

## **VULNERABILITY PROFILE OF INDIA**

India has been vulnerable, in varying degrees, to a large number of natural, as well as, human-made disasters on account of its unique geo-climatic and socio-economic conditions. Out of 35 states and union territories in the country, 27 are disaster prone. Almost 58.6 percent 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.

### **HAZARD PROFILE OF INDIA**

India is one of the ten worst disaster prone countries of the world. The country is prone to disasters due to number of factors; both natural and human induced, including adverse geo-climatic conditions, topographic features, environmental degradation, population growth, urbanization, unscientific development practices etc. The four distinct regions of the country i.e. Himalayan region, the alluvial plains, the hilly part of peninsula, and the coastal zone have their own specific problems.

- The Himalayan region is prone to frequent seismic activities. As a result of various major river systems flowing from Himalaya and huge quantity of sediment brought down by them, the region is exposed to river channel siltation, resulting into frequent floods.
- The western parts of the country is very frequently hit by drought situation. The unusual change in the temperature and pressure gradient over ocean, results in cyclones in coastal regions. The geo-tectonic movements inside the ocean floor makes the coastal region prone to tsunami disaster too. India with its extended coast line is exposed to five to six tropical cyclones on an average, both from the Arabian Sea and the Bay of Bengal annually.
- Various human induced activities like increasing demographic pressure, deteriorating environmental conditions, deforestation, unscientific development, faulty agricultural practices over grazing, unplanned urbanisation, etc. are also responsible for accelerated impact and increase in frequencies of disasters in the country.

## **DISASTER MANAGEMENT FRAMEWORK IN INDIA**

The institutional structure of disaster management in India is currently in state of transition. The new setup, following the implementation of the Disaster Management Act, 2005 is evolving; while the previous structure also continues to be functional. The National Disaster Management Authority has been established at the center and the State Disaster Management Authority at state and district authority at district level are gradually being formalized.

### **DISASTER MANAGEMENT ACT, 2005**

The Act provides institutional mechanisms for drawing up and monitoring the implementation of disaster management in India. It also ensures implementation of the policies by various wings of the Government for prevention and mitigation of disasters and prompt response to any disaster situation.

### **NATIONAL POLICY ON DISASTER MANAGEMENT (2009)**

The salient features of National Policy on Disaster Management are:

- A holistic and pro-active approach for Prevention, Mitigation and Preparedness will be adopted for Disaster Management.
- Each Ministry/Department of the Central/State Government will set apart an appropriate quantum of funds under the Plan for specific schemes/projects addressing vulnerability reduction and preparedness.
- Where there is a shelf of projects, projects addressing mitigation will be given priority. Mitigation measures shall be built into the on-going schemes/programs.
- Each project in a hazard prone area will have mitigation as an essential term of reference. The project report will include a statement as to how the project addresses vulnerability reduction.
- There will be close interaction with the corporate sector, non-government organization and the media in the national efforts for disaster prevention/vulnerable reduction.
- Institutional structures/appropriate chain of command will be built up and appropriate training imparted to disaster managers at various levels to ensure coordinated and quick response.
- A culture of planning and preparedness is to be inculcated at all levels for capacity building measures.
- Standard Operating Procedures and Disaster Management Plan at state and district levels as well as by relevant central government departments for handling specific disasters will be laid down.
- Construction designs must correspond to the requirements as laid down in relevant Indian Standards.
- All lifeline buildings in seismic zones III, IV & V viz - hospitals, railway stations, airports/airport control towers, fire station buildings, bus stands, major administrative center will need to be evaluated and, if necessary, retro-fitted.

- The existing relief codes in all the States will be revised to develop them into disaster management codes/manuals for institutionalizing the planning process with particular attention to mitigation and preparedness.
- Community involvement and awareness generation, particularly that of the vulnerable segments of population and woman has been emphasized as necessary for sustainable disaster risk reduction.

# Earthquake

## Before & During

- Make new constructions earthquake resistant in consultation with professional structural engineer, if possible.
- Prepare a family disaster plan including
  - preparation of emergency kit which shall make you self-sufficient for a minimum of three days with adequate supply of drinking water, dry food items, stock of basic medicines, sanitary pads, baby food items etc.
  - Identification of a few safe family meeting places; pick easy to identify, open and accessible places that you can easily reach.
- Conduct regular Mock Drills for school children
- Falling objects must be given additional fixing so that they don't fall while shaking and cause harm.
- During an earthquake stay calm; if inside, Stay inside. "DROP, COVER and HOLD! DROP under firm furniture. COVER as much of your head and upper body as you can. Stay away from mirrors and windows. Do not exit the building during the shaking. Do not use lift?
- If outdoors, move to an open area away from all structure, especially building, bridges, trees and overhead power lines.

