



Regulation & enabling environments for resilient telecommunications/ICTs

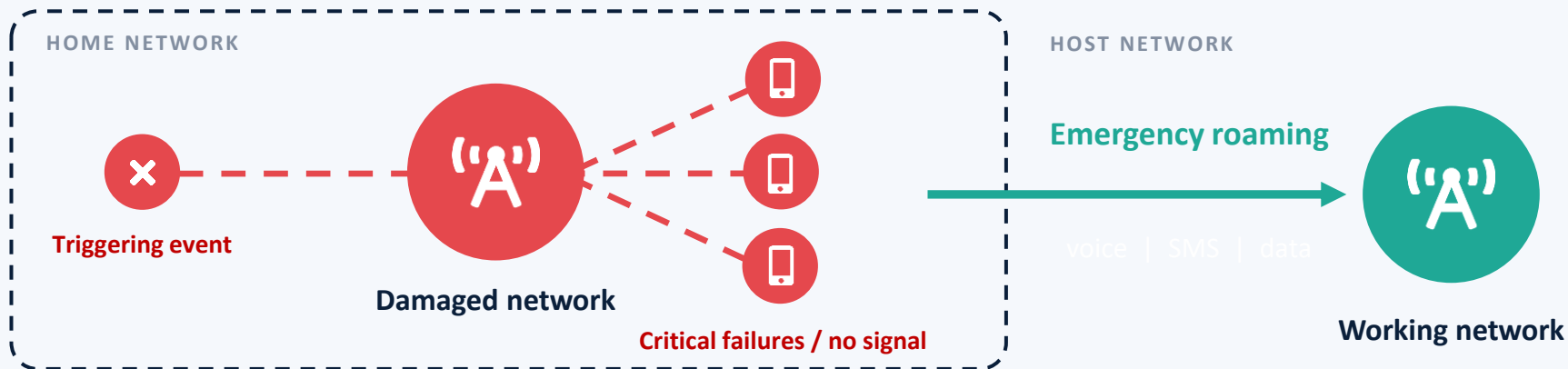
The work of the BDT

October 1, 2026

Question 3/1 workshop:

Telecommunications/ICTs resilience for
disaster management utilizing emerging
technologies and services including AI

When one network fails, another can step in



Emergency roaming: the temporary provision of domestic voice, text and data services on another operator's network during all or part of a critical network failure

Why national emergency roaming matters

Natural hazards target critical infrastructure first. Shared resilience is a public safety imperative.



Rising natural hazards



**Infrastructure
vulnerability**



**Critical risk to public
safety**



Continuity

Keeps vital communications
alive when home networks
suffer catastrophic damage



Public safety survival

Guarantees uninterrupted
access to life-saving
emergency numbers (911,
112)



**Rapid response
coordination**

Supports coordination
among first responders and
stakeholders in response/
recovery phases



**Cost-efficient
resilience**

Multiplies national resilience
without slow, costly,
redundant physical
infrastructure

Regulation is what makes it work

National Emergency Roaming does not happen automatically—it requires regulatory leadership to put the framework in place before disasters occur



Obligation

Operators must agree in advance to host each other's users

Within 12 months



Trigger

The affected operator / home network declares a critical network failure

Formal declaration



Activate

The host network switches roaming on across the affected area

Within 2 hours



Protect

Emergency calls and responders come first - users pay nothing extra

No extra cost



Recovery

Emergency roaming should be terminated ASAP once the home network restores services

