



Early Warning for All (EW4all) Information and Communication Technologies (ICTs) for early warning systems – the role of ITU

Rapporteur Group Meeting for Question 3/1: The use of telecommunications/ICTs for disaster risk reduction and management
Workshop on “Emergency Preparedness for Disaster Management”

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International Telecommunication Union (ITU)

Our mission: Connect the world



**Specialized United Nations
(UN) Agency for
Telecommunications &
Information and
Communication
Technologies (ICTs)**

3

Sectors

Standardization

Radiocommunication

Development

193

**Member
States**

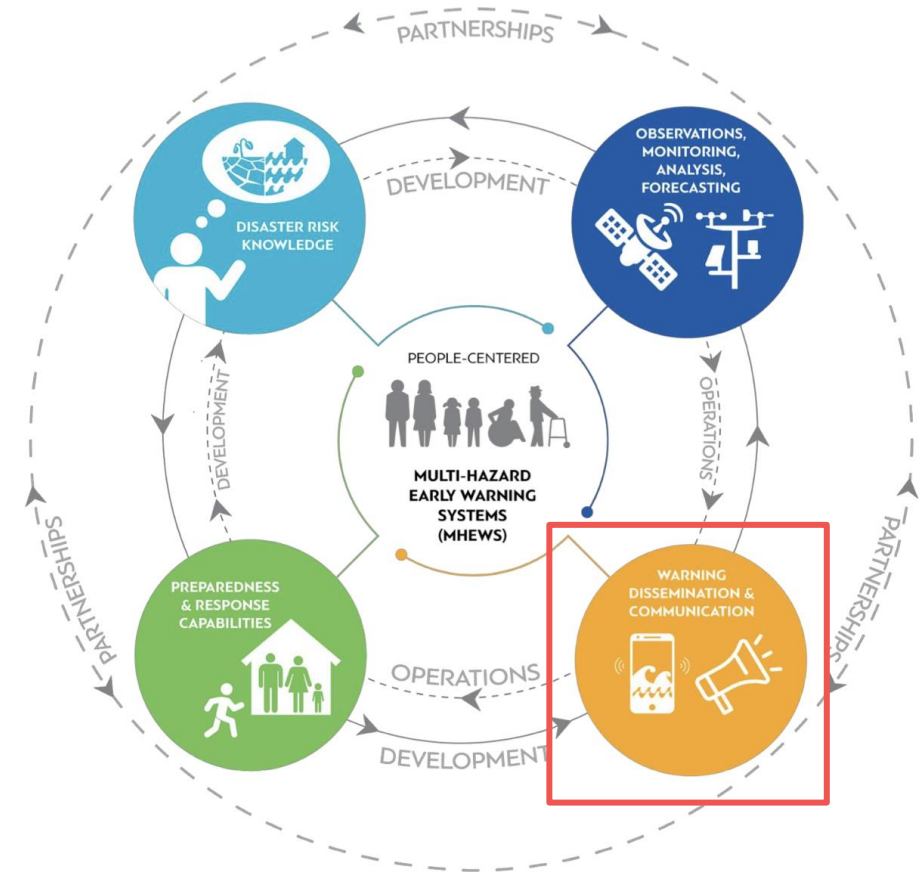
900

**Companies, universities,
and international and
regional organizations.**

**Rich network of experts in
the global ICT ecosystem**

UN Initiative on Early Warnings for All (EW4All)

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



Multi-Hazard Early Warning System(MHEWS)
Value Cycle – 4 pillars (Source: [WMO](https://www.wmo.int))

4 Pillars of Early Warning Systems


Pillar 1: Disaster Risk knowledge

lead by UNDRR



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?

Pillar 2: Observations, Monitoring, Analysis, Forecasting

lead by WMO



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?

