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The Rasuwa Disaster: A Rock and Ice Collapse, a Barrier Lake, and Why It Was Not a Classic GLOF

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The Rasuwa Disaster: A Rock and Ice Collapse, a Barrier Lake, and Why It Was Not a Classic GLOF

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✓ Every fact web-verified against primary sources

A bedrock and glacier collapse at about 5,200 metres altitude on August 26, 2026 in Nepal's Rasuwa district sent an estimated 100 to 200 million cubic metres of rock and ice into the valley, damming the Lhende Khola. The resulting barrier lake burst, sending a debris-laden surge down the Bhotekoshi and Trishuli rivers along roughly 72 kilometres of valley. A second barrier lake overflowed on August 28, forcing fresh downstream evacuations.

WHAT ACTUALLY HAPPENED

The sequence, as reconstructed by Nepal's **Department of Hydrology and Meteorology (DHM)** and the **International Centre for Integrated Mountain Development (ICIMOD)**, has four stages:

- ❶ **Bedrock failure at roughly 5,200 metres.** A section of mountainside about **600 metres** wide, carrying glacier ice, detached and fell approximately **1,200 metres** into the valley below.
- ❷ **Valley blockage.** The displaced mass, estimated at **100 to 200 million cubic metres**, dammed the **Lhende Khola**, a [transboundary](#) stream rising in **Gyirong County, Tibet**.
- ❸ **Barrier-lake outburst.** The impounded water overtopped and breached the debris dam, releasing a surge amplified by frictional meltwater generated as the ice mass travelled.
- ❹ **Downstream propagation** along the **Bhotekoshi and Trishuli**, with impact reported over a stretch of about **72 kilometres**.

A second impoundment, of roughly **2 million cubic metres** near the [confluence](#) of the **Chhochen Khola** and **Purepu Tsangpo**, **overflowed on August 28**, triggering renewed evacuation orders.

THE CLASSIFICATION POINT, AND WHY IT IS NOT PEDANTRY

Most coverage has described this as a **glacial lake outburst flood (GLOF)**. It is not, in the strict sense.

TYPE	DAM MATERIAL	TRIGGER	WARNING AVAILABLE
Classic GLOF	Moraine (loose glacial debris) or ice, impounding a pre-existing glacial lake	Avalanche into the lake, seepage, overtopping, seismic shaking	Lake is inventoried and monitorable in advance
Landslide-dammed outburst flood (LDOF)	Landslide or rockfall debris , creating a lake that did not previously exist	Failure of the newly formed dam	Near zero : the lake forms hours or days before it bursts

DHM and ICIMOD attribute the Rasuwa event to **a combination of an ice avalanche, permafrost movement and a rockslide**. The lake that burst **did not exist before August 26**. That is the definition of an LDOF, and the distinction has an operational consequence: **India's and Nepal's early-warning systems are calibrated for moraine-dammed glacial lakes, which can be inventoried by satellite and watched for years**. A lake that forms and fails within days is invisible to that architecture.

THE GEOGRAPHY TRAP

*The river involved is the **Bhote Koshi of Rasuwa district**, which is the **upper Trishuli**. It flows into the **Narayani (Gandaki)** system and enters India as the **Gandak**. It is **NOT** a tributary of the Koshi.*

Nepal has **two rivers named Bhote Koshi**. The one in **Sindhupalchok** district does feed the **Sun Koshi** and hence the **Koshi**. The one in **Rasuwa**, which is the river in this disaster, belongs to the **Gandaki basin**.

The confirming evidence is the list of affected downstream districts: **Rasuwa, Nuwakot, Dhading, Chitwan, Gorkha, Tanahun and East and West Nawalparasi**. That is the **Trishuli-Narayani corridor**, not the Koshi corridor.

Why it matters for India. The Gandaki system enters India as the **Gandak**, is regulated at the **Valmiki Nagar barrage** in Bihar, and joins the **Ganga near Hajipur and Patna**. The Koshi, by contrast, enters Bihar further east and is regulated at the **Bhimnagar barrage**. Placing this flood in the wrong basin points Indian flood preparedness at the wrong districts.

