

On losses from landslides associated with large dams

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In 1963 the Vajont landslide in Northern Italy slid into a reservoir, generating a displacement wave that killed over 2500 people. Since then there has been a high level of awareness of landslide hazards amongst the engineers of large dams, such that there has been no repeat event on a similar scale. However, landslides continue to generate significant problems at large dam sites and on the banks of the associated reservoirs.

This paper examines the occurrence of landslides associated with dam projects over the last decade. It is demonstrated that reservoir bank failures continue to cause high levels of economic loss, although the loss of life in these events is reasonably low. The most notable case in recent year has occurred along the banks of the Three Gorges reservoir in China, where landslides have occurred at a higher than expected rate, resulting in the need to relocate large numbers of people. However, the data suggest that landslides are a very significant hazard during the construction of large dams. Since 2002 at least 550 lives have been lost in landslide events at or near to the construction sites of large dam projects. Most of these landslides, which have occurred in particular in East and South Asia, are the result of rainfall triggered rock slope collapses and debris flows, although some have occurred as a result of seismic triggering.

This paper examines the spatial and temporal occurrence of these losses and demonstrates that there appears to be an upward trend in the annual number of events. Over the next two decades a very large number of new dam projects are planned in high mountain area, particularly in Asia. This research suggests that a much higher level of attention needs to be paid to landslides during the construction of these large infrastructure projects if total losses over the this period are not to approach those of the original Vajont landslide.

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