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A 1 :-

 Earth quake :- An **earthquake** (also known as a **quake**, **tremor** or **temblor**) is the shaking of the surface of the Earth resulting from a sudden release of energy in the [Earth](https://en.wikipedia.org/wiki/Earth)'s [lithosphere](https://en.wikipedia.org/wiki/Lithosphere) that creates [seismic waves](https://en.wikipedia.org/wiki/Seismic_wave). Earthquakes can range in size from those that are so weak that they cannot be felt to those violent enough to propel objects and people into the air, and wreak destruction across entire cities. The [seismicity](https://en.wikipedia.org/wiki/Seismicity), or **seismic activity**, of an area is the frequency, type, and size of earthquakes experienced over a period of time. The word *tremor* is also used for [non-earthquake seismic rumbling](https://en.wikipedia.org/wiki/Episodic_tremor_and_slip).

At the Earth's surface, earthquakes manifest themselves by shaking and displacing or disrupting the ground. When the [epicenter](https://en.wikipedia.org/wiki/Epicenter) of a large earthquake is located offshore, the seabed may be displaced sufficiently to cause a [tsunami](https://en.wikipedia.org/wiki/Tsunami). Earthquakes can also trigger [landslides](https://en.wikipedia.org/wiki/Landslide) and occasionally, volcanic activity.

In its most general sense, the word *earthquake* is used to describe any seismic event—whether natural or caused by humans—that generates seismic waves. Earthquakes are caused mostly by rupture of geological [faults](https://en.wikipedia.org/wiki/Fault_%28geology%29) but also by other events such as volcanic activity, landslides, mine blasts, and [nuclear tests](https://en.wikipedia.org/wiki/Underground_nuclear_testing). An earthquake's point of initial rupture is called its [hypocenter](https://en.wikipedia.org/wiki/Hypocenter) or focus. The [epicenter](https://en.wikipedia.org/wiki/Epicenter) is the point at ground level directly above the hypocenter.

**EMERGENCY INFORMATION**

1. The best protection during an earthquake is to get under heavy furniture such as a desk, table, or bench
2. The greatest danger exists directly outside buildings, at exits, and alongside exterior walls. Many of the 120 fatalities from the 1933 Long Beach earthquake occurred when people ran outside of buildings only to be killed by falling debris from collapsing walls.

Ground movement during an earthquake is seldom the direct cause of death or injury. Most earthquake-related casualties result from collapsing walls, flying glass, and falling objects.

**DANGER ZONES**

Earthquakes occur most frequently west of the Rocky Mountains, although historically the most violent earthquakes have occurred in the central United States. All 50 states and all U.S. territories are vulnerable to earthquakes. Forty-one states or territories are at moderate to high risk.

**HELP YOUR COMMUNITY GET READY**

The media can raise awareness about earthquakes by providing important information to the community. Here are some suggestions:

1. Publish a special section in your local newspaper with emergency information on earthquakes. Localize the information by printing the phone numbers of local emergency services offices, the American Red Cross, and hospitals.
2. Conduct a week-long series on locating hazards in the home.
3. Work with local emergency services and American Red Cross officials to prepare special reports for people with mobility impairments on what to do during an earthquake.
4. Provide tips on conducting earthquake drills in the home. Interview representatives of the gas, electric, and water companies about shutting off utilities.

**DID YOU KNOW...**

* Many people think of California as "Earthquake Country," but the state with the most major earthquakes is Alaska. The grandaddy of earthquakes was along the New Madrid Fault in Missouri where a 3-month long series of quakes in 1811--1812 included three quakes larger than a magnitude of 8. These quakes were felt over 2 million square miles.
* The Richter Scale was developed by Charles F. Richter in 1935. It is a logarithmic measurement of the amount of energy released by an earthquake. Earthquakes with a magnitude of at least 4.5 are strong enough to be recorded by sensitive seismographs all over the world. In the United States several thousand shocks of varying sizes occur annually.
* The effects of earthquakes are also measured by the Modified Mercalli Intensity scale. The intensity of a quake is evaluated according to the observed severity of the quake at specific locations. The Mercalli scale rates the intensity on a Roman nu meral scale that ranges from I to XII.
* The Loma Prieta (northern California) earthquake of October 1989 registered 7.1 on the Richter scale and as high as XI on the Mercalli scale.

