Emergency Situation Overview

Nepal Flash Floods August 2026: Rapid Remote Sensing Damage Screening

2 September 2026 | Nepal

Key Messages

- **Bidur Municipality stands out most clearly in the screening, with both the largest area of high-confidence change signal (149.7 ha) and the highest share of assessed built-up area showing this signal (10.64%).** These changes are considered a proxy for possible infrastructure damage.
- **Other notable concentrations of change signals are found in Belkotgadhi, Gosaikunda, Uttargaya, Gajuri and Galchhi municipalities.** The sharp difference between Bidur and these other affected municipalities could be explained by the differences in their total built-up areas, which are roughly a quarter the size of Bidur's.
- **All six highest-ranked municipalities in this screening are in Rasuwa, Nuwakot and Dhading districts,** consistent with other reports identifying these districts among the areas most affected by the event.

Context

On the morning of 26 August 2026, a sudden surge of water entered the Bhote Koshi River from the Tibet side, likely triggered by an ice-rock avalanche. The flash flood struck Rasuwa District before moving downstream along the Trishuli corridor into Nuwakot and Dhading districts, destroying roughly 40km of road and damaging schools, markets, health facilities, homes, hydropower facilities, etc. As of 1 September 2026, according to national authorities 1,003 people were confirmed dead and 3,916 remained missing. The full extent of the damage remains under assessment.

This rapid remote sensing damage screening offers a rapid, wide-area picture of where damage may be concentrated to support rapid geographic prioritisation and identification of areas that require further assessment. It uses satellite radar - specifically Synthetic Aperture Radar (SAR), via Sentinel-1 - to screen the whole affected area for signals of changes in the built-up surface. These changes are considered a proxy of possible damage. **It aims to complement site-specific efforts already in progress** such as Copernicus EMS building-damage mapping. **This is a screening product and not a detailed damage assessment.** For more detail see the Methodology Overview.

Top 3 municipalities by total assessed built-up area with high-confidence change signal (ha)

1. Bidur - 149.73 ha
2. Belkotgadhi - 22.94 ha
3. Gosaikunda - 13.10 ha

Methodology Overview

This analysis compares one post-event SAR Sentinel-1 radar image (28 August 2026) against a one-year pre-event baseline from the same satellite. Each 10 m pixel is scored on how strongly it differs from that baseline, then averaged over a 50 m neighbourhood to reduce radar noise. **The result is a neighbourhood-scale signal, not a building-level assessment**. The analysis specifically focuses on built-environment zone: a 30 m buffer around known building locations.

A pixel is flagged as **high-confidence change signal consistent with possible damage** where the smoothed score is ≥1.60. This threshold was calibrated and **tested against a sample of Copernicus EMSR927 building-grading data**, detecting 53.1% of confirmed damaged/destroyed structures. The threshold was then applied across the full analysed area, including places Copernicus EMS has not assessed, to flag likely damage there too. **The threshold favors fewer false positives** - which remain possible - over catching every instance of damage, so an unflagged area should not be read as confirmed undamaged. **False positives remain palusible** using this method.

The analysed area (58,557 ha) merges three areas of interest defined by OCHA, UNOSAT, CEMS and local hydrological data. Of this, 4,775 ha falls within the built-environment zone, of which roughly 245.13 ha meet the threshold. **That is, around 5% of the assessed area shows high-confidence signal change.** The change signal layer was qualitatively reviewed and manually edited to remove potential false positives The whole analysis is available here.

