

COLLABORATE CIVIL PROTECTION STARTS WITH YOU



USEFUL CONTACTS



PREVENT PLAN RESCUE

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USEFUL CONTACTS

SELF-PROTECTION MEASURES

HOW TO PREPARE FOR AN EARTHQUAKE

"THE 7 STEPS"

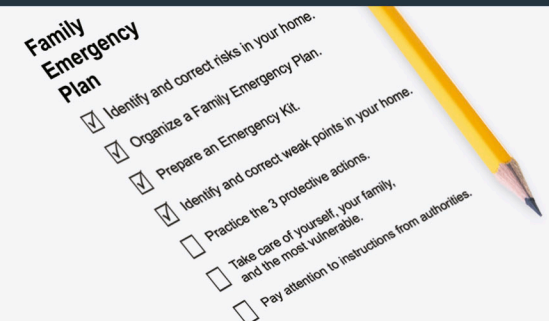
Inform yourself about the causes and possible effects of an earthquake in your area. Discuss the topic calmly and serenely with your family and friends.



ORGANIZE IN 7 STEPS:

- 1 Identify and correct risks in your home.**
- 2 Organize a Family Emergency Plan.**
- 3 Prepare an Emergency Kit.**
- 4 Identify and correct weak points in your home.**
- 5 Practice the 3 protective actions.**
- 6 Take care of yourself, your family, and the most vulnerable.**
- 7 Pay attention to instructions from authorities.**

WHAT TO DO BEFORE AN EARTHQUAKE



1. Identify and correct risks in your home

Do not place heavy objects like mirrors and pictures over places like beds and/or sofas;
Do not place beds near windows;
Have a fire extinguisher at home, learn how to use it, and perform regular maintenance;
Secure furniture to the wall.

2. Organize a Family Emergency Plan

Everyone should know how to act in case of an earthquake;
Teach all family members how to turn off electricity, water, and gas supplies;
Keep emergency service phone numbers in an accessible location;
Define a family meeting point.

3. Prepare an Emergency Kit

Dynamo radio and flashlight;
First aid kit;
Essential medications and warm clothing;

Water and dry food for +/- 3 days (renew periodically);

Extra food and water for pets;
Multi-tool and whistle;
Money and copies of documents.

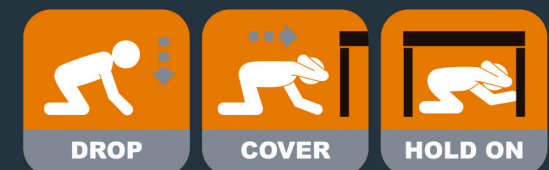
4. Identify and correct weak points in your home

Know as much as possible about the structure of your home (or workplace), and check if it has seismic-resistant features.

SELF-PROTECTION MEASURES - BEFORE AN EARTHQUAKE

WHAT TO DO DURING AN EARTHQUAKE

5. Perform the 3 protective actions:



IF YOU ARE AT HOME OR IN A BUILDING

Stay away from windows, mirrors, and other objects that may fall;

NEVER use elevators;

Do not run immediately to the street - exits and/or stairs may be blocked.

IF YOU ARE ON THE STREET

Stay away from tall and old buildings, electricity poles, and other objects that may fall;

Move to an open area;

Do not circulate in the street;

Do not go home. Return only when authorities advise you to;

Stay away from beaches. In case of an alert from authorities, quickly move to higher ground away from the coast;

If you are on a vessel, head out to sea.

IF YOU ARE DRIVING

Stop your vehicle away from buildings, walls, slopes, poles, and power lines, and stay inside it;

Turn on the radio and listen to the instructions being broadcast.



WHAT TO DO AFTER AN EARTHQUAKE

6. Take care of yourself, your family, and the most vulnerable:

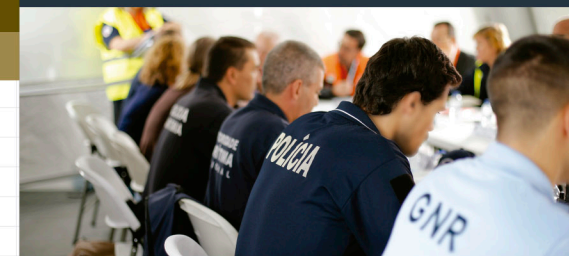
Carefully assess what is happening around you;
Stay calm and wait for possible aftershocks;
Do not smoke or light fires;
Do not turn on switches;
Turn off the gas, electricity, and water;
Do not touch metallic objects in contact with electrical wires;
Do not walk around the streets to see the damage.
Keep streets clear for emergency vehicles;
If possible, protect yourself with appropriate clothing and footwear;
Check for injured people and provide first aid;

If injuries are severe, call for help and do not move the injured unless they are in immediate danger;
If you detect any leaks of toxic or flammable substances, clean them up as quickly as possible.



