

# POLICIES AND STRATEGIC PROVISIONS FOR DRR IN INDIA

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# The Risk Components

**RISK**

**Hazard Level**

Hazard severity

Likelihood of hazard occurring

Hazard exposure

Likelihood of hazard leading to an accident



# Risk Class

- ❖ Example Risk Classification (IEC61508-5)

- I Unacceptable

- II Undesirable

- III Action Recommended (ALARP)

- IV Broadly Acceptable

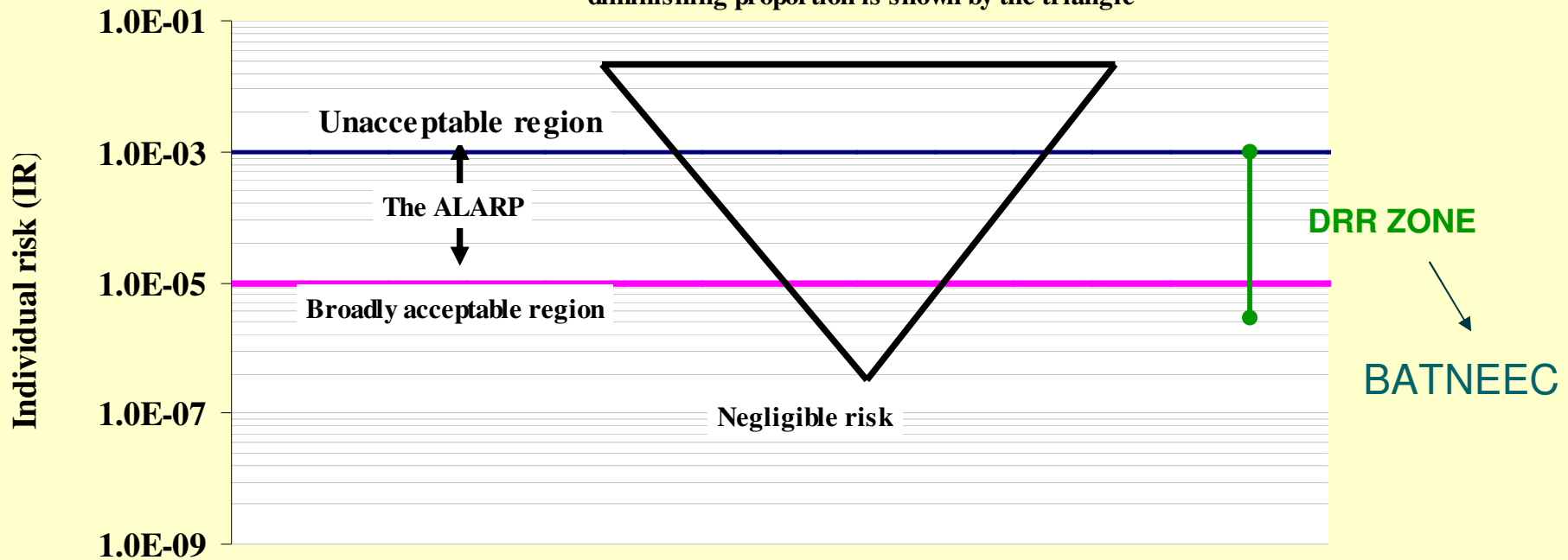
- ❖ Classifications are developed inside the organization and approved by senior management



