



# Natural Disasters & How To Deal With Such Situations

# NSS GROUP



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# What is Natural Disaster?

Any occurrence that causes damage, ecological disruption, loss of human life or deterioration of health and services on a scale sufficient to warrant an extraordinary response from outside the affected community or area.



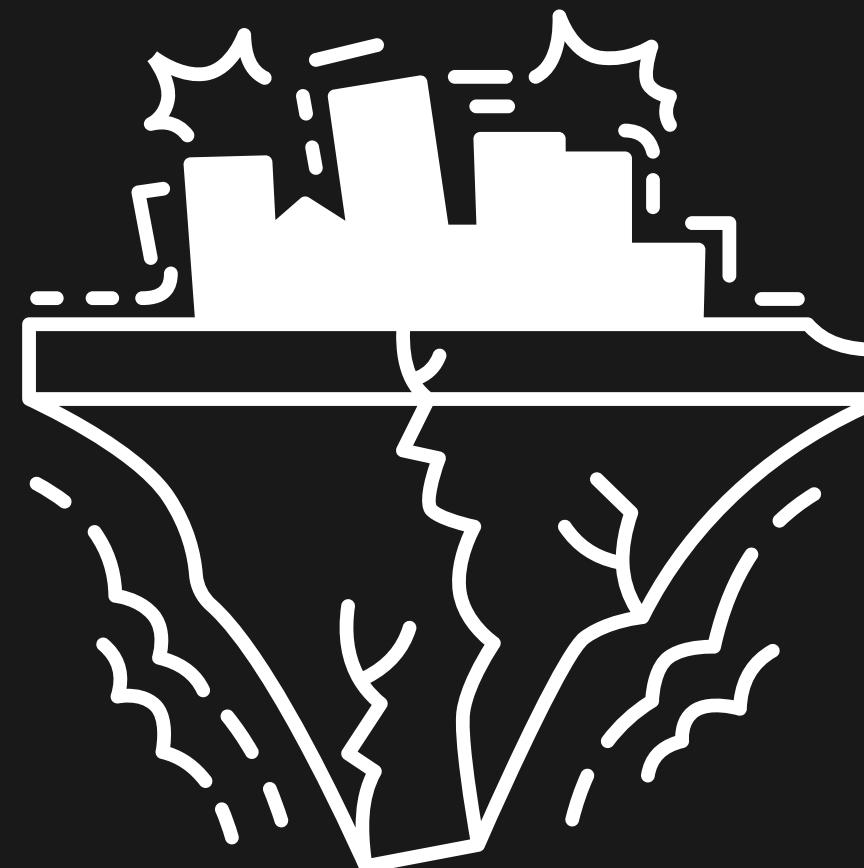
# EARTHQUAKES

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A sudden violent shaking of the ground as a result of movements within the earth's crust or volcanic action.



# WHAT TO DO DURING EARTHQUAKES ?



If you are indoors, find a sturdy table to hide under  
If you are outside stay clear of things that can potentially fall like bridges or pillars, and get shelter under a steady covering.



# FLOODS

Flood is a state of high water levels in a river or channel caused due to heavy rainfall, cloud bursts, and siltation of rivers.

Flood are **predictable disasters** as rate of increase of water level in a river can be measured.

# Dealing with floods

- Immediate evacuation by local officers through boats.
- Sheltering victims in public buildings.
- Providing free food and water to victims as done by Government of Maharashtra during Mumbai floods of 2005.

