

## MOVEMENT OF THE POPULATION WHEN A LANDSLIDE OCCURS

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**Abstract:** *In this article, one of the natural disasters that pose a great threat to the population and economic objects living in the mountainous, sub-mountainous, and riverside areas of our Republic is the displacement of land, and information is given on how to move the population and measures to be taken.*

**Key words:** *Landslide, foothills, river banks, mountainous area, landslide phenomenon, landslide base, elements of landslide, rock formation, Shaulisoy landslide, signs of landslide danger, size of landslide, Ugoi landslide.*

The sliding phenomenon is characteristic of mountainous regions of the earth, river valleys, sea coasts, hydrodynamic, hydrostatic, seismic of healthy soils (loess rocks) on mountain slopes, river valleys and sea coasts, sedimentary rock mass such as clay, limestone, shale, sand, sandstone. it occurs as a result of moving from top to bottom with its own weight under the influence of forces.

The slope of impermeable rocks under the soil on the slopes plays an important role in the occurrence of landslides. If the slope of the impermeable rocks is suitable for the terrain, the higher is the landslide potential of the mass lying on it. In order for landslides to occur, as a result of rainfall in landslide-prone areas, the soil mass on the slope becomes saturated with moisture, becomes liquefied, and descends along the surface of the impermeable rocks underlying the soil. moves in a hurry.

The volume of the landslide can be from several ten thousand m<sup>3</sup> to several hundred thousand m<sup>3</sup> or more. Large-scale earthquakes move at high speed in their direction, destroy all living things, destroy crops, destroy settlements, civil and industrial facilities, and highways.

Therefore, landslides are one of the most dangerous natural disasters, just like earthquakes. Many landslides and landslides have been observed in the territories of the Republics of Central Asia to date. Chaulisoy landslide - April 30, 1960, 30 people died, total mass 200 thousand m<sup>3</sup>, Khojikent landslide - 1961, 12 people killed, total mass 1000 m<sup>3</sup>, Jigaristan landslide - May 4, 1991, 56 people died, total mass 176 thousand m<sup>3</sup>, Aktash landslide - March 11, 1993, 5 people the total mass is 80 thousand m<sup>3</sup>, Karakisloq landslide - March 29, 1994, 3 people died, the total mass was 400 thousand m<sup>3</sup>.

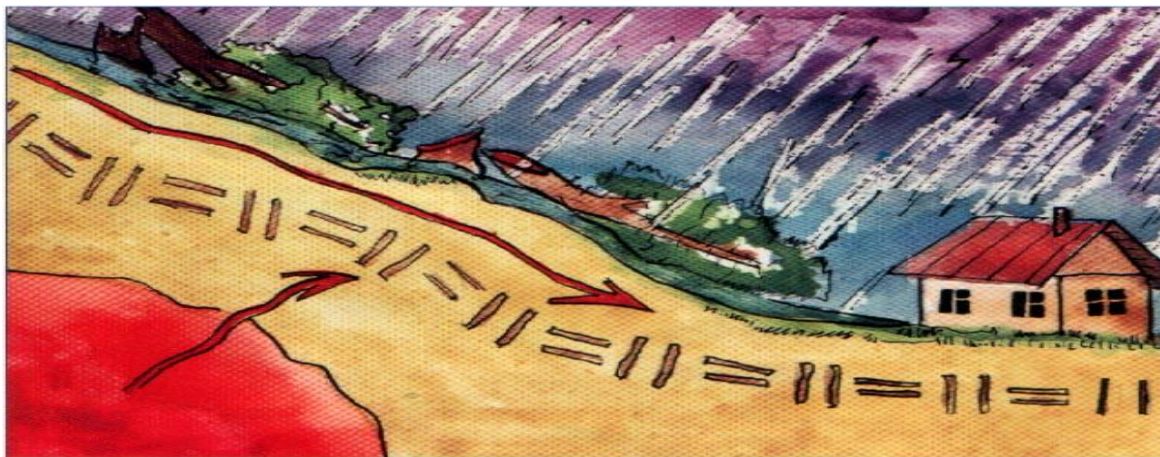


Figure 1. Landslide formation scheme.

For example, on February 11, 1911, there was a 9-point earthquake in the Muzkol mountain range of the Pamirs, as a result of which the Ugoi landslide occurred. The landslide pushed 2.5 km<sup>3</sup> of rock to a distance of 2.5 km and blocked the Murgob river. As a result of the disaster, the village of Ugoi fell under a landslide and 54 people died. Today, the world-famous Sorez lake has appeared here in front of a natural dam with a depth of 703-788 m and a width of 4.3-5.3 km. In 1991, another powerful "Jigharistan" earthquake occurred in Ohangaron Valley. Here, the volume is 30 mln. More than 50 people living in the area were killed by the landslide as a result of the 7-second slide of porous soil measuring m<sup>3</sup>.



Figure 2. Landslide signs in areas prone to landslides

The reason for the landslide is that the area where the village is located is located at the bottom of the slope, the rocks located on the slope are made of thick chert rocks, blasting has been carried out on these rocks for many years, and it is explained that there was a lot of precipitation that year. Many more such examples can be given.

Residents living in areas prone to landslides should have information about the signs, description and danger of landslides and know what to do in case of such a situation.



Figure 3. Landslide signs in areas prone to landslides.

Signs of avalanche danger include:

- changes in the surface and relief of mountains and hills, sudden disappearance of spring water or change of its direction of movement;
- piles of soil and stones of various shapes and the appearance of cracks on the surface of the earth, the occurrence of interruptions in the roads and crooked growth of trees;
- in places with a risk of landslides or at the bottom of the slopes, the soil pushes and forms mounds;
- appearance of cracks in the walls of buildings and private houses located around the area where landslides are likely to occur.

