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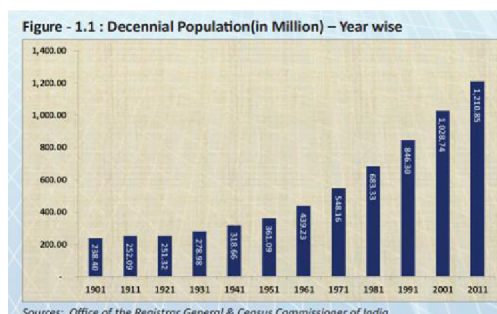
COUNTRY  
PRESENTATION

# DISASTER MANAGEMENT IN INDIA

Presented By-  
Smti. Mridusmita Borah  
Project Officer (Disaster Risk Reduction)  
Assam State Disaster Management Authority (ASDMA),  
Under Revenue & Disaster Management Department, Govt. of Assam,  
Visiting Researcher to ADRC, Kobe (Japan), Member Country-Republic of India

## GENERAL INFORMATION ABOUT INDIA

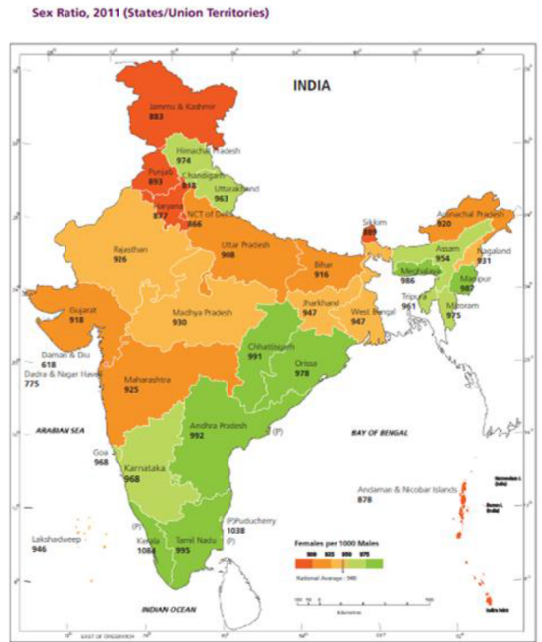
- POPULATION (2017 est.) : 1,210,193,422 (as on 1<sup>st</sup> March,2011)
- TOTAL AREA (SQ MI) : 1,269,346
- TOTAL AREA (SQ KM) : 32,87,590
- TOTAL STATES & UNION TERRITORIES : 29 States & 7 UT
- CAPITAL : New Delhi
- No. of Constitutional Languages : 22
- Official language : Hindi
- LIFE EXPECTANCY AT BIRTH :
  - Male: (2006–2011) 65.8 years
  - Female: (2006–2011) 68.1 years
- LITERACY: (AS PER 2011 CENSUS) :
  - Male: (2011) 82.14%
  - Female: (2011) 65.46%
- Birth Rate : 20.4 (2016)





As per sex ratio of 2011 census, North-Eastern India & Southern India have a greater female ratio than the North & North West India

Source of map: Census of India report



States and Capitals	
1. Andhra Pradesh (Hyderabad)	21. Punjab (Chandigarh)
2. Arunachal Pradesh (Itanagar)	22. Rajasthan (Jaipur)
3. Assam (Dispur)	23. Sikkim (Gangtok)
4. Bihar (Patna)	24. Tamil Nadu (Chennai)
5. Chhattisgarh (Raipur)	25. Telangana (Hyderabad)
6. Goa (Panaji)	26. Tripura (Agartala)
7. Gujarat (Gandhinagar)	27. Uttarakhand (Dehradun)
8. Haryana (Chandigarh)	28. Uttar Pradesh (Lucknow)
9. Himachal Pradesh (Shimla)	29. West Bengal (Kolkata)
10. Jammu & Kashmir (Srinagar(S*), Jammu (W*))	
11. Jharkhand (Ranchi)	<b>Union Territories and Capitals</b>
12. Karnataka (Bangalore)	1. Andaman and Nicobar Islands (Port Blair)
13. Kerala (Thiruvananthapuram)	2. Chandigarh (Chandigarh)
14. Madhya Pradesh (Bhopal)	3. The Government of NCT of Delhi (Delhi)
15. Maharashtra (Mumbai)	4. Dadra and Nagar Haveli (Silvassa)
16. Manipur (Imphal)	5. Daman and Diu (Daman)
17. Meghalaya (Shillong)	6. Lakshadweep (Kavaratti)
18. Mizoram (Aizawl)	7. Puducherry (Puducherry)
19. Nagaland (Kohima)	
20. Odisha (Bhubaneswar)	

Source of maps: [www. Maps of India.com/](http://www.Maps of India.com/)  
Census of India report  
Source of list: NIDM report

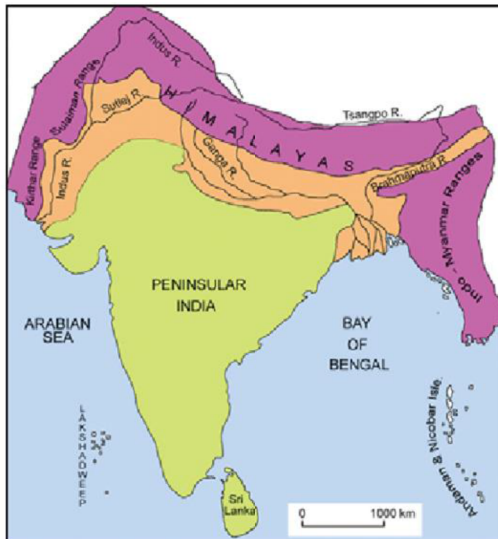
# INDIAN ECONOMY

- GDP (2017-18) (6<sup>th</sup> largest) : \$2.6 trillion (nominal; 2018)
- GDP Growth : 6.6% (Expected 2018-19- 7.3%)
- TAX COLLECTION : Increase by 19.5% (Y on Y)
- START-UP TECHNOLOGIES : 4750+ (as reported by NASSCOM)
- LABOUR FORCE : Expected 160-170 million by 2020
- LABOUR FORCE PARTICIPATION RATE : 50.4 (2015-16)
- UNEMPLOYMENT RATE : 5.0 (2015-16)

Source: <https://timesofindia.indiatimes.com/business/india-business/indias-economy-is-an-elephant-thats-starting-to-run-says->

[www.ibef.org](http://www.ibef.org)  
<http://www.mospi.gov.in>

# GEOLOGY & CLIMATE OF INDIA



Source of map:  
Indian Journal of  
Geosciences,  
Volume 66, No.  
4 October -  
December, 2012; pp  
181-192, Article by

**Geologically;**  
India is divided into 3 major regions :

1. **The Peninsular Plateau** region – It also includes the Shillong Plateau and the Kutch Kathiawar region **Outliers**
1. **The Extra-peninsular region** – the mountainous region of Himalayas

1. **The Indo-Gangetic Plain** between the above two

In addition to these, there are 2 minor divisions:

4. The Coastal Plains (Eastern and western),
5. The Islands (Lakshadweep and Andaman and Nicobar)

**Climatologically,**

There are four seasons as designated by the Indian Meteorological Department, namely:

- Winter (December-February)
- Pre-Monsoon/ Summer (March-May)
- Monsoon/rainy season (June-September)
- Post monsoon season/autumn (October-November)