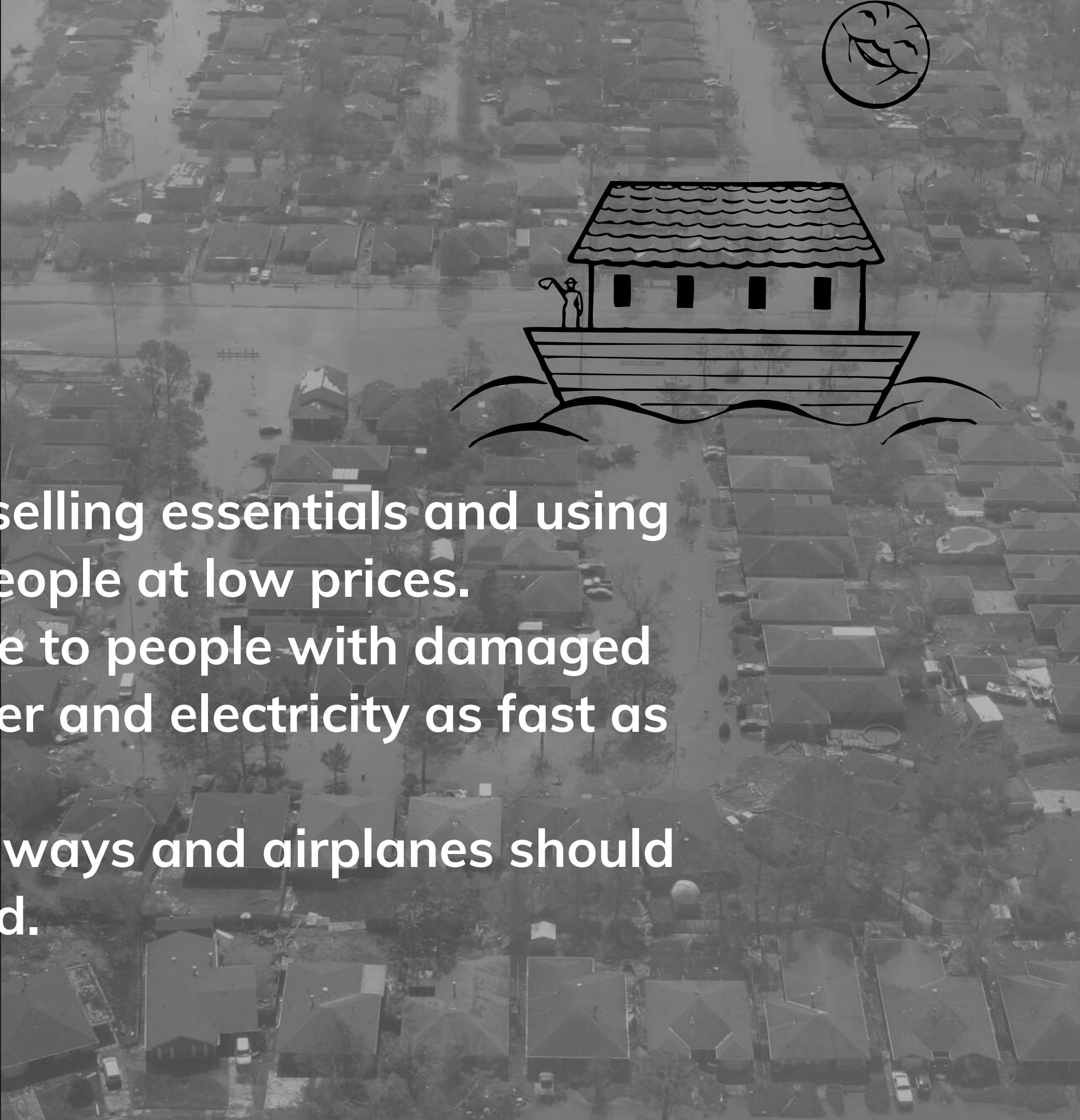
# Mitigation

- Improving infrastructure to withstand the force of water
- Banking of rivers and constructing check-dams
- Improving transport and communication, especially wireless.



