



LEBANON

Interim Damage and Loss Assessment (DaLA)

ASSESSMENT REPORT

NOVEMBER 2024



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ABBREVIATIONS AND ACRONYMS

ACLED	Armed Conflict Location and Event Data
CAS	Central Administration of Statistics
CCA	Climate Change Adaptation
CM	Centimeters
DaLA	Damage and Loss Assessment
DRR	Disaster Risk Reduction
DTM	Displacement Tracking Matrix
EU	European Union
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GDPR	General Data Protection Regulation
GFDRR	Global Facility for Disaster Reduction and Recovery
IDPs	Internally Displaced Persons
ILO	International Labor Organization
IOM	International Organization for Migration
KII	Key Informer Interview
KM	Kilometer
Landsat	Land Satellite
LBP	Lebanese Pound
LFPRs	Labor force participation rates
M	Meter
MEHE	Ministry of Education and Higher Education
MoE	Ministry of Environment
MoPH	Ministry of Public Health
NGO	Non-Governmental Organization
OEA	Order of Engineers and Architects
PAI	Publicly available information
PDNA	Post-Disaster Needs Assessment
PISA	Program for International Student Assessment
QITABI	Quality Instruction Towards Access and Basic Education Improvement
RDNA	Rapid Damage and Needs Assessment
SAR	Synthetic Aperture Radar
SMEB	Survival Minimum Expenditure Basket
SWM	Solid Waste Management
TVET	Technical and Vocational Education and Training
TIMSS	Trends in Mathematics and Science Study
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
UN OCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNODA	United Nations Office for Disarmament Affairs
UNRWA	United Nations Relief and Works Agency for Palestine Refugees in the Near East
UR	Unemployment Rates
USD	United States Dollar
WAP	Working Age Population
WB	World Bank
WFP	World Food Program
WHO	World Health Organization

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OVERVIEW

This report presents the findings of an interim Damage and Loss Assessment (DaLA) conducted by the World Bank to assess the impact of the conflict affecting Lebanon. As of November 7, 2024, the conflict has reportedly claimed the lives of 3,102 individuals in Lebanon, injured 13,819¹ and resulted in the displacement of over 1.3 million people.² The DaLA estimates sectoral damage that has occurred between October 8, 2023, and October 27, 2024 (inclusive), for commerce, health, housing, and tourism and hospitality, and between October 8, 2023, and September 27, 2024 (inclusive), for agriculture and environment.^{3,4} For these sectors, along with education,⁵ it also estimates sectoral losses for a period of 12 months based on damage incurred, displacement, and other sector-specific transmission channels as of these same cut-off dates.⁶ In addition to the damage and loss assessment, the report presents a complementary analysis of the impact of the conflict on Lebanon's economic growth as measured through its Gross Domestic Product (GDP). It also covers an analysis of key displacement patterns.

The report finds that damage to physical structures alone amounts to at least US\$3.4 billion and estimates that the conflict has caused US\$5.1 billion in economic losses as of the assessment cut-off dates. The final damage and losses due to the conflict are expected to be significantly higher, as the conflict has continued and additional sectors are increasingly impacted, explained further below. The conflict is estimated to have cut Lebanon's real GDP growth for 2024 by at least 6.6 percent, whereas modest growth had been forecast prior to the conflict. This compounds five years of sustained sharp economic contraction in Lebanon that has exceeded 34 percent of real GDP, losing the equivalent of 15 years of economic growth.

The DaLA is spatially targeted and covers a minimum of 80 percent of Lebanon's conflict-affected areas as of October 27, 2024, spread through six of Lebanon's nine governorates (Baalbek-Hermel, Beirut, Bekaa, Mount Lebanon, Nabatiyeh, and South). Where data allow, losses are also assessed nationwide because the economic impact of the conflict extends beyond the damaged areas. Annexes detail the geographic scope and methodology for each sector, as well as present maps that support the assessment.

