

Landslide risks in Central Asian cities

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Landslide Risks in Central Asian Cities

SUMMARY

In Central Asian cities, landslides pose a potential risk of damage to buildings, disruption of transport links and operation of other critical infrastructure, and, in the worst-case scenario, loss of life. A regional assessment by international experts identifies localized high-risk areas in many districts and cities across the region. Potential direct losses are estimated at US\$3.59 billion for the region as a whole. The events that occurred in Nepal on September 24–27 illustrate how landslides disrupt infrastructure. The region's priority is to take these hazards into account in urban planning and investment decisions.

Figure 1. Modelled costs of landslide risk in Central Asia, US\$ million



Source: Caleca et al. (2024)¹. Non-annualized estimate: slope susceptibility × asset value, assuming total loss. This is neither actual damage nor a forecast of annual losses.

Event

Heavy rainfall triggered 304 landslides in Nepal between 24 and 27 September 2026. According to NDRRMA's bulletin of 29 September, 20 people died in landslides, while the total death toll from rain-related disasters reached 27². Thirty-one bridges and hundreds of homes were damaged. In the Kali Gandaki corridor, the collapse of transmission towers caused 12 hydropower plants with a combined capacity of 358 MW to be disconnected from the grid and forced restrictions on electricity supplies to industrial enterprises³. These events highlighted the cascading nature of the risk: slope failures disrupted energy and transport infrastructure, spreading the economic consequences far beyond the disaster zone.

Slopes, rivers and climate

Every year, landslides claim thousands of lives and cause substantial economic damage worldwide. According to Haque et al. (2019)⁴, they rank fourth among natural disasters in terms of fatalities. The scale of losses depends both on natural conditions and on development in hazardous areas: construction on unstable slopes, land-use changes and shortcomings in spatial planning increase the number of people and assets at risk. Climate change may exacerbate the risk by intensifying extreme precipitation. The IPCC projects an increase in extreme precipitation in many mountain regions, but its effect on landslide frequency varies across river basins and depends on local geology, topography and land use.

Central Asian cities

Landslide risk is a particular concern for Central Asia because of its combination of mountainous terrain, high level of seismic activity, and expanding development in hazardous areas. Heavy precipitation, snowmelt, and earthquakes can destabilize slopes, threatening people, buildings, and transport infrastructure. A regional assessment

¹ Caleca et al. (2024). "Regional-scale landslide risk assessment in Central Asia." NHESS, 24: 13-27.

² NDRRMA / RSS, 29.09.2026.

³ The Kathmandu Post, 28.09.2026.

⁴ Haque et al. (2019). "The human cost of global warming: Deadly landslides and their triggers (1995–2014)" Sci. Total Environ.

conducted by international experts identifies the areas most susceptible to landslides: mountain and foothill districts in Kyrgyzstan; the Ayni district and parts of Dushanbe in Tajikistan; the Akhangaran district in the Tashkent Region, as well as areas along the Tashkent–Osh corridor in Uzbekistan; and parts of the foothills of Almaty and the Almaty Region in Kazakhstan. Potential losses are estimated at US\$3.59 billion (Caleca et al., 2024).

Conclusions and measures

Prioritizing adaptation in built-up mountain valleys is highly recommended in Central Asia. Key measures include ensuring compliance with requirements in water protection zones and buffer strips; using integrated maps of landslide, debris-flow and flood hazards in planning and economic activity; restricting construction on floodplains and unstable slopes; monitoring areas upslope of cities and issuing timely warnings; and establishing evacuation routes and conducting regular drills. For bridges, roads, water intakes and power grids, it is highly advisable to assess cascading risk scenarios, maintain river channels and culverts, and provide alternative transport links and backup water and electricity supplies.



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