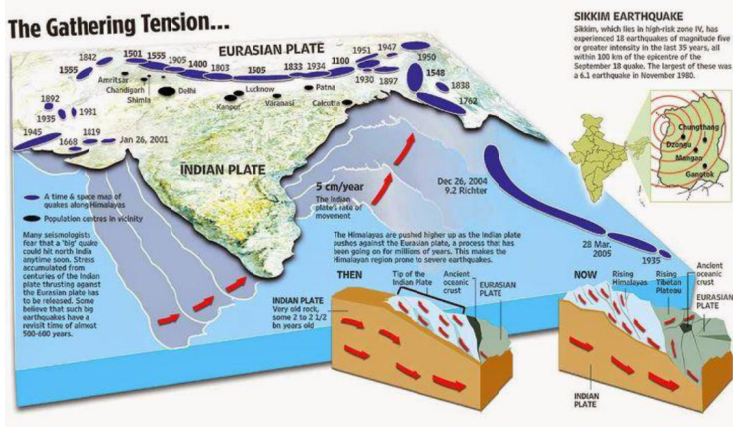
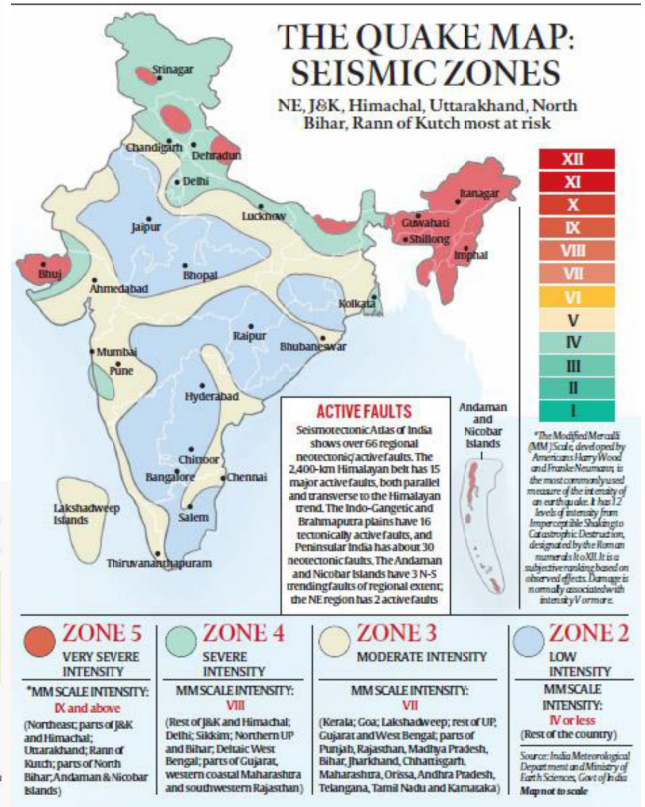
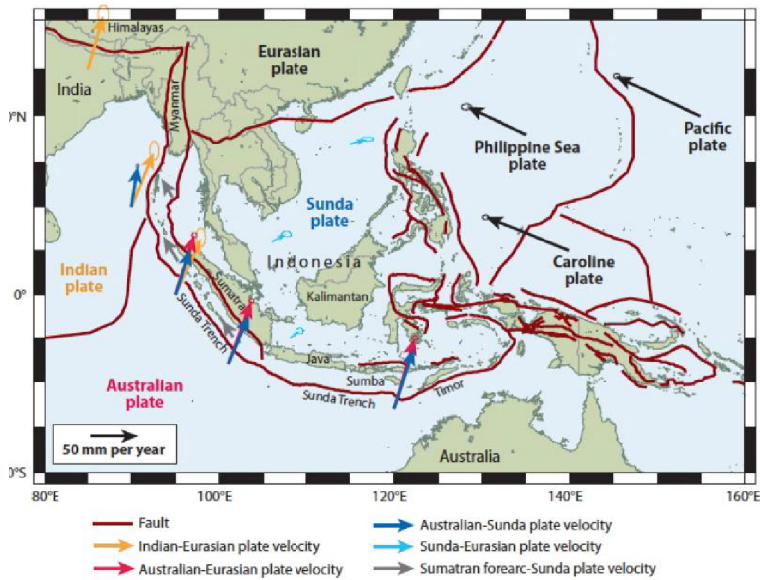
Source: NIDM Report

# DISASTER RISK PROFILE OF INDIA

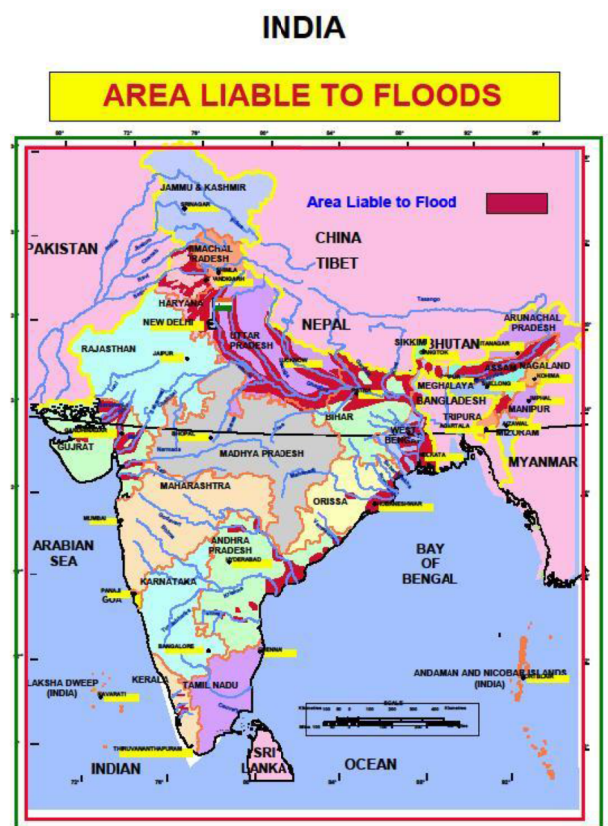
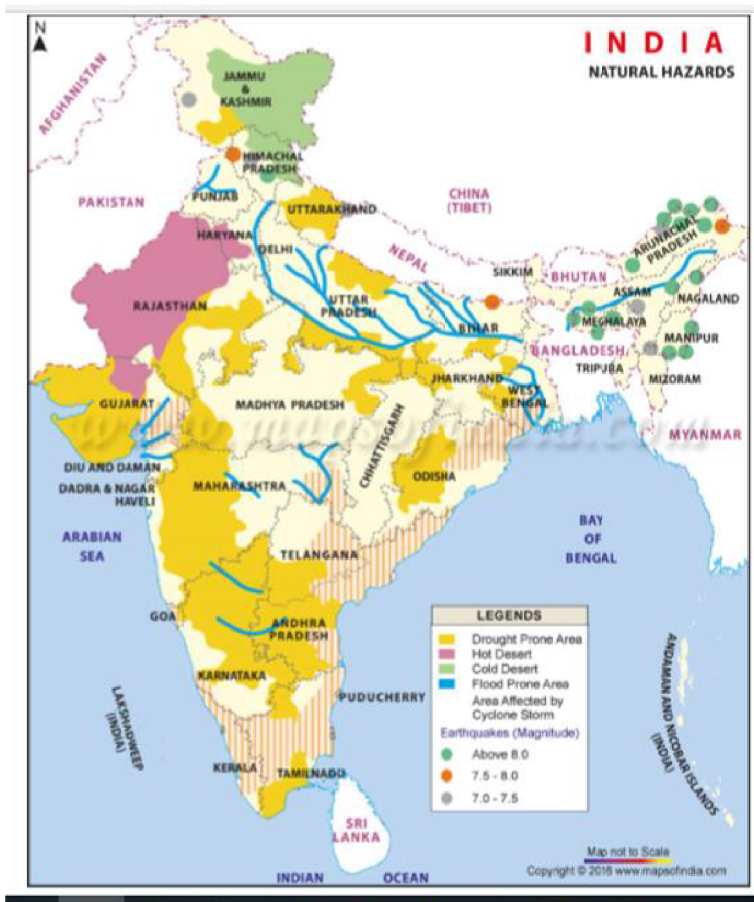
- Out of 36 states and union territories in the country, 27 of them are disaster prone.
- It is highly vulnerable to floods, droughts, cyclones, earthquakes, landslides, avalanches and forest fires.
- Almost 58.6 per cent of the landmass is prone to earthquakes of moderate to very high intensity;
- Over 40 million hectares (12 per cent of land) are prone to floods and river erosion;
- Of the 7,516 km long coastline, close to 5,700 km is prone to cyclones and tsunamis;
- 68 per cent of the cultivable area is vulnerable to drought and hilly areas are at risk from landslides and avalanches.
- Himalayan region is prone to disasters like earthquakes and landslides, the plain is affected by floods almost every year. The desert part of the country is affected by droughts and famine while the coastal zone susceptible to cyclones and storms. The Geo-tectonic movements going on in the ocean floor make the coastal region prone to tsunami disaster too.