Damage in **agriculture** is estimated at US\$124 million, with losses over US\$1.1 billion, driven by lost harvest caused by destruction of crops and livestock and displacement of farmers. **Commerce** accounts for US\$178 million in damage with losses estimated at US\$1.7 billion, primarily driven by the displacement of employees and business owners, supply chain disruptions, and shifts in consumption towards essential goods. In the **education** sector, losses are estimated at US\$215 million based on lost private school tuition payments and the costs of temporary schooling.⁷ **Environment**, through natural resource degradation and the impact on solid waste management, has incurred US\$221 million in damage with losses estimated at US\$214 million. The **health** sector has suffered damage valued at US\$74 million, with losses estimated at US\$338 million. **Housing** is the sector with the most damage, estimated at US\$2.8 billion, with over 99,000 housing units partially or fully damaged, and with sector losses estimated at US\$389 million. **Tourism and hospitality** account for US\$18 million of damage, but have losses estimated at US\$1.1 billion, driven by reductions in tourist arrivals and inbound travel, affecting revenues of hotels, restaurants and other businesses reliant on tourist spending.

The final cost of damage and losses for Lebanon associated with the conflict is expected to significantly exceed those presented in this assessment. This assessment only focuses on select sectors that were initially identified as being the most impacted, while noting that additional sectors such as electricity, transportation, cultural heritage, municipal services, and water are also increasingly affected by the continued conflict. In addition, the conflict has continued since the cut-off dates of this assessment, increasing in intensity and expanding to more districts in the south, around Beirut, and in northeast Lebanon (see [Figure 1](#) in Annex B). Finally, the assessment relies on remote data collection sources and analytics, and, as such, can only provide a preliminary estimate of damage and losses. A comprehensive Rapid Damage and Needs Assessment (RDNA) that assesses damage and losses in more detail and for a wider range of sectors, as well as prioritizes financing needs for recovery and reconstruction, will be completed once the situation allows.

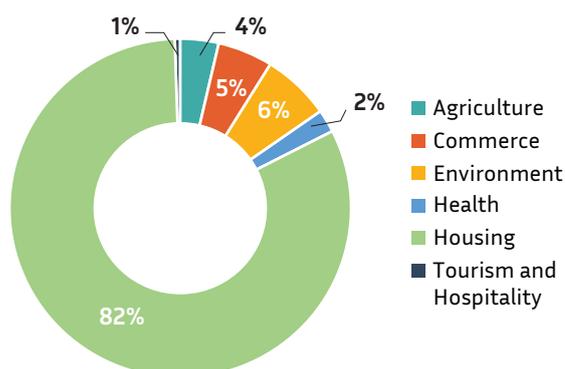
KEY ASSESSMENT FINDINGS

DAMAGE ESTIMATE

This assessment estimates that the total damage caused by the conflict as of the assessment's cut-off dates is equivalent to US\$3.4 billion, largely concentrated in the housing sector which makes up nearly 82 percent of total damage observed. In terms of geographic distribution, damage is concentrated in the Nabatiyeh and South governorates, which respectively represent 45 and 38 percent of the total damage in the assessed areas, followed by Bekaa (12 percent).

Table 1: Summary of damage estimates per sector

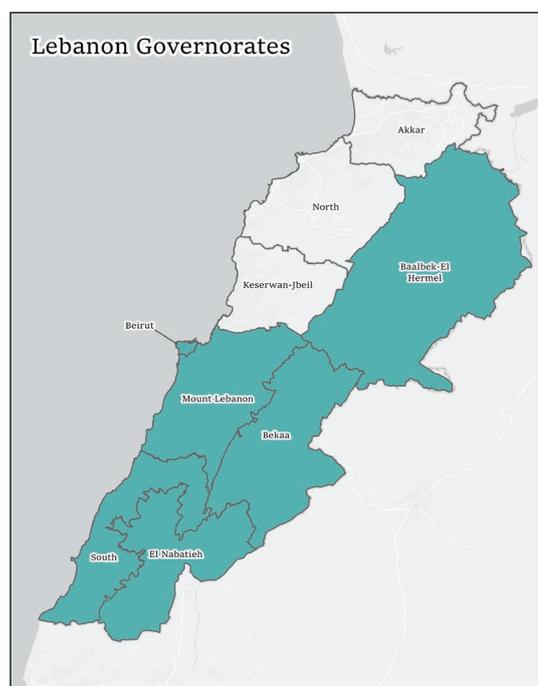
Sector	Damage (US\$ million)
Agriculture	\$ 124
Commerce	\$ 178
Environment	\$ 221
Health	\$ 74
Housing	\$ 2,799
Tourism and Hospitality	\$ 18
Total ⁸	\$ 3,413



