THE DISASTER RISKSCAPE ACROSS ASIA-PACIFIC
PATHWAYS FOR RESILIENCE, INCLUSION AND EMPOWERMENT
Asia-Pacific Disaster Report 2019
Emerging technologies – the game changers
In Asia-Pacific region, the principal causes of natural disaster deaths were earthquakes and storms, followed by floods.

Fatalities from natural disasters, 1970-2018

Asia-Pacific region: 2,025,692 fatalities

Rest of the world: 1,380,741 fatalities

Note: From 1990, including data from countries of the former Soviet Union.
Asia-Pacific faces a new climate reality

- Economic losses are on the rise
- With the inclusion of slow-onset disasters, annualized economic losses more than quadruple to USD 675 billion
- High drought vulnerability associated with low levels human development
Under a scenario of global warming of 1.5°C, an IPCC special report (2018), says that ‘complex disaster risk is a new normal’. Economic losses are on the rise.
With the inclusion of slow-onset disasters, annualized economic losses more than quadruple to USD 675 billion.

- Climate risk accounts for 85 per cent of the regional ‘riskspace’
Disaster risks accumulate and cluster in four hotspots

- Environmental fragility, poverty and disaster risk converging in four risk hotspots
Hotspots are emerging in which environmental fragility, poverty and inequality are converging in a ‘perfect storm’.
Disasters widen inequalities in incomes and opportunities

- Intensifying disaster risk threaten to slow down poverty reduction rates
- Disasters widen inequalities in opportunities that deepen poverty over generations
Disasters widen inequalities in opportunities that deepen poverty over generations

A 1 percentage point increase in exposure to climate events

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<tr>
<th>Income inequality</th>
<th>Deprivation and disempowerment</th>
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<tr>
<td>Increases the Gini coefficient by 0.24 percent point</td>
<td>Increases under-five mortality rates by 0.3 percent point</td>
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<td>Decreases education rates by 0.26 percent point</td>
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Invest in resilience to outpace risk

- Poverty reducing impact of investments
- Inclusive investments are affordable and deliver important social co-benefits
Additional investments are required, but this is small compared to the damage and losses from disasters.

Inclusive investments are affordable and deliver important social co-benefits.
Empower the poor through big data and new technologies

- Big Data mitigate the challenges of new climate reality
- Technology innovations enable adaptation to a new climate reality, empowering at risk communities
Big Data Sources in DRR
Increasing use of Satellite imagery, crowdsourcing, and social media

Source: Manzhu Yu et al reviewed articles by major data sources (2012-2018)
Predictive analytics of IoT provides affordable earthquake early warning to communities

Startups like Zizmos (Stanford University) uses smartphone apps with cloud messaging services to detect motion and serve as seismic sensors in high-risk areas.
Big data mitigate the challenges of a new climate reality

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)
Emerging technologies such as digital identity and big data offer unprecedented opportunities for including and empowering people.
Innovations turned a pro-cyclic into counter cyclic policy interventions. Benefited millions of drought-affected poor and vulnerable farmers/landless laborers in India. Technology innovations enable adaptation to a new climate reality, empowering poor - at risk - communities.
Big Data and its interface with Machine Learning

- Big Data
- Data Mining
- Machine Learning
- Deep Learning
- Artificial Intelligence
Global Google Public Alerts program (Big Data and Machine Learning)

Al-assisted flood predictions

AI and significant computational power to create better forecasting models through Google Public Alerts. A variety of elements—from historical events, to river level readings, to the terrain and elevation of a specific area—feed into these models.

It generates maps and run up to hundreds of thousands of simulations in each location to accurately predict not only when and where a flood might occur, but the severity of the event as well.
Thank you!

For further information, please contact:

Sanjay K Srivastava
Chief, Disaster Risk Reduction
ICT and Disaster Risk Reduction Division (IDD)
United Nations Economic and Social Commission for Asia and the Pacific
Office: +6622882633 | srivastavas@un.org
www.unescap.org