



**Knowledge Exchange Workshop on Building Integrated and Adaptive Social
Protection Systems in India**
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Leveraging ICT for Disaster Risk Management Experience from Kerala and Flood Response

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Keralam - Land of diversity

- Strip of land sloping westward with Ghats hills & forests in the east to 593km long coastline in the west, at a width of 35-120km.
- 3000mm Annual average rainfall, 44 rivers and numerous other waterbodies.
- 33.39 Million people (2011 census) with 91% literacy rate.
- Strong local governance system with 1200 LSGIs of various levels
- Rank 1 in the country in Health Care and School Education systems



Keralam - Indicators at a Glance

Year 2017-18 (quick estimate)

GSDP - ₹ 6,867. 64 Billion [growth rate 11.42%]

Per capita GSDP at constant (2011-12) prices –

₹ 1,48,927/- [growth rate 6.65%]

Sector wise contribution to GSVA at constant prices (2011-12)

Primary sector - 10.85%

Secondary sector- 27.40%

Tertiary sector - 61.75%

Ranks first in SDGs of health, education and gender equality.
Fore-runner with score 69 in Index Score for SD Goals 2030.

Global Warming Making an Impact

Cloud Burst, Un-seasonal Rains
and Land slides in the Ghats

August 2019

Worst ever floods of the Century

August 2018

Ockhi Cyclonic Storm impact

November 2017



2018



2019



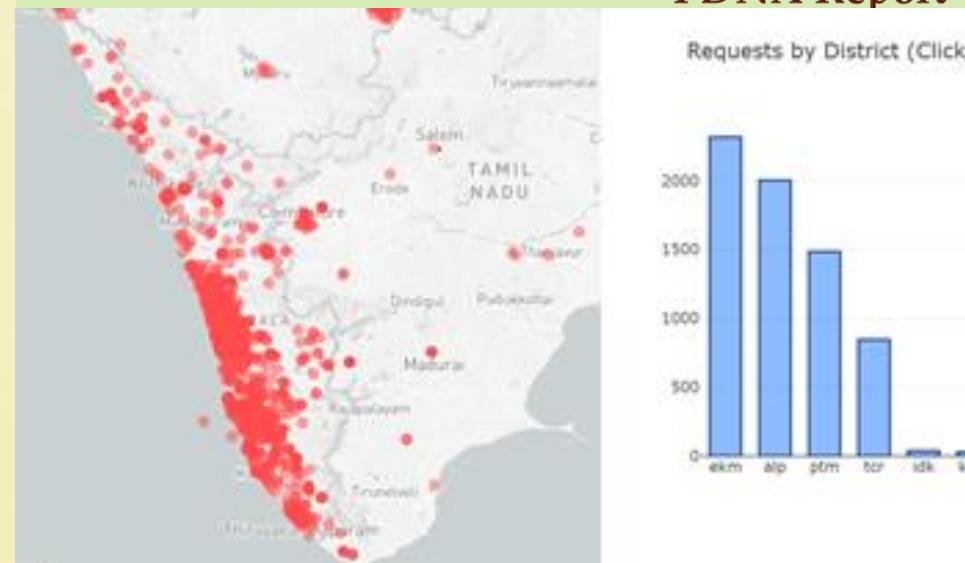
Worst Floods of the Century

August 2018

- 483 lives lost
- 5.4 Million People affected
- 1.4 Million people displaced
- 13000+ houses destroyed
- 55000+ Ha of Crop land lost
- 34,000 Km Road damaged
- 218 bridges washed away
- 13 out of 14 districts affected

The post disaster needs assessment estimates a total disaster effects of around INR 269,960 million (US\$ 3,856 million). The total recovery needs are estimated at INR 269,850 million (US\$ 3,855 million).