Note: Damage to commerce, health, housing, and tourism and hospitality are assessed based on data as of October 27, 2024, while damage to agriculture and environment are assessed based on data as of September 27, 2024.

Table 2: Geographic distribution of damage estimates⁹

Governorate	Damage (US\$ million)
Baalbek - Hermel ¹⁰	\$ 18
Beirut & Mount Lebanon (including the southern suburbs of Beirut)	\$ 144
Bekaa	\$ 415
El Nabatiyeh	\$ 1,546
South Governorate	\$ 1,289
Total ¹¹	\$ 3,413



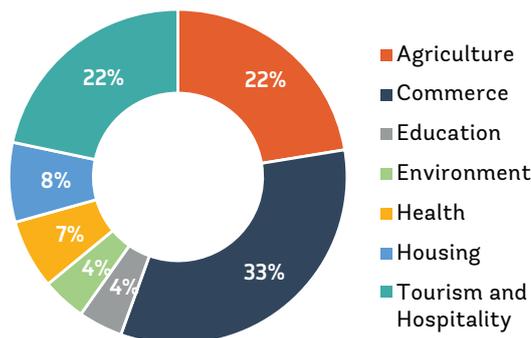
Source: IPSOS, for the World Bank

LOSS ESTIMATE

Losses are estimated at US\$5.1 billion for a 12-month period for the assessed sectors, based on damage incurred, displacement, and other sector-specific transmission channels as of the assessment's cut-off dates. These losses are largely concentrated in the commerce and tourism and hospitality sectors, which have been increasingly impacted as the conflict has expanded, affecting the wider national economy and inbound tourism; as well as in the agriculture sector, which has been particularly affected in the southern regions of Lebanon. Together, these three sectors represent an estimated 77 percent of total losses. For most sectors, it is anticipated that losses will further accumulate beyond this period.

Table 3: Summary of 12-month loss estimates per sector

Sector	12-month losses (US\$ million)
Agriculture	\$ 1,134
Commerce	\$ 1,674
Education	\$ 215
Environment	\$ 214
Health	\$ 338
Housing	\$ 389
Tourism and Hospitality	\$ 1,097
Total ¹²	\$ 5,062



MACROECONOMIC ANALYSIS

As of mid-September 2024, and taking into account the conflict's significant escalation, the conflict is estimated to have cut real GDP growth for 2024 by at least 6.6 percent. The analysis evaluates the conflict's impact on the Lebanese economy by examining shocks to consumption and net exports as these serve as the primary transmission channels for the conflict's effects to date. With these impacts, real GDP is projected to contract by at least 5.7 percent in 2024, compared to a counterfactual scenario without conflict in which real GDP growth would have been 0.9 percent. Widespread displacement and destruction have triggered a substantial decline in private consumption, which accounted for 134 percent of GDP in 2023, significantly slowing economic activity. Tourism, a key economic pillar, has been hard hit, with the 2024 escalation likely halting this sector for the year, leading to major losses in service exports.

These impacts of the conflict represent yet another shock to Lebanon's already struggling economy, which has undergone an unprecedented economic crisis that began in 2019 and has seen a contraction of over 34 percent in real GDP since then, equivalent to 15 years of GDP growth. The conflict compounds the effects of the ongoing prolonged economic downturn and further undermines Lebanon's prospects for recovery, which are already hampered by sovereign default, a systemic banking crisis, limited capital investment, and significantly curtailed public services.

