATHWAYS FOR RESILIENCE, INCLUSION AND EMPOWERMENT

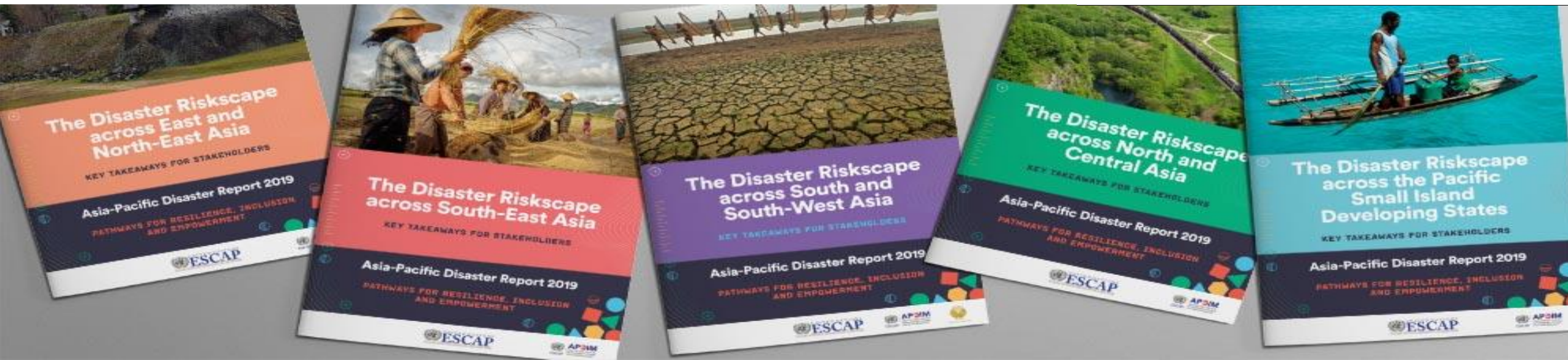


THE DISASTER RISKScape ACROSS ASIA-PACIFIC

PATHWAYS FOR RESILIENCE, INCLUSION AND EMPOWERMENT

Asia-Pacific Disaster Report 2019
EXECUTIVE SUMMARY FOR POLICYMAKERS

