Artificial Intelligence for Disaster Preparedness

Reimagining Disaster Risk Reduction: The Role of Standardization and Innovative Technologies
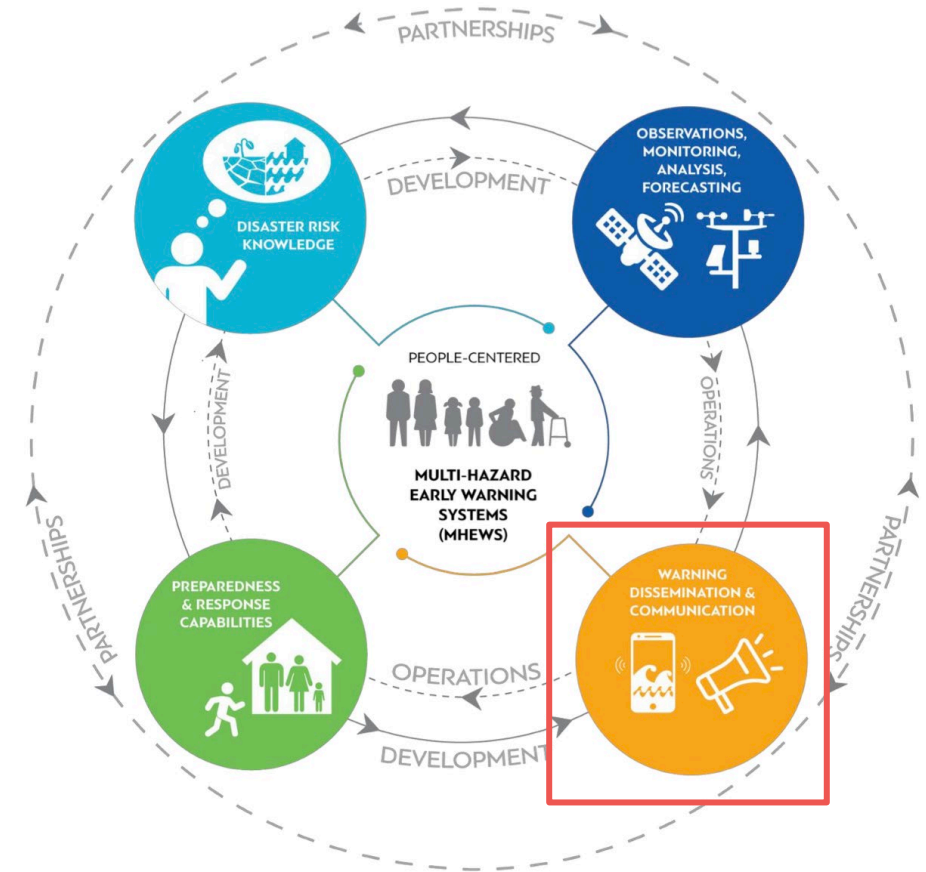17 October 2024, New Delhi

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UN Early Warnings for All Initiative

In March 2022, the UN set a new target to **ensure that everyone on Earth should be protected by early warning systems by 2027**.

Multi-Hazard Early Warning System(MHEWS)
Value Cycle – 4 pillars

4 Outcomes of Pillar 3: Warning Dissemination and Communication

Outcome 1: Governance
All countries have agreed on functions, roles and responsibilities for each actor in the warning dissemination process and this is defined through government policy

Outcome 2: Infrastructure networks and services
Last-mile communication - All countries have multichannel dissemination and communication alerting to ensure the warnings reach those at risk.

Outcome 3: Inclusion and people-centered approach
Strengthened and expanded alert dissemination and feedback channels reaching all people with actionable information.

Outcome 4: Quality and trust
All countries have the capability for effective, authoritative emergency alerting that leverages the Common Alerting Protocol (CAP), suitable for all media and all hazards.

AI and emerging technologies can support each pillar in achieving its outcomes as laid out in the EW4All Action Plan. AI systems can:

01
Disaster risk knowledge and management
Contextualize disaster risk information and integrate all forms of knowledge to make informed and equitable decisions.

02
Detections, Observations, Monitoring, Analysis and Forecasting
Enhance capacity to forecast and detect hazards.

03
Warning dissemination and communication
Develop "client" profiles and scale dissemination in a timely manner.

Ensure information is understandable and actionable, and build feedback mechanisms to inform service delivery.

04
Preparedness to respond
Offer information and communication resources to help people to react to warnings.

AI Sub-group for EW4All

- The EW4All Action Plan highlights the importance of accelerating innovation and technology, with a focus on **AI** and **private sector collaboration**.

- AI transforms disaster management practices e.g. enhances monitoring, analysis, and forecasting of hazards.

- Optimises information delivery to communities at risk, ensuring timely response to warnings.

- Establishment of the **AI Sub-Group for EW4All** to cultivate public-private partnerships to further leverage AI in early warnings systems globally.