# ALARP

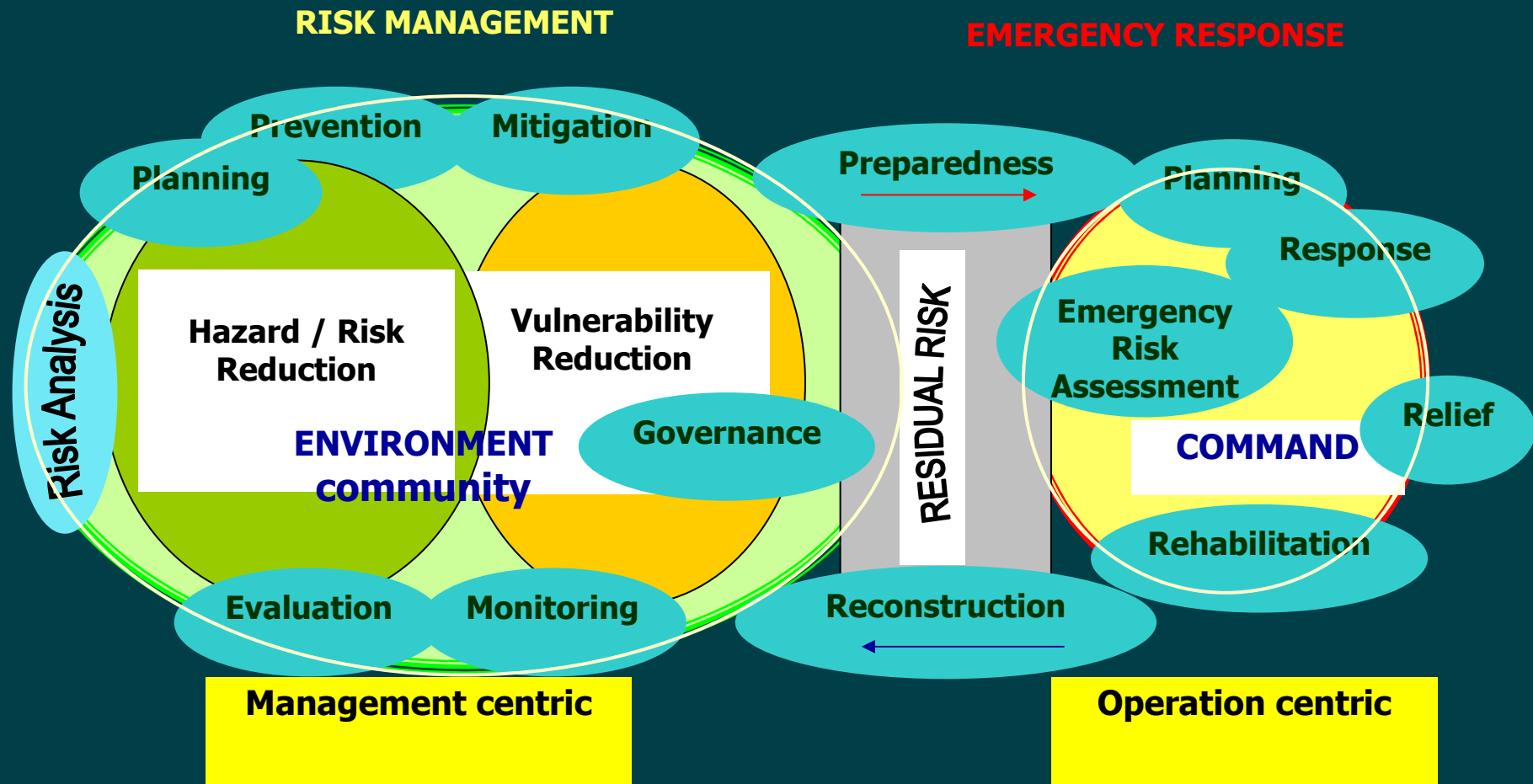
- As Low As Reasonable Practicable (ALRAP)

The lower the risk less proportionately, it is necessary to spend to reduce it. This concept of diminishing proportion is shown by the triangle



# Disaster Risk Management

## Disaster Management Vehicle



# Concept of Disaster Risk Reduction

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## Risk Reduction:

- Event minimization
- Loss minimization
  - Quick recovery (Resilience)