Asia-Pacific Disaster Report 2019

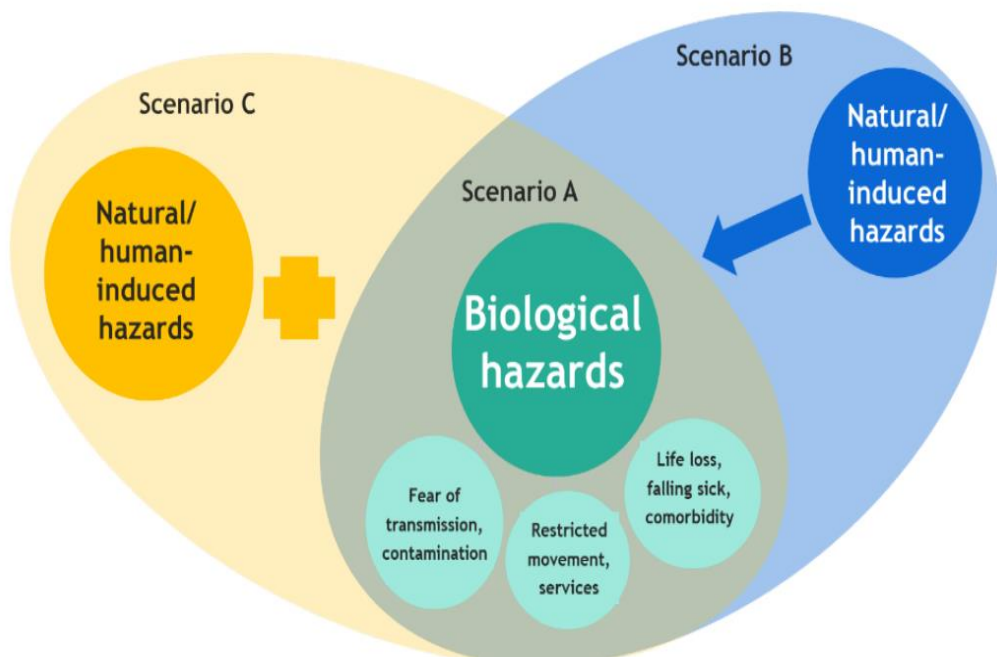


#5. Key Question

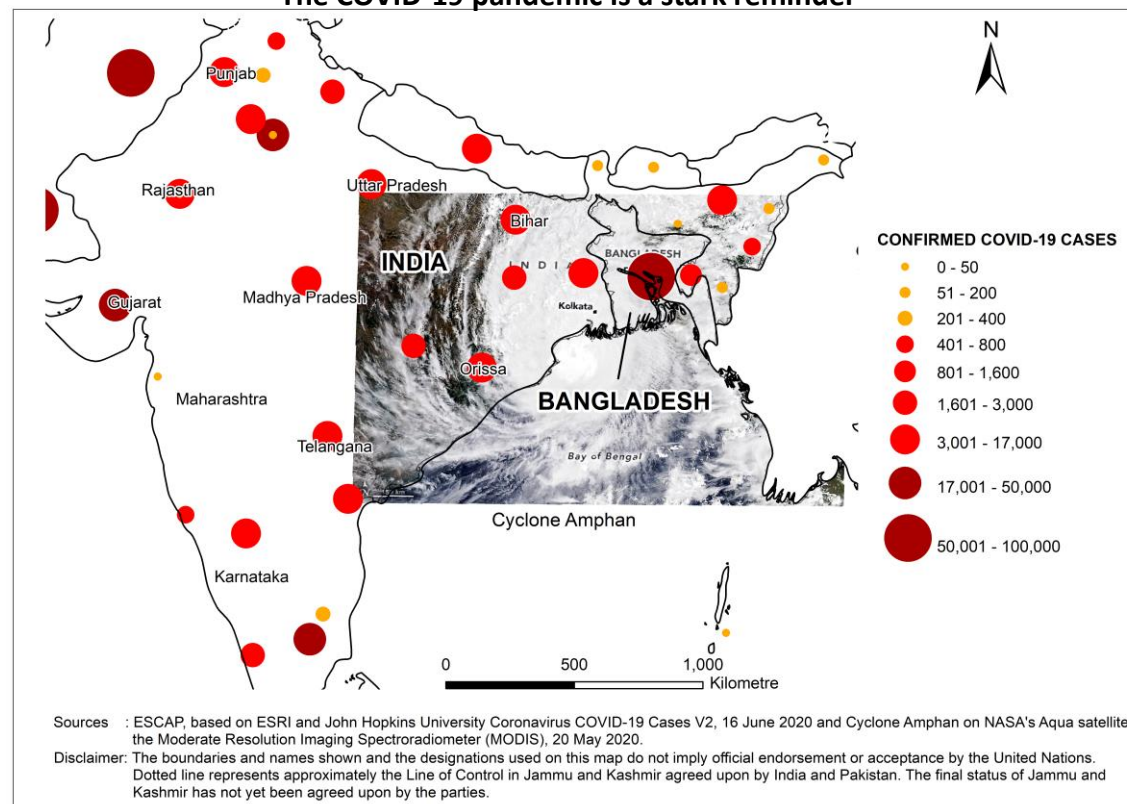
How can digital technologies **support the recovery from COVID-19** by adopting the build back better approach?

