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What is a landslide and how does it happen?

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What is a landslide?

A landslide is defined as the movement of a mass of rock, mud or debris down a slope due to gravity. Landslides cause massive damage to human lives and property while also causing disruption in the movement of traffic and communication network. Landslides block the riverways which may further result in floods also. The productive farm fields that are affected by the landslides may lose their fertility and this causes a massive loss to the farmers.

What causes a landslide?

Landslides are induced by climatic conditions such as heavy rainfalls, snowfalls or natural phenomena such as volcanic activity or earthquakes. Human activities such as deforestation, mining, constructions, vibrations from big machines, etc. may also cause a landslide. Deforestation also is an important cause of landslides. The roots of trees hold the soil in place. Without trees, the stability of a slope is decreased greatly and with a large or even a small change, a landslide can be caused.

Types of landslides

1. **Falls** – Falls are sudden movements of huge amount of soil, debris, and rock that breaks away from slopes and cliffs. Such landslides occur as a result of weathering, earthquakes, and force of gravity.
2. **Slides** – In this type of a slide, the unstable sliding material breakaways from underlying stable material.
3. **Topples** – Topple landslides occur when a block of rock tilts or rotates. It leads to formation of a debris cone below the slope known as a Talus cone.
4. **Spreads** – This phenomenon is symbolised by the gradual horizontal displacement of large volumes of distributed material over very gentle or flat terrain.
5. **Flows** – This is the most destructive and dangerous form of landslide. Flows have a high water content which loosens the slope material and turns it into a slurry.

Some of the major landslides that have taken place in India in the last few years are as follows:

- June 16, 2013 – Kedarnath, Uttarakhand –More than 5,700 casualties were recorded because of this dreadful natural disaster.
- September 24, 2012 – Northern Sikkim – Over 27 people died in this sad incident, including members of the Indo-Tibetan Border Police (ITBP)
- July 27, 2007 – Dasalgaon-Maharashtra – The official records suggest 50+ casualties.
- July 26, 2005 – Raigad – More than 50 people were believed to be dead in this tragedy.
- July 26, 2005 – Sakinaka, Mumbai – Over 74 people lost their precious lives in this landslide.

Prevention of landslides

Though we cannot prevent natural disasters, we can always make an effort to mitigate their effect. We must encourage people to protect nature, plant more trees and curb deforestation. In addition, detailed geologic investigations, advanced engineering practices and wise use of land can help in reducing landslide hazards.

Landslides in India

Every year, landslides in the Himalayan region kill hundreds of people and cause severe damage to several small villages, leaving them unsuitable for habitation. The main reasons for landslides in India are indiscriminate cutting down of trees, slash and burn cultivation practices in the hills, road construction and mining activities, increased grazing activities, and rapid urbanization. According to data of the Defence Terrain Research Laboratory, "Landslides rank third in terms of the number of deaths due to natural disasters. While Himalayan Landslides kill one person per 100km. The estimated average losses due to landslides in the Himalayas cost 200 lives and Rs 550 crore every year."

3 Interesting facts about landslides

1. Landslides can move slowly, just a few millimeters per year or can move swiftly with speeds up to 200 miles per hour.
2. The world's biggest landslide occurred in 1980 when Mount St. Helens, a volcano in the USA erupted.
3. The scientists have found out that planets such as Mars and Venus also experience occasional landslides.