

All India Peoples Science Network

Position Paper on Uttarakhand Disaster

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The disaster in Chamoli District, Uttarakhand on 7 February 2021 morning, in the region around the Nandadevi Biosphere Reserve, saw a large volume of fast moving flood waters carrying ice and snow, rocks, debris and mud come rushing down from high-altitude mountains. At the time of writing on 14 February 2021, [over 58 persons have tragically lost their lives and 148 persons are still missing](#). Most were workers in different projects in the area, along with some local villagers, and another 150 or so remain missing. [Many workers are feared trapped inside the tunnel of the badly damaged under-construction ADB-funded 520 MW NTPC Tapovan hydro-electric project on the Dhauliganga river](#). The small Rishiganga 13.2MW hydel project on the Rishiganga river, about 4km upstream near the village of Raini where the famous Chipko movement started, was completely destroyed. At its peak, the flow was [reportedly](#) around 30,000 cumec (cubic metres per second) with a 10-15 metre wave in narrow parts of the river. The deluge continued downstream past Joshimath where monitoring stations [apparently showed](#) the waters at more than 3 metres above the previous Highest Flood Line recorded during the infamous 2013 disaster in Uttarakhand resulting from extreme rainfall over several days and flash floods. Several other hydel Projects nearby, such as the World Bank-funded 444 MW Pipalkoti dam still being built and the 400 MW Vishnuprayag dam, were also threatened but damage assessment is awaited.

The exact cause and circumstances of the disaster are yet to be fully determined. Based on what is currently known, the earlier speculation about a glacial lake burst is probably incorrect. It now seems, based on satellite imagery in India and [abroad](#), and [preliminary observations](#) by specialist Indian teams from the Wadia Institute of Himalayan Geology (WIHG), Dehradun, that a large weakened section of a rocky section of the Raunthi mountain-top fell over on an over-hanging portion of a glacier, and carried along an avalanche of large quantities of recently accumulated snow, rocks and debris. This massive avalanche-cum-landslide seems to have settled in the Raunthi river on the valley floor, blocking it for several days, and then bursting through in the deluge witnessed on the 7 February. Recent reports suggest formation of another large

pool behind large amounts of accumulated rocks and debris, threatening another high river flow event.

It is indeed tragic that most of the dead so far seem to be workers in different infrastructure and hydro-electric power projects. According to both Central and State governments, these and other infrastructure projects were supposed to benefit the region. However, this has long been questioned by environmentalists, local residents as well as by many experts and civil society organizations that remain of the opinion that such projects should be scaled down and assessed carefully before being launched. Decisions need to be taken keeping in mind the precautionary principle in view of the fragile mountains, low carrying capacity of towns and other settlements in the area, and high risks posed by floods, landslides etc. At present, it is not known if there is any evidence pointing to these infrastructure projects having any role in triggering the rock and glacier break-off rock and related avalanche and landslide. But, as discussed below, they certainly contribute to the magnitude and impact of such disasters, which therefore can never be termed as purely “natural” disasters or “acts of god.”

Ironically though, in the present case, these very projects and those working on them, including local villagers, have themselves become victims of a disaster.

Role of Climate Change & Infrastructure Projects

Regardless of the issue of causation, this disaster is nevertheless a grim reminder of the potential impact and dangers of mindless so-called “development” projects, [ignoring all warnings and expert opinion, brushing aside environmental assessments](#), and implemented badly, all without thought about consequences.

Two major aspects stand out which cause, or contribute to, similar disasters in mountain areas in India especially in the Western Himalayas, namely climate change and [thoughtless infrastructure and other construction projects in the region](#).

Man-made global warming has resulted in rapid melting and shrinking of glaciers along with melting of polar ice caps. The Himalayas are often called “the third pole” since they are the third largest reservoir of fresh water in the form of ice and snow. More recent studies, both [internationally](#) and [in India](#), have shown that melt rates are much higher at present than in earlier decades and, in India, more rapidly in the Western Himalayas than in the East. Glacier melt often leads to formation of glacial lakes or large pools of water. Sometimes under pressure or due to external forces or impacts, the barriers of these glacial lakes break, releasing large volumes of water

leading to flash flooding downstream, as was earlier speculated in the present case. Rapid melting of glaciers in India therefore lead to large-scale instability in the Himalayan region with increasing probability of increase in river water flows and flash flooding, posing a serious but as yet poorly predictable threat and imminent danger to downstream settlements and infrastructure, besides medium-term hydrological impacts on the whole Indo-Gangetic basin.

