

# Reimagining Disaster Risk Reduction

# The Role of Standardization and Innovative Technologies

Dr Rajkumar Upadhyay CEO, Centre for Development of Telematics (C-DOT) India Mobile Congress 2024



#### Loss of Lives and Livelihood Due to Disasters





Comprehensive strategies are required to minimize the loss of lives and livelihoods

Source: https://ourworldindata.org/natural-disasters

#### **Disaster Risk Reduction**

## Saving Communities & Infrastructure

- Understanding Risk
- Preparing Adequately
- Early Warning





"DRR aims to build resilient communities that can withstand, adapt to, and recover from disasters, thereby reducing future risk and enhancing sustainable development."





### **Disaster Risk Reduction : Need for Standardization**

सी-डॉट C-DOT

Standards based approach to Disaster Management is the need of the hour

#### Benefits of Standardization in DRR

Consistency and Predictability

Improved Coordination

**Quality Assurance** 

Benchmarking and Best Practices

**Economic Efficiency** 



By embracing a strategic approach to standardisation in DRR, India can significantly improve its disaster preparedness and response capabilities, ultimately reducing the impact of disasters on its population and economy.

### POLICY INTERVENTIONS: INTERNATIONAL CONTEXT



- ITU-T Common Alerting Protocol (CAP)
- UN'S EW4ALL, 2022



### **POLICY INTERVENTIONS: INTERNATIONAL CONTEXT**

R

Ω

(

En

EQ.

3

3



SENDAI FRAMEWORK FOR DISASTER RISK REDUCTION 2015-2030

#### Reduce

- > Target A Mortality
- Target B Affected People
- Target C Economic loss
- Target D Damage to critical infrastructure

#### Increase

- Target E Countries with national & local DRR strategies 2020
- Target F International cooperation to developing Countries
- Target G Availability and access to multi-hazard early warning systems & disaster risk information and assessments



Direct disaster economic loss in relation to global gross domestic product (GDP)

Direct disaster economic loss in relation to global GDP, including disaster damage to critical infrastructure and disruption of basic services

Number of countries with national and local disaster risk reduction strategies

Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with the SFDRR



Goal 1. End poverty in all its forms everywhere

SUSTAINABLE GOALS



Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable



Goal 13 Make urgent action to combat climate change and its impacts

#### POLICY INTERVENTIONS: INTERNATIONAL CONTEXT

#### **UN'S EW4ALL, 2022**

The initiative aims to ensure that every person on Earth is protected by early warning systems by 2027, focusing on improving access to timely and accurate disaster alerts, especially in vulnerable regions. Governments to adopt policies for supportinhg development and maintenance of EWS.

Developed & deployed digital platforms and mobile apps to disseminate early warnings information to the public.

> Equitable Access to all, including people with disabilities, the elderly, and marginalized groups.

Encouraged using advanced tech like satellite imagery and data analytics for faster EWS

> Encourage a holistic approach that integrates warnings for different types of hazards into a unified system.



### CHALLENGES ADDRESSED DURING IMPLEMENTATION

- Standard/non-standard legacy system in telecom, satellite, broadcasting, internet were converted to ITU-T CAP compliant system without disrupting their regular operations by developing interworking gateways.
- The non-disaster SMS tariff formulation was finalized with consultation paper through TRAI.
- Unified Alert Sender ID or Header
- Multi-Hazard, Multi-Media, Multi-Technology, Multi-Lingual, Multi-Stakeholder
- Maintaining compatibility with modern technology and supporting legacy system
- Ensuring last mile reachability

### **C-DOT : Innovations in Disaster Risk Reduction**

- Artificial Intelligence (AI) and Machine Learning: Predictive analytics, early warning, real-time analysis.
- **GIS based Early Warning Systems** : Risk mapping, realtime monitoring, damage assessment.
- **5G/6G: Enhanced** communication and real-time coordination.
- Internet of Things (IoT): Environmental monitoring, early warning systems, structural monitoring.
- Social Media and Crowdsourcing: Real-time information gathering, resource allocation.
- Virtual and Augmented Reality (VR/AR): Training simulations, real-time field assessments.
- Mobile Applications: Public alerts, emergency reporting, evacuation planning.

New innovative technologies enhance the speed and effectiveness of disaster response, improving resilience and minimizing loss of life and property



### Benefits of Common Alert Protocol (CAP) Platform





#### About any kind of hazard





Light weight XML-based



**Geo-Targeted warning** 



Scheduling

Televisi Radi Cell

Phone et Over any and all media





Support Image, Audio, Video



Increase

Effectiveness

Multi-Lingual



Secured



#### **C-DOT : Innovations in Disaster Risk Reduction** सी-डॉट C-DOT **C-DOT Integrated** C-DOT Satellite Wi-Fi Mitigation Recovery Alert System Phase Phase Satellite Based Geo-Targeted Alerts for **Communication Network** Disaster disaster Preparedness, **Response & Relief** Managem ent & Risk Reduction (•) Response Preparedne Phase ss Phase **C-DOT Cell Automatic Priority Broadcast Centre** Call Routing Mass Alert Broadcast **Connecting Disaster Based on Global ITU and 3GPP** Solution for Immediate Managers **Public Alerting** standards

#### **SACHET : Disaster Resilient India**



#### **CELL BROADCAST SERVICE : Mass Alerting**



- Mass broadcast messaging to mobile phones in targeted area in near real-time
- Useful for rapid onset disasters with very less lead time such as Tsunami, Gas leaks etc.



#### Automatic Priority Call Routing



#### Priority Call Routing routes the calls in telecom network according to the assigned priority.



Crucial For Connecting Disaster Managers in case of network Congestion / Overload

- Disaster Response
- Emergency Services
- Disaster Recovery

### C-DoT Satellite Wi-Fi: Connectivity Anywhere



 Communication Network for Disaster Management

सी-डॉट —DOT

 Advantageous in Disaster Relief and Response

Indigenously Designed and developed, integrated with Wi-Fi 6, Support 3.6 Gbps throughput

Connectivity for Voice/Video/Data anywhere

Customized solutions for secure wireless connectivity

#### Awards & Recognitions



United Nations' (UN) WSIS 2024 "Champion" Award for its project "Mobile-Enabled Disaster Resilience through Cell Broadcast Emergency Alerting"



Aegis Graham Bell Award for "Innovation in Tech for Social Good"



Geosmart India Excellence Award in "Geospatial for Disaster Management"



CAP Integrated Alert Platform Demonstration at ITU Regional Development Forum Meet, Bangkok, Thailand



CAP Integrated Alert Platform Demonstration at CAP Workshop, Geneva, Switzerland





Visit us at www.cdot.in

# **Thank You**