ASAP



The regulator's role

Prepare
annual testing

Execute
12-month deadline

Resolve
settle disputes

Review
60-day reports

When one network fails, communication must not

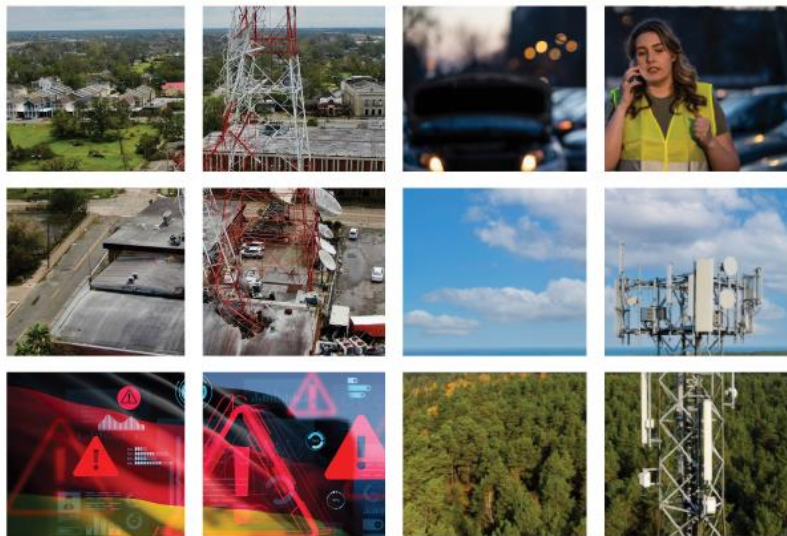


An ITU Guide

A model framework that regulators can adopt or adapt, and operators can use to agree emergency roaming arrangements



A guide to developing a national emergency roaming framework



“Connectivity in times of crisis is not optional, it’s essential”



EW4All

Warning Dissemination & Communication

Early Warnings for All



Disaster risk knowledge

Systematically collect data and undertake risk assessments

- Are the hazards and the vulnerabilities well known by the communities?
- What are the patterns and trends in these factors?
- Are risk maps and data widely available?



Detection, observations, monitoring, analysis and forecasting of hazards

Develop hazard monitoring and early warning services

- Are the right parameters being monitored?
- Is there a sound scientific basis for making forecasts?
- Can accurate and timely warnings be generated?



Preparedness and response capabilities

Build national and community response capabilities

- Are response plans up to date and tested?
- Are local capacities and knowledge made use of?
- Are people prepared and ready to react to warnings?



Warning dissemination and communication

Communicate risk information and early warnings

- Do warnings reach all of those at risk?
- Are the risks and warnings understood?
- Is the warning information clear and usable?

In March 2022, the UN Secretary General set a new target to

“ensure that everyone on Earth is protected by early warning systems.”

A Global Opportunity

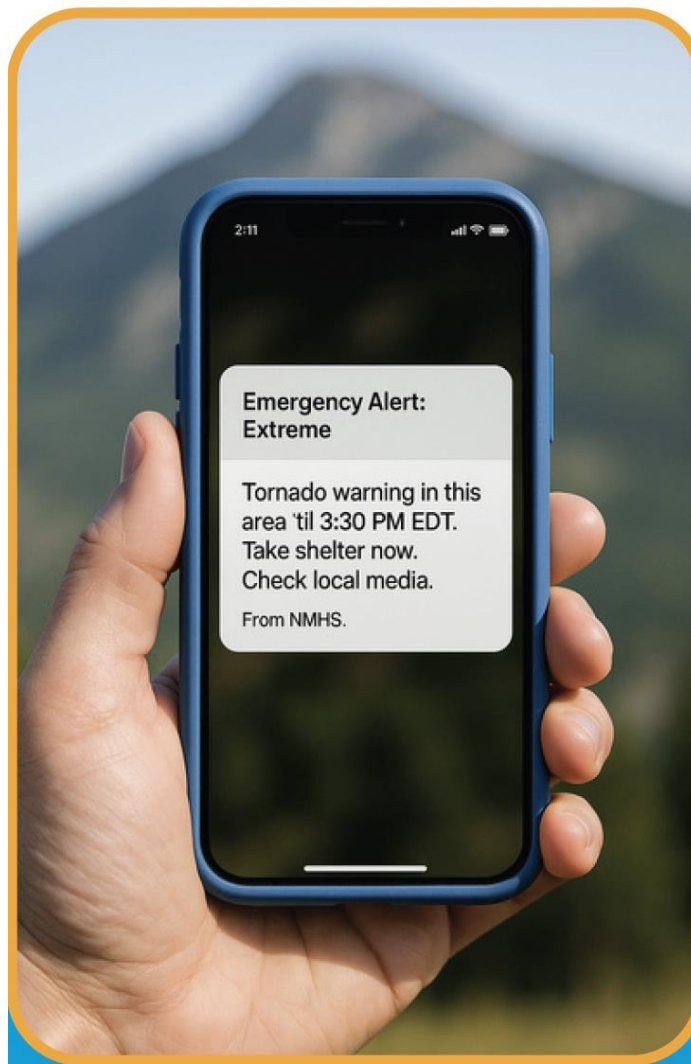


98.9% of the global population is covered by mobile networks.