## Approach:

- Visualizing hazards
- Reducing vulnerability
- Increasing coping capacities

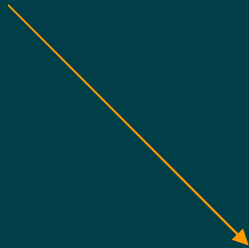
# DM Paradigm Shift

- Response Centric
- Relief Centric

- Mitigation centric
- Preparedness centric
- Disaster Centric

- Hazard Centric
- Vulnerability Centric
- Environment Centric

Adaptation



# DRR Strategy Design – Components

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- What is the risk

hazard - event X damageability

- What is at risk

- – Life, Structures, Resources, Infrastructure

- Resist

- Resilience

- Avoid
- Tolerate
- Manage

- Programmes

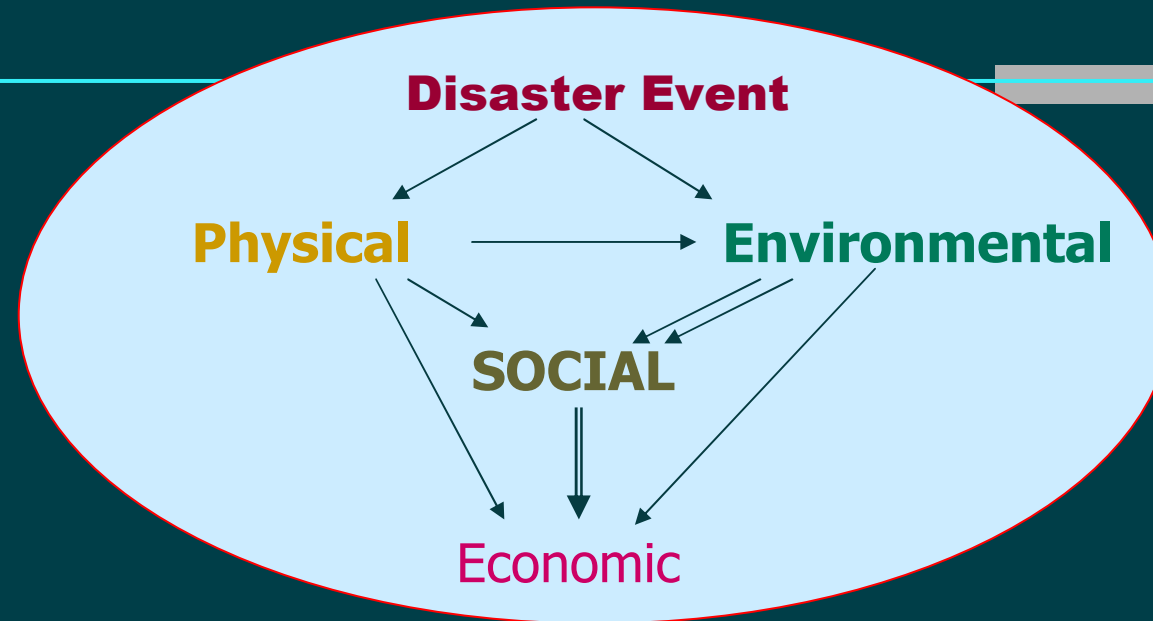
- Direct
- Indirect
- Infused

# Environmental resources – at Risk?

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- Air – composition, wind...weather
- Land/soil - bioproductivity system
- Water bodies
- Water supply – drinking, households, irrigation
- Food supply - crops, aquaculture, fisheries, natural....  
Raw materials for housing / industry / etc.
- Health resources - therapy environment, medicinal resources
- Mitigation?
- Shelter?

# IMPACTS OF DISASTERS



- **Physical** (buildings, structures, physical property, industry, roads, bridges, etc.)
- **Environmental** (water, land/soil, land-use, landscape, crops, lake/rivers / estuaries, aquaculture, forests, animals/livestock, wildlife, atmosphere, energy, etc.)
- **Social** (life, health, employment, relations, security, peace, etc.)
- **Economic** (assets, deposits, reserves, income, commerce, production, guarantee/insurance, etc.)