Pillar 3: Warning dissemination & communication

lead by ITU

Pillar 4: Preparedness & Response Capabilities

lead by IFRC

Multi-channel Approach for Warning Dissemination and Communication

Making sure alerts reach the last-mile

- In warning dissemination and communication, a **multi-channel approach** increases the effectiveness of an alert and helps address the diversity of communities at risk
- Digital transformation brings huge opportunities to strengthen this pillar and allows us to reach more people through information and communication technologies (ICTs) --such as sending alerts to the phone
- Integrating **CAP**



Fax



Radio



Cell / SMS



Television



Web
Social Media



Sirens

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 (negotiation)



Community Involvement and Trust

Making sure alerts are understandable and actionable

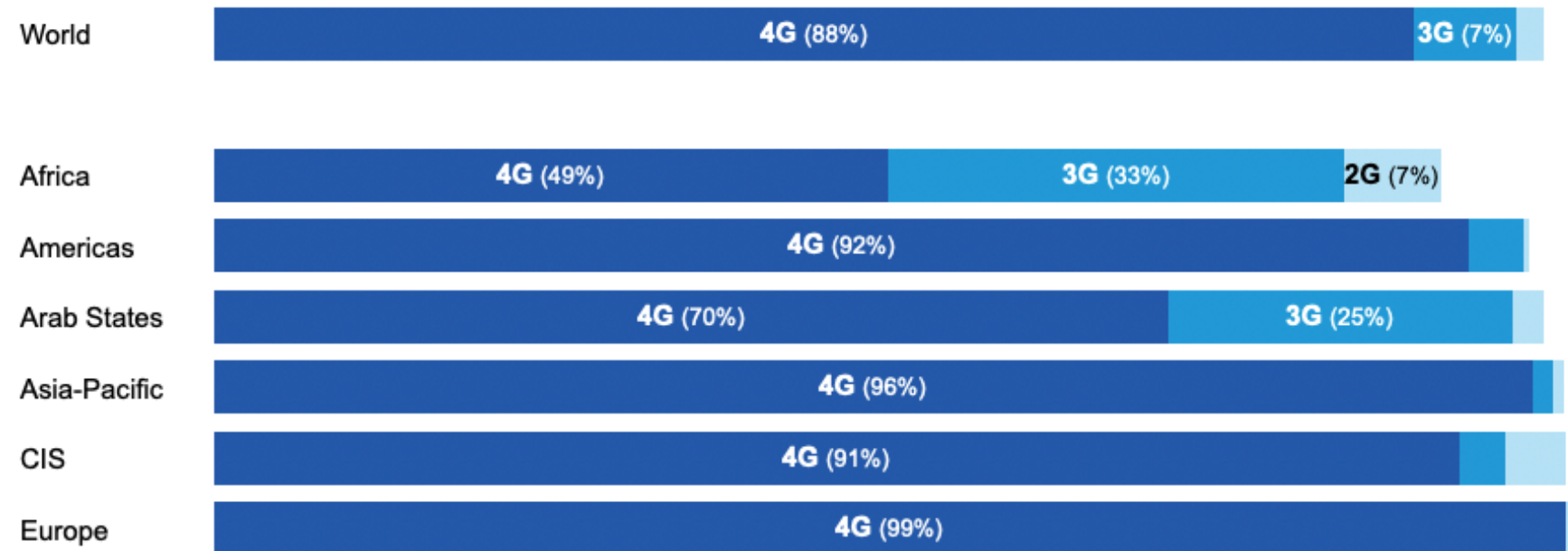
- Effective early warning services are co-designed by engaging the communities they serve and have feedback mechanisms to help ensure **messages reach people through preferred and trusted communication channels, in actionable formats**
- Address structural inequalities often facing women, youth, children, disabled, displaced, Indigenous Peoples and marginalized ethnic groups in receiving, understanding and acting on early warning services



95% of the world population is covered by a mobile network

...a great opportunity to use mobile networks for early warning systems!