# RECOVERY

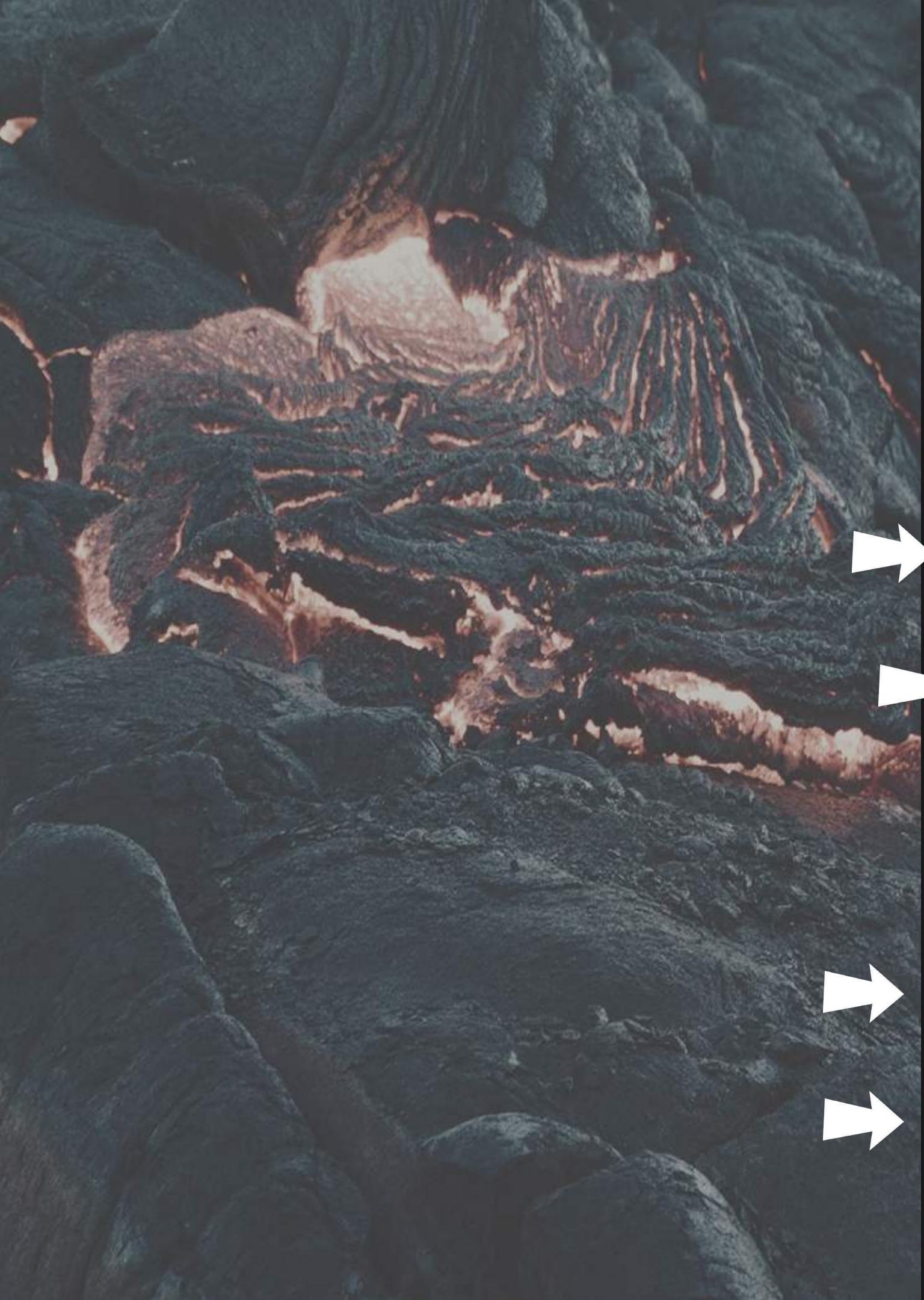
- 1) Immediate relief to shopkeepers selling essentials and using food reserves for needs of people at low prices.**
- 2) Government providing assistance to people with damaged homes and providing access to water and electricity as fast as possible.**
- 3) Transport facilities like buses, railways and airplanes should be resumed.**



# VOLCANIC ERUPTION

Volcanoes are ruptures in the crust of our planet Earth that allow hot gases, molten lava and some rock fragments to erupt by opening and exposing the magma inside.





# WHAT TO DO?

## BEFORE VOLCANIC ERUPTION

- PREPARE ALL THE NECESSARY THINGS TO BRING ONCE EVACUATION IS NEEDED.
- STORE AS MUCH FOOD, WATER, LIGHT SOURCES AND BATTERIES THAT ARE VERY USEFUL IN CASE OF EMERGENCY.

## DURING THE INCIDENT

- SEEK COVER IN CASE OF ASH FALLS AND ROCK FALLS AND USE MASKS TO COVER YOUR NOSE AND MOUTH AND TO AVOID BREATHING IN THE ASHES.
- IF INSIDE THE HOUSE, CLOSE ALL DOORS AND WINDOWS TO AVOID LETTING IN THE ASHES.

