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EDITORIAL ANALYSIS

The Slope Gives Way: Himachal's Landslides Are a Governance Failure

 DOWN TO EARTH

26 July 2026

ENVIRONMENT

GEOGRAPHY

GS1

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GS1

GS3



INTERVIEW ANGLE

"If a hill road is the only lifeline a Himalayan village has, is it defensible to slow its construction in the name of slope stability?"

Source: [Original editorial](#)

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THE LIFT LINE

On 24 July 2026 a hillside came down on the Sansari to Kilad to Thiroth to Tandi road near Kadhu Nala in the Udaipur subdivision of Lahaul and Spiti, and thirteen people died, among them a six-month-old infant. The rain was the trigger; the slope was the loaded gun. A young fold mountain range, still rising and still shedding weight, has been cut, blasted, drained and loaded by four decades of human decisions, and every monsoon the bill is presented in lives. Calling this a natural disaster is a category error that lets the responsible departments off the hook.

WHY THIS EDITORIAL MATTERS FOR YOUR EXAM

GS Paper 1 takes the physical geography: *salient features of the world's physical geography, important geophysical phenomena such as earthquakes, tsunamis, volcanic activity and cyclones*, and the specific mechanics of mass wasting in a young fold mountain belt. The Himalaya is the single most examinable landform in the syllabus and landslides are its most frequently asked hazard, appearing in the General Studies papers with unusual regularity.

GS Paper 3 takes the governance: *disaster and disaster management, conservation and environmental impact assessment*, and *infrastructure*. This is where a candidate must connect the Disaster Management Act, 2005 architecture, environmental clearance regimes, carrying capacity and the political economy of hill-road construction. The strongest answers use one case, in this instance Lahaul and Spiti, and explain a general mechanism through it rather than listing causes in the abstract.

BACKGROUND AND CONTEXT

The Himalaya is a young fold mountain range formed by the ongoing collision of the Indian and Eurasian plates. That single sentence explains almost everything that follows: the rock is intensely fractured and sheared by thrust systems, relief is steep, the range is still tectonically active, and weathering rates are high. Add a monsoon that delivers most of the year's rainfall in a few concentrated weeks, and mass movement becomes the mountain's normal method of losing height. Human settlement did not create landslides in Himachal Pradesh; it multiplied their frequency, moved them next to roads and houses, and converted a geomorphic process into a mortality statistic.

PARAMETER	POSITION
Tectonic setting	Young fold mountains, active Indian-Eurasian convergence
Seismic zoning	Most of the Himalayan belt lies in Zones IV and V, the highest categories
Cloudburst definition (IMD)	About 100 mm of rain in one hour over roughly 20 to 30 sq km
Legal framework	Disaster Management Act, 2005: NDMA, SDMA, DDMA
Policy document	NDMA National Landslide Risk Management Strategy, 2019
Hazard mapping	GSI National Landslide Susceptibility Mapping, launched 5 February 2014, 1:50,000 scale on a GIS platform
Coverage	About 4.3 lakh sq km across parts of 19 States and Union Territories
Data access	GSI Bhukosh portal and the National Geoscience Data Repository
2026 monsoon setting	Weak El Nino; IMD lowered its seasonal forecast to about 90 per cent of the Long Period Average

The 2026 season in Himachal Pradesh, as recorded by the Himachal Pradesh State Disaster Management Authority (HPSDMA) between 30 June and 26 July, already carries fifteen deaths, of which fourteen were caused by landslides, with thirteen of those in Lahaul and Spiti alone and one in Chamba, plus one flash-flood death in Kangra. Down To Earth's tally for the season records nineteen major landslide incidents, eleven flash floods and six cloudbursts, with roads blocked in triple digits at any given time and restoration running continuously. State authorities placed monsoon losses at roughly Rs 800 crore to Rs 1,000 crore as of 23 July 2026.

The longer arc is worse, and it is the arc that makes this a governance story rather than a weather story. The same reporting records **276 deaths in 2022, 428 in 2023 and 468 in 2025**, with cumulative economic losses of over **Rs 20,000 crore**. A hazard that kills more people each cycle in a State whose geology has not changed is, by definition, a hazard whose human exposure has changed.

THE CORE ARGUMENT / ISSUE

The physics: what actually makes a slope fail

A slope is stable when its **factor of safety**, the ratio of resisting shear strength to driving shear stress, exceeds one. Rainfall attacks the numerator. Water infiltrating a slope raises **pore-water pressure**, which reduces the effective normal stress acting between soil grains, and since shear strength depends on effective stress under the Mohr-Coulomb relationship, the slope's resistance falls even though nothing has been added to the driving side. Simultaneously, **saturation** adds weight, increasing the driving stress. Sustained rain over days primes the slope by raising the water table; a short intense burst then pushes the factor of safety below one and the slope fails along a curved rupture surface.