## After

- Move cautiously, and check for unstable objects and other hazards above and around you.
- Check yourself for injuries. Help those in need.
- Check all power connections at home/ office before switching them ON.
- BEWARE: chances of Short circuits might happen.
- Stay out of damaged buildings.
- Anticipate aftershocks, especially if the shaking lasted longer than two minutes.
- Listen to the radio or watch local TV for emergency information and additional safety instructions.

## **Floods**

### **Before & During**

- All your family members should know the safe route to nearest shelter/raised shelters or designated (identified) flood shelter.
- Tune in to your local radio/TV for warnings and advice.
- Have an emergency kit ready with basic medicines and sanitary pads, baby food items, important documents etc.
- Keep dry food, drinking water and clothes ready.
- Drink preferably boiled water. Keep your food covered, don't take heavy meals.
- Use sandbags to seal entry points around doors and vents. Also, seal windows if the water is likely to rise that high.
- Do not let children and pregnant woman remain empty stomach.
- Be careful of snake bites which are common in post floods.

### **After**

- Pack warm clothing, essential medication, valuables, personal papers, etc. in waterproof bags, to be taken with your emergency kit.
- Move to high rise floor, keep your clothing and valuables onto beds, tables etc. to save them from getting wet.
- Turn off the main power supply. Do not use electrical appliances, which have been in floodwater.
- Do not get into water of unknown depth and current.
- Do not allow children to play in, or near flood waters

# Cyclone

## Before & During

- Listen to radio or TV weather reports
- Identify safe shelter in your area.
- Keep your emergency kit with basic food supply, medicines, torch and batteries etc.
- Doors, windows, roof and walls should be strengthened before the cyclone season through retrofitting and repairing. Store adequate food grains and water in safe places.
- Keep flashlights, candles, and matches in case of power outages.
- Do not venture into the sea.
- Remain indoors until advised that the cyclone has passed away.
- Do not take shelter close to trees or heavy constructions such as bridges etc.
- Write each child's name, address, and contact number on a piece of paper and place it in the child's pocket.
- If you are outside, be aware of the dangers of flying objects, falling trees, buildings that may collapse, and damaged power lines.
- If you are in a car, do not try to outdrive a cyclone or heavy winds: if it changes course you will be in danger of being picked up in your vehicle. Remain in the, car preferably halting at a safe place.
- Conduct Mock Drills for yourself and the community for evacuation.

## After

- After the winds die down, wait for at least one and a half hours before leaving your shelter.
- Do not go out till officially advised that it is safe. If evacuated, wait till advised to go back.
- Do not use power points until they have been checked.
- Use the recommended route to return to your home. Do not rush.
- Be careful of fallen powers lines, damaged roads and houses, fallen trees.

# Fire

## Do's

- Get your premises fire audited; check for loose electric connections; don't store combustible material near loose electric wires.
- In case of fire, dial 101.
- If trapped lay down/sit near the floor; curtail entry of smoke into the room; look for exit; breathe through wet cloth; learn at least two escape routes and ensure they are free from obstacles.
- Remain calm, unplug all electrical appliances. Meet at safe place after exit.
- Keep buckets of water and blankets ready. Keep fire extinguishers ready and regularly re-fill them.
- If clothes catch fire, STOP DROP and ROLL. Conduct regular drills.
- In case of uncontrolled fire, wrap the victim in a blanket, till the fire ceases.

## Don'ts

- Don't burn crackers in crowded, congested places, narrow lanes or inside the house.
- Don't cover crackers with tin containers or glass bottles for extra sound effect.
- Avoid long loose clothes, as they are fast in catching fire.
- Don't dispose lighted cigarette ends carelessly.
- Don't remove burnt clothing (unless it comes off easily).
- Don't apply adhesive dressing on the burnt area.

# Landslide

## Before & During

- Avoid building houses near steep slopes, close to mountain edges, near drainage ways or along natural erosion valleys.
- Become familiar with land around you. Avoid areas with debris flow.
- In mudflow areas, build channels to direct the flow around buildings.
- Stay alert and awake. Stay Calm and do not panic. Stay together.
- Inform the nearest tehsil/ district headquarters.
- Plant trees and mesh the hillocks to protect soil from eroding.
- Listen for unusual sounds that might indicate moving debris, such as trees cracking or boulders knocking together.
- Move away from the path of a landslide or debris flow as quickly as possible.
- Avoid river valleys and low-lying areas.
- If you are near a stream or channel, be alert for any sudden increase or decrease in water flow and notice whether the water changes from clear to muddy. It is a sign of mudslide/landslide nearby.
- Restore the place/area after normalcy.