Source: NIDM Report





<https://www.src.com.au/seismographs-for-myanmar/>  
<https://topyaps.com/earthquake-hit-north-india>



# DISASTERS AFFECTING INDIA

## Water and climate related disasters

- Floods and drainage management
- Cyclones
- Tornadoes and hurricanes
- Hailstorm
- Cloud burst
- Heat wave and cold wave
- Snow avalanches
- Droughts
- Sea Erosion
- Thunder and lightning
- 

## Accident related disasters

- Forest fires
- Urban fires
- Mine flooding
- Oil spills
- Major building collapse
- Serial bomb blasts
- Festival related disasters
- Electrical disasters and fires
- Air, road and rail accidents
- Boat capsizes
- Villages

## Chemical, industrial and nuclear related disasters

- Chemical and industrial disasters
- Nuclear disaster

## Biological related disasters

- Biological disasters and epidemics
- Pest attacks
- Cattle epidemics
- 

## Geological related disasters

- Landslides and mudflows
- Earthquakes
- Dam failures/ Dam bursts
- Minor

## State Specific disasters: (Assam)

- Erosion
- Lightning
- 

Source: wikipedia

## RECENT DISASTER EVENTS THAT OCCURRED IN INDIA FROM 2015-2018

### Disasters that occurred in India during 2015:

- February 13 Anekal derailment
- March North India unseasonal rain
- March Swine flu outbreak
- March 20 Uttar Pradesh train accident
- April 25 Nepal earthquake
- May 12 Nepal earthquake
- May 25 Muri Express derailment
- May–June Heat Wave
- June 17 Mumbai alcohol poisoning
- June 24 Gujarat flood
- July 27–30 North Gujarat flood
- August 4 Harda twin train derailment
- September 12 Petlawad explosion
- November 8–10 South Indian floods

### Disaster that occurred in India during 2018:

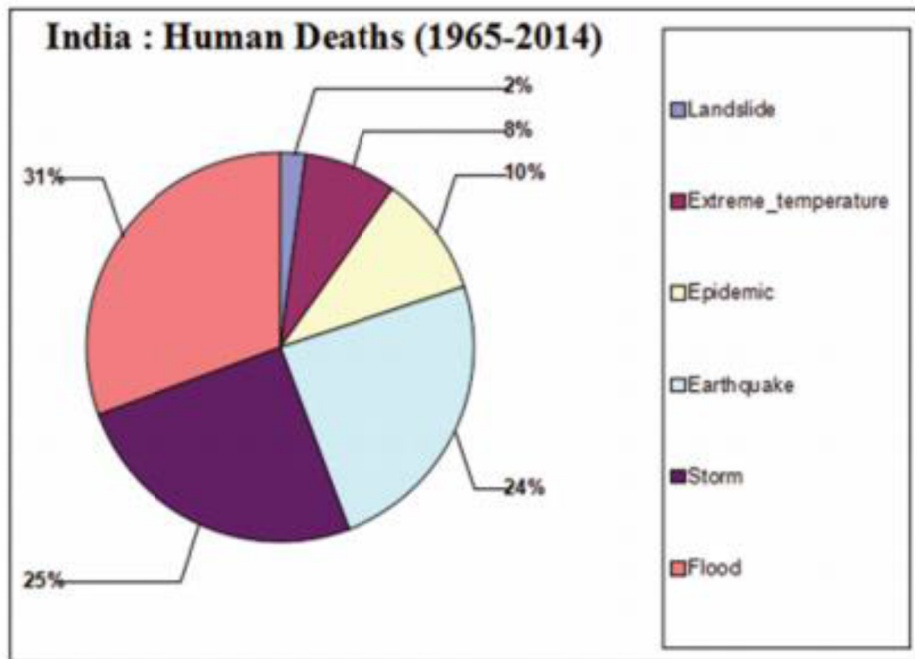
- Indian dust storms
- May Nipah Virus outbreak in Kerala
- August Kerala floods
- September South Kolkata Majherghat bridge collapse

### Disasters that occurred in India during 2016:

- January 4 Imphal earthquake
- January 22–24 East Asia cold wave
- February 3 Siachen Glacier avalanche
- February 5 Gujarat road accident
- March 31 Kolkata flyover collapse
- April 10 Puttingal temple fire
- April 13 Myanmar earthquake
- April 26 National Museum fire
- April–May Uttarakhand forest fires
- April–May INDIAN HEAT WAVE
- May 17 Cyclone Roanu
- July 22 Air Force An-32 disappearance
- July Assam floods
- August 16 Bihar hooch tragedy
- August 24 Myanmar earthquake
- November 20 Pukhrayan train derailment
- December 12 Cyclone Vardah
- December 28 Kanpur train accident
- December Smog in Delhi

### Disaster that occurred in India during 2017

- January 3 Tripura earthquake
- January 3–14 North India cold wave
- January 14 Patna boat accident
- January 21 Kunderu train derailment
- January 25 Gurez sector avalanche
- January 28 Ennore oil spill
- February 6 Uttarakhand earthquake
- July Assam-Brahmaputra floods
- July Gujarat flood
- July West Bengal flood
- August GORAKHPUR HOSPITAL DEATHS
- August Nepal and India floods
- August 19 Khatauli train derailment
- August 23 Auraiya train derailment
- August Bihar flood
- August 29 Mumbai flood
- September 29 Mumbai stampede
- November 1 NTPC power plant explosion
- November 29 Cyclone Ockhi
- December 23 Rajasthan bus crash
- December 28 Kamala Mills fire



Graph showing Disaster Deaths in India from 1965 to 2014

Source of Graph: International Journal of Health System and Disaster Management | Vol. 4 | Issue 2 | Apr-

## DISASTER RISK MANAGEMENT IN INDIA

- A Series of disasters such as Latur Earthquake (1993), Malpa Landslide (1994), Orissa Super Cyclone (1999) and Bhuj Earthquake (2001), resulted in a systematic, comprehensive and holistic approach towards disasters and led to the evolution of a hierarchical structure for disaster management in India.
- Disaster Management division shifted under the Ministry of Home Affairs in 2002.
- Disaster Management Act, 2005 came into force.
- Constitution of NDMA in May 30, 2005 under the Chairmanship of Prime Minister vide an executive order and later was formally constituted in accordance with Section-3(1) of the Act on 27th September, 2006 with Prime Minister as its Chairperson .
- National Executive Committee(NEC) constituted under Section 8 of DM Act, 2005 to assist the National Authority in the performance of its functions with Home Secretary as its Chairperson.
- Setting up of SDMA and DDMA under DM act, 2005.