The disaster risk is rapidly emerging to be systemic: it is complex and cascading, interconnected and cyclical

Source: Prof Rajib Shaw, 2020

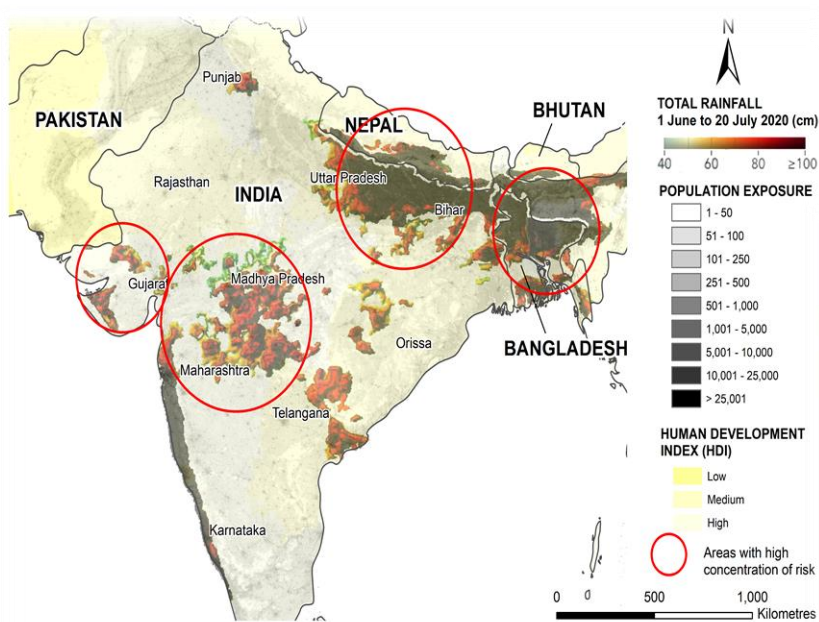


The COVID-19 pandemic is a stark reminder



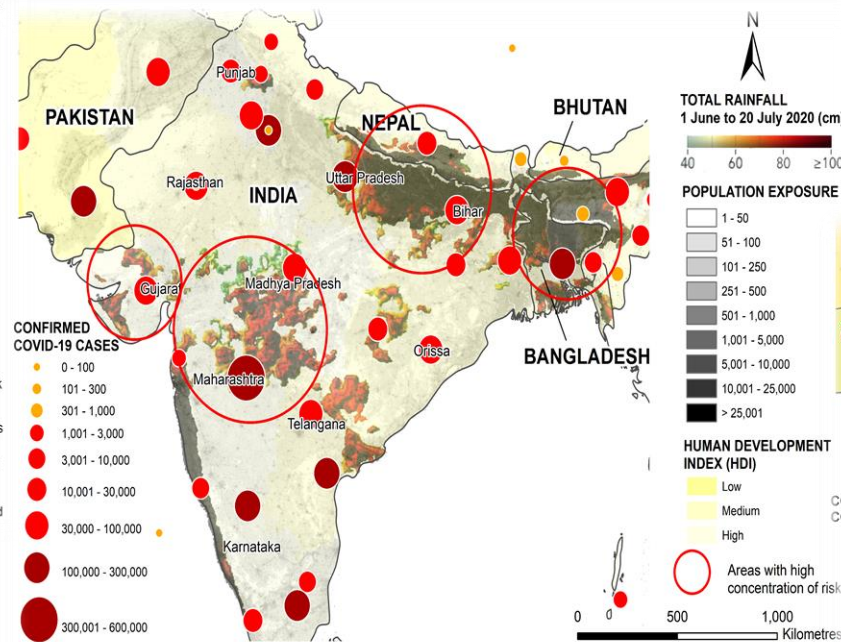
Cyclone Amphan colliding with COVID 19

In-situ Risk Scenarios in South Asia: July – August 2020



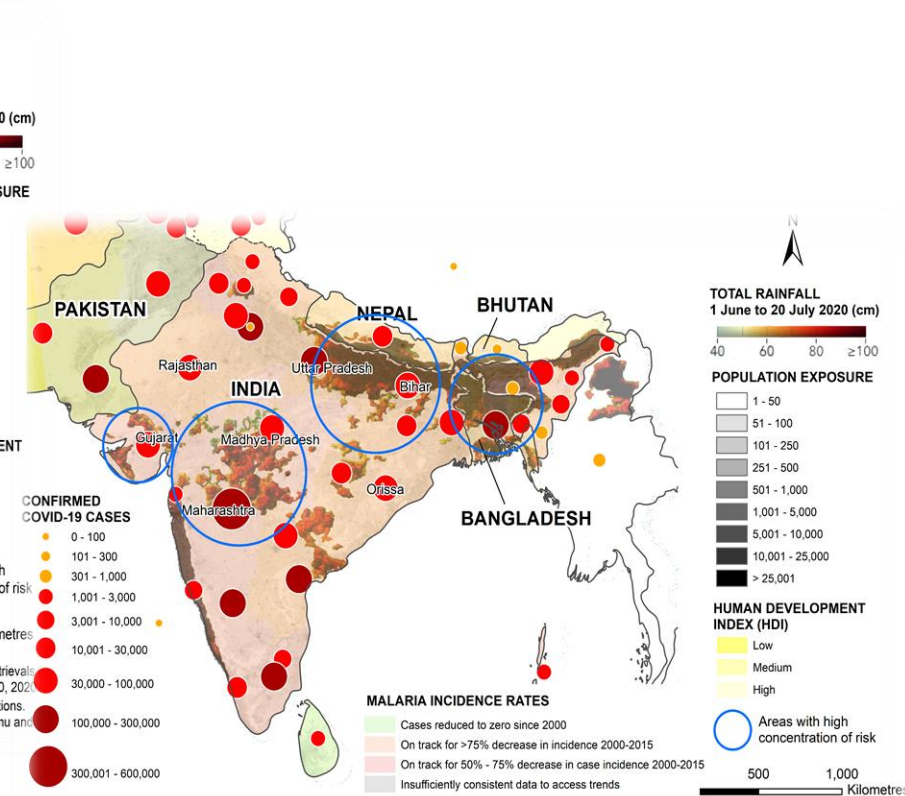
SCENARIO 1: Risk Hotspots

Flood affected vulnerable populations



SCENARIO 2: Cascading risks

Flood affected vulnerable confronting with COVID-19



SCENARIO 3: Systemic risks

Vulnerable in midst of floods and COVID-19 and @ risk of vector-borne diseases

Protecting lives in multiple risk scenarios is most challenging;
Unprecedented in cascading and systemic risk contexts

Coronavirus risk matrix

Potential risks to health enterprises and needs requirements



Understanding the links between epidemics and disasters requires innovative solutions.

A wide-range of risk analytics viz., impact forecasting and risk informed early warning, indexing and creating risk matrix helps to target differential vulnerabilities.