**WHAT SHOULD I DO BEFORE THE EARTHQUAKE STRIKES ?**

**Develop a Family Disaster Plan:**

Disaster can strike quickly and without warning. It can force you to evacuate your neighborhood or confine you to your home. What would you do if basic services--water, gas, electricity or telephones--were cut off? Local officials and relief workers will be on the scene after a disaster, but they cannot reach everyone right away.

Families can--and do--cope with disaster by preparing in advance and working together as a team. Follow the steps listed in this brochure to create your family's disaster plan. Knowing what to do is your best protection and your responsibility.

Where will your family be when disaster strikes? They could be anywhere--at work, at school or in the car. How will you find each other? Will you know if your children are safe?

**Steps to Safety:**

**Find Out What Could Happen to You.** Contact your local emergency management or civil defense office and American Red Cross chapter--be prepared to take notes:

* Ask what types of disasters are most likely to happen. Request information on how to prepare for each.
* Learn about your community's warning signals: what they sound like and what you should do when you hear them.
* Ask about animal care after disaster. Animals may not be allowed inside emergency shelters due to health regulations.
* Find out how to help elderly or disabled persons, if needed.
* Next, find out about the disaster plans at your workplace, your children's school or daycare center and other places where your family spends time.

**Create a Disaster Plan.** Meet with your family and discuss why you need to prepare for disaster. Explain the dangers of fire, severe weather and earthquakes to children. Plan to share responsibilities and work together as a team.

* Discuss the types of disasters that are most likely to happen. Explain what to do in each case.
* Pick two places to meet:
	1. Right outside your home in case of a sudden emergency, like a fire.
	2. Outside your neighborhood in case you can't return home. Everyone must know the address and phone number.
* Ask an out-of-state friend to be your "family contact." After a disaster, its often easier to call long distance. Other family members should call this person and tell them where they are. Everyone must know your contact's phone number.
* Discuss what to do in an evacuation. Plan how to take care of your pets.

**Complete This Checklist**

* Post emergency telephone numbers by phones (fire, police, ambulance, etc.).
* Teach children how and when to call 911 or your local Emergency Medical Services number for emergency help.
* Show each family member how and when to turn off the water, gas and electricity at the main switches.
* Check if you have adequate insurance coverage.
* Teach each family member how to use the fire extinguisher (ABC type), and show them where it's kept.
* Install smoke detectors on each level of your home, especially near bedrooms.
* Conduct a home hazard hunt.
* Stock emergency supplies and assemble a Disaster Supplies Kit.
* Take a Red Cross first aid and CPR class.
* Determine the best escape routes from your home. Find two ways out of each room.
* Find the safe spots in your home for each type of disaster.

**Practice and Maintain Your Plan**

* Quiz your kids every six months so they remember what to do.
* Conduct fire and emergency evacuation drills.
* Replace stored water every three months and stored food every six months.
* Test and recharge your fire extinguisher(s) according to manufacturer's instructions.
* Test your smoke detectors monthly and change the batteries at least once a year.

**Emergency Supplies**

Keep enough supplies in your home to meet your needs for at least three days. Assemble a Disaster Supplies Kit with items you may need in an evacuation. Store these supplies in sturdy, easy-to-carry containers such as backpacks, duffle bags or covered trash containers.

Include:

* A three-day supply of water (one gallon per person per day) and food that won't spoil.
* One change of clothing and footwear per person, and one blanket or sleeping bag per person.
* A first aid kit that includes your family's prescription medications.
* Emergency tools including a battery-powered radio, flashlight and plenty of extra batteries.
* An extra set of car keys and a credit card, cash or traveler's checks
* Sanitation supplies.
* Special items for infant, elderly or disabled family members.
* An extra pair of glasses.
* Keep important family documents in a waterproof container. Keep a smaller kit in the trunk of your car.

**Utilities**

* Locate the main electric fuse box, water service main and natural gas main. Learn how and when to turn these utilities off. Teach all responsible family members. Keep necessary tools near gas and water shut-off valves.
* Remember, turn off the utilities only if you suspect the lines are damaged or if you are instructed to do so. If you turn the gas off, you will need a professional to turn it back on.

**Neighbors Helping Neighbors**

Working with neighbors can save lives and property. Meet with your neighbors to plan how the neighborhood could work together after a disaster until help arrives. If you're a member of a neighborhood organization, such as a home association or crime watch group, introduce disaster preparedness as a new activity. Know your neighbors' special skills (e.g., medical, technical) and consider how you could help neighbors who have special needs, such as disabled and elderly persons. Make plans for child care in case parents can't get home.