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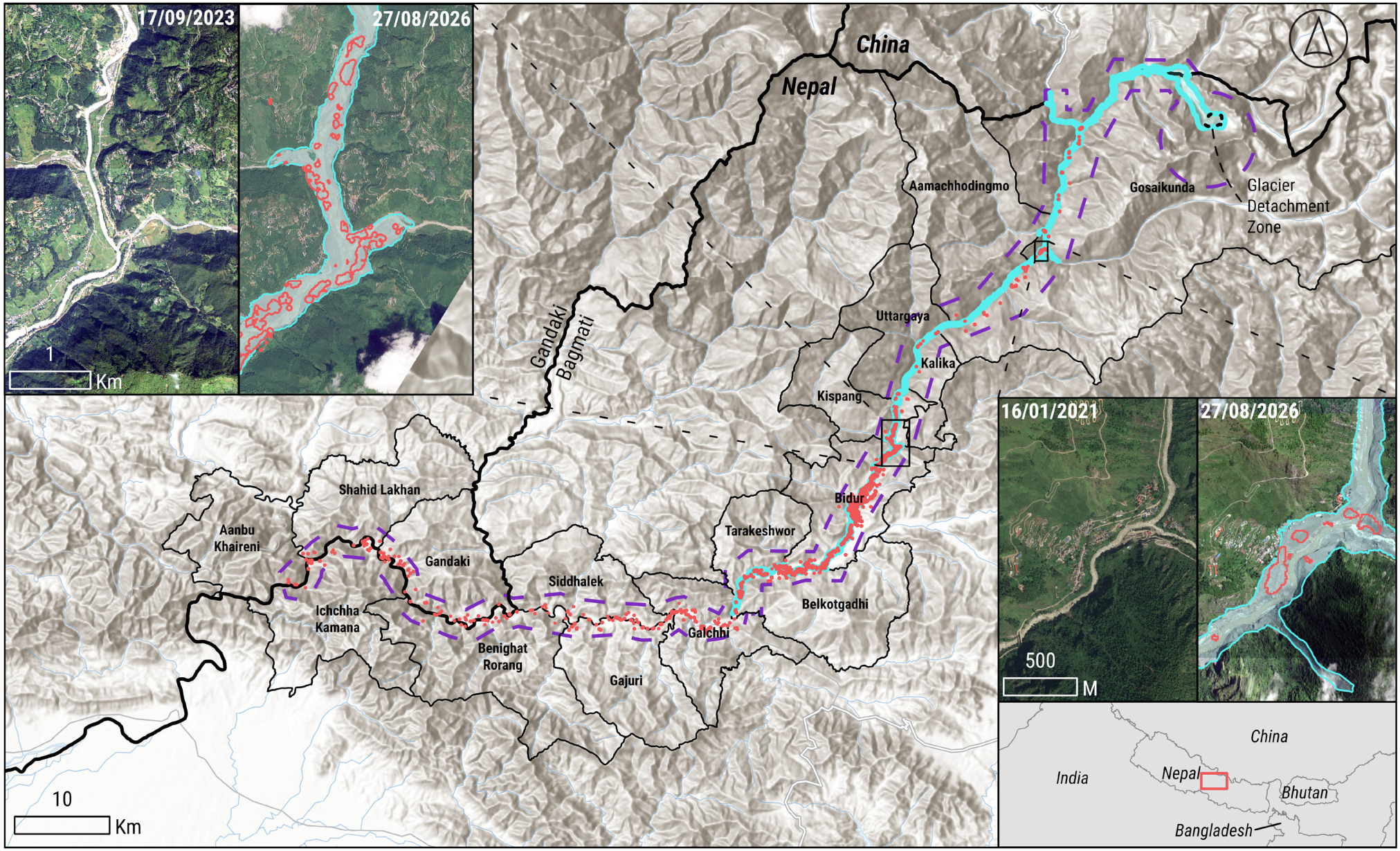
Production date : 02 September 2026

Map 1. Nepal Flash Floods 2026: Rapid build-up damage screening using 10-m Sentinel-1 radar data (August 28th 2026)



Analysis Area
Provinces
Municipalities
High-confidence Change Areas
UNOSAT Flood Extent (26/08/2026)

Data sources: Damage Screening: IMPACT Initiatives; Flood Extent: UNOSAT 26.08.2026; Satellite Imagery: Pre-event: Upper Corridor: Vantor WV02 - 16/01/2021; Bidur: GE01 - 17/09/2023; Post-event: Upper Corridor: Vantor WV03 - 27/08/2026; Bidur: Planet PS 27/08/2026; Administrative boundaries: OCHA; AOI: OCHA, CEMS, UNOSAT and local hydrological stations
Basemap: Esri World Hillshade and World Terrain Base
Coordinate System: WGS 1984 UTM Zone 45N
File: IMPACT_NPL_Map_Rapid_Built_Up_Damage_Screening_20260902_A4
Contact: impact.geneva.mapping@impact-initiatives.org

Note: Data, designations and boundaries contained on this map are not warranted to be error-free and do not imply acceptance by REACH partners, associates or donors mentioned on this map.