Population coverage by type of mobile network, 2021

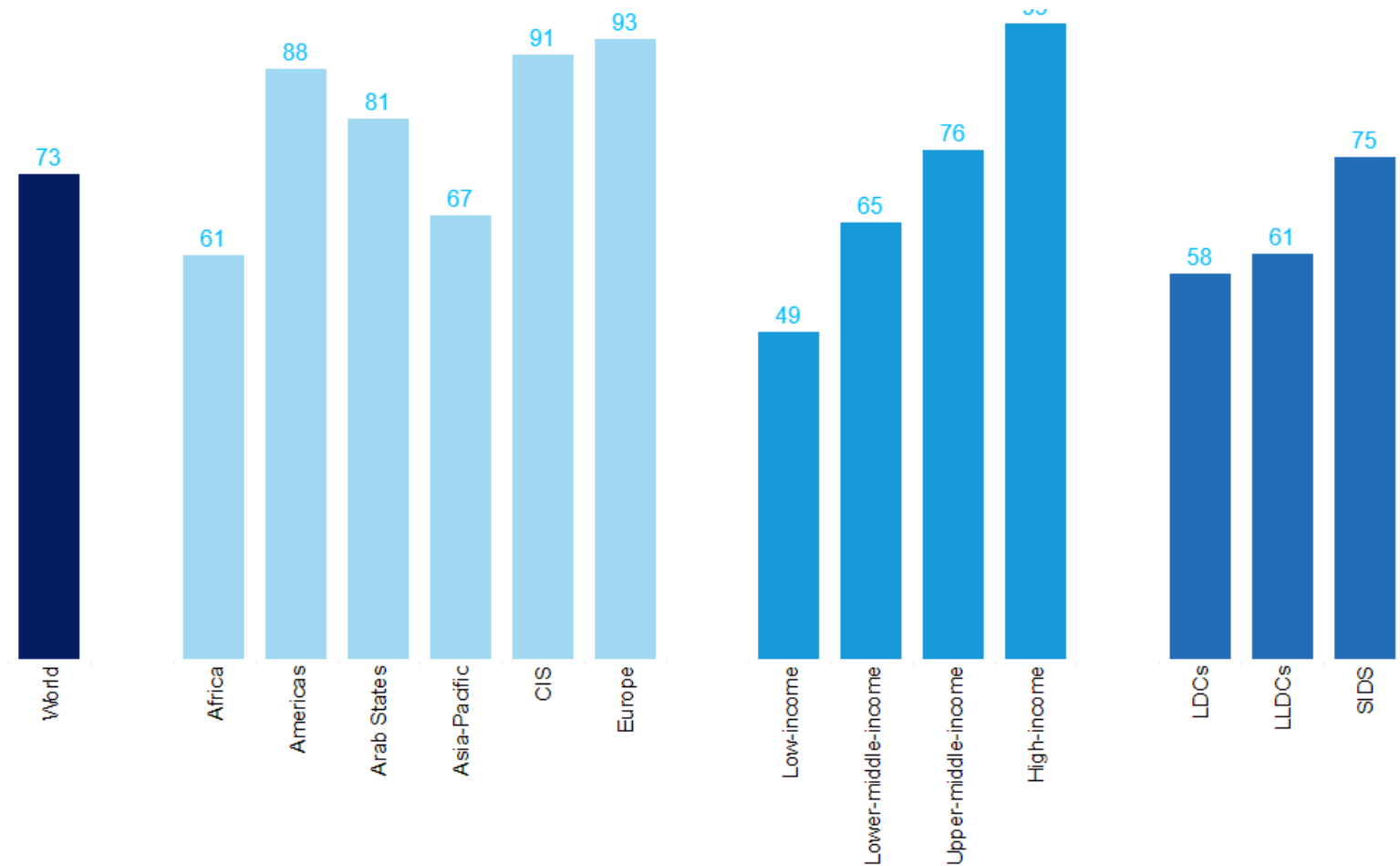


Source: ITU, *Facts and Figures 2021*

Three-quarters of the world's population own a mobile phone

...making mobile network an effective channel to reach people!