**Home Hazard Unit**

* During a disaster, ordinary objects in your home can cause injury or damage. Anything that can move, fall, break or cause a fire is a home hazard. For example, a hot water heater or a bookshelf can fall. Inspect your home at least once a year and fix potential hazards.
* Contact your local fire department to learn about home fire hazards.

**If Disaster Strikes**

If disaster strikes remain calm and patient. Put your plan into action. Check for injuries. Give first aid and get help for seriously injured people. Listen to your battery powered radio for news and instructions. Evacuate, if advised to do so. Wear protective clothing and sturdy shoes.

Check for damage in your home...

* Use flashlights--do not light matches or turn on electrical switches, if you suspect damage.
* Check for fires, fire hazards and other household hazards.
* Sniff for gas leaks, starting at the water heater. If you smell gas or suspect a leak, turn off the main gas valve, open windows, and get everyone outside quickly.
* Shut off any other damaged utilities.
* Clean up spilled medicines, bleaches, gasoline and other flammable liquids immediately.

Remember to....

* Confine or secure your pets.
* Call your family contact--do not use the telephone again unless it is a life-threatening emergency.
* Check on your neighbors, especially elderly or disabled persons.
* Make sure you have an adequate water supply in case service is cut off.
* Stay away from downed power lines.

**If you are at risk from earthquakes:**

* **Pick "safe places" in each room of your home.** A safe place could be under a sturdy table or desk or against an interior wall away from windows, bookcases, or tall furniture that could fall on you. The shorter the distance to move to safety, the less likely you will be injured. Injury statistics show that people moving as little as 10 feet during an earthquake's shaking are most likely to be injured. Also pick safe places, in your office, school and other buildings you are frequently in.
* Responding quickly and automatically may help protect you from injury.
* **Practice drop, cover, and hold-on at least twice a year.** Frequent practice will help reinforce safe behavior.
* **Discuss earthquakes with your family.** Everyone should know what to do in case all family members are not together. Discussing earthquakes ahead of time helps reduce fear and anxiety and lets everyone know how to respond.
* **Talk with your insurance agent.** Different areas have different requirements for earthquake protection. Study locations of active faults, and if you are at risk, consider purchasing earthquake insurance.

**Awareness Information**

Involve Children in Disaster Preparedness. Ask children to help you remember to keep your kits in working order by changing the food and water every six months and replacing batteries as necessary. Children might make calendars or posters with the appropriate dates marked on them. Ask children to think of items that they would like to include in their own Disaster Supplies Kit, such as books or games or appropriate nonperishable food items

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A 2 :-

 (A) History of seismology :- Scholarly interest in earthquakes can be traced back to antiquity. Early speculations on the natural causes of earthquakes were included in the writings of [Thales](https://en.wikipedia.org/wiki/Thales) of Miletus (c. 585 BCE), [Anaximenes](https://en.wikipedia.org/wiki/Anaximenes_of_Miletus%22%20%5Co%20%22Anaximenes%20of%20Miletus) of Miletus (c. 550 BCE), [Aristotle](https://en.wikipedia.org/wiki/Aristotle) (c. 340 BCE), and [Zhang Heng](https://en.wikipedia.org/wiki/Zhang_Heng) (132 CE).

In 132 CE, Zhang Heng of China's [Han dynasty](https://en.wikipedia.org/wiki/Han_dynasty) designed the first known [seismoscope](https://en.wikipedia.org/wiki/Seismoscope%22%20%5Co%20%22Seismoscope).[[1]](https://en.wikipedia.org/wiki/Seismology#cite_note-needham-1)[[2]](https://en.wikipedia.org/wiki/Seismology#cite_note-DeweyByerly-2)[[3]](https://en.wikipedia.org/wiki/Seismology#cite_note-3)

In the 17th century, [Athanasius Kircher](https://en.wikipedia.org/wiki/Athanasius_Kircher) argued that earthquakes were caused by the movement of fire within a system of channels inside the Earth. [Martin Lister](https://en.wikipedia.org/wiki/Martin_Lister) (1638 to 1712) and [Nicolas Lemery](https://en.wikipedia.org/wiki/Nicolas_Lemery) (1645 to 1715) proposed that earthquakes were caused by chemical explosions within the earth.[[4]](https://en.wikipedia.org/wiki/Seismology#cite_note-Lisbon-4)