Pillar 3: Warning dissemination and communication

Opportunities to leverage artificial intelligence

Optimizing communication channels

Reaching underserved communities

User profiling and sentiment analysis to tailor warnings

Evaluating infrastructure resilience

Tracking responses to alerts

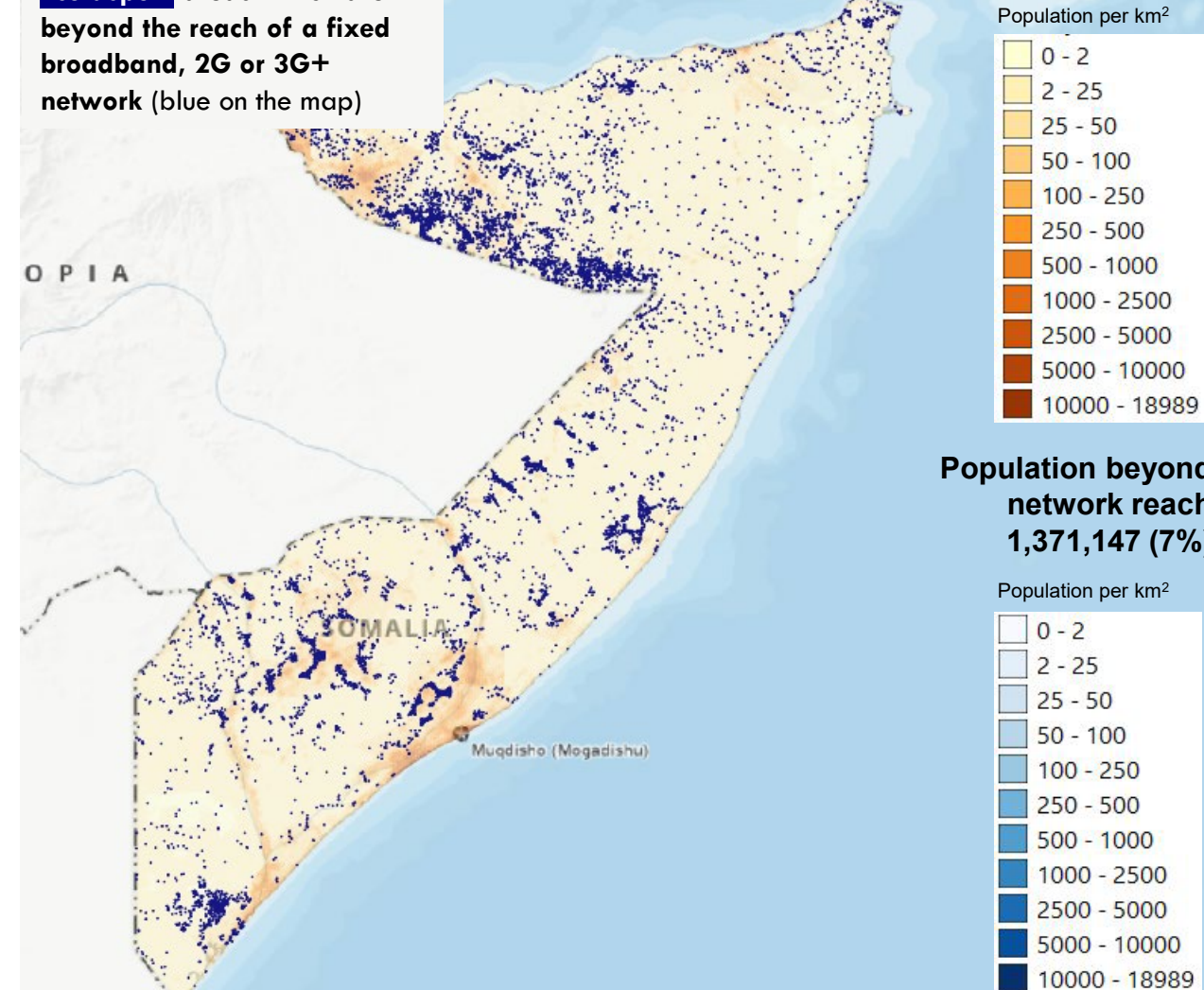Improving message clarity and accessibility

Piloting AI in the Disaster Connectivity Map (DCM)

- **Utilizes ITU's DCM** which provides near real-time information on communication network status.

- Working with Microsoft AI for Good lab, Planet and IHME at the University of Washington, to use AI to analyze satellite imagery, generate high-resolution population density maps, and visualize connectivity data.

- **Visualizes how many people, and where,** are vulnerable to natural hazards as they cannot receive emergency notifications, because they live in places beyond the reach of fixed broadband, 2G and 3G+ networks.

- First results for **Fiji, Dominican Republic, Mozambique, Somalia, South Sudan, Tonga and Vanuatu** scaling to 30+ countries to enhance disaster response and connectivity resilience.

Pilot example: Population beyond the reach of fixed broadband, 2G and 3G+ networks in Somalia

As many as **1.371m (7%) of the population live in "coldspot" areas which are beyond the reach of a fixed broadband, 2G or 3G+ network** (blue on the map)

Total population (UNPD, Jan 2024) 18,421,727

Population per km²

	0 - 2
	2 - 25
	25 - 50
	50 - 100
	100 - 250
	250 - 500
	500 - 1000
	1000 - 2500
	2500 - 5000
	5000 - 10000
	10000 - 18989

Population beyond network reach 1,371,147 (7%)

Population per km²

	0 - 2
	2 - 25
	25 - 50
	50 - 100
	100 - 250
	250 - 500
	500 - 1000
	1000 - 2500
	2500 - 5000
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WorldPop| U.N. Clear Map

Disclaimer: The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of ITU and of the Secretariat of the ITU concerning the legal status of the country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

Interested in AI & Early Warnings for All?
Contact: marco.obiso@itu.int
Thank you!