Usually, these signs appear as a result of rains and snow melt in spring and autumn.

Failure to follow the rules of land development and irrigation without properly studying the soil layer of the mountains and hills also leads to excess moisture in the soil and the development of landslides. Man-made changes such as mining of minerals, construction of railways and highways, laying of water and gas pipelines, cutting of forests and bushes, especially in areas with a risk of landslides, also cause landslides. speeds up the process.

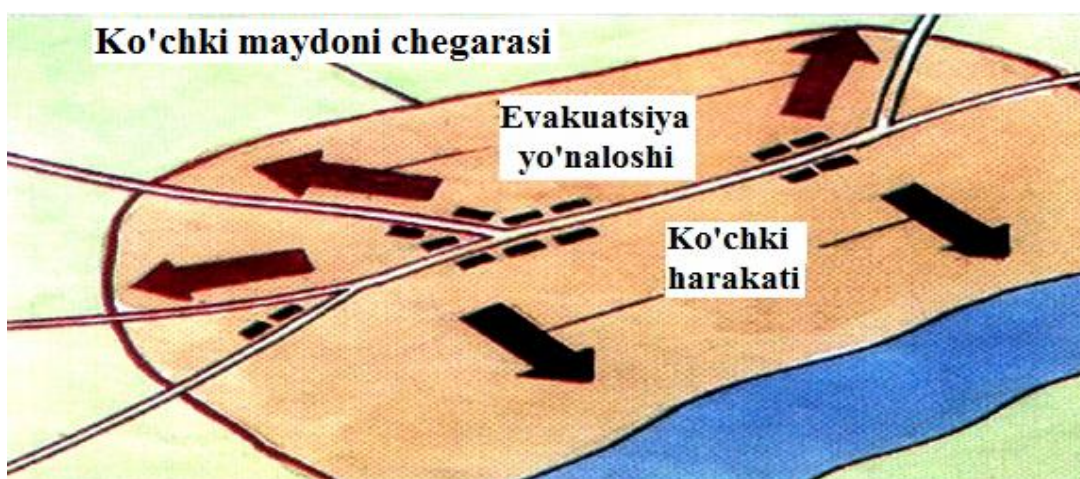


Figure 4. A scheme for the evacuation of people from the area where landslides may occur.

First of all, people living in landslide-prone areas need to know in advance whether their house is at risk of falling under a landslide. Usually, it is not possible to build buildings for living or other purposes on the lands where there is a risk of landslides. If there is a risk

of landslides in a populated area, about it residents will be warned by local authorities and moved to safe places according to a pre-arranged plan.

To date, state services for monitoring landslides have been established in all mountainous and sub-mountainous regions of our Republic, and they carry out scientific research on the investigation of dangerous geological processes, including areas with a risk of landslides.

they carry out their work. Employees of the state surveillance service identify all dangerous processes in the area, determine measures to eliminate them. If there is such a danger, they will send out warning letters to the local authorities about it and help to set measures to warn the population.

Obligations of citizens living in landslide-prone areas include:

- strictly comply with the instructions and warning procedures of the responsible persons set by the local authority about the possibility of an avalanche;
- active participation in the elimination of a landslide when it occurs;
- immediately inform the assembly of citizens about the possibility of a landslide;
- participation in the quick relocation of the population in places where landslides occurred to safe areas;
- to put signs in dangerous areas and to help the employees of the surveillance service in other work.

Precautions to be taken in the event and prevention of landslides include the following:

As a result of inspections, it is strictly prohibited for people to live in the areas where it is found that the pushing event will occur. Digging ditches, building roads, plowing, cutting trees will be prohibited in this area. If the thrust event is ongoing, it is continuously monitored, and the nature of the thrust is studied. For this, it is necessary to install rapiers, drill wells, place flexible plastic devices inside them, and install sliding rails if it is necessary to take into account the expansion of cracks. If the sliding area is not too big, stone and reinforced concrete walls are built in its lower part - on the way. If the landslide event covers a very large area, it is more difficult to prevent it and cannot be contained by reinforced concrete walls. In such cases, open and closed waterways (drainages) are dug to ensure the outflow of existing underground seepage water in this area. Sometimes, trenches are dug in the soil layers and heated to a high temperature (more than 800°) by burning high-heat fuels in these trenches, during which the water in the soil core evaporates, the physical and mechanical properties of the soil change, as a result, the sliding mass remains in place.

In some cases, there are layers of sand, sandy soil, and gravel of different thicknesses between the sliding layer and the underlying rock, through which seepage water seeps out, and during long periods of time, seepage water constantly removes small sand and soil particles from these layers. adhesion to the lower layer is reduced. As a result, the thrust force exceeds the holding force and a thrust event may occur. In such cases, the thickness of this intermediate layer (sand, gravel layer) is the amount of water that flows out of it, the place where the seepage water appears is studied, the flow path of the seepage water is

changed, or wells (drainage) are dug, pumps are installed in these wells, and the water is pumped with the help of pumps. absorbed.

Taking into account the fact that landslides have such a destructive nature, in 1958 in Uzbekistan, the engineer-geological State Monitoring Service was established to monitor them specially.

Currently, the State Surveillance Service has 7 regional surveillance stations and 21 posts on the territory of our country. There are more than 8,000 economic objects, 144 health care complexes, 170 highway areas, more than 20 mining and hydrotechnical facilities in their observation areas. The State Surveillance Service is working around the clock with the staff of the Ministry of Emergency Situations. The first problem in the study of landslides is the abstraction of the time of their occurrence. Because landslides are dangerous geological processes that develop accidentally. The surest way to prevent landslides is to warn people in time and move them to safe places.

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