The [Lisbon earthquake of 1755](https://en.wikipedia.org/wiki/1755_Lisbon_earthquake), coinciding with the general flowering of science in Europe, set in motion intensified scientific attempts to understand the behaviour and causation of earthquakes. The earliest responses include work by [John Bevis](https://en.wikipedia.org/wiki/John_Bevis) (1757) and [John Michell](https://en.wikipedia.org/wiki/John_Michell) (1761). Michell determined that earthquakes originate within the Earth and were waves of movement caused by "shifting masses of rock miles below the surface".[[5]](https://en.wikipedia.org/wiki/Seismology#cite_note-5)

From 1857, [Robert Mallet](https://en.wikipedia.org/wiki/Robert_Mallet) laid the foundation of instrumental seismology and carried out seismological experiments using explosives. He is also responsible for coining the word "seismology".[[6]](https://en.wikipedia.org/wiki/Seismology#cite_note-6)

In 1897, [Emil Wiechert](https://en.wikipedia.org/wiki/Emil_Wiechert)'s theoretical calculations led him to conclude that the [Earth's interior](https://en.wikipedia.org/wiki/Structure_of_the_Earth) consists of a mantle of silicates, surrounding a core of iron.[[7]](https://en.wikipedia.org/wiki/Seismology#cite_note-7)

In 1906 [Richard Dixon Oldham](https://en.wikipedia.org/wiki/Richard_Dixon_Oldham) identified the separate arrival of [P-waves](https://en.wikipedia.org/wiki/P-wave), S-waves and surface waves on seismograms and found the first clear evidence that the Earth has a central core.[[8]](https://en.wikipedia.org/wiki/Seismology#cite_note-8)

In 1910, after studying the April [1906 San Francisco earthquake](https://en.wikipedia.org/wiki/1906_San_Francisco_earthquake), [Harry Fielding Reid](https://en.wikipedia.org/wiki/Harry_Fielding_Reid) put forward the "[elastic rebound theory](https://en.wikipedia.org/wiki/Elastic-rebound_theory)" which remains the foundation for modern tectonic studies. The development of this theory depended on the considerable progress of earlier independent streams of work on the behaviour of elastic materials and in mathematics.[[9]](https://en.wikipedia.org/wiki/Seismology#cite_note-9)

In 1926, [Harold Jeffreys](https://en.wikipedia.org/wiki/Harold_Jeffreys) was the first to claim, based on his study of earthquake waves, that below the mantle, the core of the Earth is liquid.[[10]](https://en.wikipedia.org/wiki/Seismology#cite_note-10)

In 1937, [Inge Lehmann](https://en.wikipedia.org/wiki/Inge_Lehmann%22%20%5Co%20%22Inge%20Lehmann) determined that within the earth's liquid outer core there is a solid *inner* core.[[11]](https://en.wikipedia.org/wiki/Seismology#cite_note-11)

By the 1960s, earth science had developed to the point where a comprehensive theory of the causation of seismic events had come together in the now well-established theory of [plate tectonics](https://en.wikipedia.org/wiki/Plate_tectonics).

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(B) :- SEISMOSCOPE :-

A **seismoscope**  is an instrument that responds to ground motions, such as caused by earthquakes, volcanic eruptions, and explosions. Seismometers are usually combined with a timing device and a recording device to form a **seismograph**.[[1]](https://en.wikipedia.org/wiki/Seismometer#cite_note-1) The output of such a device—formerly recorded on paper (see picture) or film, now recorded and processed digitally—is a [seismogram](https://en.wikipedia.org/wiki/Seismogram). Such data is used to locate and characterize earthquakes, and to study the Earth's internal structure.

Basic principles[[edit](https://en.wikipedia.org/w/index.php?title=Seismometer&action=edit&section=1" \o "Edit section: Basic principles)]



Basic horizontal-motion seismograph. The inertia of the round weight tends to hold the pen still while the base moves back and forth.

A simple seismometer, sensitive to up-down motions of the Earth, is like a weight hanging from a spring, both suspended from a frame that moves along with any motion detected. The relative motion between the weight (called the mass) and the frame provides a measurement of the vertical ground motion. A rotating drum is attached to the frame and a pen is attached to the weight, thus recording any ground motion in a [seismogram](https://en.wikipedia.org/wiki/Seismogram).

Any movement of the ground moves the frame. The mass tends not to move because of its [inertia](https://en.wikipedia.org/wiki/Inertia), and by measuring the movement between the frame and the mass, the motion of the ground can be determined.