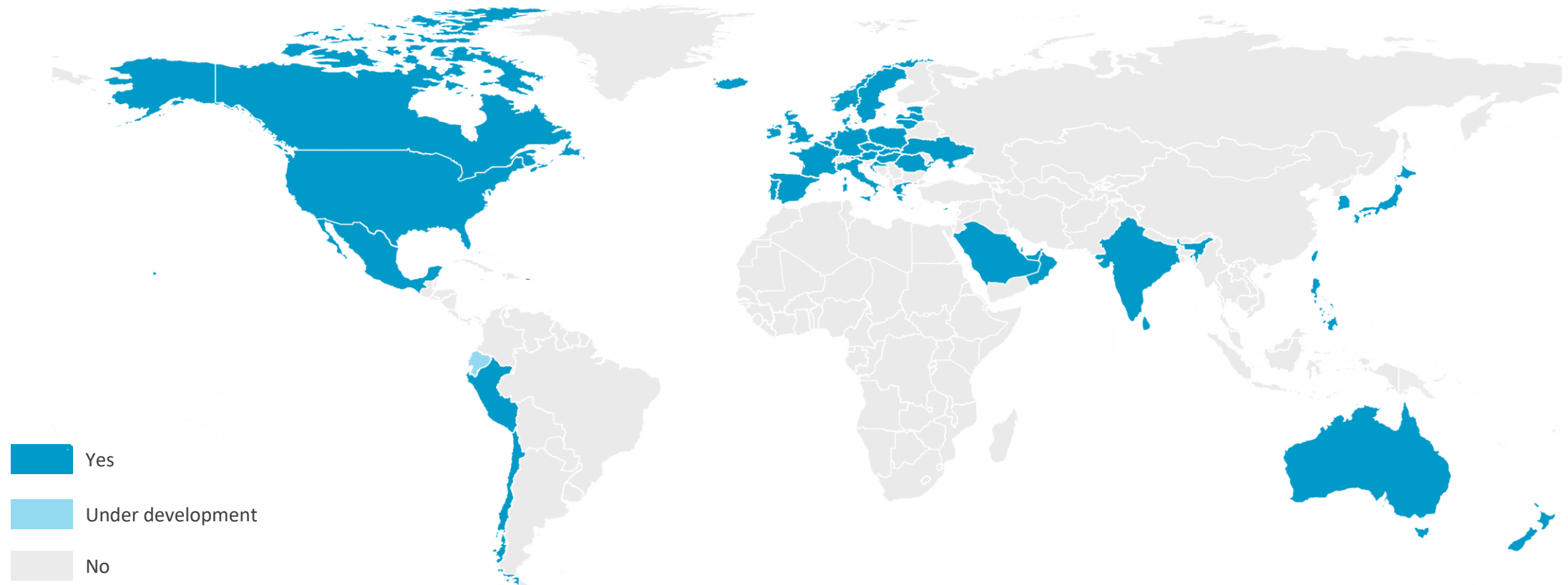
Percentage of individuals owning a mobile phone, 2022



Source: ITU, *Facts and Figures 2022*

Countries with mobile EWS in place

using cell broadcast and location-based SMS*



* work in progress, based on ITU research

How and why alerting via mobile-cellular networks works?



