

DELHI, FRIDAY, 25 AUGUST 2023

Unplanned infra work to climate crisis: Why the hills are reeling

Jayashree Nandi

letters@hindustantimes.com

NEW DELHI: The images are frightening – part of a hillside in Kullu coming down, along with several buildings, all fortunately evacuated in anticipation of just such an eventuality.

The immediate cause of this was extreme weather – just as it was earlier this month. In the second week of August, the monsoon trough moved north of its normal position to the Himalayan foothills, triggering heavy rainfall, landslides, and flash floods that damaged buildings, bridges, roads, and other infrastructure in the hill states of Himachal Pradesh and Uttarakhand, leaving 238 and 84 dead since June, respectively.

On August 18 and 19, the trough temporarily moved southwards before moving to the north of its normal position again. Whenever it shifts north, rainfall is concentrated over the Himalayan states and northeast India while the plains remain largely dry.

This is the third time the region is witnessing weather-driven carnage this season. Earlier in July, an interaction between a western disturbance and the trough led to extremely heavy rainfall.

But there are larger underlying causes: the climate crisis; the fact that the Himalayas are relatively young, and still geologically active; and unconsidered, unplanned (and sometimes illegal) development. The impact of the climate crisis on temperatures in Himachal Pradesh and Uttarakhand is also significant with over 1°C warming compared to the long-term average. Himachal Pradesh's average annual mean land surface air temperature during 2022 was 1.2°C warmer than its long-period average for the period 1981-2010.

Then there is the rain.

Continuous rainfall soaks the topsoil, leading to flash floods, heavy erosion, and collapse of structures. The soil in parts of Himachal and Uttarakhand is almost sinking and causing devastation in the geologically sensitive regions. Continued rainfall can saturate already withered topsoil and lead to small and large landslides and destruction, particularly



A family clears the debris in their house following a landslide, near Peepalkoti Bandh area of Uttarakhand.

when infrastructure is not scientifically planned.

Wadia Institute of Himalayan Geology (Dehradun) director Kalachand Sain called for the need to understand why this is happening. "The monsoon trough is very active over the Himalayas. There is often also a confluence or interaction with westerly disturbances which accentuates rainfall. Due to the climate crisis, some high-altitude regions are recording significant rise in temperatures and hence, a rise in the water-vapour holding capacity. There is a lot of moisture available," Sain said.

Hence, when it rains, it pours.

Sain added that across the region, the top part of the soil is environmentally weathered in most parts. "Very warm temperatures followed by cold temperatures – a cycle of thawing and freezing – is further degrading the topsoil. There is a lot of anthropogenic activity, which can further put these regions at risk, such as hill cutting, slope instability, heavy load, etc, in areas where load bearing capacity is not assessed."

Sain called for sensitising people about the risks in this terrain in current climatic conditions. "For short-term economic gain, lives can be lost if norms are not followed." That's exactly what's happening in Himachal Pradesh.

Sain said all kinds of anthropogenic activities cannot be allowed in the Himalayan region. "This should be clear to the people. Secondly, we can develop a landslide vulnerability map to identify zones at the highest risk... land use maps should be prepared for them. Land use can allow only those structures which are safe."

Sain underlined that the Himalayas are a very young mountain range and a lot of subsurface and surface activities are still going on. "There is erosion going on due to heavy rainfall events and snowfall. There is exhumation of rocks and plate tectonics. It is geo-dynamically extremely active due to these ongoing processes." He cited the downstream impact on the national capital when continuous rainfall led to devastating floods, landslides, and mudslides in Himachal Pradesh followed by Uttarakhand in July.

Pushpendra Johari, senior vice-president, sustainability at RMSI, a global disaster risk management firm, said un stabilised slopes (especially where roads are concerned) and unplanned construction are to blame. "It should be made mandatory for project proponents and construction firms to stabilise slopes, and ensure green cover before leaving a finished project. Secondly, the foundations of buildings and homes have to be deeper. We are seeing the topsoil just washing away with the building structure in Himachal."

Environmentalist Ravi Chopra, who headed the Supreme Court-appointed committee on Char Dham roads projects, highlighted the significant impact of roads, railways, and transmission lines on the Himalayan ecology during a meeting on the Forest Conservation (Amendment) Bill on July 22.

"We have seen how the government ensured that the Char Dham project bypassed the environmental impact assessment (EIA)... an adverse impact could have been avoided had the project been scrutinised. For example, a lot of landslides took place in Tankapur to Pithoragarh stretch. There were 102 sensitive zones and 45 landslides had already taken place in 2019. A geological investigation and EIA may have avoided this."

"The climate is not changing in a known way. The high variations and unpredictability of the change creates a huge problem. The way buildings and infrastructure have been constructed on unsafe lands is only making matters worse," said Anshu Sharma, co-founder of SEEDS that works on disaster management.