Early seismometers used optical levers or mechanical linkages to amplify the small motions involved, recording on soot-covered paper or photographic paper. Modern instruments use electronics. In some systems, the mass is held nearly motionless relative to the frame by an electronic [negative feedback loop](https://en.wikipedia.org/wiki/PID_loop). The motion of the mass relative to the frame is measured, and the [feedback loop](https://en.wikipedia.org/wiki/Feedback_loop) applies a magnetic or electrostatic force to keep the mass nearly motionless. The voltage needed to produce this force is the output of the seismometer, which is recorded digitally.

In other systems the weight is allowed to move, and its motion produces an electrical charge in a coil attached to the mass which voltage moves through the magnetic field of a magnet attached to the frame. This design is often used in a [geophone](https://en.wikipedia.org/wiki/Geophone), which is used in exploration for oil and gas.

Seismic observatories usually have instruments measuring three axes: north-south (y-axis), east-west (x-axis), and vertical (z-axis). If only one axis is measured, it is usually the vertical because it is less noisy and gives better records of some seismic waves.[*[citation needed](https://en.wikipedia.org/wiki/Wikipedia%3ACitation_needed%22%20%5Co%20%22Wikipedia%3ACitation%20needed)*]

The foundation of a seismic station is critical.[[2]](https://en.wikipedia.org/wiki/Seismometer#cite_note-2) A professional station is sometimes mounted on [bedrock](https://en.wikipedia.org/wiki/Bedrock). The best mountings may be in deep boreholes, which avoid thermal effects, ground noise and tilting from weather and tides. Other instruments are often mounted in insulated enclosures on small buried piers of unreinforced concrete. Reinforcing rods and aggregates would distort the pier as the temperature changes. A site is always surveyed for ground noise with a temporary installation before pouring the pier and laying conduit. Originally, European seismographs were placed in a particular area after a destructive earthquake. Today, they are spread to provide appropriate coverage (in the case of [weak-motion seismology](https://en.wikipedia.org/w/index.php?title=Weak-motion_seismology&action=edit&redlink=1)) or concentrated in high-risk regions ([strong-motion seismology](https://en.wikipedia.org/w/index.php?title=Strong-motion_seismology&action=edit&redlink=1)).[[3]](https://en.wikipedia.org/wiki/Seismometer#cite_note-Reitherman-3)

Nomenclature[[edit](https://en.wikipedia.org/w/index.php?title=Seismometer&action=edit&section=2" \o "Edit section: Nomenclature)]

The word derives from the [Greek](https://en.wikipedia.org/wiki/Greek_language) σεισμός, *seismós*, a shaking or quake, from the verb σείω, *seíō*, to shake; and μέτρον, *métron*, to measure, and was coined by [David Milne-Home](https://en.wikipedia.org/wiki/David_Milne-Home) in 1841, to describe an instrument designed by Scottish physicist [James David Forbes](https://en.wikipedia.org/wiki/James_David_Forbes).[[4]](https://en.wikipedia.org/wiki/Seismometer#cite_note-Ben-Menahem-4)

*Seismograph* is another Greek term from *seismós* and γράφω, *gráphō*, to draw. It is often used to mean *seismometer*, though it is more applicable to the older instruments in which the measuring and recording of ground motion were combined, than to modern systems, in which these functions are separated. Both types provide a continuous record of ground motion; this record distinguishes them from **seismoscopes**, which merely indicate that motion has occurred, perhaps with some simple measure of how large it was.[[5]](https://en.wikipedia.org/wiki/Seismometer#cite_note-5)

The technical discipline concerning such devices is called **seismometry**,[[6]](https://en.wikipedia.org/wiki/Seismometer%22%20%5Cl%20%22cite_note-LeeJennings2002-6) a branch of [seismology](https://en.wikipedia.org/wiki/Seismology).