While the macroeconomic analysis examines the impact of the conflict on the whole economy for 2024, the DaLA examines sector-level damage and corresponding losses, with impacts that will likely extend over a multi-year period. For example, in addition to immediate impacts on economic activity, the damage identified in the DaLA will ultimately affect the physical and human capital across all sectors of the economy, impacting Lebanon's GDP growth potential in the medium and long-term. As such, the findings of the macroeconomic assessment are not directly comparable to the DaLA estimates.

DISPLACEMENT

The scale of internal displacement in Lebanon has triggered a humanitarian crisis, which is also exacerbating fragility and vulnerability. There are over 875,000 internally displaced persons (IDPs) in Lebanon as of November 6, 2024.¹³ Women, children, the elderly, persons with disabilities, refugees, and certain migrant workers are particularly at risk.¹⁴ Based on the number of IDPs, along with data about labor force participation at origin, employment rates, and average monthly earnings of employees of US\$84.22 (see [Annex A](#) for more details), approximately 166,000 individuals are estimated to have lost their employment, which would correspond to a reduction in earnings of up to US\$168 million per year. Displacement increases pressure in host communities on delivery of basic services and infrastructure, including health, education, water, electricity, and municipal services. Local authorities, which are still struggling from the ongoing economic crisis that began in 2019, are largely unable to cover these costs and face significant environmental and public health challenges.

Most IDPs have been displaced from southern Lebanon, as well as from other areas including the districts of Baabda (which includes the southern suburbs of Beirut), Baalbek, and the Bekaa, to Beirut and its southern coastal districts, as well as to certain districts in the north and northeast (see [Figure 2](#) in [Annex B](#)).¹⁵ This massive displacement, if not effectively managed, may exacerbate pre-existing social tensions between different communities that could further increase fragility in Lebanon. Additionally, more than 440,000 people are estimated to have left the Lebanese territory to Syria as of October 25, 2024, of which 312,000 are estimated to be Syrians.¹⁶

SOCIAL AND ENVIRONMENTAL IMPACT¹⁷

In addition to the sectoral damage and losses, the conflict has broader social and environmental implications in Lebanon. Prior to recent escalations, Lebanon had already been facing record-high currency depreciation, with food inflation soaring compared to pre-COVID levels. Monetary poverty had more than tripled over the past decade, and the ongoing nature of the conflict is expected to push many more people into poverty.¹⁸ From October 8, 2023, to October 25, 2024, 64 percent of the Lebanese population had been directly exposed to conflict.¹⁹ In the southern regions of the country, the alleged use of white phosphorus munitions, which has not been independently verified by the World Bank as part of this assessment,²⁰ could lead to the contamination of crops, surface and ground water, potentially posing a long-term threat to health, agriculture, and the environment, which would necessitate extensive remediation efforts.^{21,22} Additionally, the conflict has exacerbated food insecurity with only 40,000 tons of wheat available as of November 2024 (1.3 months' worth of consumption) and increased shipping costs due to rising insurance premiums. Short-term food security needs for IDPs are increasing and are estimated at US\$131 million per month.²³

SECTORAL ASSESSMENT FINDINGS

The following assessment findings consider damage from October 8, 2023, up to the cut-off date for each sector. Sectoral losses, unless stated otherwise, are estimated for a 12-month period, based on damage incurred, displacement, and other sector-specific transmission channels as of the same cut-off dates.

AGRICULTURE

Damage to the agriculture sector to its cut-off date of September 27, 2024, is estimated at **US\$124 million**. 12-month losses are estimated at **US\$1.1 billion**.