Photo credit: Dimone Hogan/[Shutterstock](https://www.shutterstock.com)

Cell-Broadcast (CB) & Location-based SMS (LB-SMS)

- **Wide reach:**
 - Send geo-located messages to users within risk areas, including roamers
 - Opt-in challenges limited (as opposed to mobile-apps)
 - Compatible on most (CB) /all devices (LB-SMS)
- No risk of congestion (CB)
- No subscription needed (CB)
- Supports multi-language alerts (CB & LB-SMS)
- A “blind technology” that does not allow 2-way communication (CB)
- 2-way communication to provide information such as the number of users in risk areas (LB-SMS)

Regulatory approach: Europe Legislation on EWS

European Electronic Communications Code (EECC)

Directive (EU) 2018/1972, Article 110

Public warning system

- 1. By 21 June 2022, Member States shall ensure that, when public warning systems regarding imminent or developing major emergencies and disasters are in place, public warnings are transmitted by providers of mobile number-based interpersonal communications services to the end-users concerned.*
 - 2. Notwithstanding paragraph 1, Member States may determine that public warnings be transmitted through publicly available electronic communications services other than those referred to in paragraph 1, and other than broadcasting services, or through a mobile application relying on an internet access service, provided that the effectiveness of the public warning system is equivalent in terms of coverage and capacity to reach end-users, including those only temporarily present in the area concerned, taking utmost account of BEREC guidelines. Public warnings shall be easy for end-users to receive.*
- By 21 June 2020, and after consulting the authorities in charge of PSAPs, BEREC shall publish guidelines on how to assess whether the effectiveness of public warning systems under this paragraph is equivalent to the effectiveness of those under paragraph 1.*

Getting ready for 2022 with a Public Warning System

By June 2022, the European Electronic Communications Code (EECC) Article 110 requires all EU countries to operate a public warning system that can send geo-targeted emergency alerts to all mobile phone users located in the affected area during a natural or man-made disaster.



Crisis manager must be able to **warn every handset located in an area, without prior subscription** to a system



This implies to deploy a **location-based SMS** or/and a **Cell Broadcast** technology

Europe's current implementation of EWS

- Almost all European countries have adopted an EWS or are in the process of selection (tender) to have one. A mix of technology has been chosen: Cell-broadcast OR/AND Location-based SMS
- The effectiveness of these EWS relies on the very good access and coverage of telecommunication services all over Europe – 99% of the population is covered by 4G network.
- A majority of EU country asked in their tender to be CAP compliant !

