

# Risk of living on **UNSTABLE SLOPES**



**Landslides triggering agents**

47% of the Mexican territory has mountains, ranges and hills, 17% of that extension has a high probability of landslide occurrence

## **A landslide occurs when...**

- ▶ The soil is saturated due to heavy rainfalls or water leaks from broken pipes, and is shaken by earthquakes, volcanic activity or vibration induced by machinery
- ▶ The terrain is overloaded with constructions
- ▶ The terrain is deforested
- ▶ The soil is saturated by both septic tanks and domestic water leaks
- ▶ Inadequate excavations are made for constructions

## **Recognize landslide warning signs!**

### **A landslide can occur if the following is observed...**

- ▶ Subsidence and cracking in the middle or upper part of the slope
- ▶ Floor lifting and deformations hindering to use doors or windows
- ▶ Pavement cracking
- ▶ Tilting of trees and fences
- ▶ Deformations or ruptures in walls and/or buttresses
- ▶ Small quakes

## **How to reduce risk?**

- ▶ Knowing our environment and attending the civil protection recommendations
- ▶ Respecting land use and building codes
- ▶ Checking doors, walls, ceilings and floors in order to identify possible cracks, expansions or bulking signals in the base
- ▶ Not cutting trees
- ▶ Not allowing the infiltration from water leaks of pipelines
- ▶ Checking if trees and/or posts are tilted
- ▶ Once any sign is observed, notify it as soon as possible to civil protection authorities

**Your life and your families  
are the most important!**

**#PREVENIRESVIVIR**

**Learn more**

National System of Civil Protection  
[www.proteccioncivil.gob.mx](http://www.proteccioncivil.gob.mx)

National Center for Disasters Prevention  
[www.cenapred.gob.mx](http://www.cenapred.gob.mx)

Source: National Center for Disasters Prevention

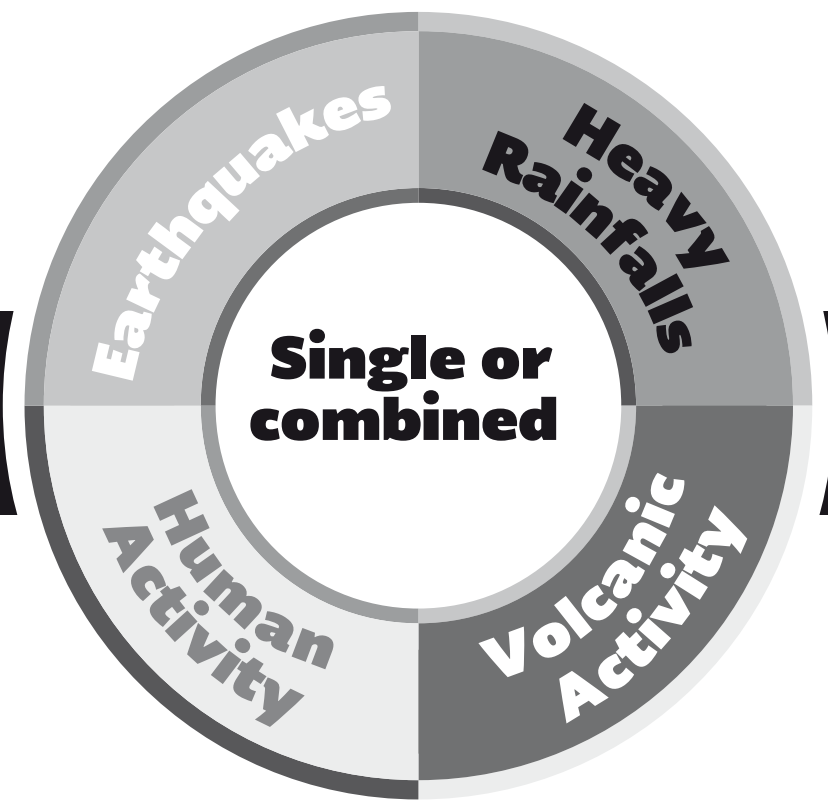
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SISTEMA NACIONAL DE  
PROTECCIÓN CIVIL  
MÉXICO

MOVING MEXICO INTO PREVENTION

# Factors that triggers landslides



## Actions to be taken in order to prevent slope instability

A slope is a tilted terrain surface or a descent of the mountains, ranges, hills or knolls

A landslide occurs due to one or several processes shown in the graphic; it is important to know them and to be prepared

### What are the movements that an unstable slope may present?

**Falls or topples** are sudden movements of soil and rock fragments from steep slopes or cliffs; the movement is free fall, rolling and bouncing

**Landslides** are mass movements of soil on one or more slide surfaces. Sometimes this kind of movement shows warning signs before its mobilization, like cracks and settlements. They have a high destructive power

A **flow** has downslope movements of soil and/or rock fragments, their grains or fragments have relative movements into the sliding mass. It mainly occurs during very heavy rains, so that the mobilized material acquires erosive power and speed, flowing in canyons and valleys and destroying everything on its way

### What can I do to avoid affecting a slope and to diminish the hazard?

- 1.- Do not cut trees nor destroy vegetation
- 2.- Protect the environment and respect the land use
- 3.- Do not excavate at the slope base
- 4.- Ask for technical advice from local authorities when changes are to be made on the slopes
- 5.- Do not let the terrain to be infiltrated and softened by drained water. If water emerges from the slope body, or leakages of tap or drained water are detected, immediately inform the authorities in order to start repair works
- 6.- Pay attention to the directions of the Civil Protection authorities in your community, especially during the rainy season and with their help, organize brigades for site inspection in order to detect any signs of instability
- 7.- Frequently check walls, floors and ceilings for subsidence, expansion or formation of steps. If any of them appear, inform the local Civil Protection authorities

8.- Stay alert to identify tilting of posts and trees on the slope surfaces

9.- Before starting any construction, excavation or installation, consult the Civil Protection authorities

10.- If you find any cracks on the slope surface where you live, immediately notify it to the Civil Protection authorities

**Call 088 in case of emergency**

**Learn more:**

**[www.proteccioncivil.gob.mx](http://www.proteccioncivil.gob.mx)**  
**[www.cenapred.gob.mx](http://www.cenapred.gob.mx)**

**Stay alert all year long, especially from June to November; these phenomena are more frequent during that season**