This is why a cloudburst, defined by the India Meteorological Department (IMD) as about 100 mm of rain in an hour over roughly 20 to 30 sq km, is so lethal in the hills. The burst is not usually the whole cause. The slope was already at the edge after days of accumulated infiltration, and the burst supplies the final increment. It also explains why 2026 has been unusually deadly despite a below-normal seasonal total: a weak El Nino year producing longer dry spells punctuated by more intense bursts delivers exactly the rainfall profile that slopes handle worst.

The human loading: four ways development destabilises a Himalayan slope

INTERVENTION	MECHANISM OF FAILURE
Road widening by vertical cutting	Removes the toe support of the slope, steepens the face, exposes fractured rock to rain
Muck and spoil tipped downslope	Loose, unconsolidated debris on an already steep gradient becomes the first material to fail
Hydropower tunnelling and blasting	Vibration fractures the rock mass; tunnels alter groundwater flow, dewatering or oversaturating slopes
Construction over natural drainage	Blocked nalas force water into the slope body rather than off it, raising pore pressure

Add unregulated multi-storey construction on terraces never intended to carry that load, and the result is a slope carrying more weight, holding more water, supported by less competent rock and drained by fewer channels than it was designed by geology to manage. The Kadhu Nala site is a road cut across a drainage line, which is precisely the highest-risk configuration in Himalayan engineering: the intervention that removes toe support and the intervention that obstructs drainage, occurring at the same point.

There is a second, quieter cost visible in the same reporting. The Jahalma drain in Lahaul and Spiti has been overflowing persistently since 2023, cutting off crop transport and forcing farmers to destroy finished cabbage and pea crops. Disrupted drainage in a mountain valley does not only kill people in a single event; it degrades

livelihoods continuously, and it is the same failure of hydrological planning in both cases.

The precedents were ignored, not absent

India does not lack knowledge. The Geological Survey of India (GSI) formally launched the National Landslide Susceptibility Mapping (NLSM) programme on 5 February 2014 and has since mapped roughly **4.3 lakh sq km** of landslide-prone hilly terrain at 1:50,000 scale across parts of **19 States and Union Territories**, covering the Himalayan region, the Tertiary belt of north-eastern India and the Western Ghats. The maps and the accompanying landslide inventory are freely downloadable through the Bhukosh portal and the National Geoscience Data Repository, so no district administration can plead ignorance of where the risk lies.

The National Disaster Management Authority (NDMA) issued a **National Landslide Risk Management Strategy in 2019** covering hazard zonation, early warning systems, regulation of slope-modifying activity, capacity building and financial support through the National Landslide Risk **Mitigation** Programme. On the Char Dham Pariyojana in Uttarakhand, the Supreme Court's High Powered Committee lost its chairman when Ravi Chopra resigned on **11 February 2022**, writing that his belief that the panel could protect the fragile Himalayan ecology had been shattered. The Court had in December 2021 permitted double-lane paved-shoulder widening on three strategic stretches on national security grounds, against the committee's preference for a narrower 5.5 metre intermediate width. The **Joshimath subsidence of January 2023** in Chamoli district emptied an entire town and produced a fresh round of expert reports.

Each episode produced a document. None produced a binding constraint on the next road bench. That is the pattern this editorial is about: India's Himalayan disaster problem is not a knowledge deficit or a mapping deficit, it is an enforcement deficit.

The counter-argument, taken honestly

The strongest case against this editorial is that Himalayan communities are not laboratory specimens. Lahaul and Spiti is snowbound for months of the year; a wider, all-weather road is the difference between a medical emergency survived and one that is not, and between a harvest that reaches a market and one that rots. Hydropower is one of the few revenue bases a mountain State possesses, and tourism sustains livelihoods that agriculture on thin high-altitude soils cannot. Told to stop building, the hill resident reasonably asks who will pay for the development foregone, and points out, correctly, that landslides in the Himalaya predate the bulldozer by several million years.

That argument is right in what it asserts and wrong in what it assumes, namely that the choice is between building and not building. The real choice is between building blind and building to slope science. The same road, engineered with proper benching, retaining structures, cross-drainage, controlled blasting and designated muck-disposal sites, costs more per kilometre and kills far fewer people. Ravi Chopra's objection to the Char Dham widening was never that the road should not exist; it was that a 10 metre tarred surface where 5.5 metres would serve imposes a slope-stability cost that nobody had priced. What the Himalaya cannot absorb is not development but cheap development, and the Rs 20,000 crore of losses over four years is what the discount actually costs.

HOW TO THINK ABOUT THIS (ANALYTICAL FRAME)

Use the **Trigger, Preparation, Exposure** frame. Every Himalayan disaster answer can be built on these three layers.