The concept of measuring the "shaking" of something means that the word "seismograph" might be used in a more general sense. For example, a monitoring station that tracks changes in [electromagnetic](https://en.wikipedia.org/wiki/Electromagnetic) noise affecting [amateur radio](https://en.wikipedia.org/wiki/Amateur_radio) waves presents an *rf seismograph*.[[7]](https://en.wikipedia.org/wiki/Seismometer#cite_note-7) And [Helioseismology](https://en.wikipedia.org/wiki/Helioseismology%22%20%5Co%20%22Helioseismology) studies the "quakes" on the Sun

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**A 3:-**

 **Disaster risks of Pakistan :-**

**The probability of loss of lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period due to the interaction of Hazard and Vulnerability of Exposure (society and the built environment). May affect people or property.**

**A potentially damaging physical phenomenon induced by an event (e.g. earthquake, floods, etc.) that may cause**

* **Loss of life or injury,**
* **Property damage,**
* **Social and economic disruption or**
* **Environmental degradation.**

**Hazard is characterized by location, intensity, frequency/probability, etc.**

**Hazard profiling is essential for disaster risk characterization.**

**Vulnerability :-**

**The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.**

**There are many aspects of vulnerability arising from various physical, social, economic and environmental factors.**

***Physical Vulnerability:* It is the measure of propensity of physical systems (*say a building*) given the intensity (severity) of hazard (*say earthquake*). It is reciprocal of the system Resilience to withstand.**

***Social Vulnerability:* It depends on indicators (such as gender, wealth, employment, beliefs, economic status etc.) that describe the pre-event characteristics or qualities of a social system that creates the potential for harm or loss. It can increase/lower the global vulnerability. It included Political, Economical, Social, and Institutional factors.**

### Disaster Management to Disaster Risk Reduction:-

The evolution of disaster thinking and practice since the 1970s has seen a progressively wider and deeper understanding of why disasters happen, accompanied by more integrated, holistic approaches to reduce their impact on society through reducing risk before it occurs (disaster risk reduction, or disaster risk management) as well as managing impacts when disasters occur (disaster management). It is being widely embraced by international agencies, governments, disaster planners and civil society organisations.[[3]](https://en.wikipedia.org/wiki/Disaster_risk_reduction#cite_note-3)

DRR is such an all-embracing concept that it has proved difficult to define or explain in detail, although the broad idea is clear enough. Inevitably, there are different definitions in the technical literature, but it is generally understood to mean the broad development and application of policies, strategies and practices to minimise vulnerabilities and disaster risks throughout society. The term 'disaster risk management' (DRM) is often used in the same context and to mean much the same thing: a systematic approach to identifying, assessing and reducing risks of all kinds associated with hazards and human activities. It is more properly applied to the operational aspects of DRR: the practical implementation of DRR initiatives.

### DRR and climate change[[edit](https://en.wikipedia.org/w/index.php?title=Disaster_risk_reduction&action=edit&section=3" \o "Edit section: DRR and climate change)]

Climate change, through rising temperatures, changing rainfall patterns, and changing sea levels, will affect the nature of hydrometeorological disasters, such as droughts, floods, and cyclones. The [IPCC](https://en.wikipedia.org/wiki/Intergovernmental_Panel_on_Climate_Change) issued a special report in 2012 "Managing the risks of extreme events and disasters to advance climate change adaptation[[4]](https://en.wikipedia.org/wiki/Disaster_risk_reduction#cite_note-4)" stating that a changing climate leads to changes in the frequency, intensity, spatial extent, duration, and timing of extreme weather and climate events, and can result in unprecedented extreme weather and climate events. Similarly there has been an increase in the economic losses from weather- and climate-related disasters, which contributed to $165 billion of economic losses worldwide in 2018 according to estimates from insurance giant Swiss Re.[[5]](https://en.wikipedia.org/wiki/Disaster_risk_reduction#cite_note-5) There are growing efforts to closely link [DRR and climate change](http://www.eldis.org/go/topics/resource-guides/climate-change/key-issues/disaster-risk-reduction#.UwTCR_l_uvM) adaptation, both in policy and practice.

## Gender and DRR[[edit](https://en.wikipedia.org/w/index.php?title=Disaster_risk_reduction&action=edit&section=4" \o "Edit section: Gender and DRR)]

Disaster risk is not gender-neutral. Studies have shown that women and girls are disproportionately impacted by disasters. Following the 2004 tsunami in the Indian Ocean, 77% and 72% of the deaths in the districts of North Aceh and Aceh Besar, Indonesia, were female. And in India 62% of people who died were female.[[6]](https://en.wikipedia.org/wiki/Disaster_risk_reduction#cite_note-6) This is due to socially-constructed gender roles that determine what norms and behaviors are acceptable for women and men, and girls and boys. In particular, women tend to take responsibility for home-based tasks and can be reluctant to leave their assets in the case of hazard warning; and often do not learn survival skills that can help in disasters, such as learning to swim or climb.

