

A RESILIENT FUTURE FOR UTTARAKHAND

Relevant for: Environment | Topic: Disaster and disaster management

A vehicle stuck in the swamp at the site of the Tapovan hydel project as rescue work is under way. | Photo Credit: [PTI](#)

Days after a [glacier burst in the Chamoli district of Uttarakhand](#) caused flash floods, the scientific community is still struggling to understand what triggered the disaster. At the time of writing this article, the death toll was 34 with more than 170 people missing. The floods have also caused heavy damage to public and private infrastructure, including the NTPC's Tapovan-Vishnugad hydropower project and the Rishiganga mini hydro project. The incident was reminiscent of the 2013 disaster in Uttarakhand which killed thousands.

Uttarakhand is located in the midst of young and unstable mountains, and is subject to intense rainfall. But these natural characteristics can't be solely responsible for devastations the State has witnessed in the past decade. For years geologists, glaciologists and climate experts have voiced their fears about an impending disaster due to climate change, rapid and indiscriminate construction activities, and the subsequent ecological destruction in the region.

The agonising cost of ham-handed development

The occurrence of the current glacier burst was loosely attributed to erosion, a build-up of water pressure, an avalanche of snow or rocks, landslides or an earthquake under the ice. According to the Wadia Institute of Himalayan Geology, a rock mass, weakened from years of freezing and thawing of snow, may have led to the creation of a weak zone and fractures leading to a collapse that resulted in flash floods. What has intrigued experts and the local community is that this avalanche occurred unexpectedly, out of the regular flood season.

Experts also identified large-scale human settlements and expansion of agricultural activities leading to massive deforestation, as a possible trigger. Studies have shown that widespread settlements, farming, cattle grazing and other anthropogenic activities could destroy the natural barriers that control avalanches and floods, thereby enhancing the possibilities of a glacial lake outburst flood. The Hindu Kush Himalaya Assessment Report (2019) had pointed out that one-third of the Hindu Kush Himalaya's glaciers would melt by 2100 and potentially destabilise the river regime in Asia, even if all the countries in the region fulfilled their commitments under the Paris Agreement. It also warned that any ecologically destructive activities would lead to more intensified disasters like landslides.

Experts and activists have incessantly asked for scrutiny into the construction of hydroelectric power projects in Uttarakhand. There have also been allegations about the use of explosives in the construction of dams and other infrastructure. In 2014, an expert committee led by Dr Ravi Chopra, instituted to assess the role of dams in exacerbating floods, provided hard evidence on how haphazard construction of dams was causing irreversible damage to the region.

Scientist warns of water build-up near Uttarakhand disaster zone

The need of the hour is to invest in long-term crisis response mechanisms and resilience solutions. A few immediate steps include: (i) investing in resilience planning, especially in flood prevention and rapid response; (ii) climate proofing the infrastructure such as by applying road stabilisation technologies for fragile road networks and strengthening existing structures like bridges, culverts and tunnels; (iii) strengthening embankments with adequate scientific know-

how; (iv) reassessing development of hydropower and other public infrastructure; (v) investing in a robust monitoring and early warning system; (vi) establishing implementable policies and regulatory guidelines to restrict detrimental human activities, including responsible eco- and religious tourism policies; and (vii) investing in training and capacity building to educate and empower local communities to prevent and manage risks effectively.

Data | Over 50,000 hectares of forest land in Uttarakhand diverted for various projects in last 30 years

The time for wake-up calls is long behind us. India needs to urgently rise up to the challenge by applying innovative and inclusive solutions that support nature and marginalised communities, to restore and rebuild a resilient future for Uttarakhand.

A. Nambi Appadurai is Director, Climate Resilience Program, World Resources Institute, India. Views are personal

This story is available exclusively to The Hindu subscribers only.

Already have an account ? [Sign in](#)

Start your 14 days free trial. [Sign Up](#)

Find mobile-friendly version of articles from the day's newspaper in one easy-to-read list.

Enjoy reading as many articles as you wish without any limitations.

A select list of articles that match your interests and tastes.

Move smoothly between articles as our pages load instantly.

A one-stop-shop for seeing the latest updates, and managing your preferences.

We brief you on the latest and most important developments, three times a day.

*Our Digital Subscription plans do not currently include the e-paper, crossword and print.

Dear reader,

We have been keeping you up-to-date with information on the developments in India and the world that have a bearing on our health and wellbeing, our lives and livelihoods, during these difficult times. To enable wide dissemination of news that is in public interest, we have increased the number of articles that can be read free, and extended free trial periods. However, we have a request for those who can afford to subscribe: please do. As we fight disinformation and misinformation, and keep pace with the happenings, we need to commit greater resources to news gathering operations. We promise to deliver quality journalism that stays away from vested interest and political propaganda.

Dear subscriber,

Thank you!

Your support for our journalism is invaluable. It's a support for truth and fairness in journalism. It has helped us keep pace with events and happenings.

The Hindu has always stood for journalism that is in the public interest. At this difficult time, it becomes even more important that we have access to information that has a bearing on our health and well-being, our lives, and livelihoods. As a subscriber, you are not only a beneficiary of our work but also its enabler.

We also reiterate here the promise that our team of reporters, copy editors, fact-checkers, designers, and photographers will deliver quality journalism that stays away from vested interest and political propaganda.

Suresh Nambath

Please enter a valid email address.

To reassure Indian Muslims, the PM needs to state that the govt. will not conduct an exercise like NRC

You can support quality journalism by turning off ad blocker or purchase a subscription for unlimited access to The Hindu.

[Sign up for a 30 day free trial.](#)

END

Downloaded from **crackIAS.com**

© **Zuccess App** by crackIAS.com

CrackIAS