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Anthropogenic causes of landslides and their implications for monitoring

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Are we justified in referring to all landslides as natural hazards? With the effects of climate change, landslide incidences are increasing all over the world, and many of them accompany floods and occur due to extreme weather events. It has been unequivocally established that humans are responsible for global climate change. Further, landslides also occur in deforested areas. Even if one were to discount the effects of deforestation on climate change and the subsequent occurrence of landslides, one cannot ignore the fact that deforestation leads to slope instabilities in multiple ways. It decreases the effective retaining strength of the slope materials and also exposes more slope material to weathering and consequent leaching. Thus, deforestation and climate change, caused directly or indirectly by human beings, have a significant bearing on landslide occurrence. Furthermore, several catastrophic landslides in recent times have occurred due to indiscriminate human activity, such as constructing dams and other structures on fragile slopes, blasting slopes for road construction without providing adequate toe support, excessive mining, constructing faulty retaining structures on unstable slope material, etc. Over the years, such human activity has resulted in landslides of all types and at various scales. Whether a landslide is natural, caused due to anthropogenic factors, or a combination of the two, the investigation approach and monitored parameters remain the same; we still need to identify the various causative factors and quantify their rates of change over time in the run up to the landslide event. However, we need a paradigm shift in our perspective and treatment of landslides. We need to accept that human activity is, or can be, responsible for landslide occurrence. With this change in perspective, we would monitor slopes with an increased awareness that human actions could negatively impact slope stability. This, in turn, would entail monitoring at every stage to ensure that no human activity adversely impacts the natural balance, thus paving the way for truly sustainable development. We would be doing great disservice to the investigation and monitoring of landslides by such preconceived notions as all landslides are natural hazards. It is high time that we accept our part in compounding the problem of landslide occurrences and come up with solutions to monitor the impact of human activity on the environment to prevent landslides.