4 in 5 people own a mobile phone.



... yet, around 140 countries have no inclusive mobile early warning system.

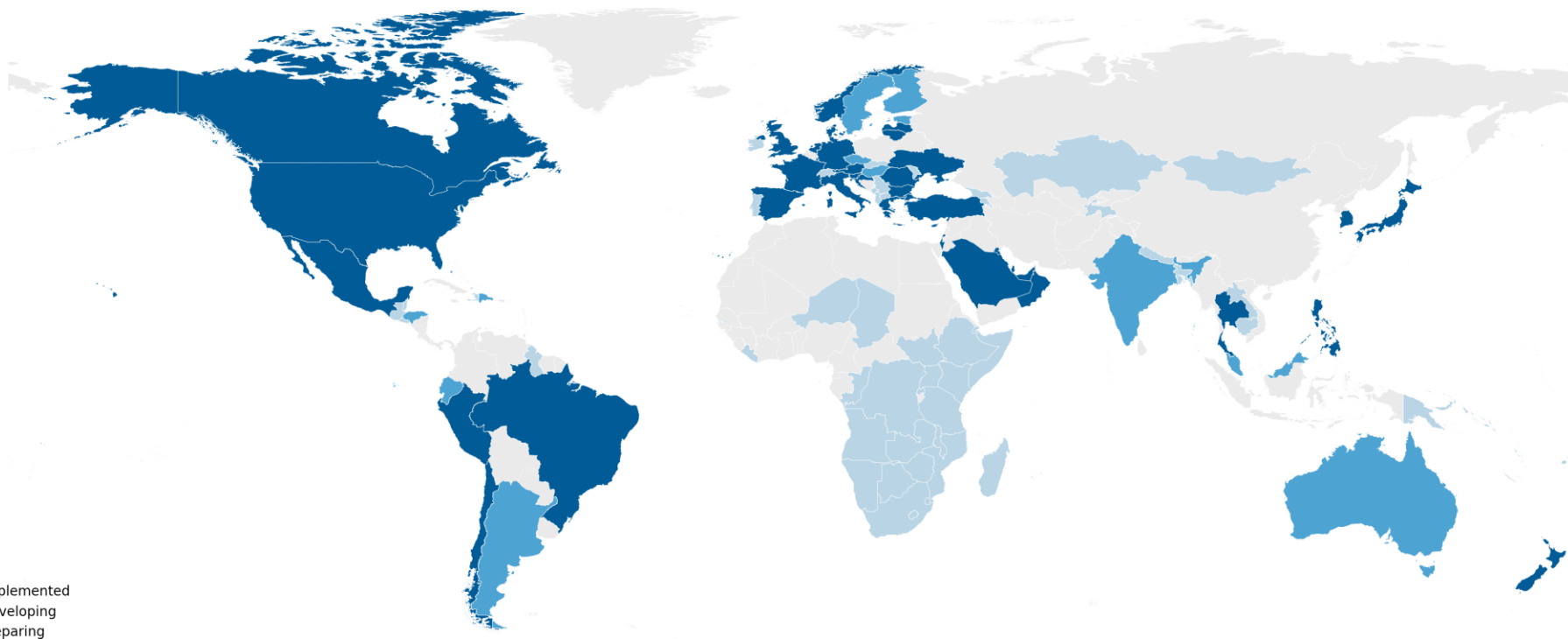


Global Progress on Cell Broadcast

38 countries currently have fully operational Cell Broadcast systems

38 Fully operational
CB

88 in the pipeline



CELL

BROADCAST



CAP



CONNECTIVITY MAP



SATELLITE



AI



COMMUNITY TRUST



Cell Broadcast

