

DISASTER MANAGEMENT

Appda - Answer

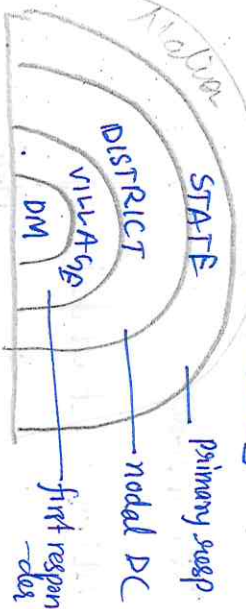
2nd APR 3rd Report: 85% of country

vulnerable to single/multiple.

58% - EQ, 68% drought, 12% flood.

8% - cyclone or 76% of coastline

[2/3rd area, 2/3rd population, WB: 2% GDP disaster]

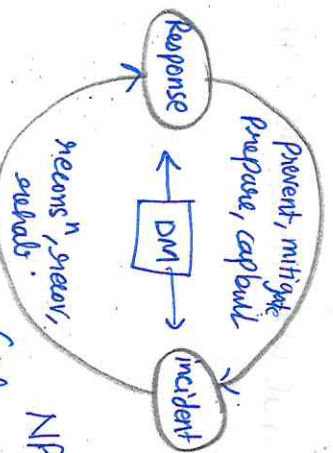


+ Centre: tech, finance, +

DM Act: NDMA⁽³⁾, NIDM⁽⁴²⁾, NDRF⁽⁴⁴⁻⁴⁵⁾
(8) NEC / SDMA⁽¹¹⁾ / DDMA⁽²⁵⁾ (---) not yet NDMF
SEC

CCMNC: Calc to Manag Nat. calamity
F.C: NDRF + NCCF = message.

- cannot declare disaster prone zone
- neglects progressive behavior of disaster
- local who? - overlaps - procedural.
- NDMF act?



NPDM
(Policy on DM)

Life cycle approach

Pre: vulnerability Zonation

CBDM, community, planning,

EWS: VPR, sodas, community

routes for shelter, escape.

During: R&R, emergency coord

community, volunteers, media

Post: Rehab, Recover, CB, evidence-based planning, (BBB)

Subhash Chandra Bose DM curved

Impacts



Climate refugee: 36 million UNHCR

deserve, drought/desert, GW

low: no law, lack skill, conflict indigenous
explo, traffick, labor

ex: 64% people in SE Asia ≥ annually lost

WF: non segment, suggests based approach

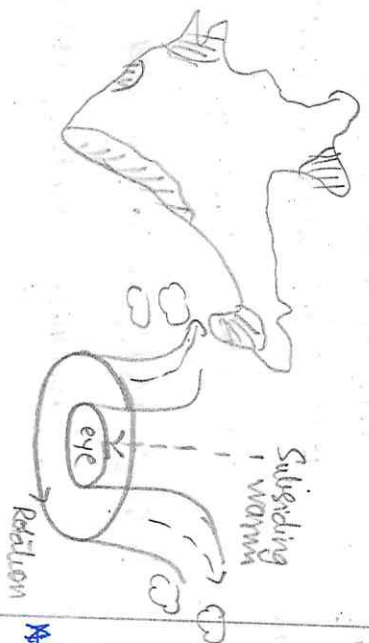
CBDR, climate justice, NANSSEN initiative

Oil spill: NOS-DCI, 8th Convention on

Civil liability for oil pollution

CYCLONE \$700/1500 coastline

upper divergence, weak wedge, moisture source
SST > 27°, strong Coriolis



* National cyclone risk mitigation project
NIDMA Coastal zone management
mangrove / shelter belt $\Rightarrow$ bio shield

CRZ, one-all weather road for each village
Community DM, (saline embankment)
SATARK - Odisha - real time alert
- minimized casualties

POST SENDAI-YOJANA NIDMA

- ① Urban Municipal level DRR
10 point agenda, contextualise it
Urban Resilient Urban Regional adaptation
- ② Linkage to UNISDR
- ③ National Disaster Response Reserve
- ④ SARAC DM centres, SAMMDEX

FLOODS

[10% area, RBAYog]

Cause: Topography

- silting
- EG
- overflow



melero: cone: 809, RFAI in 2 months
cloudburst, GLOF

Artificial, strategic
* silo approach

NBMA: Structural

embankment weir silting/dredging
Bihar

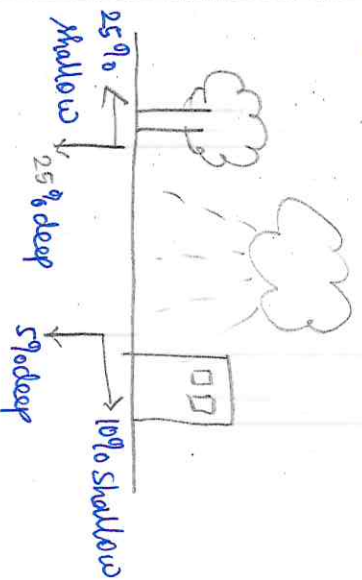
Non structural: a) Hydro data sharing
b) Transboundary River Mgmt
c) 3 approach $\rightarrow$ MANKREGA
+ catch $\rightarrow$ CG, SG

wetland regeneration before monsoon
flood plain zoning - flood cushion
illegal structures, EVS