Source: MHA Report



# LEGAL FRAMEWORK

## Disaster Management Act, 2005.

- National Policy on Disaster Management 2009
- State Policies on Disaster Management
- NDMA Guidelines

## Legal provisions under Constitution of India:

**Article 21** : Indian Constitution guarantees every person right to life and personal liberty. It casts a positive obligation on the State to take all possible steps for prevention, preparedness and mitigation of disasters

**Article 38** directs State to promote the welfare of the people.

**Article 51** directs State to honor the international treaty obligations. India is a party to a number of international treaties on environment which contain specific provision on disaster management

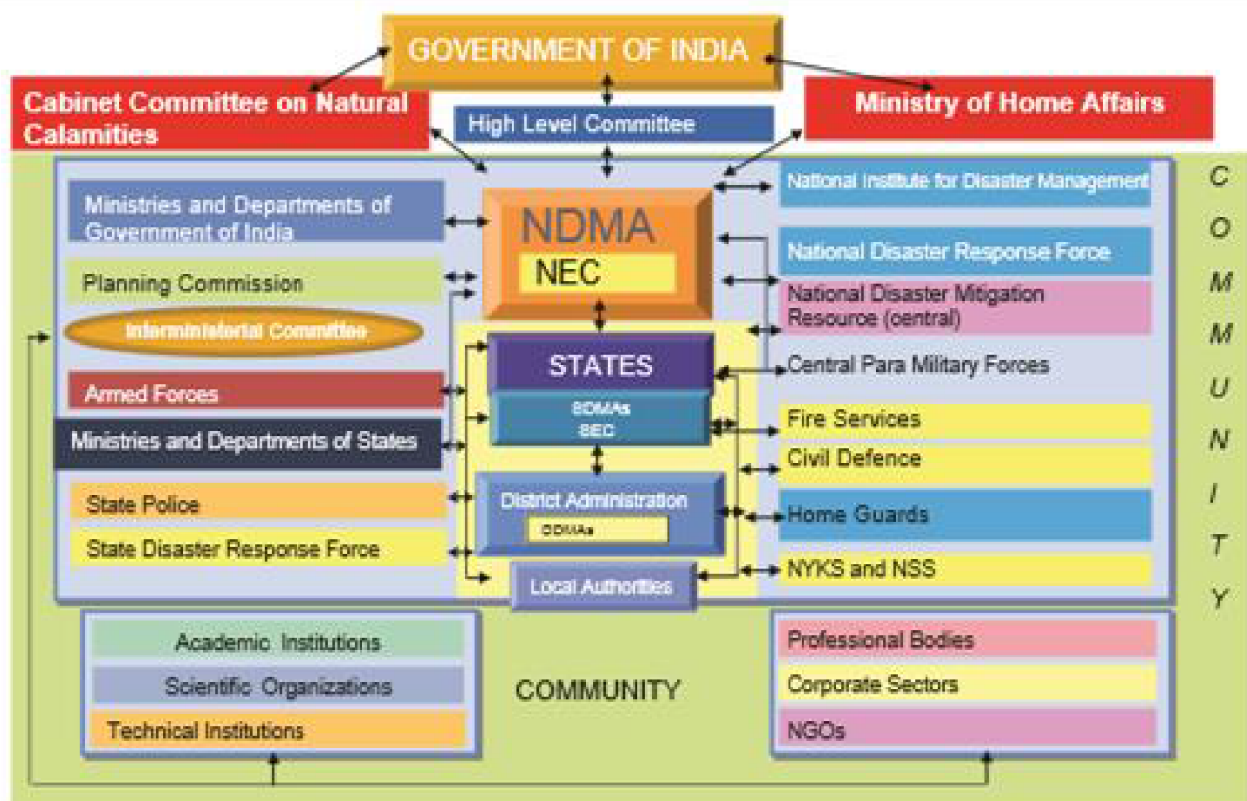
## Doctrine of *parens patriae*

## Various laws related to Disaster Management- Prevention, Mitigation, Response, Recovery and Rehabilitation:

1. THE INDIAN PENAL CODE, 1860
2. THE INDIAN EVIDENCE ACT, 1872
3. THE CIVIL DEFENSE ACT, 1968.
4. THE WILD LIFE (PROTECTION) ACT, 1972
5. THE CODE OF CRIMINAL PROCEDURE, 1973
6. THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT, 1974
7. THE WATER (PREVENTION AND CONTROL OF POLLUTION) RULES, 1975
8. FOREST (CONSERVATION) ACT, 1980
9. THE AIR (PREVENTION AND CONTROL OF POLLUTION) ACT, 1981
10. THE AIR (PREVENTION AND CONTROL OF POLLUTION) RULES, 1982
11. ENVIRONMENT (PROTECTION) ACT, 1986
12. THE ENVIROMENT (PROTECTION) RULES, 1986
13. THE FACTORIES ACT, 1948 AS AMENDED BY THE FACTORIES (AMENDMENT) ACT, 1987.
14. PUBLIC LIABILITY INSURANCE ACT, 1991
15. THE PUBLIC LIABILITY INSURANCE RULES, 1991
16. THE PROTECTION OF PLANT VARIETIES AND FARMERS' RIGHTS ACT, 2001
17. THE BIOLOGICAL DIVERSITY ACT, 2002
18. FOREST (CONSERVATION) RULES, 2003
19. FOOD SAFETY AND STANDARDS ACT 2006
20. THE DISASTER MANAGEMENT (NATIONAL DISASTER RESPONSE FORCE) RULES, 2008
21. CULTURAL HERITAGE CONSERVATION BILL, 2010
22. NATIONAL GREEN TRIBUNAL ACT 2010
23. WETLANDS (CONSERVATION AND MANAGEMENT) RULES, 2010
24. DAM SAFETY BILL 2010
25. COASTAL REGULATION ZONE NOTIFICATION 2011 etc.

