

Reimagining Disaster Risk Reduction: The Role of Standardization and Innovative Technologies

Al in DRR

17 October Bharat Mandapam, New Delhi





Coalition for Disaster Resilient Infrastructure

A multi-stakeholder partnership of national governments, UN agencies and programmes, multilateral development banks and financing mechanisms, the private sector and knowledge institutions that **aims to promote the resilience of infrastructure systems to climate and disaster risks**, thereby ensuring sustainable development.



Launched at the UN Climate Action Summit on 23 September 2019



CDRI Secretariat is based in New Delhi





CDRI's Approach

Global, regional and local knowledge platform for disaster and climate resilient infrastructure

Inclusive multi-stakeholder platform led and managed by national governments

Aligned with the 2030 Agendas, accelerated **SDGs, Climate Action & Sendai** framework

Focused on implementation and localization of design, development, maintenance and operations, and governance of infrastructure systems

Mainstreaming gender and social inclusion for disaster and climate resilient infrastructure

















AI for Resilient Infrastructure

Credit: https://intelligence.weforum.org/

Applications of AI at different phases of disaster



Pre-disaster(preparedness)



Post-disaster (recovery & reconstruction)

CDRI has been supporting AI and ML initiatives through its Fellowship and IRIS program

AI for Bridge and Infrastructure Monitoring

Dr. Richard Boothroyd (UK)

Created InfraRivChange, a web-based application that utilises AI to monitor river migration and its impact on critical bridge infrastructure in the Philippines. The AI-based system provides early warnings and supports infrastructure resilience in areas vulnerable to flooding and erosion. DeepINDRA: Detecting Flood Inundation using Deep Learning and Citizen Science

Dr Manabendra Saharia (India)

Integrates an AI-based flood mapping tool, with the INDRA citizen science app to enhance real-time flood detection and disaster response. Combines deep learning models with public data collection, to improve flood mapping accuracy, supports timely decisionmaking, and strengthens community resilience during flood events. Financial Decision Framework for Infrastructures Based on Disaster Damage Rating Models using Machine Learning Approaches

Mr Saurabh Gupta (India)

Automates damage assessment using remote sensing and Al-based segmentation models. Enables real-time insights for informed decision-making in post-disaster recovery, expediting financial planning and resource allocation.



Al for Disaster Risk Assessment

01	Hazard assessment & forecasting: scenario investigation, predict hazard intensity, spatial extent	8	04	Risk assessment: probabilistic risk assessment for better preparedness
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02	Exposure assessment: spatio-temporal assessment of assets exposed to various hazards	5	05	Impact assessment: direct (damage & loss) and indirect (economic) impact quantification for building back better
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03	Vulnerability assessment: potential damage & impacts on population and infrastructure	•	06	Risk coverage & transfer: provide financial assistance and process insurance claims using parametric risk transfer mechanism



Project Snapshot

National and Subnational Disaster Risk and Resilience Assessment and Roadmap for Telecommunication Sector, India

Learning from past events, upgrading existing system,

& preparing for better connectivity through system scale resiliency.



Development of comprehensive Disaster Risk & Resilience Assessment Framework (DRRAF)

Development of an actionable roadmap





Reduced physical damage & financial losses



Improved disaster response



Risk sharing through financial arrangements



Seamless connectivity & improved service delivery



Platform to share peer-to-peer knowledge



Sectoral capacity building





Source:

District Boundary: Sol, Wind & Cyclone; OSDMA, Flood: OSDMA, Landslide: ThinkHazard, Earthquake: OSDMA, Telecom Towers: DoT

Multi Hazard Exposure Map: Odisha

CDRI is developing a comprehensive **Data and Technology Program** aimed at enhancing infrastructure disaster risk resilience for its members, particularly LMICs and SIDS.

The strategy addresses critical challenges like

- data scarcity
- lack of technical capacity for analysis
- need for interoperable technology solutions

