Country Case Studies in ICT for Disaster Management

India

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India - Unique Geo-Climatic Conditions

Earthquake
- 54% of landmass is prone to earthquakes

more than 650 Earthquakes having magnitude above 5 on Richter scale have been recorded during the last one century

Cyclone
- 8000 km of coastline is prone to cyclones

Flood
- 40 million hectares of landmass is prone to floods

Drought
- Almost 68% of total geographical area is vulnerable to droughts

India is one of the worst flood-affected countries in the world and accounts for one fifth of global death count due to floods

Disaster Events in India (1900 – 2009)

Disaster Types	Decades											
	1900-09	1910-19	1920-29	1930-39	1940-49	1950-59	1960-69	1970-79	1980-89	1990-99	2000-09	Total
Hydro-meteorological	28	72	56	72	120	232	463	776	1498	2034	3529	**8880** **78.4%**
Geological	40	28	33	37	52	60	88	124	232	325	354	**1373** **12.1%**
Biological	5	7	10	3	4	2	37	64	170	361	612	**1275** **11.3%**
Total	73	107	99	112	176	294	388	964	1900	2720	4495	**11328**

ICT Interventions at Each Layer

ICT	Interventions
Radio / Television	• Oldest Communication method, Warning quickly to broad population. • Less reliable when struck with disaster at night
Telephone	• <u>Mobile</u> has a very high usage in APAC (Approx. 50% population estimated by 2016) • Good source for communication / planning/ <u>warning/ rescue</u> operations • <u>SMS</u> - a unique and fast way of broadcasting message to large group of people (Used effectively in Katrina disaster in US in 2005)
Satellites	• Effective way of communication both for <u>warnings and recovery</u> • Alternate to the local towers, which might get destroyed during a disaster
Internet / Email	• Effective use of internet / email can certainly lead to <u>safety of large number of lives and property</u> • A very <u>structured way of communication / dissemination</u> of information • Depends on penetration of broadband / internet users

ICT Interventions at Each Layer

ICT	Interventions
Centralised Database / Applications	• Central source and <u>online inventory of emergency sources</u> at a single point for all the entities of the ecosystem • Easily accessible and can be updated regularly • Interface can be available on all types of devices – Desktops / Laptops / Mobiles / PDAs/ Tablets
GIS	• A multi-layered platform which can be utilised for making <u>Decisions</u> • Can provide critical information with respect to <u>hazard zoning, incident mapping, natural resources and critical infrastructure at risk, available resources for response, real time satellite imagery</u> etc.

Social Media

The biggest leap and advancement of usage of ICT, which can be very effectively used in Disaster aversion, planning, warning, rescue and recovery.

Prime Minister of Nepal came to know about the recent earthquake through a twitter by Prime Minister of India – Shri. Narendra Modi

Facebook started special 'Safety Check' feature for Nepal Earthquake

Cloud & Big Data for Disaster Management

- Cloud can be leveraged to house large applications on Disaster inventory, tools etc

- Big data can help in **crisis mapping**
  - using **archived information** as well as **real-time information** coming from sources such as sensors, satellites, photos, videos, cell phone GPS signals, etc.
  - **Social data** can be analyzed to provide a detailed, <u>real-time map</u> <u>of displaced people, fatalities, and damages to properties</u>

- The **right tools** and coordinated effort can **predict the imminent occurrence** of disaster before it occurs

GOI Initiatives

- Disaster Management Act, India, 2005
- Institutional mechanism
- National Disaster Management Framework
- ICT interventions

Disaster Management Act,2005

Institutional Mechanism

- NDMA, SDMA, DDMA
- NEOC,SEOC
- NDRF

Capacity Development

NIDM

Other institutions