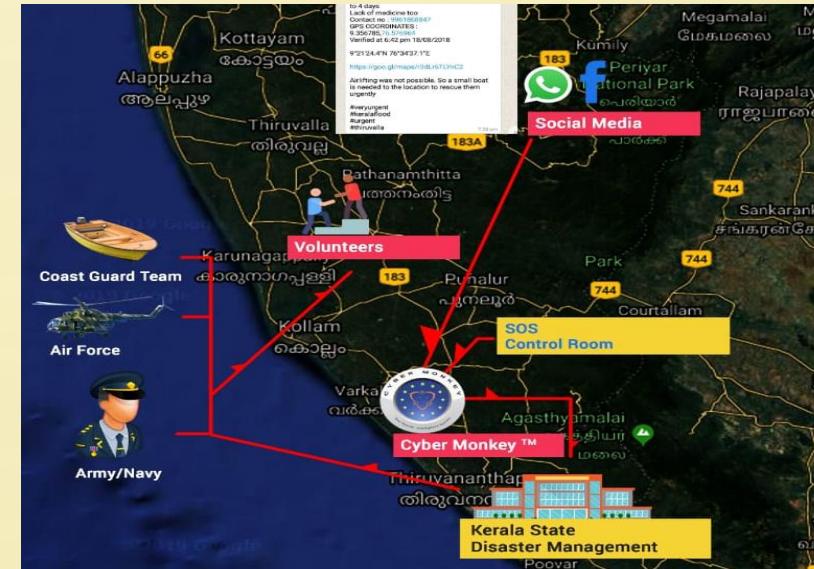
- PDNA Report



4 R's of Recovery

Rescue – Relief – Rehabilitation- Rebuild

- Unique hand-in-hand functioning of Government Machinery and the Volunteering Community
- Spontaneous help poured in from the strong network of IT professionals who geared up and developed Technology platform to ease the rescue and relief