7. Pay attention to instructions from authorities:

Turn on the radio and listen to the instructions being broadcast;
Always follow the instructions from authorities;
Use phones only in emergencies.



SELF-PROTECTION MEASURES - DURING AND AFTER AN EARTHQUAKE



Earthquakes

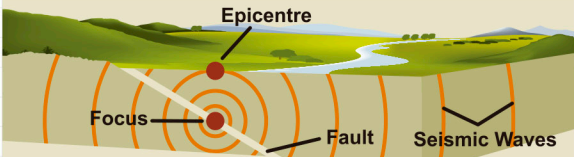
Prevention | Self-Protection



WHAT IS AN EARTHQUAKE?

AN EARTHQUAKE (or quake) is a natural phenomenon resulting from a more or less violent rupture within the Earth's crust, corresponding to the sudden and unexpected release of a large amount of energy. This release causes vibrations that propagate in all directions across a wide surrounding area. Most earthquakes are caused by movements along geological faults that exist at the contact between different tectonic plates that make up the Earth's surface, which move relative to each other.

EARTHQUAKES can also be generated by movements of faults within tectonic plates themselves. Volcanic activity and the movement of molten material from deep within the Earth can also be causes of earthquakes. More rarely, they can be triggered by superficial land displacements, such as subsidence and landslides.



The duration of an earthquake ranges from a few seconds to several tens of seconds, rarely exceeding one minute. After the main earthquake, there are usually readjustments in the rocky material, leading to weaker earthquakes known as aftershocks. The zone within the Earth where the energy release occurs is called the focus or hypocentre. The point on the Earth's surface directly above the focus is the epicentre. This is the area where the earthquake is felt with the greatest intensity.

The territory of Portugal, situated on the Eurasian plate, is characterized by intermediate seismicity globally, both in terms of magnitude and frequency. To the south, its boundary is defined by the Azores-Gibraltar Fault, a tectonic discontinuity that marks the boundary between the Eurasian and African plates. To the west, the boundary is marked by the Mid-Atlantic Ridge Fault. Most earthquakes occur in the southern Algarve region, particularly southwest of Cape São Vicente.

HOW IS AN EARTHQUAKE MEASURED?

The magnitude of an earthquake can be measured in two ways: by **Magnitude**: This method measures the amplitude of seismic waves recorded on seismographs, which is related to the amount of energy released at the focus. It is a quantitative way to measure the earthquake. The most commonly used scale is the **Richter Scale**, which consists of nine degrees. Each degree on this scale represents an increase in energy approximately 30 times greater than the previous degree.

MAGNITUDE	EFFECTS
<2	Generally not felt, near the epicentre but recorded by highly sensitive instruments.
2,0 - 2,9	Hardly perceptible, near the epicentre.
3,0 - 3,9	Felt by some people.
4,0 - 4,9	Felt by most people. Affects nearby buildings. Minor damage.
5,0 - 5,9	Strong. Moderately destructive. Causes furniture displacement.
6,0 - 6,9	Destructive in populated areas. Collapse of walls.
7,0 - 7,9	Disastrous. Severe damage. Destruction of buildings.
>8	Catastrophic. Destroys communities near the epicentre.

By **Intensity**: This method evaluates the effects of an earthquake in terms of damage to structures and how the vibrations are felt by the population.

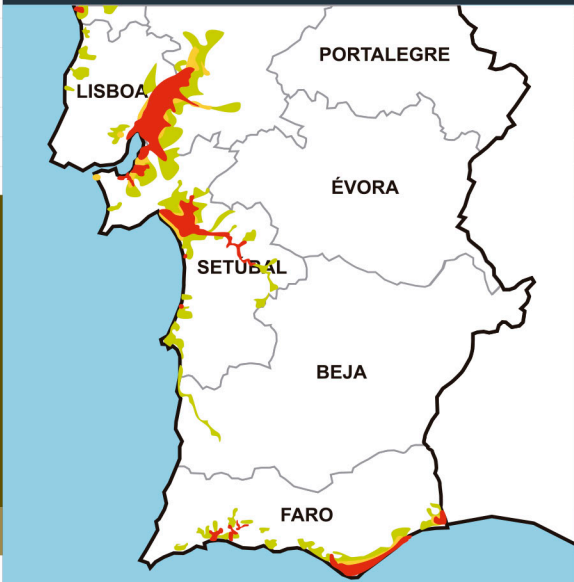
The effects are categorized into levels according to a qualitative intensity scale. The most well-known scale is the **Modified Mercalli Intensity Scale**, which consists of twelve degrees.

SUSCEPTIBILITY TO EARTHQUAKE AND TSUNAMI OCCURRENCE IN MAINLAND PORTUGAL

TSUNAMIS: When seismic activity occurs in the ocean, it can be accompanied by tsunamis.