THE HUMAN TOLL, REPORTED HONESTLY

*Casualty figures for this event **diverge sharply across sources and are still being revised**. Reported counts within the same 72 hours include **at least 160** in initial coverage on August 26, **489, 579 as of the evening of August 28** per the Kathmandu Post, and **626 or more, with 1,473 injured and roughly 2,400 unaccounted for**, as of the evening of August 28, alongside 7 dead and over 550 missing reported on the Tibet side. **This article does not state a single death toll**, because no single figure is defensible at the time of writing. Any figure you quote must carry the source and an explicit “as of” timestamp.*

Three features of the casualty profile are, however, consistent across reporting and are analytically important.

A very high proportion of the missing were foreign nationals. Rasuwagadhi is the principal overland gateway from Nepal to Tibet and the main road route for the **Kailash Mansarovar Yatra**, and **late August is peak season**. India’s **Ministry of External Affairs** reported a substantial number of Indian nationals uncontactable, with others rescued.

A large share of the missing were linked to hydropower project sites. Run-of-river hydropower is sited precisely where these valleys are narrowest and steepest, which is also where a debris surge is most destructive.

Warnings existed but did not convert into evacuation at scale. Both **China’s Ministry of Water Resources** and Nepal’s **National Disaster Risk Reduction and Management Authority (NDRRMA)** issued alerts. The gap was in the last mile.

India’s response. The **Prime Minister spoke to the Prime Minister of Nepal on August 26**, and the **Ministry of Home Affairs** stated that the Central Government was monitoring the situation closely.

CRITICAL ANALYSIS

Background: this was not an unprecedented event at this location. A comparable surge down the **Lhende** occurred on **July 8, 2025**. A site that produces two events in thirteen months is not experiencing freak accidents; it is displaying a **persistent slope instability** that should have moved it into a monitored category.

The underlying driver is well established. The **Hindu Kush Himalaya is warming faster than the global mean**. Glaciers are thinning, which enlarges meltwater lakes, and **permafrost degradation** is destabilising the rock slopes above them. Permafrost acts as cement in high-altitude bedrock; as it thaws, the rock loses cohesion. That is why the failure mode here was **rock plus ice**, not ice alone, and why LDOF events should be expected to become more frequent relative to classic GLOFs.

The transboundary problem is the sharpest governance gap. The Lhende Khola rises in **Gyirong County, Tibet**. Accounts of the collapse site itself differ: some reporting places the failure inside Tibet, roughly 20 km north-east of the Rasuwagadhi crossing, while seismic analysis locates the **M_s 5.2** signature just north of **Langtang Lirung**, inside Nepal. Either way the hazard chain is transboundary from source to outlet, and its downstream hydrology reaches India. There is **no binding trilateral early-warning protocol** across India, Nepal and China, and hydrological data sharing with China remains episodic and agreement-dependent. Notably, the **Expert-Level Mechanism on Trans-border Rivers** between India and China is scheduled to meet in **September 2026**, which makes this failure immediately relevant to a live diplomatic file.

The Indian exposure is real, quantified and historical. The **Central Water Commission's** inventory records over **28,000 glacial lakes and high-altitude water bodies** across the Indian Himalayan river basins, of which roughly **900** exceed 10 hectares and are monitored, and its June 2025 report flagged **432** as expanding. The **National Disaster Management Authority** has classified about **190 as high-risk**, of which **25** are rated most dangerous and are the focus of the **National GLOF Risk Mitigation Programme**. **ISRO** inventories show individual lakes doubling in extent over a few decades. India's own **historical** reference events are recent: **Kedarnath in June 2013**, **Chamoli in February 2021**, and **South Lhonak Lake in Sikkim on October 3, 2023**, which destroyed the **Chungthang dam** of the Teesta Stage III project and affected more than a thousand kilometres of the Teesta corridor.

UPSC RELEVANCE

GS Paper 1: Important geophysical phenomena; changes in critical geographical features including water bodies and ice caps, and the effects of such changes.

GS Paper 3: Disaster and disaster management; conservation and environmental degradation; climate change impacts.

Prelims angle: the Trishuli-Narayani-Gandak drainage, the distinction between GLOF and LDOF, the location of Rasuwagadhi, and the institutional names DHM, NDRRMA, ICIMOD and CWC are all directly examinable.

Mains angle: *“Himalayan disaster preparedness is calibrated for the hazard we can inventory, not the hazard we actually face.”* Use the moraine-versus-landslide dam distinction to argue for a shift from lake inventories to slope-stability and permafrost monitoring.

★ FACTS CORNER — KNOWLEDGE PEDIA

THE EVENT:

August 26, 2026, around 9 a.m., Rasuwa district, north-central Nepal, on the Tibet border.