# PREDICTION & PREVENTION

- A VOLCANIC ERUPTION IS **UNPREVENTABLE** BUT IT IS **PREDICTABLE**.
- VOLCANOLOGISTS CAN PREDICT ERUPTIONS—IF THEY HAVE A THOROUGH UNDERSTANDING OF A VOLCANO'S ERUPTIVE HISTORY, IF THEY CAN INSTALL THE PROPER INSTRUMENTATION ON A VOLCANO WELL IN ADVANCE OF AN ERUPTION, AND IF THEY CAN CONTINUOUSLY MONITOR AND ADEQUATELY INTERPRET DATA COMING FROM THAT EQUIPMENT.
- EVIDENCES FOR PREDICTION OF A VOLCANIC ERUPTION INCLUDES THE HISTORY OF PREVIOUS VOLCANIC ACTIVITY, EARTHQUAKES, SLOPE DEFORMATION, AND GAS EMISSIONS..



# FOREST FIRE

A dark, atmospheric photograph of a forest at night or during a fire. The foreground is filled with silhouettes of trees. In the background, a bright, glowing light source, possibly the moon or a fire, illuminates a path through the trees, casting long shadows and creating a dramatic contrast between light and dark.

Forest fire is a natural disaster consisting of a fire which destroys a forested area and can be a great danger to the flora and fauna and also people who live in forests. These fires are also known as wildfires, vegetation fire, bush fire. Fires can burn down forests as it spreads at high pace from bush to bush, therefore it is a hazard in the forest.

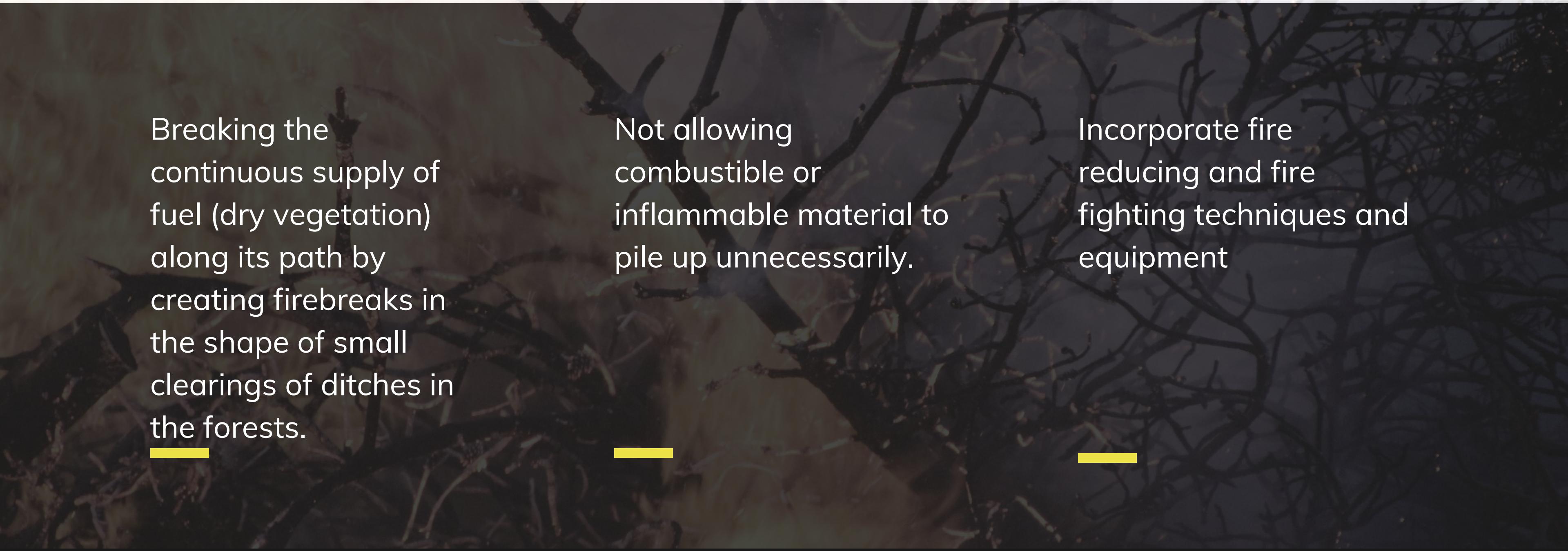
# Causes

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- Lightning which sets trees on fire
- High atmospheric temperatures, dryness
- The friction between dried out branches caused by high winds can result in sparks setting off fire.
- Even though this is a natural disaster there are some man made causes. When a source of naked flame, electric spark or any ignition comes into contact with inflammable material.