"Room of THE RIVER" Netherlands

INS: CWC, NBAYog } NINE $\rightarrow$ (Mihir Shah)
NITI: National Water Model (GIS - Doppler, Radar)

URBAN FLOOD



Cause: direct: drainage, waste
indirect: GCC, urbanⁿ, island

Floodplain removal, land use p, ↓ storage

MOES: IECWs [Mumbai, Chennai]

Haku initiative [Hyd]

China: sponge cities, Rain garden

NITI: National water model [NIS]

Buoyant Building - Zurich

Thedavays, Manila

Angda mata (volunteers)

NMMP

NDMA: ULB, Nat Hydr Metro Network

Nat Urban Info Sy/m [NUIS]

pre-monsoon desilting 31/3

RWH, EIA: stormwater drain

decongestion: counter magnets

Copenhagen

Industrial

PCB: 3x in 1990-2010
1861: Major Acc Haz, Univ

Cause: Natural: EarthQ, cyclone

Industry D S M E: ^{effort} safety, PPE, training

2) Labor Laws: Concurrent
+ Industrial Regⁿ

3) poor audit, Latent bureau, factory/inspector
baker,

NDMP: storage of raw material, mfg
+ inspection, SOP

"National Hazard waste info system" NHWS

Mitigation: Zoning/mapping, Hazard Risk

Vulnerability, Cap. Assessment

Chem Risk assess, planning

Hood: Buffer zone, factory inspectors

Mfg storage & import of Haz. Chemicals
(MSHC)

① Public liability Insurance 'At 92

② Chemical Accident Rules '96

③ Explosives Act 1884

④ Nation Action Plan on Chem. Ind. Disasters.

Heat wave

IMD: 40° plain, 37° sea, 30° hills

"Silent disaster": 2 decade: 24000 deaths

Climate forcing (Natural)

urban heat island

cyclone affect [exomere meistar]



Heat exhaustion, deluge, Seamps

NDMA: green cover, Heatwave protection

"not a notified disaster"

EARTHQUAKE: "India Quake 58% app."

Collapse, reservoir, explosion.

Bhima, A&N: sea floor

Himalayan: plate ↑↑ Eurasian

Vulnerability mapping, EQ moni centre

Bhargos Kutch, Dhaji Shivani - J&K

NDMA EQ resilient design

seismic retrofitting

enforce of Building Code '2005

CPDM: Golden Flour

Bamboo Ekra / Arom

Dhaji Shivani - J&K

Bhargos - Kutch



FOREST FIRE

>50% FSI

of fire from

Cause: invasive [lantana], illicit felling,

scattered, thin pine needles, forest shifting / from (CPN)

++ : germinate, IAS X

-- : BD, carbon sink, water/air poll"

National Policy on Managing of Forest Fire (For Fire Mang)

Sweeping machines: clear CPN, satellites, murganga: collect

broadleaf forest, 14 biological load,

thinning of pine pressure area

counter fire, fire/water lines, satellite/mar

दोष दृष्टि

UNEP fire steady

LANDSLIDES : 12.6% landmass

- (N) Kestern-Himalay, rainfall, permafrost degreⁿ
- (H) "deforest", blasting, constⁿ, earthquake, big machines

Nat. landslide Risk Manag. Strategies

Harard Zonation : halt mining, ecotourism, grazing ↓
 lossing on moderate slope, afforⁿ
 social forestry, bunds.

NDMA: Auto Rain gauge, Numerical Weather EN5

- Centre for ~~weather~~ landslide Research & Manag.
- Mountain Zone regulaⁿ.

control fence, control piles, stop fence
 & new cosmic control structures
 or "blast/remove"
 Realtime warning - Sikkim.

DROUGHT 68% prone.

NITI Composite Water Manag. Index

→ 6% GDP loss 2050 water crisis

atkal (food) + Trikal (food) + Jallat (water) } Trikal
 Agri + Eco + Hyd. = Meditia

- a) Variable rainfall b) cropping pattern
- c) ISWD d) CC+URB^N ~~etia~~

Short term: alternate Narsaga, food, fed
 drought manag, mapping

long term: agroclimatic cropping

WUE + drip/irrigation
 water intensive crop,
 drought resistant crop.
 RWH, model waterlaw
 Minis Shal.