Step 1- Rescue

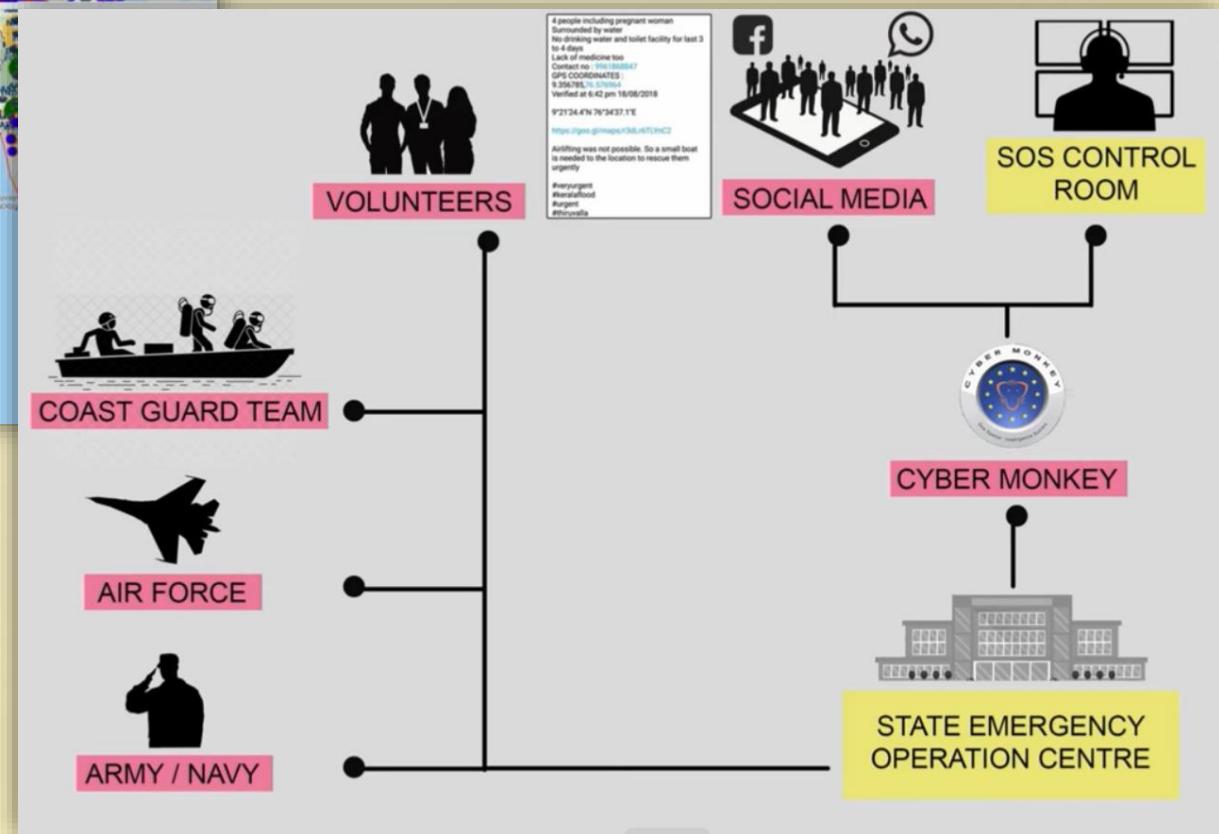
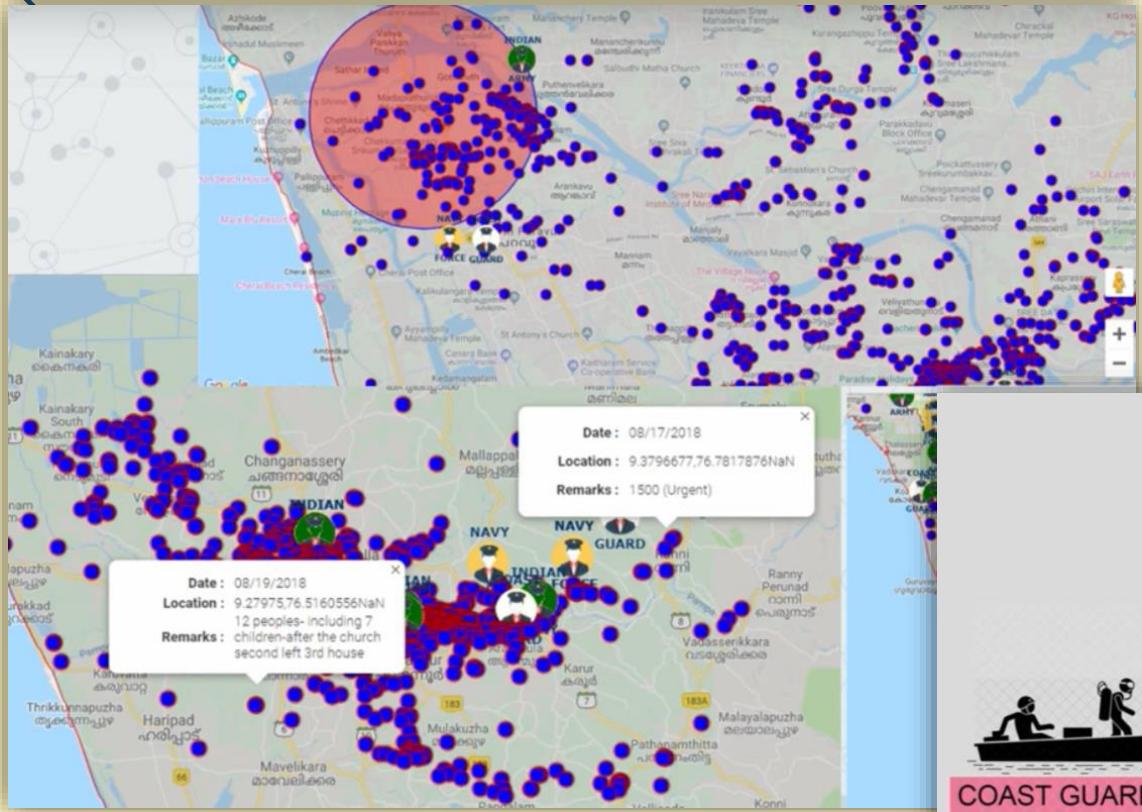
- Restored the communication networks and Mobile towers in 24hrs
- Hardware and Technology Platform Start ups volunteered; Drones and GIS tools deployed
- Rescue / distress calls logging; Access to district level control rooms
- Tracking members in relief camps
- Online Registration facility for volunteers; Facility to donate relief materials and supplies