# **MITIGATION MEASURES**



Breaking the continuous supply of fuel (dry vegetation) along its path by creating firebreaks in the shape of small clearings or ditches in the forests.

Not allowing combustible or inflammable material to pile up unnecessarily.

Incorporate fire reducing and fire fighting techniques and equipment

# LANDSLIDE

A landslide is defined as the movement of a mass of rock, debris, or earth down a slope.



# CAUSES OF LANDSLIDE

- > Disturbance in natural stability of a slope.
- > Gravity ,Heavy and Prolonged Rainfall
- > Erosion of the top of a slope by river and sea waves
- > Ground shaking caused by earthquakes
- > Volcanic Eruption
- > Deforestation , Cultivation , Construction
- > Blasts and mining





# PREDICTION AND PREVENTION

Nasa's Landslide Hazard Assessment for Situational Awareness is a real-time satellite-based landslide detection module that updates its data every 30mins.

Don't cut down trees or remove vegetation or avoid slope weakening. Provide efficient surface and cross drainage, benching to soil slope and subsurface drains at foot of the hill slope to control seepage flow

# WHAT TO DO?

## DURING LANDSLIDE

- Listen to any unusual sounds that might indicate moving debris.
- At outside, get away from the path of the landslide or mudflow.
- If there is noway to escape protect head & hold something strong.
- Look for tilted trees, fences, walls or bare spots on hillsides.

## AFTER LANDSLIDE

- Stay away from the landslide areas as there can be a further landslide.
- Help the injured or trapped person.
- Watch for flooding which may occur after landslide.
- Listen to the radio for latest emergency information.
- Report broken utility lines to the appropriate authorities.

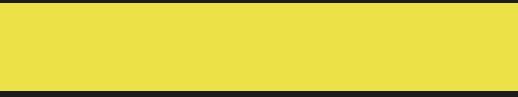
# HURRICANES

Hurricanes usually form over warm water. They last for weeks and the winds created can have the power to knock over buildings. When they hit land heavy rain and strong winds come. They usually die down after hitting land.



- Be prepared, Evacuate the storm ahead of time.
- Go to an area with higher ground not located near the ocean.
- Find shelter away from windows or potential flying objects.

# DROUGHTS



A DROUGHT IS A DAMAGE OF GROUND  
USUALLY CAUSED BY DRY WEATHERS.  
DROUGHTS OCCUR WHEN THERE IS NO  
RAINFALL FROM A LONG PERIOD OF TIME.  
IT USUALLY HAPPENS IN SUMMER,  
BECAUSE IN SUMMER WEATHER GETS HOT  
AND GROUND EVAPORATE.  
SO, GROUND NEED MORE WATER BUT IT  
CAN'T GET WATER SO DROUGHT OCCURS.

# PREVENTION



- First of all, we cannot prevent drought but we should try to prevent droughts as it causes huge damage.
- To prevent droughts we should preserve as much water as we can, we should use water in limit.
- We should plant as much trees as we can.
- We shouldn't cut down trees for economic purpose or for any other purposes.
- We should save rain water in proper ways, and protect under ground water.

# MITIGATION

- Rain water harvesting - Collects and stores rainwater from roofs or other suitable catchments can come handy in times of droughts.
- Building Dams - Many dams and their associated reservoir can supply additional water in times of droughts.
- Afforestation - Planting as many trees as possible is great way for reducing soil erosion via water and wind and so droughts are prevented in future.