## After

- Go to designated public shelter if you have been asked to evacuate.
- Stay away from the slide area as there may be a danger of additional slides.
- Check for injured and trapped persons near the slide, without entering the direct slide area. Direct rescuers to their locations.
- Do not move the injured person without rendering first aid unless in acute danger state.
- Do not drink contaminated water from rivers, springs, wells etc.



## **Drought**

### **Before & During**

- Never waste water, use it to water your indoor plants or garden.
- Repair dripping taps by replacing washers.
- Check all plumbing for leaks and get them repaired.
- Choose appliances that are more energy and water efficient.
- Plant drought- tolerant grasses, shrubs and trees (plants that thrive on less water).
- Install irrigation devices that are most water efficient for each use, such as micro and drip irrigation.
- Consider rainwater harvesting wherever practical.
- Avoid flushing the toilet unnecessarily.
- Avoid letting the water run while brushing your teeth, washing your face or shaving etc. Use buckets instead of showers while bathing.
- Store dry ration wherever possible.
- Emphasize on land-use planning for resilience to drought situation.

# Tsunami

## Before & During

- Find out if your home is in a danger area.
- People living along the coast should consider an earthquake or a strong ground rumbling as a warning signal.
- If a “tsunami watch” turns into a “tsunami warning,” prepare to evacuate your home.
- As the tsunami nears the coast, the waves slow down and increase in height.
- Try and climb a raised platform or climb the highest floor of any house or building which you might see.
- Make evacuation plans and a safe route for evacuation. Stay away from the beach.
- Listen to a radio or television to get the latest information and be ready to evacuate if asked to do so.
- Familiarize yourself with warning signs, such as a sudden change in the level of coastal waters.
- If you hear an official warning, evacuate at once. Return home only after authorities advise it is safe to do so.
- Tsunamis often cause severe floods; make sure that you are prepared to cope.
- Keep your car filled with fuel so that you can drive to safety quickly.

## After

- Stay tuned to battery- operated radio for the latest emergency information.
- Help injured and trapped persons. Provide for first aid.
- Stay away from flooded and damaged areas until officials say it is safe to return.
- Enter your home with caution.
- Use flashlight when entering damaged houses. Check for electrical short circuit and live wires.
- Check food supplies and test drinking water.

## Heat Wave

### Before

- Install temporary window reflectors such as aluminum foil-covered cardboard so as to reflect heat back outside. This will help keep the rooms pleasant.
- Listen to local weather forecasts and stay aware of temperature changes.
- Know those in your neighborhood who are elderly, young, sick or overweight. They may need help.
- Get trained in first aid to learn how to treat heat-related emergencies.
- Plant trees for shades.

### During

- Never leave children or pets alone in closed vehicles or under direct sunlight for long.
- Stay indoors as much as possible.
- Eat well-balanced, light and regular meals.
- Drink plenty of water; even if you do not feel thirsty. Keep yourself hydrated.
- Persons with epilepsy, heart, kidney, or liver disease; on fluid- restricted diets; or have a problem with fluid retention should consult a doctor before increasing liquid intake.
- Protect face and head by wearing a hat or cloth.

## Cold Wave

### Before & During

- Keep ready the emergency kit with basic and specific medicines for family members and adequate warm clothings.
- Buy low-wattage electric heaters that you can leave on overnight to keep rooms above freezing.
- Listen to local Radio Station for critical information from time to time.
- Stay indoors; Minimize travel during peak extreme cold hours.
- Keep yourself dry as much possible.
- Watch for signs of frostbite like loss of feeling and white/ pale appearance in fingers, ear lobes, and the tip of the nose.
- Maintain proper ventilation when kerosene heaters or coal oven to avoid build-up of toxic fumes.
- Take regular hot drinks.

### After

- Go to a designated public shelter if your home loses power supply or heat during periods of extreme cold.
- Continue to protect yourself from frostbite and hypothermia by wearing warm clothing in several layers.
- If you live in an avalanche area and an avalanche warning is issued, stay inside unless told to evacuate.

### Cold-Weather Car Kit

- (Shovel, blanket, coats, flashlight, batteries, high-energy food, water, other essentials)

## Epidemics

### Before & During

- Store drinking water and food to last for few days. Use boiled or filtered water to avoid contamination.
- Keep a stock of non-prescribed basic medicines such as pain relievers, stomach remedies, cough and cold medicines, fever, fluids with electrolytes, and vitamins, sanitary pads, baby food items etc.
- Volunteer with local groups to prepare and assist with emergency response, If possible.
- Keep your surrounding clean and do not let the water be stagnant in neighborhood.