RESCUE- Distress Call Logging and Tracking

- Cyber Monkey – a unique location based solution developed by a Women Start up of Kerala – facilitated by location based AI (GEOAI)
- Geo-spatial logging of real-time distress calls and translating that to meaningful location based information
- Providing automated spatial decision support for the Army, Navy, Air force and NDRF teams carrying out the rescue operations

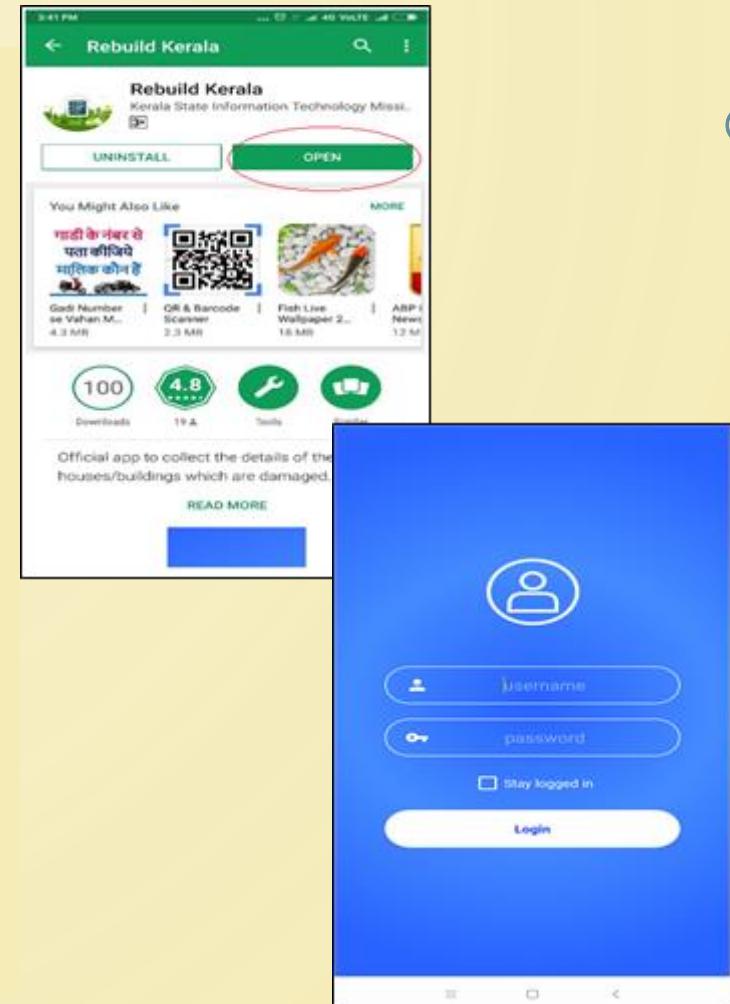


Rescue



Step 2 -Relief

- Overwhelming Volunteering support esp. youngsters
- Effective Crowd Sourcing of Relief Materials
- **Rebuild survey Mobile App** developed & deployed for collecting details of flood affected people
- Data collection carried out by Local Self Government officials and Volunteers through the **webapp keralarescue.com**



Relief Management

- Technology based Logistic support and Support from Amazon & Flipkart effectively enhanced the tireless action of Government and Volunteers



- Immediate financial support provided to 687,843 affected families
- Relief support Kits with 22 essential commodities provided to 724,352 families returning home
- 1,050,838 Relief support kits with food items and provisions delivered to affected families till houses are cleaned and clean drinking water restored.

Relief

keralarescue

An initiative by Govt. of Kerala, Kerala State IT Mission and IEEE Kerala Section
For effective collaboration and communications between authorities, volunteers and public
ഭൂതിക്കാശാസ്സ പ്രവർത്തനങ്ങളും രക്ഷാ ദണ്ടുങ്ങളും എക്കോപിള്ളിക്കാൻ
Message from Hon. Chief Minister of Kerala