Fast, Reliable Emergency Alerts Straight to User's Phones

Instant Delivery

Alerts reach phones in seconds, even during network congestion

One-to-Many Technology

Alerts sent to all devices in a targeted area

Works on All Networks

2G, 3G, 4G/LTE, 5G & beyond

Grabs Attention

Loud alert + vibration, even if on silent

Unmissable

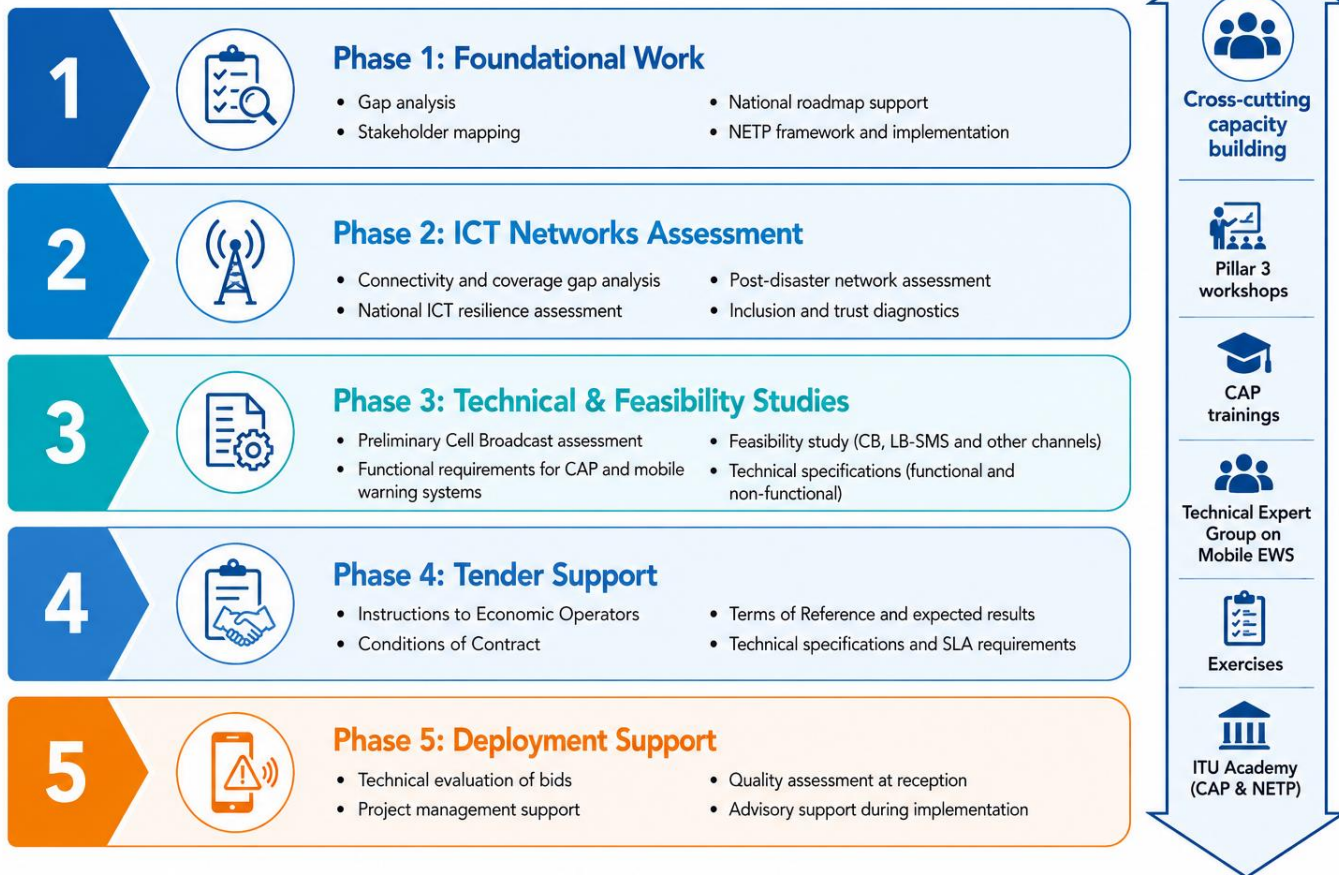
Appears directly on screen, overriding other apps