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Table 1: Assessed municipalities by total assessed built-up area with high-confidence change signal. The full analysis is available here.

1. Rank (by ha)	2. Municipality (Admin-3)	3. District (Admin-2)	4. Province (Admin-1)	5. Total assessed built-up area with high-confidence change signal (ha)	6. Share of assessed built-up area with high-confidence change signal (%)
1	Bidur	Nuwakot	Bagmati	149.73	10.64%
2	Belkotgadhi	Nuwakot	Bagmati	22.94	5.97%
3	Gosaikunda	Rasuwa	Bagmati	13.10	4.16%
4	Uttargaya	Rasuwa	Bagmati	12.86	3.98%
5	Gajuri	Dhading	Bagmati	10.45	4.45%
6	Galchhi	Dhading	Bagmati	8.62	1.98%
7	Tarakeshwor	Nuwakot	Bagmati	6.76	5.17%
8	Gandaki	Gorkha	Gandaki	4.59	1.71%
9	Kispang	Nuwakot	Bagmati	4.14	4.03%
10	Ichchha Kamana	Chitawan	Bagmati	2.84	1.25%
11	Benighat Rorang	Dhading	Bagmati	1.99	0.61%
12	Aamachhodingmo	Rasuwa	Bagmati	1.92	1.48%
13	Siddhalek	Dhading	Bagmati	1.80	0.80%
14	Kalika	Rasuwa	Bagmati	1.69	1.07%
15	Aanbu Khaireni	Tanahu	Gandaki	0.87	4.48%
16	Shahid Lakhan	Gorkha	Gandaki	0.84	1.30%

Rasuwa, Nuwakot and Dhading are the three districts identified as most affected in initial reports. This screening results align with this initial assessments: all six of the highest-ranked municipalities in Table 1 fall within these same districts.

Bidur Municipality, in Nuwakot District, **recorded both the highest share and the largest extent of built-up land with high-confidence change signals consistent with possible damage by far.** This could be explained by its location at a river confluence and its substantially larger town centre relative to surrounding municipalities.

For example, **Gosaikunda** and **Uttargaya** municipalities in Rasuwa District rank far behind Bidur on both measures despite being closer to the origin of the flood. This could be explained by the assessed built-up area in Gosaikunda (315 ha) and Uttargaya (323 ha) being a small fraction of Bidur's (1,407 ha). This is consistent with the **mountainous characteristics of the area**.

The screening also detected change signals in further downstream areas. This could reflect debris, flood inundation, vegetation disturbance, sediment deposition, changes in surface moisture, or other event- and non-event-related changes. **Further assessment is needed to confirm impact in these areas.**

How to read the table?

- **The municipalities are ranked by the total built-up area (column 5), in hectares, showing high-confidence change signal, with change being a proxy for possible damage** (see the Methodology Overview). Column 6 shows that same area as a share (%) of the municipality's total assessed built-up area. **While column 5 represents an absolute measure, column 6 represents a relative one.**
- **The built-up area is the zone immediately around known building locations** - residential and non-residential - plus a small surrounding margin to account for uncertainty in building location data (see the Methodology Overview).
- **A municipality can rank high on column 5 and low on column 6 as a result of its built-up area size.** For example, a municipality with an unusually large built-up area can show a large figure in column 5, even from a modest proportion of damage signal. Column 6 stays comparatively low, because that same area is a small share of a much bigger total.
- **This analysis is intended to support rapid geographic prioritisation and identification of areas for further assessment.** It looks at change signals as a proxy for possible damage at an area level, not a confirmation of damage to individual buildings. The ranking does not account for population, casualties, humanitarian needs, infrastructure importance or type of damage, and should therefore **not be interpreted as an overall humanitarian priority ranking.**
- **The table and map in this brief should be used alongside other damage and impact analysis being conducted by partners** for a more complete analysis.

ABOUT IMPACT

Founded in 2010 and headquartered in Geneva, IMPACT Initiatives is a leading applied research organization and the largest independent provider of data in crisis-affected contexts. Through our initiatives—REACH, AGORA, and PANDA—we enable humanitarian and other aid actors to make better, evidence-based decisions by delivering timely, relevant, and methodologically rigorous data and analysis. Our extensive presence across crisis-contexts allows us to collect data directly from crisis-affected people wherever needed, including among the most vulnerable and hard-to-reach.

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