# TSUNAMI



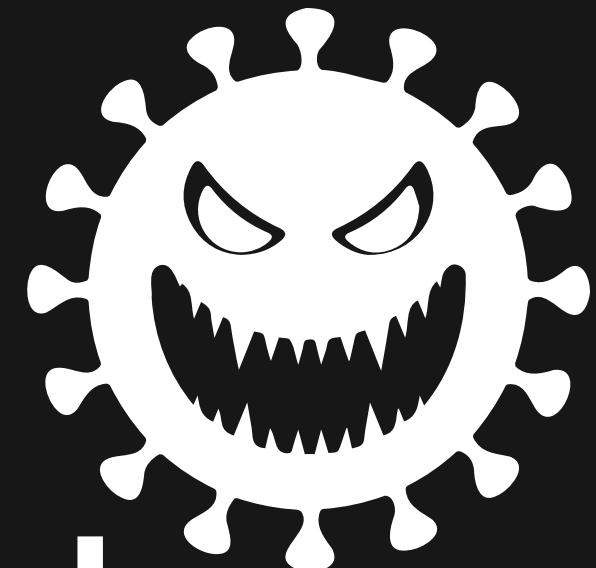
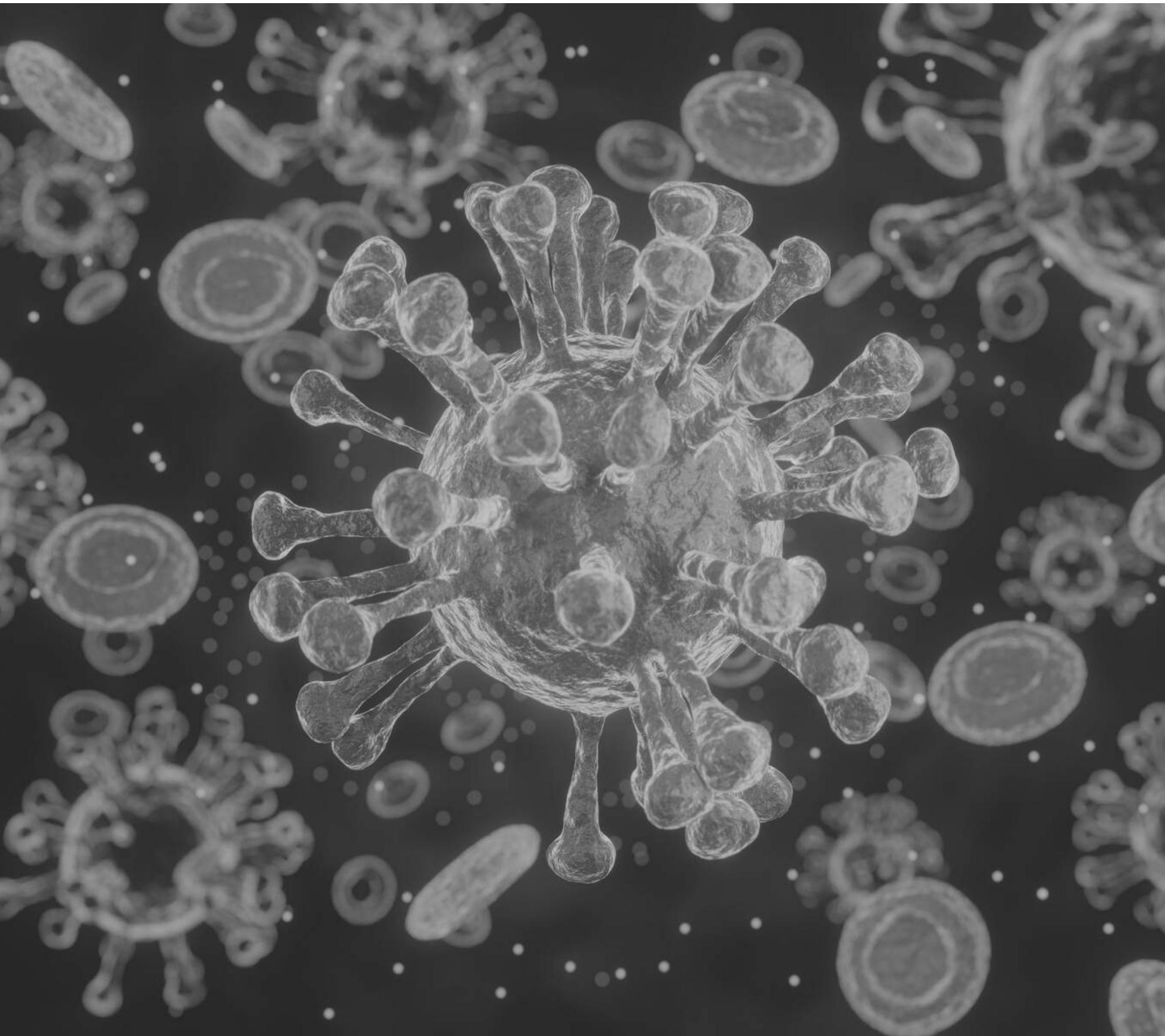
A Tsunami is a series of ocean waves that sends surges of water, sometimes reaching heights of over 100 feet (30.5 meters), onto land. These destructive surges of water can cause widespread destruction when they crash ashore.