Personalised Language:

Delivered in the user's preferred language



ITU Support to Countries under EW4All





Integrating Common Alerting Protocol (ITU-T X. 1303)

- International standard format for emergency alerting to ensure the interoperability and consistency of alerts via different communication networks.
- Integrating CAP into Multi-Hazard Early Warning Systems
- Local agreement of the CAP specificities and the feedback between Authorities and Mobile Network Operators before implementation

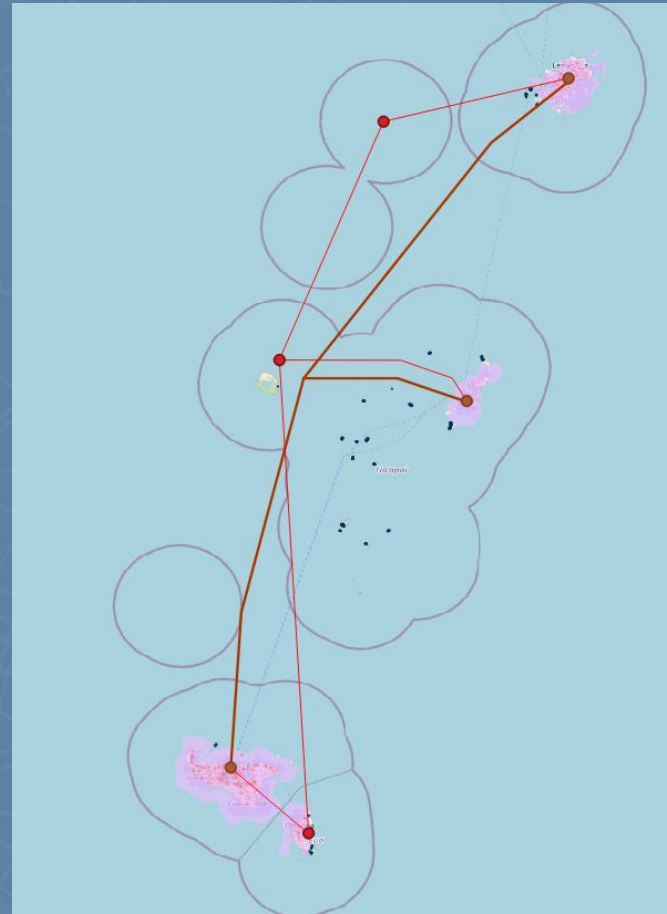


Disaster Connectivity Map

ITU's Disaster Connectivity Map – designed to monitor the connectivity status during and after disasters – has been activated over 60 times, including:

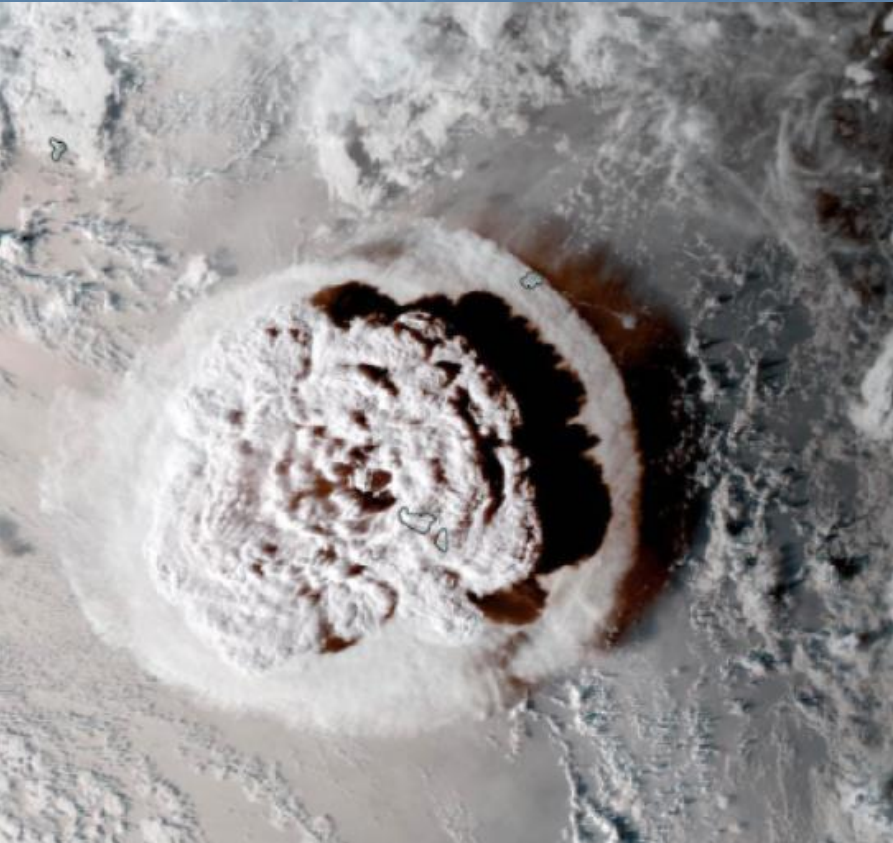
- La Soufrière volcano | St Vincent and the Grenadines | April 2021
- Mt Semeru volcano | Indonesia | Dec 2021
- Hunga Tonga–Hunga Ha'apai volcano | Tonga | Jan 2022

The DCM supported first responders to identify connectivity outages and facilitate targeted allocation of resources to repair mobile networks and restore connectivity.



Hunga Tonga - Hunga Ha'apai Volcano and Tsunami | Tonga | 15 January 2022
Population beyond reach of fixed broadband, 2G and 3G+ networks

Early Warning Connectivity Map



- ITU collaborates with Microsoft AI for Good Lab, Planet, and the Institute for Health Metrics and Evaluation (IHME) at the University of Washington.
- Integrates AI with satellite imagery to create high-resolution population density maps and visualize connectivity data, to highlight areas where people are vulnerable to hazards due to limited access to emergency notifications.
- These results guide data-driven decisions on warning dissemination strategies and guide mobile infrastructure investment to ensure no one is left behind.

EWCM data complements official statistics, providing policymakers with an evidence-base for emergency preparedness and telecommunications planning

Applications for Policy

Identify Vulnerable Populations

Reveals communities with limited digital network connectivity requiring alternative warning systems and targeted preparedness.

Develop Multi-Channel Approach

Combine sirens, radio broadcasts, and community-based alerts to reach populations.

Prioritize Infrastructure Investment

Utilize connectivity gap data to guide investment for network expansion and strengthen resilience.