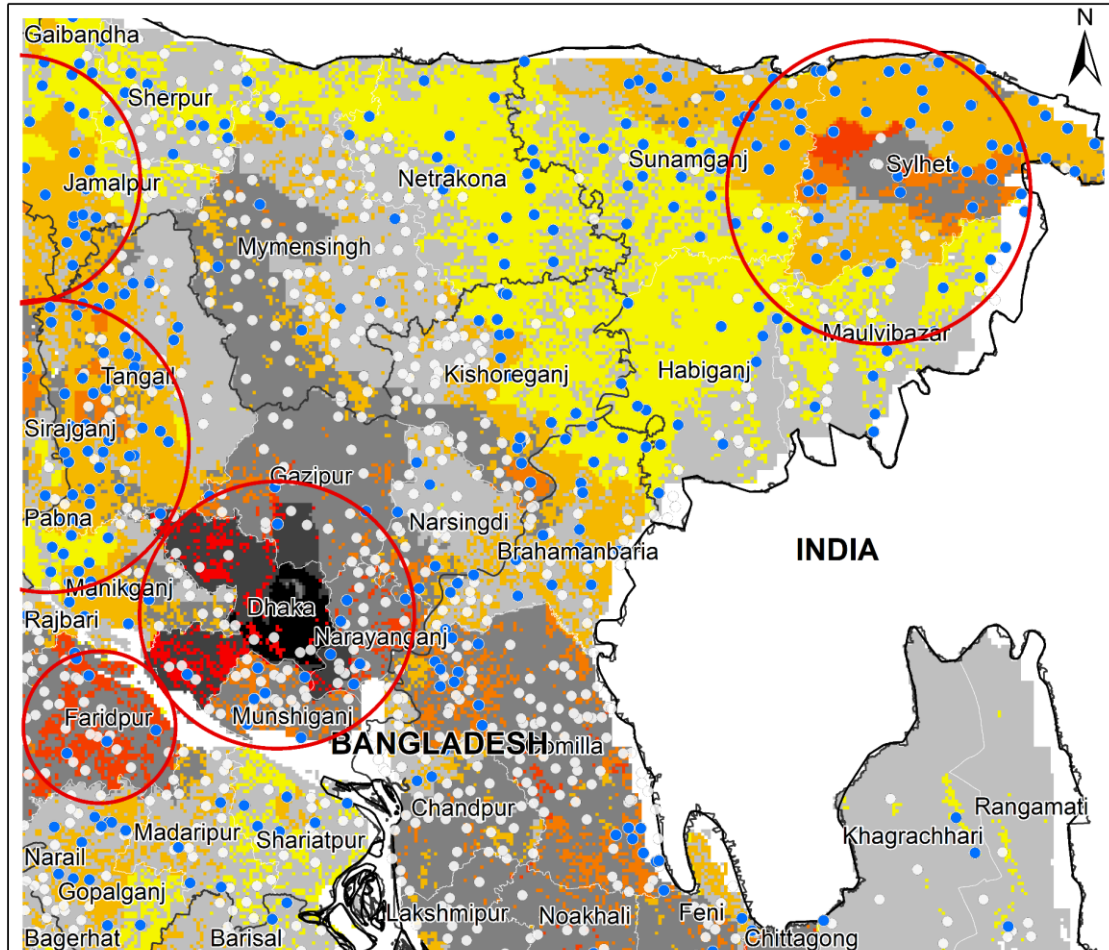
Indexing risk for targeting differential vulnerabilities

Met Office IMPACT BASED FORECASTING A weather warning matrix

Likelihood	High				
	Med				
	Low				
	Very low				
		Very low	Low	Med	High
Impact					

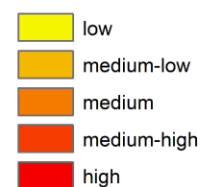
www.metoffice.gov.uk

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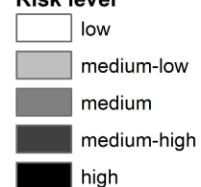
VULNERABLE POPULATION EXPOSED TO FLOOD, DENGUE AND COVID-19