Source: Compendium of laws on DM

# DISASTER MANAGEMENT INSTITUTIONAL FRAMEWORK IN INDIA



Source: MHA Report

# ROLE OF NATIONAL DISASTER MANAGEMENT AUTHORITY IN INDIA

LAY DOWN POLICIES on disaster management

CO-ORDINATE the enforcement and implementation of the policy and plan for disaster management

APPROVE the National Plan

LAY DOWN GUIDELINES for Ministries to integrate measures for prevention of disaster in their development plans and projects

APPROVE plans prepared by the Ministries or Departments

TAKE MEASURES for the prevention of disaster, or the mitigation, or preparedness and capacity building for dealing with the threatening disaster situation

LAY DOWN GUIDELINES for State Authorities to draw State plan

RECOMMEND provision of funds for the purpose of mitigation;

LAY DOWN POLICIES AND GUIDELINES for the functioning of the National Institute of Disaster

PROVIDE SUPPORT to other countries affected by major disasters

## FEW SNAPSHOTS OF DM OPERATIONS



Search & Rescue team of NDRF in operation during Sikkim Earthquake



Medical Camp set up during Sikkim Earthquake to treat the patients



"Operation Maitri" launched by MHA during 25<sup>th</sup> April, 2015 Nepal Earthquake to aid Nepal in S&R



"Operation Phutkal" by Army, IAF & NDMA in Zaskar River of Ladakh where LS blocked river

# AGENCIES WORKING FOR DISASTER MANAGEMENT IN INDIA

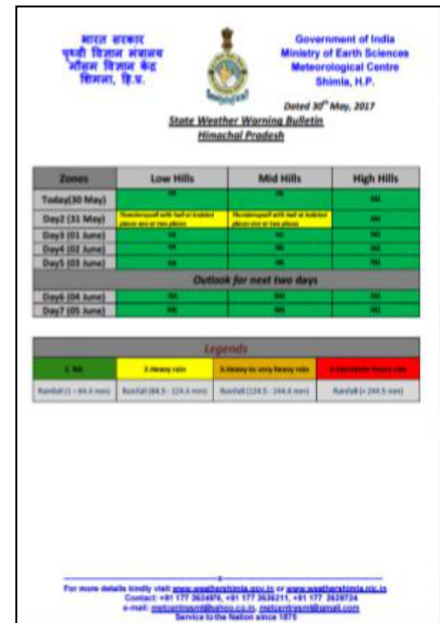
## Nodal agencies for monitoring and early warning of disasters

Forecasts / Warnings relating to major Natural Disasters are being provided by....

- 1) **India Meteorological Department** (Cyclones, Floods, Drought, earthquakes)
- 2) **Central Water Commission of the Ministry of Water Resources** (Floods)
- 3) **Geological Survey of India** (Landslides)
- 4) **Department of Ocean Development** (Tsunami)

### AGENCIES FOR RESPONDING TO DISASTERS:

NDRF/ CIVIL DEFENCE & HOME GUARDS/ FIRE & EMERGENCY SERVICES/ SDRF/ LINE DEPARTMENTS



Weather bulletin of IMD

### CO-ORDINATING AGENCIES:

NDMA/ SDMA/ DDMA/ LOCAL AUTHORITIES etc.

# SENDAI TARGETS

## By 2016:

Translation of Sendai messages into national languages

Identification of Sendai Focal Point

Take stock of current status of DRR

AMCDRR agreed on implementation of Asian regional Plan for DRR

## By 2020:

established methodologies to collect disaster loss data and risk profiles

revised/developed their national strategies and/or plans for disaster risk reduction with increased focus on local actions

Develop regulatory or policy frameworks to re- enforce risk considerations and risk reduction measures into development initiatives

Review regional targets under the Asian Regional Plan

## By 2018:

Technical guidance by UNISDR to finalize national indicators

establish a national mechanism to collect, analyse and disseminate information on disaster losses and risk

Develop national plans /strategies considering Sendai target (e)

Develop local platforms for information sharing

Develop regulatory framework of Infrastructure development

## By 2022:

Develop regulatory or policy frameworks to re- enforce risk considerations and risk reduction measures into development initiatives

Improved Early warning systems

Established multi-sectoral and multi-stakeholder national and local platforms.



# SENDAI TARGETS

## By 2030:

- All countries have demonstrated reduction in disaster-related mortality, affected population, economic losses and damages to critical infrastructure and basic services.
- All countries have reviewed their progress of implementation through the Sendai Monitor.
- A regional review report of the Sendai Framework is available.
- All countries have risk-sensitive development planning and practice.
- All countries have improved their governance and accountability for risk-resilient investment in both the public and private sector.
- Sub-

# RECENT DISASTER MANAGEMENT INITIATIVES IN INDIA

INITIATIVES TOWARDS FULFILLMENT OF SFDRR TARGETS

2018

India-Japan Workshop on Disaster Risk Reduction

First International Workshop on Disaster Resilient Infrastructure (IWDRI)

2017

First Joint Disaster Management Exercise for BIMSTEC Countries

Second Meeting of National Platform for Disaster Risk Reduction held in Vigyan Bhawan, New Delhi

2016

First Asian Ministerial Conference for Disaster Risk Reduction after adoption of SFDRR

Cooperation with UNIDSR

Meeting of BRICS Ministers for Disaster Management

First Disaster Management Exercise with SAARC Countries

# PRIME MINISTER'S 10 POINT AGENDA ON DRR

PERIODIC REVIEW  
& MONITORING BY  
GOVT OF INDIA  
TOWARDS STATE'S  
ACHIEVEMENT ON  
THE HON'BLE PM'S  
10 POINT AGENDA  
FOR DRR

All development sectors must imbibe the principles of disaster risk management

Work towards risk coverage for all – starting from poor households to small and medium enterprises to multi-national corporations to nation states

Encourage greater involvement and leadership of women in disaster risk management

Invest in risk mapping globally

Leverage technology to enhance the efficiency of our disaster risk management efforts

Develop a network of universities to work on disaster issues

Utilize the opportunities provided by social media and mobile technologies

Build on local capacity and initiative

Ensure that the opportunity to learn from a disaster is not wasted

## DISASTER BUDGET OF INDIA

- The **Second Finance Commission** brought the concept of **Margin Money** as a separate fund for the management of natural calamities.
- The margin money allocated to the states by various finance commissions steadily increased from **Rs. 13.75 crores** during 1955-60 to **Rs.1203.75 crores** during 1985-90.
- The **Ninth finance Commission (1990-95)** constituted the **Calamity Relief Fund (CRF)** to be contributed by the central government and the state Governments on **75:25** basis as non-plan grant.
- CRF allocation to the states has registered a increase from **Rs.4020 crores** during 1990-95 to **Rs.21333.33 crores** during 2005-10.; The **tenth (1995-2000)**, **eleventh (2000-2005)** and the **Twelfth Finance commissions (2005-2010)** retained the scheme with minor modifications.
- The **Tenth Finance commission** had constituted the National Fund for Calamity relief to deal with catastrophic disasters, which was substituted by **National Calamity Contingency Fund (NCCF)** by the **eleventh finance commission** with an initial corpus of **Rs.500 crores**.
- The **14th Finance commission** has recommended **Goods and Service Tax (GST)** for funding catastrophe with total amount of **Rs 61,219 crores** by introducing **State disaster response Fund** with the contribution of **10 % by the state government ( Rs 6,122 Crore)** and **National disaster response Fund** as recommended in clause 46 (section 46) of the National Disaster Management Act 2005. with the contribution of **90% by the Central Government . (Rs. 55,097 Crores)**.
- The volume of post disaster funding is continuously growing and it has reached from **Rs. 500 crore** to **Rs. 61,219 crores**.
- National Disaster Management Act has also made a mention of the creation of National disaster Mitigation Fund , Clause 47 exclusively for the purpose of mitigation .