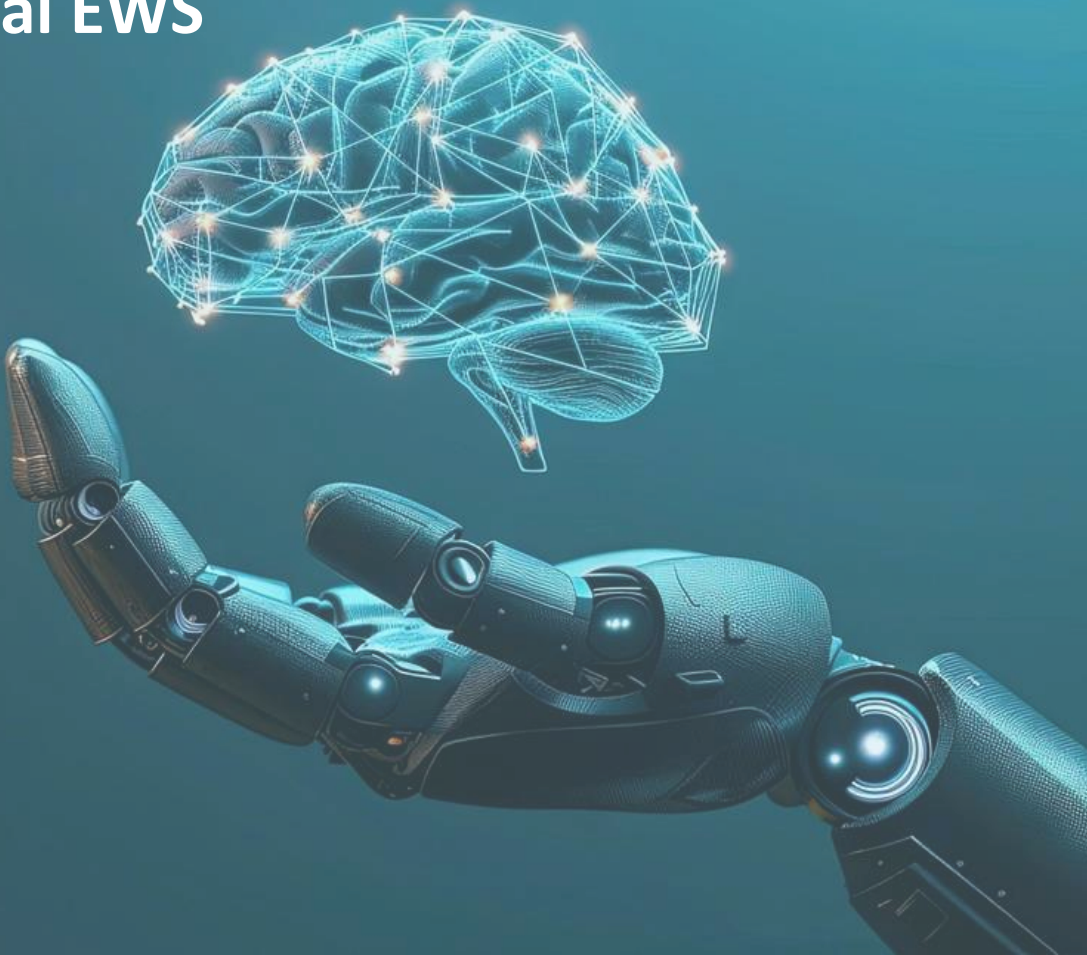
Satellite Direct-to-Device Alert Dissemination

- ITU works closely with the satellite industry to develop, test and deliver direct-to-handset solutions.
- Global coverage – including for communities in remote areas without connection.
- Ensure people at risk could be alerted even when the connectivity is down/affected by disasters
- The Case of Europe: Galileo's Emergency Warning Satellite Service



Integrating AI in national EWS

- Accelerating innovation and technology, with a focus on AI and private sector collaboration.
- AI transforms disaster management practices & enhances monitoring, analysis, and forecasting of hazards.
- Optimises information delivery to communities at risk, ensuring timely response to warnings.
- AI Sub-Group for EW4All:cultivating public-private partnerships globally; **focus on developing & bringing AI technologies & tools to countries**



ITU Support to Countries under EW4All

Haiti

In Haiti, ITU led a simulation of location-based short messaging service (SMS) with the Government and mobile network operators. Haitian authorities have since sent over 100,000 preventive flood alerts via SMS, showcasing the system's life-saving potential in a fragile context. Scan the QR code to read the full impact story.



Mauritius

ITU is supporting Mauritius to become the first country in Africa to implement CB technology, setting a regional benchmark for advanced early warning systems.



Somalia

Through EW4All, ITU is helping Somalia build its alerting system with the National Communications Authority and other partners. Key reforms, CAP setup, and a national plan are underway, laying the foundations for mobile-based early warnings.



Initiative Based on Partnerships

Government	ICT & Media Broadcasting	UN & Humanitarian	Private Sector	CSO
 • Min ICTs • Telecom Regulators • NDMAs • MNHS & others	 • GSMA • MNOs • GSOA • Satellite operators • EBU / WBU & others	 • UNDRR • WMO • IFRC / ICRC • UNDP • WFP • UNHCR & others	 • Microsoft • Google • CB Vendors & others	 • REAP • GNDR • NetHope & others

ITU is turning mobile networks
into lifelines

Thank you



Scan to learn more