Risk level



VULNERABLE POPULATION EXPOSED TO DENGUE AND COVID-19

Risk level



CRITICAL INFRASTRUCTURE

- Health facilities exposed to flood
- Health facilities not exposed to flood

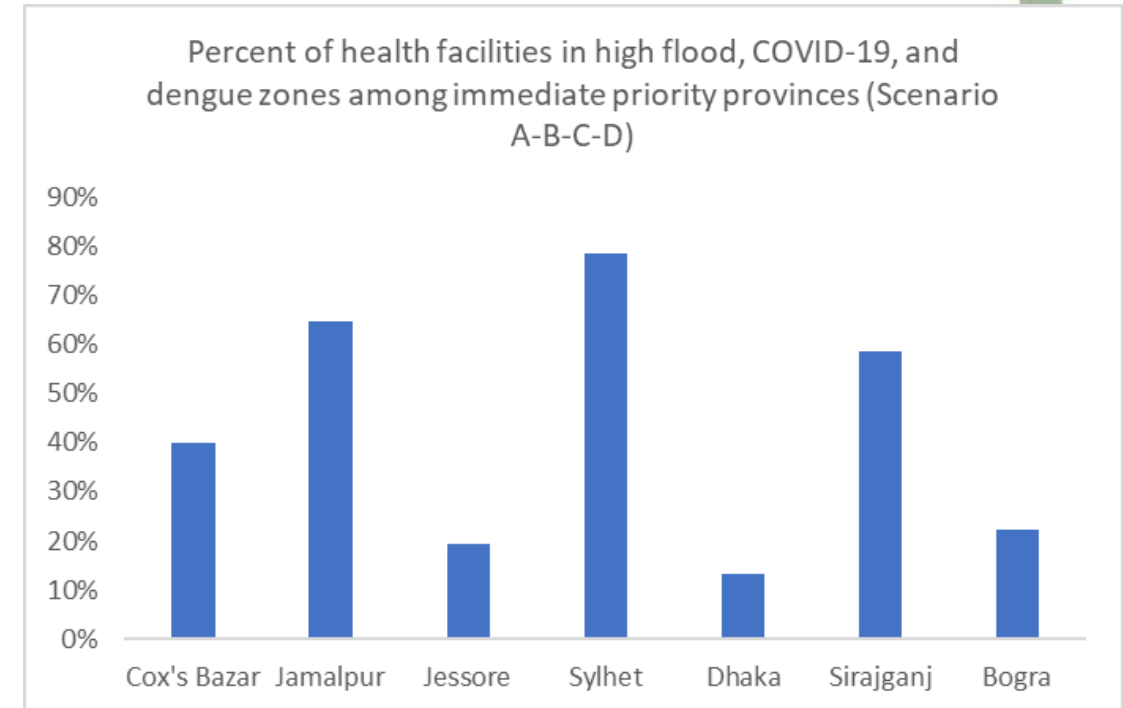
Areas with high concentration of risk

0 25 50 Kilometres

Sources : ESCAP calculations based on UN WPP-Adjusted Population density 2020, v4.11; Sub-National Human Development Index (SHDI) 2018; Institute of Epidemiology, Disease Control and Research COVID-19 Cases, 9 August 2020; Dengue prevalence risk map of Bangladesh, Brady, 2019; Bangladesh health care facilities, 2018; and UNOSAT-UNITAR analysis on NOAA-20 (VIIRS) Imagery, 20 June - 19 July 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.