- **Pre-conflict situation:** The Bekaa, Nabatiyeh and South governorates were prominent agricultural areas supplying most of the agricultural outputs for local and international markets. The agri-food sector contributed up to 80 percent of these regions' GDP.^{24,25} The South governorate alone was responsible for 64 percent of the country's citrus trees,²⁶ 94 percent of banana plantations, 15 percent of olive trees and 44 percent of the country's tropical fruit trees, including 63 percent of avocado trees.²⁷ Bekaa produced 70 percent of Lebanon's grapes, 30 percent of which were used for winemaking.²⁸ Livestock farming, particularly dairy production, supported around 60 percent of the poorest agricultural households in the South.²⁹ However, the sector had already been weakened by the 2019 economic crisis, which limited access to finance, exacerbated by poor value chain integration and inefficient public institutions. With 30 percent of Lebanon's cooperatives based in the Nabatiyeh and South governorates, agribusiness was heavily reliant on international aid and NGO support, which has been diminished by the conflict.³⁰
- **Damage and losses:** Damage to the agriculture sector is evaluated at US\$124 million. It is estimated that 12-month losses in the agriculture sector amount to US\$1.1 billion,³¹ due to the burning and abandonment of large areas of agricultural land and livestock, particularly in the southern and Bekaa regions (see [Figure 3](#) in Annex B), along with lost harvests due to the displacement of farmers from the south. The impact of the conflict varies across districts, with regions near the southern border suffering the most significant damage and losses. Crops have suffered US\$25 million in damage, which, combined with displacement, results in 12-month losses of US\$601 million. Losses for banana plantations alone are estimated at US\$353 million due to both sustained damage and the inaccessibility of plantations, all of which are located in Tyre and Saida. The disruption of the olive harvest caused by bombing and displacement is expected to lead to US\$58 million in losses with 12 percent of olive groves in the assessed area destroyed. This impact is expected to have further market implications as the region's olive oil typically commands a 16 percent premium. Citrus production has also been hit, with losses amounting to US\$16 million. Other crops, such as potatoes and vegetables, are also sustaining significant losses with 23 percent of the fields in the assessed areas impacted leading to an estimated US\$111 million in losses. Further, 19 percent of mixed orchards and fields and 16 percent of tobacco fields have been impacted by the conflict while 16 percent of vineyards have been destroyed. Livestock has also been severely affected, with US\$99 million in damage and US\$533 million in losses, affecting cattle, poultry, sheep, goats, and other animals. Poultry has experienced the highest losses at US\$297 million, followed by cattle at US\$154 million. The situation is further exacerbated by disruptions in feed supplies and the abandonment of herds and flocks due to evacuation, complicating future recovery efforts.

COMMERCE

Damage to the commerce sector to its cut-off date of October 27, 2024, is estimated at **US\$178 million**. 12-month losses are estimated at **US\$1.7 billion**.

- **Pre-conflict situation:** Lebanon's commerce sector accounted for 33 percent of GDP including around 140,000 formal and informal establishments across trade, professional services, and manufacturing.³² Since 2019, the sector had been gradually recovering from multiple challenges, including the economic and financial crisis, the COVID-19 pandemic, and the Beirut port explosion. Lebanon remained a net importing country despite small-scale growth in agribusiness, chemicals and medicinal production. Access to banking services for businesses remained a significant challenge and insurance policies typically covered conflict-related damage only when costly additional premiums are paid.
- **Damage and losses:** The commerce sector in Lebanon has been severely impacted by the conflict, with damage estimated at US\$178 million and losses of US\$1.7 billion. Approximately 11 percent of establishments

in areas affected by the conflict has been damaged, with the highest costs incurred in the southern districts, particularly Tyre, Saida, Nabatiyeh, Marjayoun, and Bint Jbeil. An estimated 83 percent of losses are expected to accrue in conflict-affected areas, with 17 percent occurring in the rest of Lebanon. Losses are mainly driven by the displacement of both employees and business owners from conflict-affected areas, causing a close-to-complete cessation of business activity; the disruptions to supply chains to and from conflict districts; and changes in consumption behavior in non-conflict zones with a concentration on necessary rather than discretionary spending. The severity of damage in the heavily impacted areas will likely delay the return of the displaced (employers, employees and consumers). These barriers to return may complicate the reconstruction of impacted establishments and their contribution to the medium to long-term recovery.