Bedrock and glacier failure at about 5,200 metres; a section roughly 600 metres wide fell about 1,200 metres.

Displaced mass: 100 to 200 million cubic metres. The collapse registered as an Ms 5.2 seismic event.

Dammed the Lhende Khola, a stream rising in Gyirong County, Tibet.

Impact along roughly 72 kilometres of valley.

A second barrier lake of about 2 million cubic metres, near the Chhochhen Khola and Purepu Tsangpo confluence, overflowed on August 28.

DHM and ICIMOD attribution: a combination of ice avalanche, permafrost movement and rockslide. Not a classic moraine-dammed GLOF.

Historical note: a comparable Lhende surge occurred at the same site on July 8, 2025.

THE DRAINAGE, AND THE TRAP:

The Rasuwa Bhote Koshi is the upper Trishuli. Trishuli joins the Narayani (Gandaki), which enters India as the Gandak, is regulated at the Valmiki Nagar barrage in Bihar, and joins the Ganga near Hajipur and Patna.

It is NOT a Koshi tributary. A different Bhote Koshi, in Sindhupalchok district, feeds the Sun Koshi and hence the Koshi, which is barraged at Bhimnagar.

Affected downstream districts confirm the basin: Rasuwa, Nuwakot, Dhading, Chitwan, Gorkha, Tanahun, East and West Nawalparasi.

The seven Koshi tributaries (Sapta Koshi): Sun Koshi, Indravati, Tamba Koshi, Likhu, Dudh Koshi, Arun and Tamor.

The Gandaki system's seven: Kali Gandaki, Trishuli, Seti, Marsyangdi, Budhi Gandaki, Madi and Daraudi.

GLOF VERSUS LDOF:

GLOF: a pre-existing glacial lake impounded by moraine or ice bursts. The lake is inventoriable and can be monitored for years.

LDOF (landslide-dammed outburst flood): a lake created by a landslide or rockfall bursts. It may form and fail within days, giving near-zero warning.

Rasuwa 2026 was of the second type.

INDIA'S EXPOSURE:

The Central Water Commission inventory records over 28,000 glacial lakes and high-altitude water bodies across the Indian Himalayan basins; roughly 900 exceed 10 hectares and are monitored, with 432 flagged as expanding in its June 2025 report.

The NDMA classifies about 190 as high-risk, of which 25 are rated most dangerous, under the National GLOF Risk Mitigation Programme.

ISRO inventories show lakes doubling in extent over a few decades.

The Hindu Kush Himalaya is warming faster than the global mean.

INDIA'S REFERENCE EVENTS (HISTORICAL):

Kedarnath, June 2013: Chorabari lake breach compounding extreme rainfall.

Chamoli, February 2021: rock and ice avalanche in the Rishiganga catchment.

Sikkim, October 3, 2023 (historical): South Lhonak Lake burst; Chungthang dam (Teesta Stage III) destroyed; over 1,000 km of the Teesta corridor affected.

INSTITUTIONS:

DHM: Department of Hydrology and Meteorology, Nepal.

NDRRMA: National Disaster Risk Reduction and Management Authority, Nepal.

ICIMOD: International Centre for Integrated Mountain Development, headquartered at Kathmandu; India is a regional member.

NDMA: India's National Disaster Management Authority, chaired by the Prime Minister, under the Disaster Management Act, 2005; NDRF is the response force.

Central Water Commission (CWC): glacial lake monitoring and flood forecasting.

Expert-Level Mechanism on Trans-border Rivers between India and China: next meeting September 2026.

OFFICE-HOLDER BACKGROUND:

Nepal's Prime Minister is Balendra Shah, sworn in on March 27, 2026 following the general election of March 5, 2026. He is the youngest prime minister in the history of the Federal Democratic Republic of Nepal and was Mayor of Kathmandu from 2022 to 2026.

WATCH THE TRAP:

Do not place this flood in the Koshi basin. It is Gandaki.

Do not call it a GLOF without qualification. The dam was landslide debris, not moraine.

Do not quote a single casualty figure. Reported counts in the same 72 hours ranged from 160 to over 626, with the missing count still rising past 2,400. Always attribute and timestamp.

Sources: ICIMOD, PIB, The Kathmandu Post, Central Water Commission

Source: The Rasuwa Disaster: A Rock and Ice Collapse, a Barrier Lake, and Why It Was Not a Classic GLOF —
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