# NATIONAL FLAGSHIP PROJECTS OF INDIA

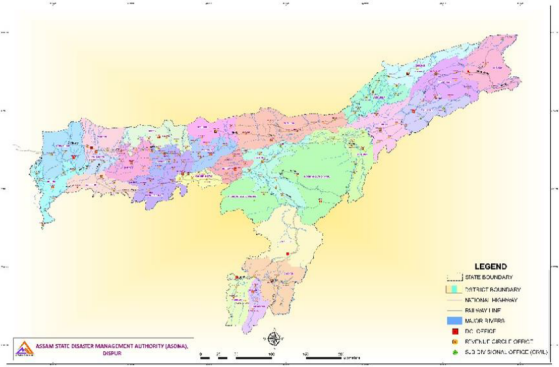
- National Cyclone Risk Mitigation Project
- Infrastructure Development for 10 battalions and 10 teams of NDRF
- Creation of a National Disaster Response reserve (NDRR)
- Aapda Mitra Scheme
- Sustainable Reduction in Disaster Risk in 10 Multi-hazard Districts
- National Emergency Communication Plan (Phase II)
- School Safety Programme
- National Earthquake Risk Mitigation Project
- National Landslide Risk Mitigation Project
- National Flood Risk Mitigation Project

[www.mha.gov.in](http://www.mha.gov.in)  
[www.ndma.gov.in](http://www.ndma.gov.in)



**National Guidelines of NDMA**

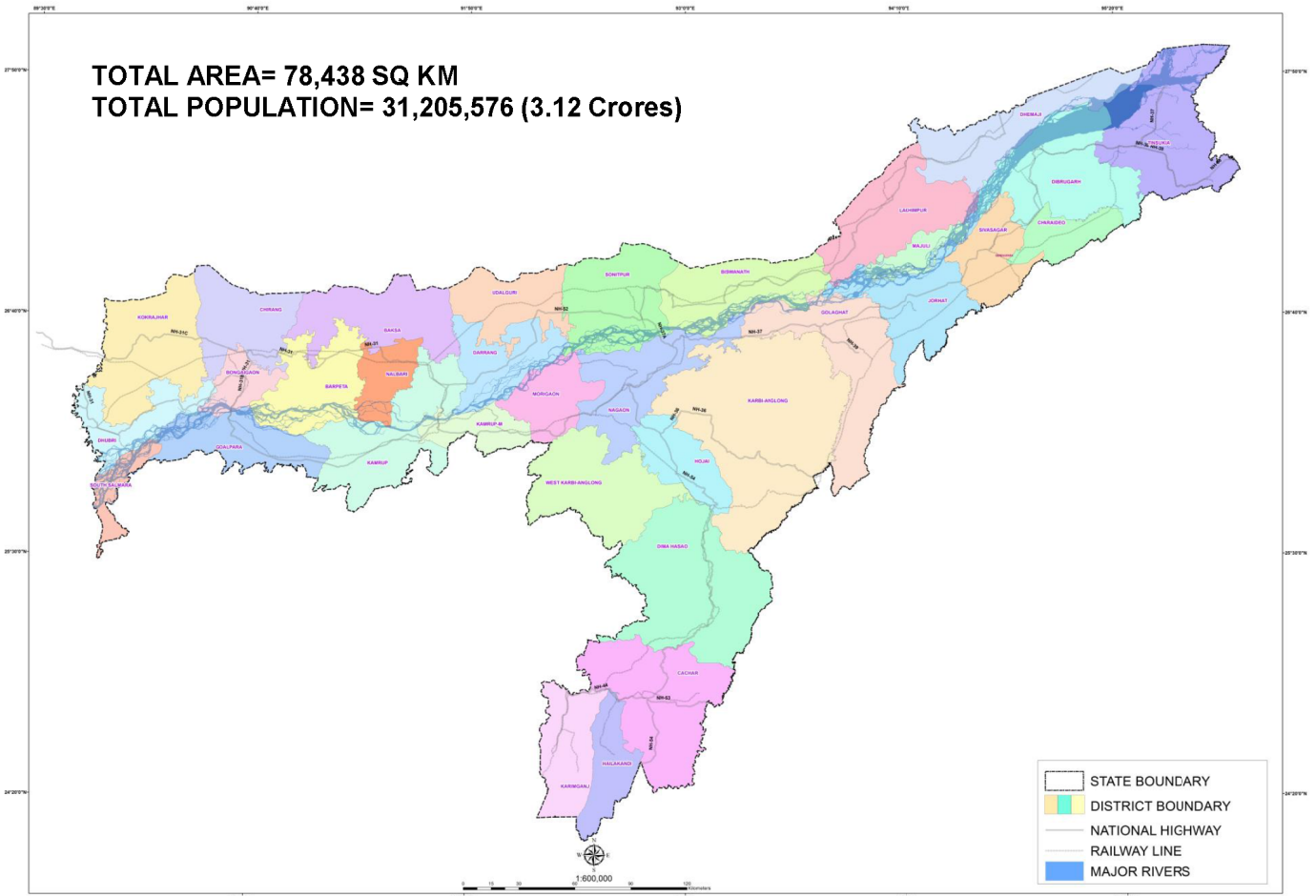
**ASSAM- AT A GLANCE**  
**(brief note about the proposed Research plan)**



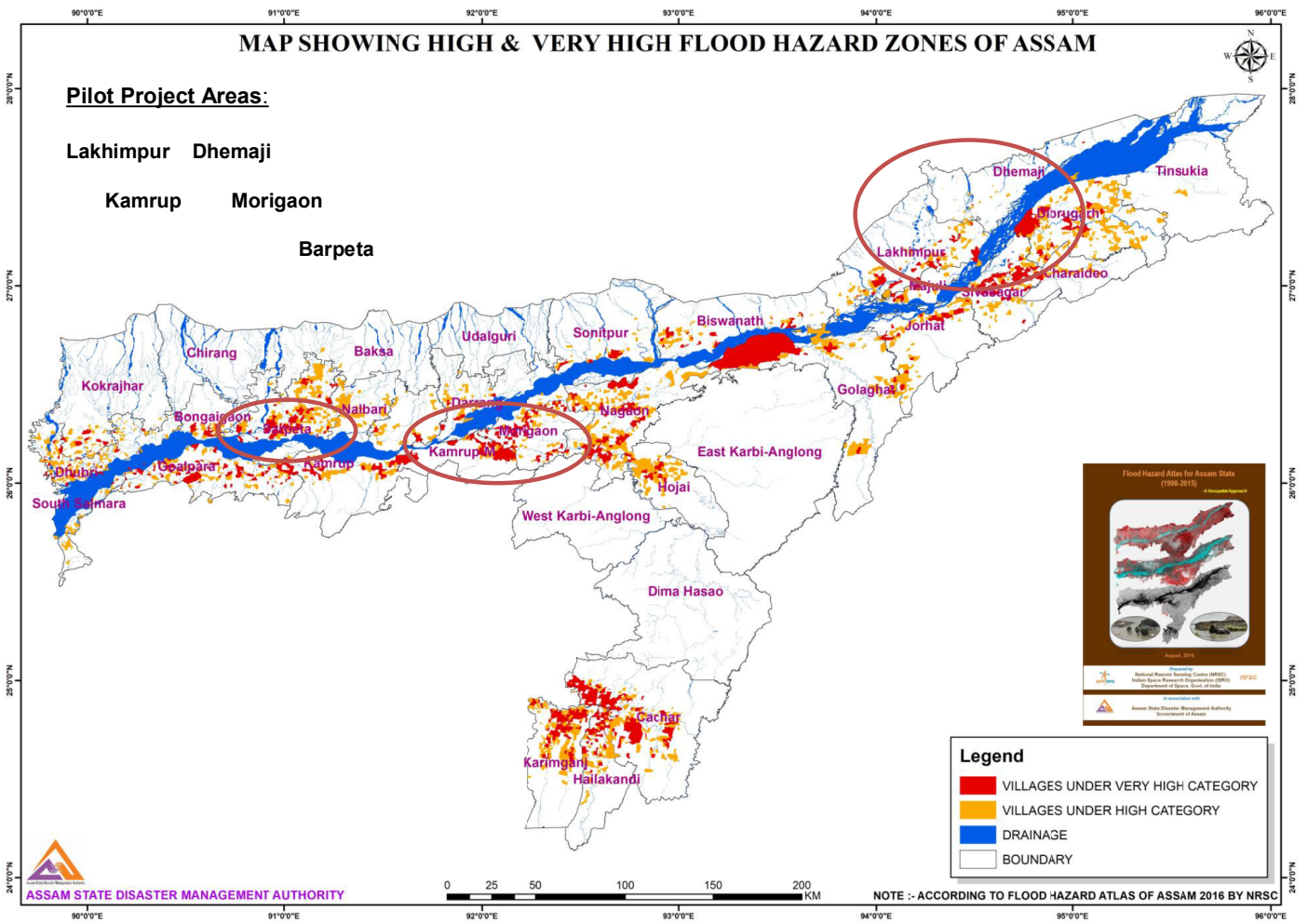
**33 DISTRICTS**  
**154 REVENUE CIRCLES**  
**2202 GAON**  
**PANCHAYATS**  
**26000+ VILLAGES**