A gender-sensitive approach would identify how disasters affect men, women, boys and girls differently and shape policy that addresses people's specific vulnerabilities, concerns and needs.[[7]](https://en.wikipedia.org/wiki/Disaster_risk_reduction#cite_note-7)

## Policy arena[[edit](https://en.wikipedia.org/w/index.php?title=Disaster_risk_reduction&action=edit&section=5" \o "Edit section: Policy arena)]



Chennai damage after 2004 Indian Ocean Earthquake

There have been growing calls for greater clarity about the components of DRR and about indicators of progress toward resilience — a challenge that the international community took up at the UN's [World Conference on Disaster Reduction](https://en.wikipedia.org/wiki/World_Conference_on_Disaster_Reduction) (WCDR) in Kobe, Japan, in 2005, only days after the [2004 Indian Ocean earthquake](https://en.wikipedia.org/wiki/2004_Indian_Ocean_earthquake). The WCDR began the process of pushing international agencies and national governments beyond the vague rhetoric of most policy statements and toward setting clear targets and commitments for DRR.

### Hyogo Framework for Action[[edit](https://en.wikipedia.org/w/index.php?title=Disaster_risk_reduction&action=edit&section=6" \o "Edit section: Hyogo Framework for Action)]

The first step in this process was the formal approval at the WCDR of the [Hyogo Framework for Action (2005–2015)](http://www.unisdr.org/eng/hfa/hfa.htm) (HFA). This was the first internationally accepted framework for DRR. It set out an ordered sequence of objectives (outcome – strategic goals – priorities), with five priorities for action attempting to 'capture' the main areas of DRR intervention. The UN's biennial [Global Platform for Disaster Risk Reduction](http://www.preventionweb.net/english/hyogo/GP/) provided an opportunity for the UN and its member states to review progress against the Hyogo Framework. It held its first session 5–7 June 2007 in [Geneva](https://en.wikipedia.org/wiki/Geneva), Switzerland, where [UNISDR](https://en.wikipedia.org/wiki/UNISDR) is based. The subsequent Global Platforms were held in June 2009, May 2011 and May 2013, all in [Geneva](https://en.wikipedia.org/wiki/Geneva).

### Sendai Framework for Disaster Risk Reduction[[edit](https://en.wikipedia.org/w/index.php?title=Disaster_risk_reduction&action=edit&section=7" \o "Edit section: Sendai Framework for Disaster Risk Reduction)]

In March 2015, the 10-year-old [Hyogo Framework](http://www.unisdr.org/eng/hfa/hfa.htm) came to an end and was replaced by the [Sendai Framework for Disaster Risk Reduction (2015–2030](http://www.wcdrr.org/preparatory/post2015), adopted at the [World Conference on Disaster Risk Reduction](https://en.wikipedia.org/wiki/World_Conference_on_Disaster_Risk_Reduction) held on March 14–18, 2015 in the Japanese city of [Sendai](https://en.wikipedia.org/wiki/Sendai). It sets out four priorities:

1) understanding disaster risk;

2) strengthening disaster risk governance to manage disaster risk;

3) investing in disaster risk reduction for resilience; and

4) enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction.

To support the assessment of global progress in achieving the outcome and goal of the Sendai Framework, seven global targets have been agreed: substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality between 2020–2030 compared to 2005–2015; substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 between 2020–2030 compared to 2005–2015; reduce direct disaster economic loss in relation to global gross domestic product by 2030; substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030; substantially increase the number of countries with national and local disaster risk reduction strategies by 2020; substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of the framework by 2030; substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030.

The Sendai document emerged from [three years' of talks](http://www.wcdrr.org/uploads/post_2015_drr_timeline.jpg), during which UN member states, NGOs and other stakeholders made calls for an improved version of the existing HFA, with a set of common standards, a comprehensive framework with achievable targets, and a legally-based instrument for disaster risk reduction. Member states also emphasised the need to tackle disaster risk reduction and climate change adaption when setting the [Sustainable Development Goals](https://en.wikipedia.org/wiki/Sustainable_Development_Goals), particularly in light of an insufficient focus on risk reduction and resilience in the original [Millennium Development Goals](https://en.wikipedia.org/wiki/Millennium_Development_Goals). [[8]](https://en.wikipedia.org/wiki/Disaster_risk_reduction#cite_note-8)

### Other international initiatives[[edit](https://en.wikipedia.org/w/index.php?title=Disaster_risk_reduction&action=edit&section=8" \o "Edit section: Other international initiatives)]

UN initiatives have helped to refine and promote the concept at international level, stimulated initially by the UN's designation of the 1990s as the International Decade for Natural Disaster Reduction. In 1999, UN member states approved the [International Strategy for Disaster Risk Reduction](http://www.unisdr.org/who-we-are/international-strategy-for-disaster-reduction), which reflected a shift from the traditional emphasis on disaster response to disaster reduction, by seeking to promote a "culture of prevention".