# DRR Interventions - Routes

- **Direct : DM Act, Rules, Policy...**
  - DM Programmes – NCRM, Capacity building programme of Engineers/Architects
- **Environmental Resources:**
  - Land/soil/land-use
  - Water/water bodies, watersheds
  - Wetlands, Rivers
  - Air/atmosphere
  - Habitat/vegetation-forests, plantation, orchards, agriculture - agroforestry, aquaculture
  - Livestock, wild animals
  - Environmental supplies – water, PHE, sanitation, waste mgmt,
  - Chemicals / minerals
- **Welfare programmes**
  - Family, child, youth, sports, NREGS, RTI, ....
- **Service programmes**
  - Transport, health, communication, housing, aviation, navigation, fire, industry

# Prepare and Plan to Reduce Risk

- **Hazard Mapping** (Individual / Multihazard)
- **Risk and Vulnerability Assessment**
- **Modeling and simulation** (e.g. flood models)
- **Forecasting** (e.g. through sharing of real-time data and information on floods, including telemetry involved in collecting data from field to national centres and beyond)
- **Early Warning Systems** (e.g. weather forecasting in cyclones and tropical storms)
- **Monitoring** (e.g. Temporal image analysis, GLOF)
- **Knowledge hub** (e.g. portal giving database of equipment, responsible agencies,, evacuation plan, sharing of lessons learned and experiences etc.)
- **Preparedness through education, communication and Information** e.g. Radio, TV can be used to raise awareness and accountability of policy makers to ensure polices are drawn

# HRVC Analysis

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- Hazard identification
  - Establish relative priorities for your hazards.
  - Hazard Mapping
- Critical Facility Analysis
  - Identify critical facilities categories
  - Complete a critical facilities inventory
  - Identify intersections of critical facilities with high-risk areas
- Vulnerability Analysis
  - Societal
  - Infrastructure
  - Environmental
  - Economic

# DM in India

- Disaster Management Act 2005
- Paradigm Shift
- Planned, holistic and proactive approach
- Role of S&T and academic inputs, and participative
- Disaster Management Act 2005
- A Holistic and Comprehensive Approach
- Institutional Mechanisms at National, State & Local level
- Focus on Prevention, Mitigation and Preparedness

# Nodal agencies for monitoring and early warning of disasters

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- Forecasts / Warnings relating to major Natural Disasters are being provided by....
  - India Meteorological Department (Cyclones, Floods, Drought, earthquakes)
  - Central Water Commission of the Ministry of Water Resources (Floods)
  - Geological Survey of India (Landslides)
  - Department of Ocean Development (Tsunami)

# The Disaster Management Act 2005

- The Disaster Management Act was enacted on 23rd December, 2005. The Act provides for establishment of -
  - NDMA (National Disaster Management Authority)
  - SDMA (State Disaster Management Authority)
  - DDMA (District Disaster Management Authority)
- Act provides for constitution of Disaster Response Fund and Disaster Mitigation Fund at National, State and District level.
- Establishment of NIDM and NDRF.

# NATIONAL POLICY ON DISASTER MANAGEMENT

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- The National Policy on Disaster Management has been finalized and approved by Home Minister.
- Inter-Ministerial consultation process has been completed.
- The Policy is now under consideration of NDMA.
- Draft Policy lays down the roadmap/direction for all Government endeavors.

# OBJECTIVES OF POLICY

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- A holistic and pro-active approach for mitigation and preparedness will be adopted.
- Each Ministry/ Department of the Central/ State Government to ensure that disaster reduction elements are integrated with development planning.
- Promoting a culture of Prevention and Preparedness
- Ensuring Mitigation measures based on State-of-the-Art technology and environmental sustainability

# OBJECTIVES OF POLICY

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- Mainstreaming DM concerns into the Development Planning Process
- Putting in place a streamlined Institutional Techno-Legal Framework
  - in order to create and preserve the integrity of an Enabling Regulatory Environment and a Compliance Regime

# OBJECTIVES OF POLICY

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- Promoting a productive partnership with the Media to create awareness and contributing towards Capacity Development
- Ensuring efficient Response and Relief with a caring approach towards the needs of the vulnerable sections of the Society
- Undertaking Reconstruction as an opportunity to build back better

# POLICY : TECHNO LEGAL FRAMEWORK

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- Development and vigorous enforcement of Indian Codes /Standards relevant to multi hazard resistant designs and updating it on regular basis.
- Review of development control regulations and zoning regulations.
- Revision of relief codes/ manuals so as to convert them into disaster management codes/ manuals to institutionalize planning process.