REQUEST FOR HELP

സഹായം
ആഭ്യർമ്മിക്കാൻ



TO CONTRIBUTE

സംഭാവന നൽകാൻ



DISTRICT NEEDS & COLLECTION CENTERS

ജില്ലകളിലെ
ആവശ്യങ്ങൾ



REGISTER AS A VOLUNTEER

വൊളരീയർ ആകാൻ



REQUEST MAP

സഹായം ആവശ്യമായ
സ്ഥലങ്ങൾ



CONTACT INFO

ഞങ്ങളുമായി
ബന്ധപ്പെടാൻ



REGISTERED REQUESTS

ഇതു വരെ
ആവശ്യപ്പെട്ടവ



RELIEF CAMPS

ഭൂതിക്കാശാസ്സ
കൂടാനുകൾ

Relief



Over 55,000
volunteers
registered



Over 17 Million
hits on the
website



ZERO
outage during 2
weeks of
operation



Over 45,000 help
requests
serviced



Over 4000
camps serviced



Over 1000
commits in the
portal
development



Administered
and managed by
1700+ students
& professionals



with Over
1900 users in
slack

Seeing the massive movement of Tech volunteers, Slack , Google and Heroku came forward and offered free subscriptions ..

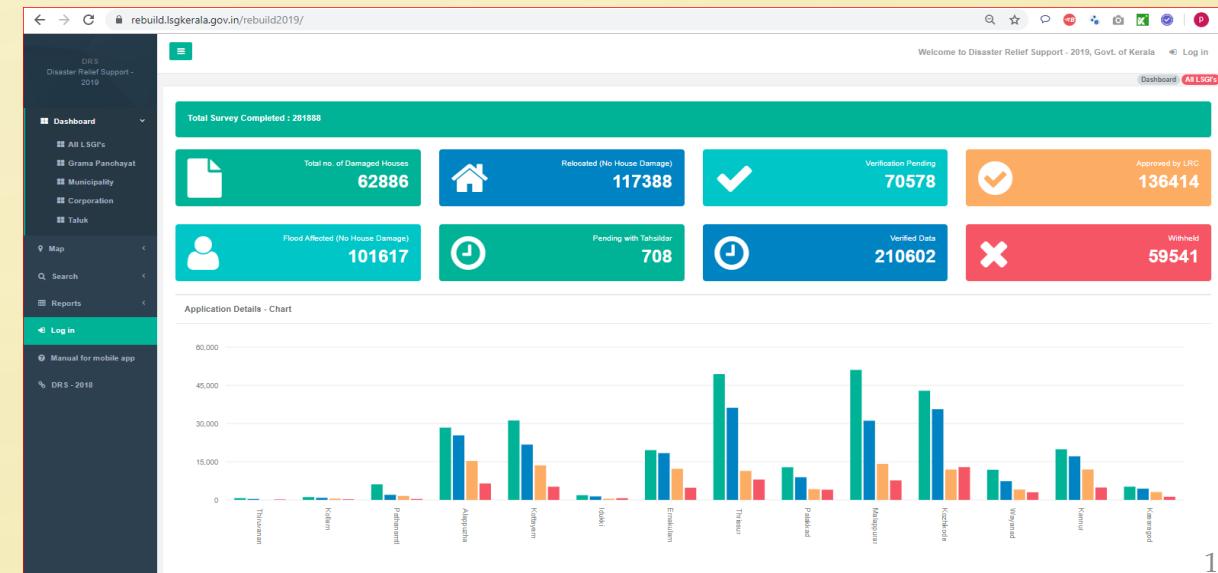
Step 3- Rehabilitation

- Details of all Houses damaged gathered through Mobile app including its image, followed by scrutiny by Local Government and Revenue Officials
- Data Management and Monitoring using '**Disaster Relief Support' Webapp** ensuring Transparency
- Financial Assistance (based on the quantum of damage sustained) directly transferred to the bank account of affected persons

The immediate assistance amount disbursed to the beneficiaries immediately after Ration card & Bank Account number verification done by Land Revenue Commissioner in the MIS application (In DBT mode)

The damage assistance amount transferred to the beneficiaries after the completion of verification & approval of Ration card & Bank Account number by the Land Revenue Commissioner Office.