Drought Crisis Management Plan (DAMP)

murega, PDS, groundwater recharge, checkdam.
 Israel: solam (thin feed), Kakatiya, etia
 Natⁿ Agri drought are. 3 mon (NADAMS)

Cloud seeding, {Toolbox Drought UNCCD}

Dabulpur/Indore: 4% RWH, productivity tax

Dargakt Shivar/MH, Hware Bargaar, Ralagan Sdla.

शिवरात्रि आदि कार्यक्रम

Crowd

data enforcement, mangⁿ, interviewⁿ, central

basin coding, maps map

CON, police presence

people → awareness, alertness

NDMA:

Biological

Epandemic Act 1897, EPA 86, Wet '74

DM plan for hosp,

Public Health Ins of Emerg

Disability inclusive DR

+ asymmetric / disproportionate

impact : 2x ↑ mortality rate

include PWD in DR

↳ institutionalⁿ of PWD '15

→ EWS in audio/sign language
+ earmark budget

③

landslide, CC/GW, EQ [zone V],

radiative forcing/heat balance, black carbon

①

ocean circulation? salinity, layers, mixing

meandorshift, bank/depth erosion

Tehsu

Sikim: Lake Moni & Info Syst [LIMS]

siphon out, ISRO remote

Dam remediation: wall, tunnel.

Coalition for Disaster Resilient Infra

- multistakeholders @ UN Climate 2019

- knowledge platform - Cap. dev.

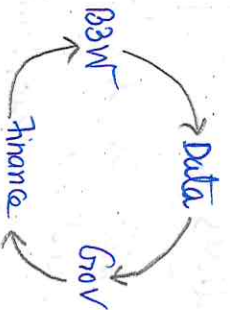
- standards - RSD - fin. & compliance

{eng. design/standard} = suboptimal

seawall rehab, embankment

Sendai Framework

- ① Disaster risk assessment: DATA (understanding)
- ② Std. of design, implement " (strengthen GOVERNANCE)
- ③ finding new infra, fin mechanism FINANCE
- ④ Build Back Better B3W



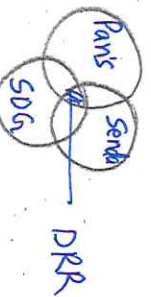
"catastrophe bonds"

NDMA: Central repository of mid- (CRIS)

G.C. [280]: allocation to NDRF/SDRF + special grant to states

Diff. from Hyogo Biodiversity
 DRP, not just DM + broad scope

"1% spent on mitigation = 7% on save R&R"



Target of Sendai

+ 1/2 mortality, people affected, GDP critical infra }

-- {country, intl coop} - EWS

{MPCC} {CIE}

Disasters

- 1) voluntary 2) no target 3) finance
- 4) Refugee 5) energy

"∫ DRR + C.C."

Risk = {Hazard × Vulnerability} Preparation

NCRMC: Disaster → Concurrent last

India Disaster Resource N/W

India Disaster knowledge N/W

National Disaster Comm N/W

RK Mishra Take force passed NDMA

→ no need of NEC → SOP → standby critical eq.

B1

Odisha: ENS [Satark]

Kerala = certificate adalat

Community DM: Saldaha / WB

"Gujar/EQ should not turn them to beggar"

- MG on Bihar EQ '1934.

Key: "holistic" "app" "Community based

CCMNC, CCS, inbuilt DM.

Chor mapping: GIS, National Spatial

data infra, database on emergency

→ Accidental Relief Van of IRailways

→ "Incident Command System"

→ "Kautika Arthashastra → chapters on famine",

Odisha, is a calendar event in India

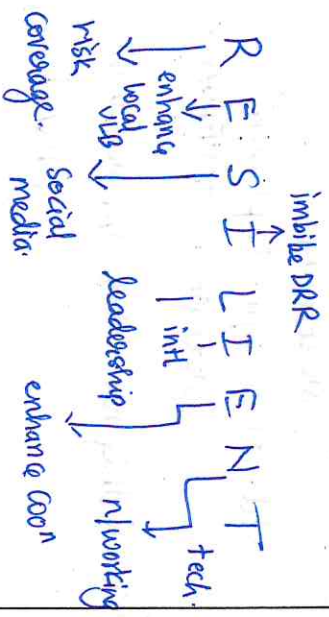
3R → Rescue Relief Rehab To

3P → Prep, Prevent, Proofing

Kerala + WBank = 1st resilience Kerala

Telavi Ram case: SC held that

DM part of RT & sustainable dev



Recent initiatives

1) National / State Disaster Mitigation fund / not Sec 48 (New, Tamil → SDM F)

2) Nation/State disaster risk management

3) Nat. disaster risk index (G40 disaster)

4) course on vulnerability At head of Indg more or

5) Nat. Migrant information slm

6) South Asian flood flood guidance (MD)

7) Satellite support

8) Atmo. & Climate Resound Modelling

Clearing system & source (ACROSS)

9) Tsunami ENS 10) CPRI 11) INCHRS

12) Drought Toolbox 13) Forest Fire Alert (FAST 2.0)

UNCCD