On top of this, there has been, especially in recent times, an irresponsible rush to build numerous roads, power plants and other infrastructure in the region without adequately assessing the potential environmental and societal impact, addressing the geological and tectonic instability of the region, and the carrying capacity of settlements and the hills. The Himalayas are a young and unstable mountain range, located in the most earthquake prone seismological Zones IV and V, subject to frequent landslides, with cloudbursts and flash floods carrying tons of rocks and other debris, causing havoc even normally. Even the on-going unplanned expansion of towns and settlements, beyond their carrying capacity, is already adding pressure on the regional environment through larger populations, new buildings outside the town limits, new hotels, new road construction or widening, depletion or even disappearance of water sources, and tree felling leading to loosening of soil and rocks which increases landslips and rainwater run-off leading to floods in local streams and rivers.

Rash of construction projects

The current rash of construction projects, expedited and pushed through under the present government, has taken such destruction to new and dangerous levels. A massive number of hydro-electric projects are now under construction in the region. At present there are around 100 dams in the State with many more under construction. According to some estimates, over 450 hydel projects are planned, meaning there could be one project every few dozen kilometers! Several of these are supposed to be run-of-the-river projects but, in practice, also involve at least some impounding of water and/or [much construction](#) activity. The construction of these dams and hydel projects involve tree-felling with lackadaisical compensatory afforestation, and a lot of construction, often using dynamite and other questionable techniques triggering further instability in already unstable hill regions. Construction debris are often simply dumped into the river in violation of procedure, or along the roadside in so-called

“designated spots,” but frequently end up in rivers below, further blocking the river flow and raising the river bed, thus increasingly the potential for flooding.

Over the years, these projects have led to large-scale protests by villagers, environmentalists and experts. In the wake of the 2013 Uttarakhand disaster, a Supreme Court appointed expert committee recommended cancellation of most of the proposed projects, which a second Committee appointed also endorsed. A third hand-picked committee thereafter appointed overturned these recommendations, but many projects thus approved continue to be under disputation. A leading expert, and Chairman of the SC-appointed committee, has [opined](#) that no dam or hydel project should be taken up in the para-glacial zone of 2,200 metres altitude or above on safety grounds.

Massive road construction is also underway, notably under the Rs.14,000 Crores Char Dham Project started in 2016 linking the four major pilgrimage sites in Uttarakhand with over 900 km of roads including the Char Dham Mahamarg highway, hotels and other infrastructure. Environmental clearance for the project was obtained in 2018 through aggressive push from the highest levels of the central government, who also amended the EIA Notification 2006 to exempt road projects under 100km in length from EIA. Using this subterfuge, the Char Dham Highway project was divided into 53 projects of under 100km length and [given clearance](#) without any environmental appraisal using the kind of norm-twisting modifications proposed in the Draft EIA 2020 Notification!

A majority of members of the packed High Powered Committee to review the project [recommended](#) keeping the road width to 10 metres, involving cutting of the hill upto 24 metres, as earlier approved by the Supreme Court which, however, had later ordered restricting road width to 5.5 metres but work had meanwhile speedily covered a substantial length of the highway at the larger width. Road cutting and scooping of hillsides have been done in a non-standard and dangerous manner including through dynamiting, often with almost vertical slopes against all protocol and sharply increasing prospects of landslides, and without stabilization and fresh plantation to help bind the slopes. Debris is also very often dumped carelessly and ends up in the river below. Speed, greater profits for the companies involved, and the headlong rush to build infrastructure, not safety, is clearly the priority.

Besides the direct damage caused in the already unstable region, all this only worsens impacts of future flooding events. Debris raises the river bed, increasing chances of flooding and submergence of riverside infrastructure and townships as

happened in the 2013 disaster. Debris also enters dams and power plant races reducing dam life and damaging generating equipment.

Way forward

With the rationale of boosting tourism in the region, regardless of carrying capacity and fragility of the mountain ecosystem, Kedarnath town, which suffered extensive damage in 2013, is being rebuilt with little thought to the impact on the surrounding environment and the vulnerability of the town to further flooding and other events like in 2013. Alternative suggestions such as building residential infrastructure at lower altitudes with regulated pilgrim traffic to the temple have been brushed aside.

Monitoring and observation of this region for extreme weather events, landslides and slope instability, and glacial observation, is also almost non-existent.

While there is some indication that there is some slowing down of dam-building and hydel projects in the region, in so many other ways various highly risky and environmentally damaging infrastructure projects continue to be undertaken in this eco-sensitive area. It is essential that this disastrous course be reversed without delay; otherwise we will be left only with post-disaster analyses in future.

In light of the tragedies of the [2013](#) and [2021](#) disasters in the Himalayan region of Uttarakhand, a safety and environmental review should be urgently conducted of all hydro-electric, road building and infrastructure currently underway and planned, based on which these should be suitably modified or cancelled.

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