# POLICY: TECHNO- FINANCIAL FRAMEWORK

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- Disaster Risk Insurance
- Micro-finance and Micro-insurance
- Regulations for provision and rescheduling of loans/debts in case of disasters of severe magnitude

# POLICY : MITIGATION AND CAPABILITY BUILDING

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- Detailed evaluation & retrofitting of lifeline buildings
- Construction of multi-purpose cyclone shelters
- Capacity building of all stakeholders.

# POLICY: PREPAREDNESS AND RESPONSE

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- Development of fully trained and equipped specialist response teams.
- Strengthening of civil defense set up to supplement local response and relief efforts.
- Development of Standard Operating Procedures by all relevant Ministries/ Departments at Central, State and District levels.

# POLICY: RELIEF AND REHABILITATION

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- State Government will be advised to establish per-contract and pre-agreement arrangements for immediate mobilization of resources.
- Central Government will also facilitate mobilization of resources when requested by the State Governments.

# POLICY: HUMAN RESOURCE DEVELOPMENT

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- Establishment of National centers of excellence for human resource development in areas of disaster mitigation, preparedness and response.
- Promotion of research and development for early warning systems and prevention and mitigation of sudden onset disasters.
- Involvement of community civil defense volunteers, NGOs, ex-servicemen and youth organizations in all aspects of DM.
- Promotion of self-reliance in the community.

# FINANCE

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- National, State, District Mitigation Fund
- National, State, District Response Fund
- Ministry or Department to make provision for fund in annual budget for disaster management activities as set out in disaster management plan
- During any threatening disaster situation, disaster National/State/District authority if satisfied that immediate procurement of provision or materials are necessary. inviting tenders shall be waived

# NATIONAL DISASTER RESPONSE AND MITIGATION FUND

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- National Disaster Response Fund will be constituted and funded by the Central Government, and grants may be made by any person/institution.
- National Disaster Mitigation Fund started for mitigation projects.
- The State Government shall establish Disaster Response Fund and Disaster Mitigation Fund at State and District Levels.
- Every Ministry/Department of Central and State shall make provision in budget for activities in DM plan.

# Related Policies

- Environmental Policy
  - Planning Commission Working Plan 2009-12 Environment & Forests
- Land-use Policies
- Agriculture Policy
- Water Policy
- Voluntary Sector Policy
- WRD & Hydro-Power policy
- Rural Development (land resources)
- Housing Policy
- Forest Policy
- Statement of Climate Change
- Right to Information
- Map Policy

# Programmes (examples)

- Disaster Risk Management Programme
- National Emergency Communication Plan
- Disaster Management Decision Support Programme
- Natural Resources Data Management System NRDMS
- Environmental Information System
- APELL
- JNURM
- Integrated Coastal Zone Management
- National River Conservation
- National Wetland Programme
- National Wasteland Programme
- Rural employment
- Mid-day meal scheme
- Microfinance

# Strategic Tools

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*Tools that help and/or implement policies*

- Project Appraisal Process
- Policy Appraisal – SEA (of policy, plan, programmes)
- EIA / REIA – DMP & EPP?
- DRA as part of Project Appraisal process
- Carrying capacity based planning
- Risk based developmental planning
- Cost-Benefit Analysis
- Economic cost of impacts
- Risk Auditing
- Integration of Strategic Tools

# DRR Institutional Framework

- NDMA – Apex Body
- Planning Commission – E&F
- Ministry of Environment & Forests
- Ministry of Earth Sciences
- Department of Science & Technology
- Department of Biotechnology
- National Biodiversity Authority
- ICAR, IARI, CSIR
- Department of Space-ISRO, NRSC, NIC
- Deptt. of Land resources, Land-use boards
- Ministry of Agriculture
- Ministry of Water Resources
- Ministry of Non-conventional Energy
- National Institute of Disaster Management, DM Centres in State ATIs



**THANK YOU**

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