Map Source : [www.mapsofindia.com](http://www.mapsofindia.com)

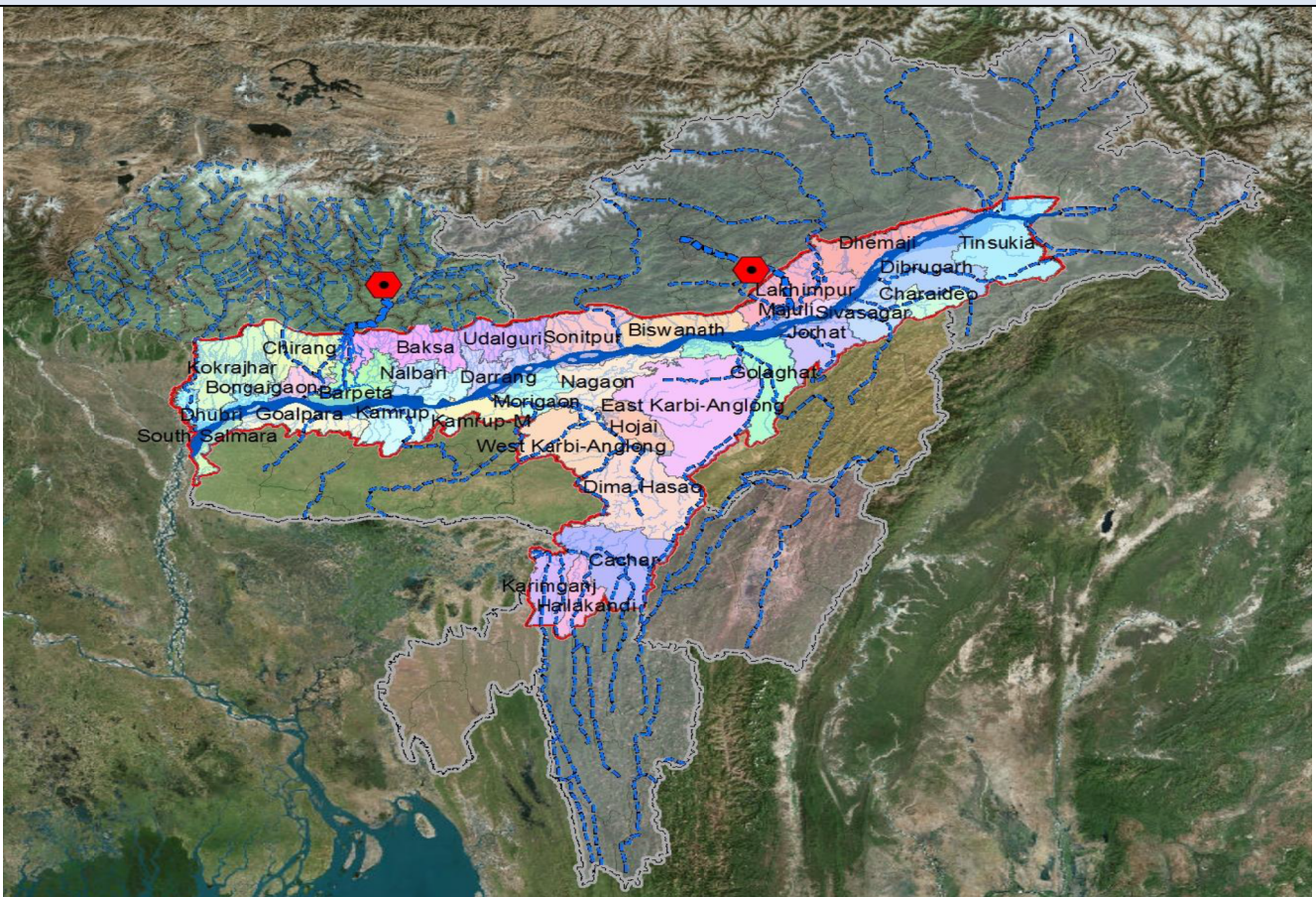
### MAP OF ASSAM







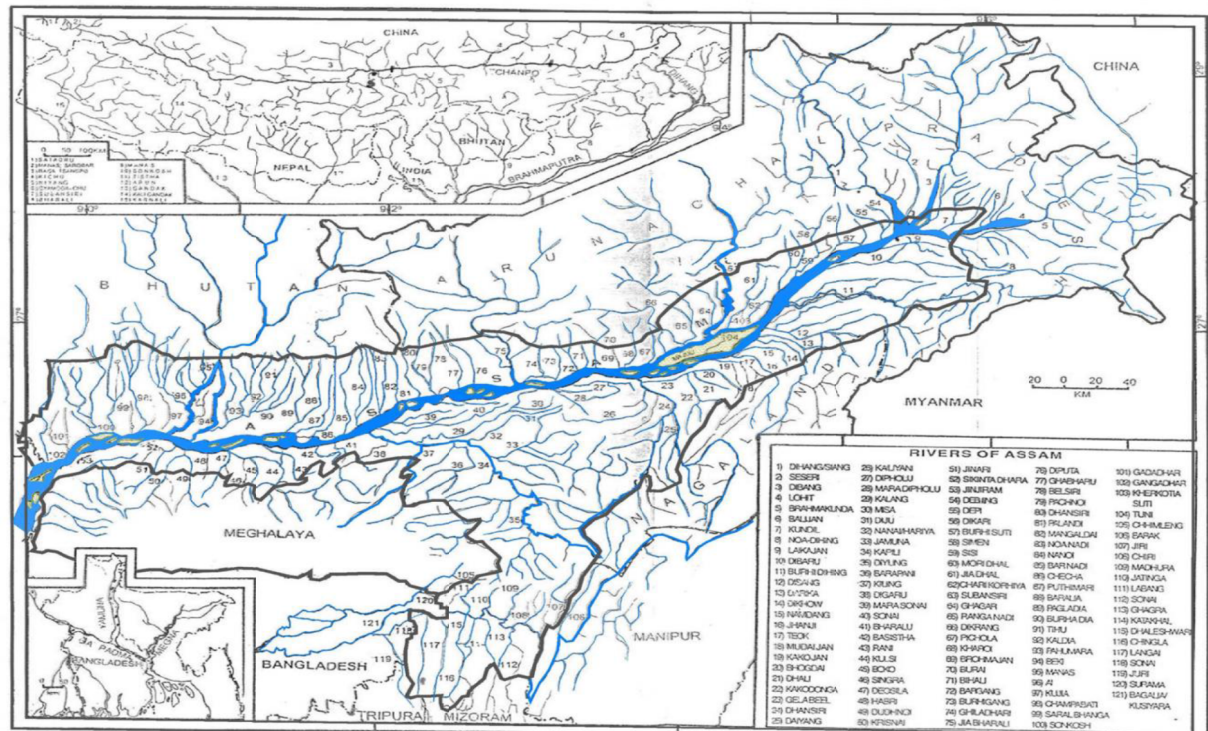
## REASONS FOR FLOOD





# REASONS FOR FLOOD

- The State has a large network of rivers & tributaries originating from the Upper Catchments with high gradient.



## SNAPSHOTS OF ASSAM FLOOD 2018



CACHAR



DIMA-HASAO



DIMA-HASAO



HAILAKANDI





**HOJAI**



**KARIMGANJ**



**KARIMGANJ**



**KARIMGANJ**

**LANDSLIDE**



**DIMA-HASAO**



**DIMA-HASAO**



**DIMA-HASAO**



**KAMRUP-METRO**



# EROSION



**DIMA-HASAO**



**NAGAON**



**DIMA-HASAO**



**DIMA-HASAO**

# INFRASTRUCTURE DAMAGE



**GOLAGHAT**



**NALBARI**



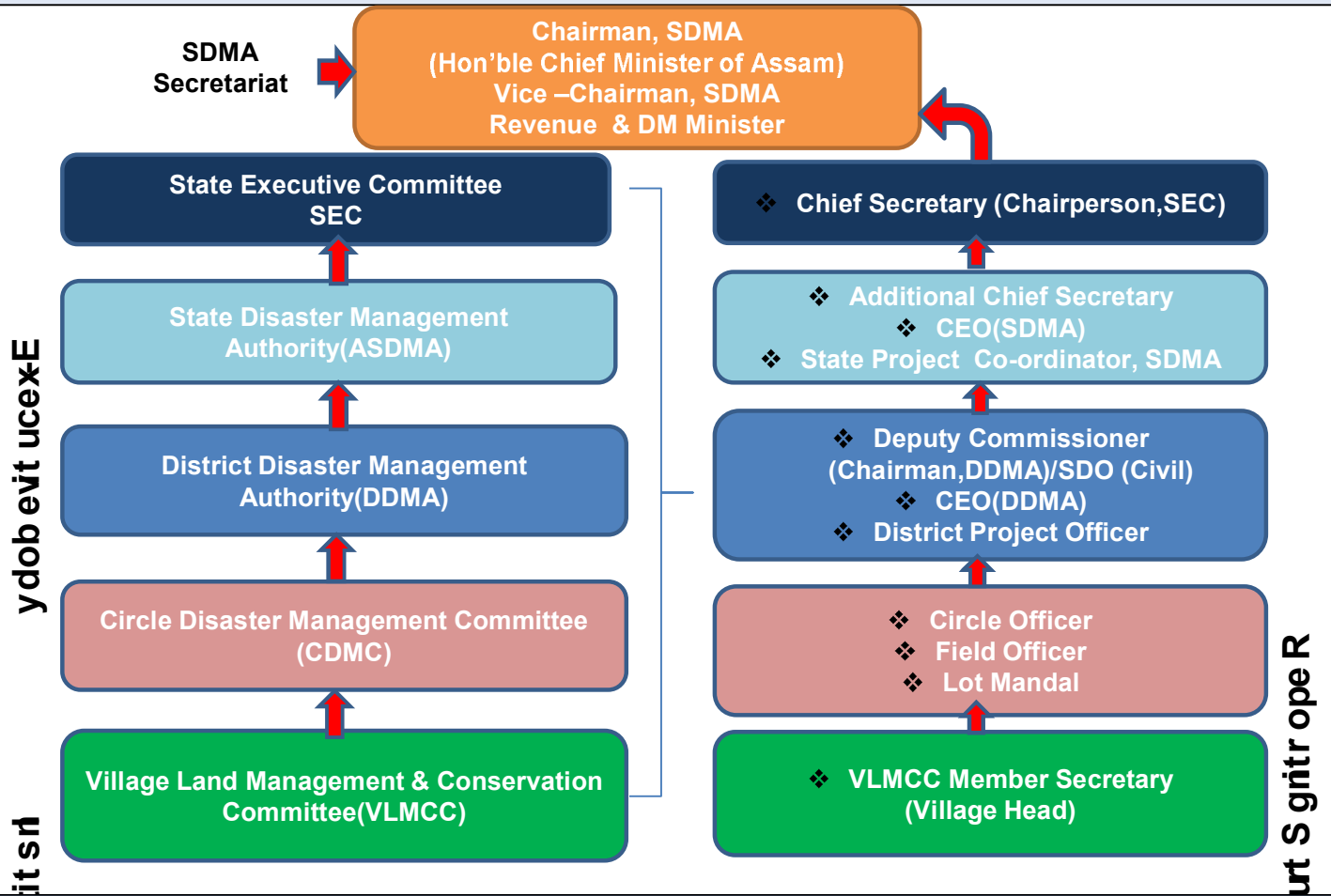
**DIMA-HASAO**



**CACHAR**



# INSTITUTIONAL STRUCTURE OF DISASTER MANAGEMENT IN ASSAM



## THE RESEARCH PLAN



### Topic

*“Community Based Disaster Risk Reduction Practices for Flood Risk Management with special focus on Early Warning, Livelihood improvement, infrastructure resilience and climate resilient agricultural practices along with other scalable CBDRR interventions for Flood plains.”*

**Flood Hazard Atlas**  
 Frequency of Flooding event  
 Past experiences of Flooding Events  
 Learnings from Other Country experiences

**Project Area selection criteria:**  
 Communities (mixed typology)  
 Proximity of village to rivers  
 Availability of NGOs  
 No. of Household

#### Objective of the Research:

- Existing DRR legislations and Governance systems for community
- Learn about EW systems (upto last mile)
- Infrastructure resilience in village
- Pre & Post Flood Livelihood.
- Business Continuity plans
- Alternative Livelihood/ mechanisms for Silted beds (riverine siltation)

#### Background of 1<sup>st</sup> phase:

Village mapping exercises, preparation of flood evacuation kits, Training of Task forces  
 Pre Monsoon camps for scheme awareness, IEC circulation  
 Raised Hand-pumps

#### Village SWOT analysis

#### Expected Results:

Knowledge Transfer  
 Technology transfer  
 \*\*Upscaling project initiatives through external funding sources

#### Application of the Research:

Plan second phase of initiatives in Project villages



**Arigato Gojaimasu!!!**

**DHANYAWAAD!!!!**