# WHAT TO DO TO SURVIVE DURING TSUNAMI ?

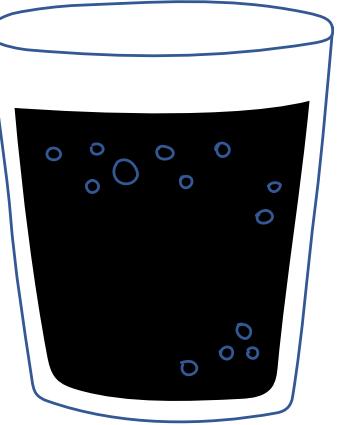
- **If there is an earthquake and you are in a tsunami area, protect yourself from the earthquake first. Drop, Cover, and Hold On. Drop to your hands and knees. Cover your head and neck with your arms. Hold on to any sturdy furniture until the shaking stops. .**
- **When the shaking stops, if there are natural signs or official warnings of a tsunami, move immediately to a safe place as high and as far inland as possible. Listen to the authorities, but do not wait for tsunami warnings and evacuation orders.**
- **If you are outside of the tsunami hazard zone and receive a warning, stay where you are unless officials tell you otherwise.**
- **If you are in the water, then grab onto something that floats, such as a raft or tree trunk.**



# Biological disasters

Biological disasters are natural scenarios involving disease, disability, or death on a large scale among humans, animals, and plants due to micro-organisms like bacteria, or viruses, or toxins.

# How to stay safe during biological disasters?



Clean drinking water and healthy food are a must in these situations.



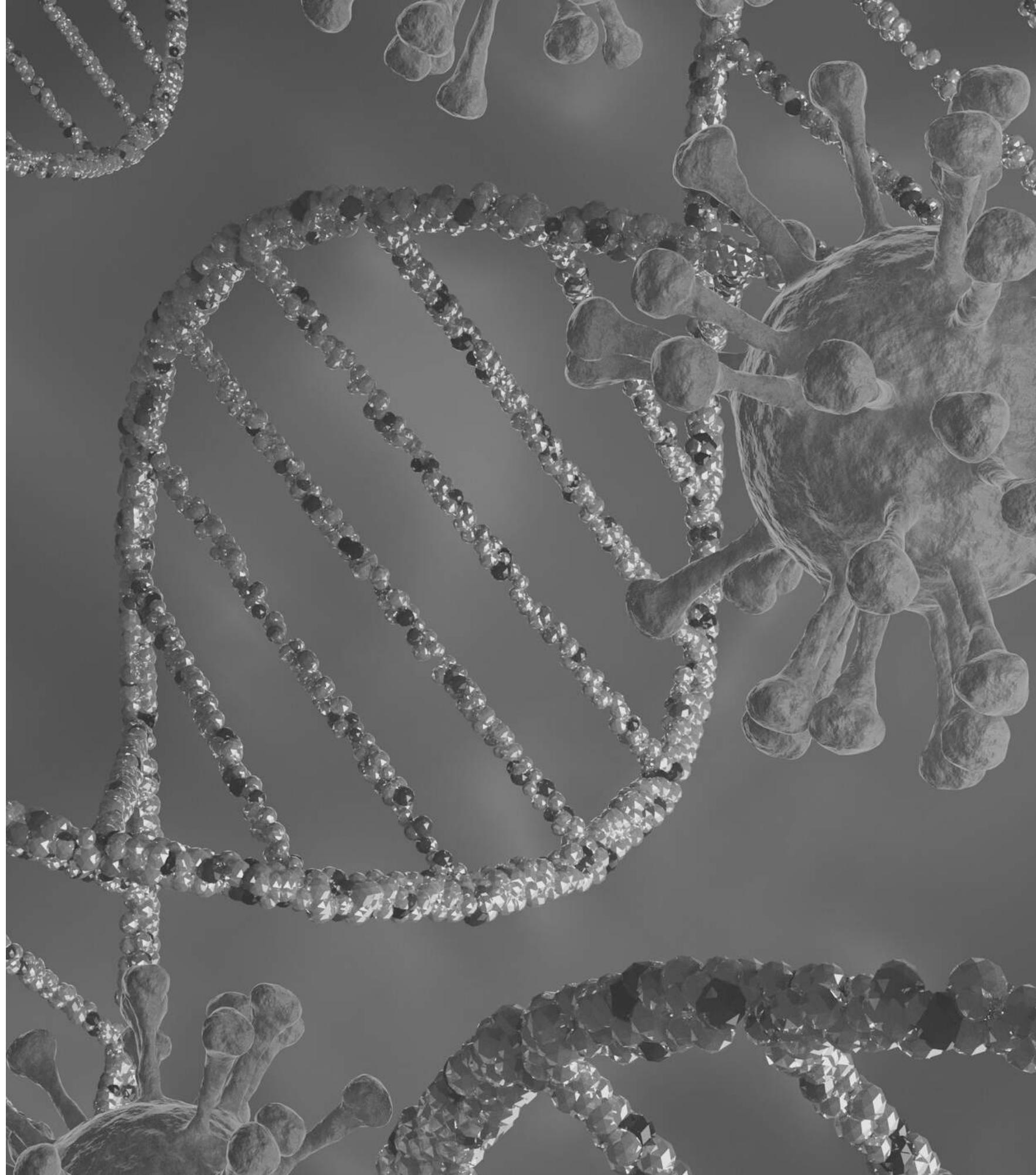
In case of wide-spread diseases, try to make least physical contact with others as they are highly contagious.



