Assessing the Physical Damage to Lebanon's Building-Level Environment from the 2026 Conflict

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The United Nations Development Programme (UNDP), in collaboration with the National Council for Scientific Research-Lebanon (CNRS-L), produced a series of rapid building-level damage assessments to evaluate the impact of the 2026 conflict on Lebanon's built environment. Using a Geospatial Artificial Intelligence (GeoAI)-enabled remote sensing methodology supported by high resolution satellite imagery, the assessments provide preliminary estimates of structural damage, debris generation, and associated reconstruction costs. To ensure methodological consistency and scientific rigor, the Beirut and Mount Lebanon assessment underwent extensive validation through records from the United Nations Department of Safety and Security (UNDSS), the Lebanese Armed Forces (LAF), and comprehensive field verification conducted by CNRS-L. Meanwhile, the South Lebanon assessment applied the same GeoAI-based methodology, damage classification framework, and debris estimation approach, complemented by office-based visual validation, ensuring consistency and comparability across the different regions assessed. These reports serve as the first releases in a broader national damage assessment series prepared by UNDP and CNRS-L to support recovery planning and humanitarian programming.

The assessment of Beirut and Mount Lebanon reveals that the overwhelming majority of the damage was concentrated in Mount Lebanon, particularly within Baabda District, which emerged as the epicentre of structural destruction with approximately 411 damaged buildings. Within the district, Haret Hreik recorded the highest concentration of destroyed and heavily damaged structures, followed by Hadath Beyrouth, Bourj El-Brajneh, Chiyah, Laylaki, and Choueifat El-Amrousieh. By contrast, Beirut Governorate experienced comparatively limited and more dispersed damage, with the Mazraa cadastre identified as the most affected area within the capital. Overall, the assessment identified 146 destroyed buildings, 264 partially damaged buildings, and 54 targeted apartments, affecting more than 7,659 housing units, of which approximately 92% were located in Baabda District. These findings underscore the highly localized concentration of destruction within the southern suburbs of Beirut.

GOVERNORATE	DESTROYED	PARTIALLY DAMAGED	APARTMENTS TARGETED
Aley	7 Bldg → 55 units	8 Bldg → 216 units	8 Apt
Baabda	133 Bldg → 2,967 units	243 Bldg → 4,061 units	35 Apt
Beirut	6 Bldg → 146 units	13 Bldg → 160 units	11 Apt
TOTAL	146 Bldgs 3,168 units	264 Bldgs 4,437 units	54 Apartments

Source: UNDP & CNRS-L (2026)

The physical destruction generated an estimated 648,942 cubic metres of debris, equivalent to between 1.1 million and 1.46 million tonnes, depending on the assumed material density. Correspondingly, total damage costs for Beirut and Mount Lebanon were estimated at approximately USD 365.03 million, with over 96% of the losses concentrated in Mount Lebanon. Baabda Caza alone accounted for approximately USD 338.28 million, representing more than 90% of the total assessed damage costs, while Beirut and Aley recorded substantially lower losses. Together, these findings illustrate the significant reconstruction

needs resulting from the concentrated nature of the damage across a relatively limited geographical area.

The second assessment extends the same GeoAI-based methodology to South Lebanon, primarily covering areas south of the Litani River. The findings indicate a considerably greater scale of destruction than that observed in Beirut and Mount Lebanon. Between 23 October 2025 and 29 April 2026, the assessment identified 11,095 destroyed buildings, 2,242 partially damaged buildings, and 9,311 minor damaged buildings, generating an estimated 3,107,756 cubic metres of debris and total preliminary damage costs of approximately USD 1.384 billion. The most heavily affected areas were concentrated within El Nabatieh Governorate and the South Governorate, with major hotspots including the districts of Bent Jbeil, Marjaayoun, El Nabatieh, Sour, and parts of Saida. These figures demonstrate that the conflict inflicted far more extensive structural damage across southern Lebanon, reflecting both the broader geographical spread and greater intensity of destruction within the assessed area.

GOVERNORATE	DESTROYED		PARTIALLY DAMAGED		MINOR DAMAGED	
El Nabatieh	8,989 Bldgs	14,357 units	1,190 Bldgs	2,476 units	5,247 Bldgs	8,384 units
South	2,106 Bldgs	3,534 units	1,052 Bldgs	2,743 units	4,064 Bldgs	9,898 units
TOTAL	11,095 Bldgs	17,891 units	2,242 Bldgs	5,219 units	9,311 Bldgs	18,282 units

Source: UNDP & CNRS-L (2026)

Overall, the assessments demonstrate that the 2026 conflict caused highly concentrated yet severe physical destruction across Lebanon, with the greatest burden falling on Mount Lebanon and South Lebanon. By applying a standardized GeoAI-based methodology, the reports provide a consistent and evidence based estimate of damaged buildings, debris volumes, and reconstruction costs, establishing an important baseline for recovery planning

and the prioritization of reconstruction resources in the most affected areas. At the same time, the findings should be interpreted as preliminary estimates, as they are limited to above-ground building structures and do not include underground facilities or critical infrastructure. As emphasized by UNDP and CNRS-L, future assessments incorporating additional satellite imagery and validation exercises will expand the geographical coverage and further refine these estimates, strengthening the evidence base for Lebanon's long-term recovery efforts.

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