- ❶ **Trigger.** The proximate event: a cloudburst, a multi-day rain spell, an earthquake, a glacial lake outburst flood. This is what news reports emphasise and what the State cannot control. It is also, analytically, the least interesting layer.
- ❷ **Preparation.** The slope's condition before the trigger arrived: lithology and structural discontinuities, the angle of the cut face, the presence of tipped muck, whether the natural drainage still functions, whether blasting has fractured the rock mass, whether the toe has been removed. This layer is entirely within human control and is where the disaster is actually manufactured.
- ❸ **Exposure.** Who and what stood in the runout path: a road with traffic, a settlement below the cut, a labour camp, a tourist convoy, a bus at the wrong hour. Governed by land-use regulation, zoning, building bye-laws and warning systems, and also fully controllable.

The examiner's marks lie in layers two and three. A candidate who writes only about rainfall has described the weather, not the disaster. A candidate who can say that the Kadhu Nala failure was a Preparation failure, a road cut across a drainage line, and an Exposure failure, an unwarned trafficked stretch in the monsoon, has written an answer.

THE DIAGRAM IN WORDS

Draw a steep triangular slope profile falling from upper left to lower right. Two thirds of the way down, cut a horizontal notch into the face and label it *road bench*; the vertical face above the notch is the cut slope, and it is the unstable element. On the outer edge of the notch, pile a loose wedge of material spilling downhill and label it *tipped muck*. Now draw a dotted line running down the slope from top to bottom crossing the road, and label it *nala*, then draw the road cutting straight through it with only a small culvert; that is the drainage obstruction. Shade the whole slope body lightly and draw a rising dashed line inside it labelled *water table after three days of rain*. Add downward arrows on the muck wedge for the added weight and outward arrows inside the slope body for the pore-water pressure. The failure surface is the curved arc you draw from the top of the cut face down to the toe of the notch, and the runout is a fan spreading across the road below. Everything in that sketch except the rain was placed there by a decision.

WAY FORWARD

- **Make slope-stability appraisal a mandatory pre-condition for hill infrastructure.** No road-widening, hydropower or major construction clearance in Zone IV and V terrain without a site-specific geotechnical assessment cross-checked against the Geological Survey of India susceptibility map, with the assessment placed in the public domain before work begins.

- **Regulate muck disposal as strictly as the excavation itself.** Contracts must specify engineered, geotechnically approved dumping sites away from drainage lines and slopes, with payment milestones tied to verified disposal rather than to metres of carriageway completed, since side-casting spoil is the cheapest option for a contractor and the most expensive for everyone downslope.
- **Enforce carrying-capacity limits for Himalayan towns.** Commission and, crucially, act upon carrying-capacity studies for the major hill settlements of Himachal Pradesh and Uttarakhand, converting the findings into enforceable building bye-laws on floor area, number of storeys and slope-angle thresholds rather than advisory reports that no municipal authority is obliged to apply.
- **Build a real-time landslide early warning network.** Combine automatic rain gauges with slope instrumentation, pore-pressure sensors and rainfall-threshold models on the highest-risk corridors, linked to district-level road closure protocols so that a stretch is shut before the slope fails rather than cleared after it has.
- **Make the District Disaster Management Authority a regulator, not only a responder.** Under the Disaster Management Act, 2005, give the DDMA a statutory veto over construction approvals in mapped high-susceptibility zones, backed by trained geotechnical staff and a dedicated mitigation budget rather than relief funds alone, so that prevention has an institutional owner at the district level.
- **Recognise slope failure as a climate adaptation problem.** With seasons like 2026 showing longer dry spells punctuated by more intense bursts, revise drainage, culvert and spillway design standards upward from historical rainfall intensities to projected ones, and integrate slope-stability planning into the State Action Plan on Climate Change rather than treating it as a public works matter.

PYQ LINKAGE AND PRACTICE

UPSC has asked this theme directly and more than once. **GS Paper 1, 2016** asked candidates to discuss why the Himalayas are highly prone to landslides, their causes, and suitable measures of mitigation. **GS Paper 1, 2021** asked for the various causes and effects of landslides along with the important components of the National Landslide Risk Management Strategy, which is the exact document cited above and which most candidates could not name. GS Paper 3 has separately probed India's vulnerability to earthquake-related hazards with reference to major disasters of recent decades, and the institutional architecture of disaster management under the 2005 Act.

The pattern is clear and stable: the examiner wants the physical mechanism and the policy instrument in the same answer, and rewards a candidate who can name the strategy, the mapping agency, the statute and the tier of authority without hunting for them. A student who has internalised pore-water pressure, the factor of safety, the NDMA-SDMA-DDMA chain and the GSI susceptibility map has covered most of what this theme can be asked in.

Practice question: “Landslides in the Indian Himalaya are increasingly a product of land-use decisions rather than of rainfall alone. Critically examine, with reference to road construction and hydropower development, and suggest a regulatory framework for slope-sensitive development.” (250 words)

Interview angle: If a hill road is the only lifeline a Himalayan village has, is it defensible to slow its construction in the name of slope stability?

Sources: Down To Earth, NDMA, Geological Survey of India, PIB

Source: The Slope Gives Way: Himachal's Landslides Are a Governance Failure — Ujiyari.com | Free UPSC & State PCS Editorial Analysis

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