Mainstreaming Disaster Risk Reduction in Critical Infrastructure Development and 2030 Agenda for Sustainable Development

SAARC Training Programme
Regional Interagency Working Group on ICT
21 January 2018
Based on the key findings of ESCAP’s analytical research
Message #1

Disaster risk is outpacing resilience.
Human cost significant, while economic cost rising


- **2 million** lives lost (56% of global fatalities)
- **88%** of people affected in the world

Earthquake/Tsunami 45%
Storm 37%
Flood 10%
Others 8%

Asia-Pacific 2,038,976

Estimated damage, as % of GDP, is rising in the Asia-Pacific region

Economic cost: Asia-Pacific has lost $1.3 trillion due to natural disasters (1970-2016)
Annual Average Losses in Asia-Pacific

Estimated annual average future losses

Source: ESCAP based on GAR 2017 AAL database
Message #2

Hazards are intensifying with transboundary geographical shifts.
Transboundary flooding (Scenarios 2010 and 2030)

A substantial increase in flood losses under both moderate and severe climate scenarios.

China, India, Bangladesh and Pakistan will experience two to three times more in flood losses.

The transboundary flood losses will range from 1.2 to 6 times more in the major river-basins.
Tropical cyclones will have shorter return periods with increasing storm surges and wind speeds.

In the Pacific basin, the track of tropical cyclones may shift eastward or northward.

Three times increase in the number of people and economic assets exposed
Message #3

Critical Infrastructure including ICT at risk with rapid urbanization
As Asia-Pacific urbanizes, risk accumulates

- 170 Cities in extreme risk
- 314 cities in high risk
- 154 in medium

2015-2030 - In the ‘Extreme’ risk areas, the population to grow more than 50 per cent in 26 cities, 35-50 per cent in 72 cities
ICT infrastructure at transboundary seismic risk

ICT transmission networks in earthquake prone areas
Message #4

Damage to ICT infrastructure amplifies overall disaster impacts because sectors are interconnected
ICT infrastructure is becoming interconnected with many economic and social sectors.

Source: Haidine, A., Hassani, SE., Hannani, AE. (2016). The Role of Communication Technologies in Building Future Smart Cities
Message #5

Making Infrastructure Resilient
- Steps for Policy Response
Three key steps:

1. Identify critical infrastructure sectors at risk including ICT;
2. Identify inter-linkages and interdependencies among ICT and critical sectors to prioritize res;
3. Put in place “hard” (built environment) and “soft” (land use plan, building codes) resiliency.
Ten essentials for making cities disaster resilient

- Institutional and administrative framework
- Financing and resources
- **Multi-hazard-risk assessment for ICT sector – know your risk**
- Infrastructure protection, upgrading and resilience
- **Protecting vital ICT infrastructure will help protect education and health facilities**
- Building regulations and land use planning
- Training, education and public awareness
- Environmental protection and strengthening ecosystems
- Effective preparedness, early warning and responses
- Recovery and rebuilding communities
The risk management investments have been found to be more cost-effective when targeted to critical infrastructure.

- Benefits/costs more attractive if 20 percent coverage of mitigation cost is attributed to building resilience to the critical infrastructure.
- Investment in building resilient infrastructure save future investments in recovery and retrofitting.
Message #6

Building climate resilient infrastructure using ICT
ICT innovations can assist on weather & climate risk information to mitigate droughts and floods.

The processing power of computers handles more extensive data gathering through weather and environmental sensors connected to telecommunication networks. ICT being used in dissemination of weather information via mobile phones to users and communities, including remote farmers and fishermen.
### List of sectors in which climate change should already be taken into account due to their investment time scales and exposure to climate conditions

<table>
<thead>
<tr>
<th>Sector</th>
<th>Time scale (year)</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water infrastructure (e.g., dams reservoirs)</td>
<td>30-200</td>
<td>+++</td>
</tr>
<tr>
<td>Land-use planning (e.g., in flood plain or coastal areas)</td>
<td>&gt;100</td>
<td>+++</td>
</tr>
<tr>
<td>Coastline and flood defenses (e.g., dikes, sea walls)</td>
<td>&gt;50</td>
<td>+++</td>
</tr>
<tr>
<td>Building and housing (e.g., insulation, windows)</td>
<td>30-150</td>
<td>++</td>
</tr>
<tr>
<td>Transportation, ICT infrastructure (e.g., port, bridges)</td>
<td>30-200</td>
<td>+</td>
</tr>
<tr>
<td>Urbanism (e.g., urban density, parks)</td>
<td>&gt;100</td>
<td>+</td>
</tr>
<tr>
<td>Energy production (e.g., nuclear plant cooling system)</td>
<td>20-70</td>
<td>+</td>
</tr>
</tbody>
</table>

Source: Hallegatte, S. et al. (2010)
Message #7

Policies, actions and tools for resilience reinforce sustainable development

SDG 1.5  Resilience of the poor
SDG 2.4  Resilience agriculture
SDG 11.5  Reduce disaster deaths and affected SDG 11.b Urban resilience
SDG 13.1  Resilience to CC and disasters
SDG 16.1  Reduce all forms of violence

LEAVING NO ONE BEHIND
Opportunity to get it right

Resilience is a common thread

- Global development frameworks
- Sendai Framework for DRR
- Addis Ababa Action Agenda
- New Urban Agenda
- Agenda for Humanity
- Paris Agreement on Climate Change
- 2030 Agenda for Sustainable Development

Resilience is a common thread.
Call for action at regional level

- Regional early warning systems
- Sharing data and knowledge
- Building regional capacity

Thematic Issue
Disaster Risk Reduction and Resilience
Thank you!

For more information:

Sanjay Srivastava  
Chief, Disaster Risk Reduction  
ESCAP  
srivastavas@un.org