Scenario A-B-C-D and health care facilities



Locations of healthcare facilities in cascading risk zones in Bangladesh



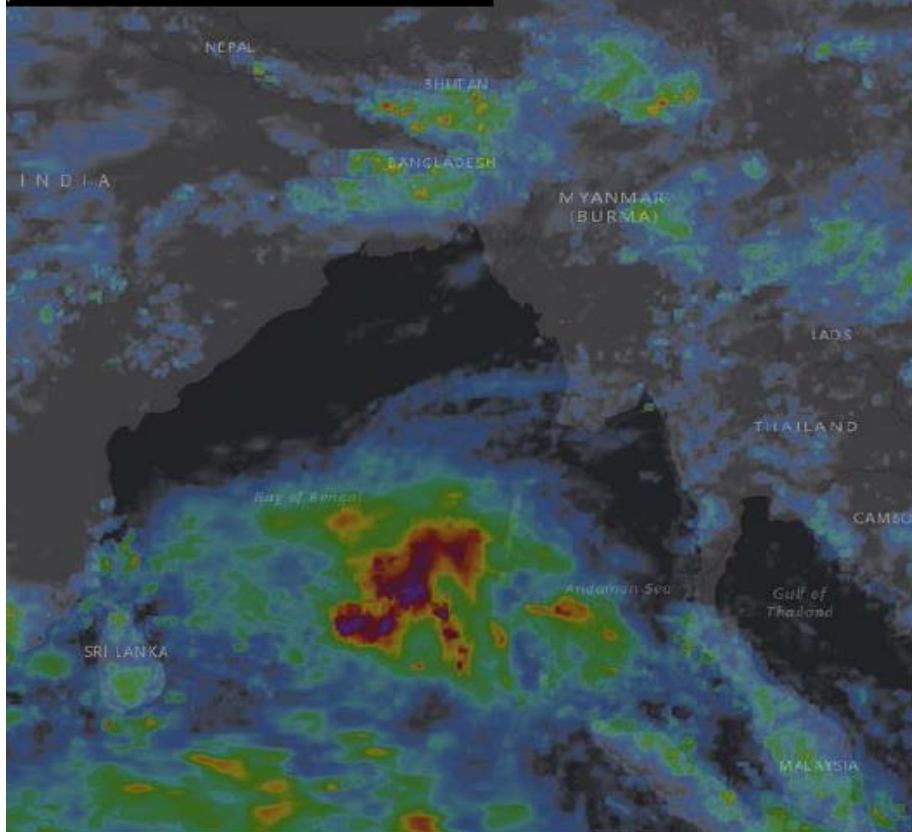
Bangladesh: COVID-19 & Potential Tropical Cyclone Planning

15 MAY 2020



PDC | GLOBAL

Day Rainfall Accumulation



CASES SUMMARY

157,000+ Tested
20,065 Confirmed Cases
1,202 Cases (last 24h)
298 Deaths
15 Deaths (last 24h)



QUARANTINE SUMMARY

223,035 Total Quarantine
186,671 Released from Quarantine



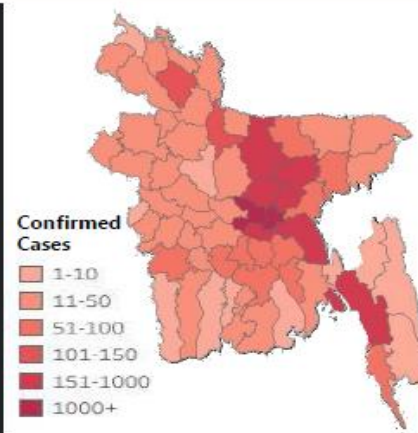
164.7 Million
TOTAL POPULATION



13.1 Million
ELDERLY POPULATION
(60+)



426,000
INTERNALLY DISPLACED
PERSONS



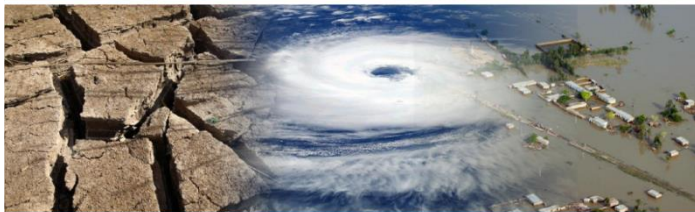
Need to have
new SOP to
address
cascading
risks

– capitalize
on predictive
analytics

Managing risks is key to resilient future of Asia-Pacific

The 'riskscape' is rapidly emerging to be systemic: it is complex and cascading, interconnected and cyclical. The COVID-19 pandemic is a stark reminder.

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



Issue Brief (3/2020)

Asia-Pacific Disaster Resilience Network



Investing in innovative solutions to manage
cascading disaster risks
Key takeaways for stakeholders

ESCAP-NIDM WEBINAR SERIES BRIEF ON COVID-19
July 22, 2020



Issue Brief (4/2020)

Asia-Pacific Disaster Resilience Network



Pathways to managing cascading risks and
protect people
Key takeaways for stakeholders

ESCAP-NIDM- SAARC DMC WEBINAR BRIEF ON COVID-10



Intersection of COVID-19 with climate extremes aggravates crisis and slows down the recovery

Thank you for kind attention !

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