### Regional initiatives[[edit](https://en.wikipedia.org/w/index.php?title=Disaster_risk_reduction&action=edit&section=9" \o "Edit section: Regional initiatives)]

#### Africa[[edit](https://en.wikipedia.org/w/index.php?title=Disaster_risk_reduction&action=edit&section=10" \o "Edit section: Africa)]

Several African Regional Economic Communities have drafted gender-responsive DRR strategies. This includes the [Southern African Development Community](https://en.wikipedia.org/wiki/Southern_African_Development_Community)'s Gender-Responsive Disaster Risk Reduction Strategic Plan and Plan of Action 2020-30; the [Economic Commission of Central Africa States](http://www.ceeac.org/)' Gender-Responsive Disaster Risk Reduction Strategy and Action Plan 2020-30; the [Economic Commission of West African States'](http://www.ecowas.int/) Disaster Risk Reduction Gender Strategy and Action Plan 2020-2030 and the [Intergovernmental Authority on Development](https://en.wikipedia.org/wiki/Intergovernmental_Authority_on_Development)'s Regional Strategy and Action Plan for Mainstreaming Gender in Disaster Risk Management and Climate Change Adaptation.

## Disaster research[[edit](https://en.wikipedia.org/w/index.php?title=Disaster_risk_reduction&action=edit&section=11" \o "Edit section: Disaster research)]

**Disaster research** deals with conducting field and survey research on group, organizational and community preparation for, response to, and recovery from natural and technological disasters and other community-wide crises.

Related field such as anthropology study human populations, environments, and events that create utter chaos. They research long-lasting effects on multiple areas of society including: social organization, political organization and empowerment, economic consequences, environmental degradation, human and environmental adaptation and interactions, oral history, traditional knowledge, psychological consequences, public health and the broader historical record of the affected region.

Public health preparedness requires cultural awareness, respect and preparation; different parties acting during a relief period are driven by cultural and religious beliefs, including taboos.[[9]](https://en.wikipedia.org/wiki/Disaster_risk_reduction#cite_note-9) If these are not acknowledged or known by emergency and medical personnel, treatment can become compromised by both a patient refusing to be treated and by personnel refusing to treat victims because of a violation of values

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**A 4:-**

 **Environmental vulnerability add up to the disaster risk of a community :- Physical Vulnerability :-**

* **It generally involves what in the built environment is physical.**
* **Including structures, transportations routes and populations.**
* **It included damage to a physical system (require rehabilitation) given the severity of a potential hazard – for economic loss computations.**
* **The resulting harm to populations (causalities ) given the severity of a potential hazard – for human casualties estimation.**
* **Employed for physical risk assessment using engineering tools.**
* **Social Vulnerability:-**

**It is the measures of certain factors that increase/decrease the propensity to incur harm or damage to a potential hazard, including**

* **Individual,**
* **Society,**
* **Political and**
* **Cultural Factors.**

**Human behaviors can contribute or reduce the population’s ability to protect itself from potential harm.**

**Examples: Class, gender, ethnicity, age, religion, immigration status, literacy, education, health, etc.**

* **Environmental Vulnerability :-**

**It is the measure of the health and welfare of the natural environment within the area that either contributes or reduce the propensity of population exposed to potential hazard.**

**Poor environmental practices can turn minor events into major disasters. It may include**

* **Deforestation,**
* **Improper land-use planning,**
* **Improper management of hazardous materials, etc.**

 **Economic Vulnerability:-**

**It is the measures of financial means of individuals, towns, cities, communities, or whole country to protect themselves from the effect of disasters.**

**Economic delineations further divide societies into various economic vulnerable groups.**

**The poor group are much more likely to suffer the consequences of disasters.**

**Some of the poor group may lose the means of income and may ruined consequently.**

**It can lead to social vulnerability – causing population to build on hazard zones – causing environmental and physical vulnerability.**

**:---------------------------------------The end-------------:----------------------**