### After

- Avoid close contact with people who are sick. If possible, stay at home when you are sick. Do not share usable items. You will help prevent others from catching your illness.
- When sick, keep distance from others to protect them from catching infections.
- Cover your mouth and nose with a tissue when coughing or sneezing.
- Washing your hands (with soap if possible) often will help protect you from germs.
- Avoid touching your eyes, nose or mouth to prevent spread of germs.

# Thunder and Lightning

## Before & During

- If you hear thunder, you may be close to be struck by lightning.
- Keep monitoring local media for updates and warning instructions and advisory.
- Keep ready an Emergency Kit with important medication and other basic amenities for emergencies.
- Unplug all electronic equipment before the storm arrives. Use your battery- operated Radio for updates.
- Avoid contact with electrical equipment or cords. Keep away from utility lines.
- Do not lie on concrete floors and do not lean against concrete walls.
- Do not take shelter under the tree. They are conductors of Lightning.
- Avoid bathing and stay away from running water as lightning can travel along metal pipes.
- As far possible, find shelter in low lying area. Be aware of sudden flooding.
- If boating or swimming, get to safe land/ shelter quickly.
- During a storm, remain in your vehicle until help arrives or the storm passes away.

## After

- Listen to local radio and television for updated information.
- Help people who may require special assistance, such as infants, children and the elderly.
- Stay away from downed power lines and report them immediately.
- If possible, give First-aid to the person struck by lightning, take to nearest hospital.
- Remember, person struck with lightning carry NO electrical charge and can be handled safely.
- Look for injury marks on victims of lightning and treat accordingly.

## Forest Fire

### Safety Tips

- Do not smoke near thick vegetation, do not leave a lighted cigarette/ bidi in dry vegetation areas;
- Do not leave any open fire in the forest area after use.
- During Fire, move farm animals & movable goods to safer places.
- During fire, regularly listen to Radio for advance information & obey the instructions cum advice regarding moving to safe locations.
- Teach the causes and harm of fire to your family, friends and others. Make people aware about forest fire safety.
- Do not be scared when a sudden fire occurs in the forest, be calm & encourage others & community to deal patiently.
- After adventure activities, ensure no lighted bon-fire is left.
- One should not leave the burning wood sticks in or near the forest vegetation.
- Don't enter the forest during the fire.

# NATIONAL INSTITUTE OF DISASTER MANAGEMENT

The National Institute of Disaster Management is one of the youngest national institute in the country. NIDM acts with nodal national responsibilities for human resource development, capacity building, training research, documentation and policy advocacy in the field of disaster management. The institute has strategic partnerships with number of academic, research and technical organizations in India and around the world. It promotes networking among knowledge institutes and encourages inter- disciplinary research on different aspects of disaster management.

## VISION

- To be a premier Institute of Excellence for training and research on disaster risk mitigation and management in India and to be recognized as one of the leading Institutions at the International level in the field.
- To strive relentlessly towards making a disaster free India by developing and promoting a culture of prevention and preparedness at all levels.

## THRUST AREAS

### TRAINING

**Face-to-Face:** NIDM conducts both in-campus and off-campus training programmes on various themes covering a wide range of subjects and sectors in the field of disaster management for senior and middle-level government officials and others. In addition to face-to-face programmes, NIDM also conducts training programmes in blended mode.

**Web-Based Training:** The institute conducts online training programme on various specialized subjects related to disaster management. Users can register and further use online study portal.

**Self-Study Courses:** The Institute has introduced web-based self-study courses which can be remotely accessed from anywhere and used anytime. These are mostly intended for knowledge sharing and sensitization on Disaster Management propose.

## PUBLICATIONS

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|--|----------------------------------|
| • Journal ‘Disaster and Development’                 | • Quarterly Newsletter “Tidings” |
| • India Disaster Report (Yearly)                     | • Proceedings                    |
| • Training Modules/Case Study/Research documentation | • Annual Reports                 |

## RESEARCH & DOCUMENTATION

NIDM documents major disasters taking place in the country to learn the lessons on its management and use the case studies as resource materials for the training classes and simulation exercises. Action oriented Research Projects are also undertaken by Institute.

## POLICY STUDIES



NIDM provides assistance in national level policy formulation and state level policies, strategies and frameworks. *For details please visit the institute website: [www.nidm.gov.in](http://www.nidm.gov.in)*