A tsunami is a series of waves with a very long wavelength (the distance between two successive crests or troughs), which can reach up to 100 km. As the waves approach the coast, the wavelength decreases and the height increases. While in deep water the height may be less than 1 meter, near the coast the wave height can reach up to 30 meters, which signifies a high destructive potential upon reaching the shore, causing significant damage to coastal or riverside structures (ships, houses, bridges, etc.).

In Mainland Portugal, the occurrence of tsunamis is most likely along the Algarve coast, the Setúbal Peninsula, and in Lisbon.



Degree of Susceptibility
High Moderate Low

Figure 1 - Tsunami Susceptibility Map

EARTHQUAKES In Mainland Portugal, regions classified with high susceptibility to earthquakes are predominantly found in the districts of Faro (entire Barlavento and the southern strip of Sotavento), Beja (coastal strip), Setúbal (entire north and the western half), Lisbon (entire eastern half and a narrow coastal strip to the south), and also Santarém (centre and southwest).



Susceptibility Degree
High Moderate Low

Figure 2 - Earthquake Susceptibility Map

Among the major exposed elements located in high susceptibility areas to earthquakes are the most populated urban agglomerations.

The population, buildings, equipment, and infrastructure of these agglomerations are therefore a significant element exposed to the risk of earthquakes. Notably, the most populous areas are located in the Lisbon Metropolitan Area and the Algarve.

Regarding transportation infrastructure, the airports and maritime ports south of Lisbon (inclusive) are highlighted due to their location in high susceptibility zones. In terms of major road structures in high susceptibility areas, the main highways, bridges, and railways in the districts of Lisbon, Santarém, Setúbal, and Faro are noteworthy.

SUSCEPTIBILITY TO TSUNAMI AND EARTHQUAKE OCCURRENCE

MEETING POINTS

Despite significant research efforts, science still cannot predict earthquakes.

However, it is always possible to minimize their effects by identifying high-risk areas in advance, constructing more resilient structures and buildings, promoting risk education and awareness among the population, developing emergency plans, and training behaviours to adopt before, during, and after an earthquake.

The Municipal Emergency Plan for Civil Protection of Almada (PMEPC) outlines strategies for mitigating and adapting to earthquakes and tsunamis.

These include conducting awareness-raising activities and information campaigns in coordination with other Civil Protection agents about the risks associated with earthquakes and tsunamis, and the self-protection measures to be adopted by the population.

The plan also involves developing a warning system for populations in tsunami-prone risk areas.

The PMEPC includes designated MEETING POINTS. In the event of an evacuation, the population should proceed to these points, where first aid is provided.

The MEETING POINTS are managed by the Almada City Council, with support from the Parish Councils and other Civil Protection agents.

In addition to other locations to be determined, pre-identified sites exist where MUNICIPAL MEETING POINTS can be set up.

PARISH	LOCATION
Cova da Piedade	Youth Park Garden of Cova da Piedade
Almada	Urban Park Cte. Júlio Ferraz Ramiro Correia Park
Laranjeiro	Garden of Our Lady of Fatima Lopes-Graça Square Portela Square
Feijó	Sports Complex Garden Peace Park Feijó Civic Centre
Caparica	Urban Garden Filipa D'Água Urban Park of Fróis Garden of Vila Nova
Trafaria	Military Barracks Football Field
Cacilhas	Cacilhas Square
Sobreda	Urban Park

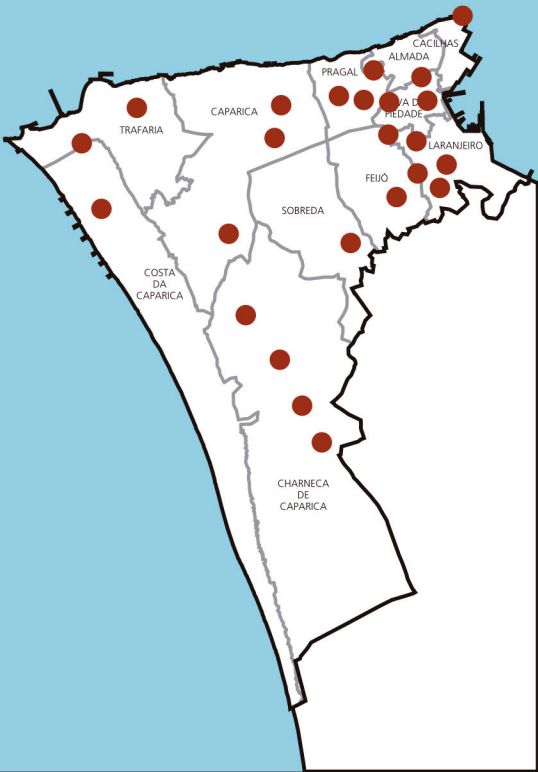


Figure 3 - Possible Locations for the Installation of MEETING POINTS (PMEPC Almada)

MEETING POINTS