The amount pushed to the beneficiaries from State Treasury Department



Rehabilitation Management

Adalat to recover lost documents

- A citizen comes to Adalat centres with one or more of documents
 - Based on type of document available
 - Generate all possible certificates by backend integration of various departments
 - Generate a certified profile for ease the process of getting other certificates from incomplete/ partial data
 - Use of NNS Algorithm
 - New digilocker created for each citizen and copy of certificate generated pushed to it.
 - Fine Tuning the process based on customer type



Rehabilitation Management Certificate Retrieval Adalat –Result

- 30 Adalat conducted covering all worst flood affected areas
- 53938 certificates issued - Fulfilment ratio of 96.94%
- Avg time per person : 20 min
- Created a model for e-gov service in an integrated manner

Anxiety to Relief
View from Adalat



Step 4- REBUILD

Challenge of Recovering Public Assets

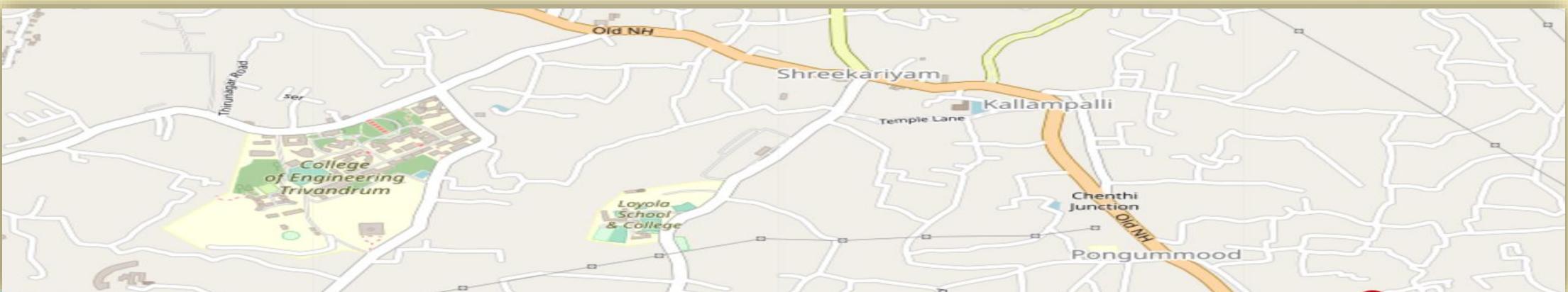
- 16954 kms of PWD Roads, 656 Culverts and 127 bridges damaged



- Challenge - Prioritisation of Public Assets for Rebuild, Redesign and Realignment to ensure resilience in the context of recurring natural calamity. Required Localised Maps and Public involvement in evaluation

Rebuild Mapathon – Map my Keralam

- Target – developing a detailed open street map of Kerala through crowd sourcing, as an enabling tool for planning and implementing projects efficiently for improving the disaster resilience of the State
- Task: mapping Kerala down to the local assets and resources on to the Open Street Map platform
- subsequently enriching with datasets from various sources



Future Risk Resilience Strategies

- ✓ Leave Room for Nature to form and re-form
 - Rehabilitation of all families within 50m zone of coast and build a green buffer zone of mangroves to pacify force of sea erosion.
 - Demarcate and declare regularly flooding zones and land-slide prone zones; rehabilitate people from there.
 - Provide permanent rehabilitation shelters and hazzle-free insurance coverage for vulnerable areas
 - Develop and deploy innovative digital systems for monitoring and warning possible disaster events, so as to save valuable lives

Future Risk Resilience Strategies

- ✓ Ensure use of environment friendly technologies and disaster resilience in development
 - Promote use of prefab construction materials to reduce pressure of extracting scares natural resources.
 - Ensure disaster resilient design features in all constructions
 - Promote preparation of Master Plans targeting disaster mitigation

- ✓ Increasing disaster management preparedness of society
 - Mapathon – participatory open street mapping
 - Constituting, Training and deploying Civil Defence Corps capable of handling modern technology tools at any event of disaster to ease out the risks

Lessons for future

- ✓ Need to develop a system for integrating PDS database with bank account details for easy aggregation of data on vulnerable population and easy disbursement of relief measures at an event of disaster.
- ✓ Putting in place a hazzle-free insurance system to cover all in the disaster-prone zones
- ✓ Developing masterplans to promote planned densification of habitation and leaving room for nature
- ✓ Strengthening innovative – modern technology based disaster warning systems