EDUCATION

12-month losses in the education sector are estimated at **US\$215 million**.

- **Pre-conflict situation:** The Lebanese education system faced severe challenges even before the current conflict, including a decline in the qualified teaching force, outdated curriculum, and inefficient processes. The 2018 Program for International Student Assessment (PISA) results ranked Lebanon among the lowest, with over two-thirds of students not achieving basic literacy,³³ and Trends in Mathematics and Science Study (TIMSS) results showed a decline in science scores from 2007 to 2019.³⁴ Public school students experienced significant learning losses due to disrupted academic years from 2019-2023, receiving only 270 days of in-person teaching instead of the expected 600 days, leading to long-term economic impacts.³⁵
- **Losses:** The conflict has severely impacted the education sector, displacing around 150,000 public and 300,000 private school students in the 2024-25 academic year.³⁶ The start of the 2024-25 academic year for public schools has been postponed to November 4, 2024, with many schools not functional as of September 27, 2024 especially in the south and east, and many public schools around the country being used as shelters (see [Figure 4](#) in Annex B).³⁷ While the DaLA did not estimate damage due to few reports of damage to school buildings, total losses were estimated and amount to US\$215 million. These losses consider the full 2023-24 academic year and the first term of the 2024-25 academic year (September-December 2024) and are based on displacement up until September 27, 2024. Losses due to the additional costs associated with setting up temporary learning spaces are estimated at US\$75 per affected student, totaling US\$17 million. Losses associated with reduced private school revenues driven by the displacement of students are estimated at US\$198 million, including US\$18 million for 2023-24 and US\$180 million for the first term of 2024-25.³⁸ The estimation of losses based on lost school revenues due to lack of tuition payments follows standard DaLA methodology to estimate the immediate loss of economic activity resulting from the conflict. At the same time, the disruptions to education will also have longer-term impact on human development and the economy due to lost future earnings, the analysis of which goes beyond the scope of this DaLA.³⁹

ENVIRONMENT

Damage to the environment sector to its cut-off date of September 27, 2024, is estimated at **US\$221 million**. 12-month losses are estimated at **US\$214 million**.

- **Pre-conflict situation:** The impact of the conflict on the environment sector in the assessed areas encompasses two main aspects: natural resources and municipal solid waste management (SWM). The assessed areas include extensive forests (around 35 percent of the country's total forest area), grasslands, rivers, and coastal ecosystems. All these provide essential ecosystem services, such as preventing soil erosion and protecting water quality, but are already threatened by urbanization, pollution, and climate change.⁴⁰ The solid waste sector already suffered from inefficiencies and financial instability, which were worsened by the 2019 economic and financial crisis. Only 8 percent of waste is treated with the remainder managed through basic collection systems and limited sanitary disposal options.⁴¹
- **Damage and losses:** The estimated damage to the environment sector is US\$221 million, with losses of US\$214 million, affecting natural resource-based ecosystem services (US\$198 million) and SWM provision (US\$16 million). The conflict has severely damaged Lebanon's environment, affecting 13 percent of forests, 16 percent of grasslands, and 17 percent of riverine ecosystems in the assessed areas. In the South Governorate alone, 14 percent of the coastline has been impacted (see [Figure 5](#) in Annex B for the geographic distribution of damage to the environment as of September 27, 2024). Solid waste management infrastructure also suffered damage estimated at US\$3.1 million for waste bins and trucks and over US\$0.4 million for SWM facilities. Reduced

functionality of ecosystems is expected to lead to disrupted water purification, air quality, and soil fertility. Such disruptions in natural resource ecosystem services lead to losses that are valued at US\$198 million annually, including US\$163 million from riverine ecosystem services, US\$28 million from coastland ecosystem services, US\$4 million from forest ecosystem services, and US\$4 million from grassland ecosystem services. Losses in SWM are due to loss of revenues from recycling activities (US\$3 million per year) and additional waste management costs due to displacement (US\$13 million per year), which can lead to severe environmental and public health challenges.