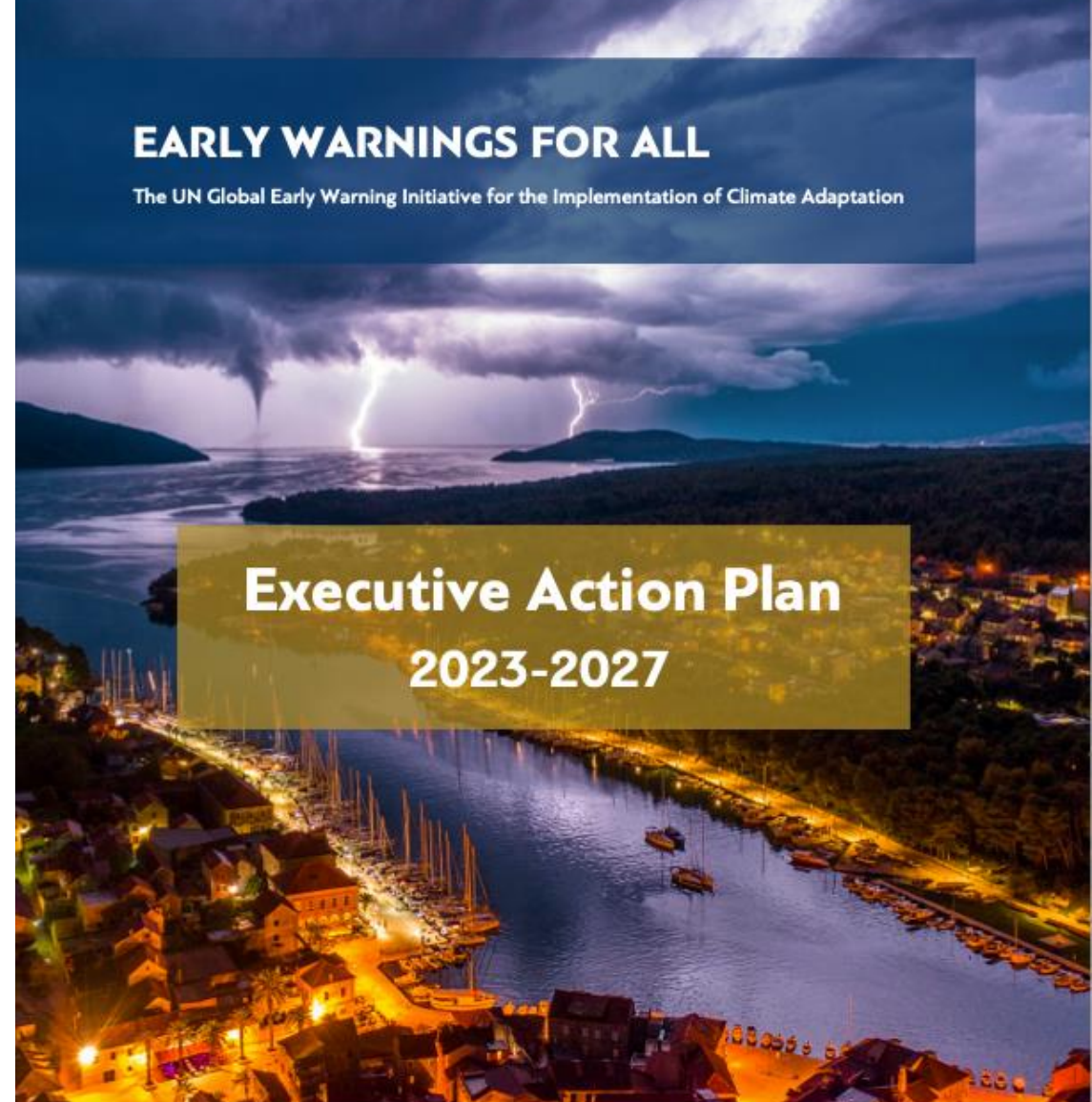


Lieges, Belgium's third-largest city. July 2021. Valentin Bianchi/Associated Press. NY Times
<https://www.nytimes.com/2021/07/16/world/europe/liege-belgium-flooding.html>

The intensive usage of CB in Netherlands and LB-SMS in Belgium saved lives with evacuations orders during the deadly floods in BENELUX, July ,2021

Next steps: Early Warnings for All

- Implementation Strategy for 5 years, including pillar and cross-cutting objectives, outcomes & indicators
- First group of 30 countries have been identified
- Mapping existing tools and resources
- Awareness raising
- Develop a minimum capacity checklist for countries to self-assess gaps and priorities



Next steps:

Warning dissemination and communications – pillar 3

- Promote a regulatory approach adopted by EU
- Work with MNOs/GSMA
- Discuss technologies and standards for implementation (including CAP)
- Identify experts and share best practices for awareness raising
- Bring on board partners and identify financing opportunities
- Provide technical support to countries in the bidding process



Links and resources

- Tender examples: [Cyprus](#), [Denmark](#), [Belgium](#), [Spain](#), [Luxembourg](#)
- Webinars: [best practices in implementing PWS](#), [EENA 2021 implementing PWS](#)
- Reports: [EENA Public warning systems update](#), [Public warning system in Chile](#)
- ITU blog: [Early Warning systems: Saving lives through mobile connection](#)
- UCL Warnings Briefing Note: [Mobile-based Early Warning Systems](#)
- The Body of European Regulators for Electronic Communications (BEREC): [Guidelines on how to assess the effectiveness of public warning systems transmitted by different means](#)
- Video: [UK Emergency Alerts](#), [Cell broadcast for public warning](#)
- ITU-Everbridge joint paper: [public warning systems for all](#)



Thank you!

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Emergency Alerts via Cell Broadcast