Maintain a proper hygiene.

# COVID-19

The most recent pandemic causing chaos by throwing everyone in lockdown causing loss of life and economy along with dealing a heavy impact on mental health of people. Originated in Wuhan, China, Covid-19 is a highly communicable disease which attacks our lungs causing pneumonia ultimately causing death if not treated properly.



# Precautions based on Predictions



Natural disasters are not preventable but their impacts can be reduced with the help of science and engineering. Some natural disasters can be forecasted based on past scientific data. Scientists look for patterns in data to determine where and when natural disasters are likely to occur, like tornadoes, landslides, drought, snowfall. Other disasters like earthquakes are not yet predictable.

Seismologists, volcanologists, and meteorologists are all examples of scientists that collect and analyze data over periods of time to make predictions about future geologic or weather events.

Good predictions and warnings save lives. With only a few minutes' notice of a tornado or flash flood, people can act to protect themselves from injury and death.

The Government also plays a big role in saving its people. For example, in India a specialised force for the purpose of special response to a disaster, The National Disaster Response Force, is present. Along with the Police, Indian Airforce and Indian Army, they handle rescue and relief before and during a disaster, and mitigation, rehabilitation and reconstruction after the disaster.

National Remote Sensing Center (NRSC), Department of Science and Technology (DST), Council of Scientific and Industrial Research (CSIR), Indian Institute of India (IITs), Universities have done tremendous work in preventing and minimizing the impact of natural disasters.



# Precautions based on predictions

# N D R F



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The **National Disaster Response Force (NDRF)** is an Indian specialized force constituted "for the purpose of special response to a threatening disaster situation or disaster" under the Disaster Management Act, 2005. The "Apex Body for Disaster Management" in India is the National Disaster Management Authority (NDMA). The Chairman of the NDMA is the Prime Minister.



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In a very short span of time, NDRF has always led from the front, displayed high level of dedication & commitment, fulfilling our motto आपदा सेवा सदैव सर्वत्र which implies Sustained Disaster Response Service under all circumstances. It is the world's single largest force dedicated to disaster response.



It had rescued over 1.44 lakh precious human lives and also evacuated more than 7 lakh stranded persons from disaster situations within the country and abroad. The swift and effective response of NDRF during Japan Triple Disaster-2011 and Nepal Earthquake 2015 was acclaimed globally.

# Conclusion

Natural disasters have the potential to pose a significant threat to human health and safety, property, critical infrastructure, and homeland security.

In the event of such disasters, these following steps should be taken for ensuring your own safety:

- Do not Panic. Listen to your portable radio for important updates and instructions from local authorities.
- Stay in your safe area and do not drive until the danger has passed. Resist the temptation to check on your property until you are sure it is safe to do so.
- When the evacuation orders are issued, make sure you are equipped with a survival kit and avoid using any kind of flammable objects like matches.
- If you're indoors, stay at the centre of the building, away from doorways and windows, and crawl under heavy furniture. Do not try to run outside or to other rooms. If you're outdoors, stay in the open away from power lines or anything that might fall.

Awareness on basic guidelines issued by organisations like NDRF helps in taking measures of protection, mitigation and prevention of these disasters.