HEALTH

Damage to the health sector to its cut-off date of October 27, 2024, is estimated at **US\$74 million**. 12-month losses are estimated at **US\$338 million**.

- **Pre-conflict situation:** Lebanon's healthcare system is predominantly private, with 83 percent of hospital beds in privately-owned facilities and significant out-of-pocket costs leading to disparities in access. Historically, the sector has faced fragmentation in financing and governance, insufficient coverage, inefficiency. In the last decade, it has been strained by the influx of Syrian refugees. Compounded challenges, including the 2019 economic and financial crisis, the Port of Beirut explosion, and the COVID-19 pandemic, have severely impacted service delivery, with a significant increase in households deprived of healthcare and a shortage of healthcare workers.
- **Damage and losses:** Damage to health facilities amounts to US\$74 million. The conflict has impacted 66 percent of hospitals and 36 percent of primary healthcare centers in the assessed areas, leaving 31 hospitals and 26 primary healthcare centers damaged, primarily across South and Nabatiyeh governorates in the south and in the southern suburbs of Beirut (see [Figure 6](#) in Annex B). It is likely that other health clinics, pharmacies, blood banks, and other types of health facilities have also incurred damage, exacerbating the challenge of providing medical services. Losses, totaling US\$338 million, result from increased costs for additional health treatment of injuries and sicknesses due to the conflict (US\$13 million) and displacement (US\$34 million), decreased revenue from inoperative facilities (US\$201 million); and reduced availability of health personnel to provide proper medical attention, leading to increased mortality and morbidity (US\$91 million). Moreover, 36 percent of hospitals and primary healthcare centers have been rendered partially or fully non-operational reducing service availability, again primarily across South and Nabatiyeh governorates in the south and in the southern suburbs of Beirut (see [Figure 7](#) in Annex B). During the reporting period, the World Health Organization's (WHO) Surveillance System for Attacks on Health Care recorded 55 attacks on healthcare facilities, including 28 attacks on medical transport vehicles. According to the Ministry of Public Health, 163 fatalities and 272 injuries have been recorded among health personnel. The disruption in service delivery has increased waiting times, reduced access to healthcare, and exacerbated health inequities, while overcrowding in shelters is IDPs are heightening public health risks.

HOUSING

Damage to the housing sector to its cut-off date of October 27, 2024, is estimated at **US\$2.8 billion**. 12-month losses are estimated at **US\$389 million**.

- **Pre-conflict situation:** Lebanon's housing sector was already in crisis due to the economic downturn that began in 2019. High inflation, currency devaluation, and soaring building material costs left many private housing projects incomplete, while government subsidies became unviable due to budget constraints.
- **Damage and losses:** The conflict has damaged an estimated 99,209 housing units, impacting over 8 percent of the housing stock in the assessed areas. Of these damaged units, 18 percent are assessed as completely destroyed and 82 percent as partly damaged. The total damage is estimated at US\$2.8 billion, with apartments and houses accounting for 91 and 8 percent of this cost, respectively. Economic losses, including rental revenue, operating revenue, wage income of domestic workers, and property tax revenue, are estimated at US\$389 million. Out of the twelve districts covered by the housing sector assessment, those of Tyre, Nabatiyeh, Saida, Bint Jbeil, and Marjayoun are the most impacted, concentrating 81 percent of the assessed damage and losses (see the geographic distribution of housing stock damage in [Figure 8](#) in Annex B).

TOURISM AND HOSPITALITY

Damage to the tourism and hospitality sector to its cut-off date of October 27, 2024, is estimated at **US\$18 million**. 12-month losses are estimated at **US\$ 1.1 billion**.

- **Pre-conflict situation:** Tourism and hospitality covers establishments operating as restaurants, cafes, bars, hotels (and other short-term accommodation), hospitality services, and other tourism-related facilities.⁴² Tourism has historically been a source of employment and key driver of the Lebanese economy, especially when accounting for foreign expatriate and Lebanese diaspora spending as tourism revenues. Tourist arrivals (excluding expatriates) reached 1.46 million in 2022, reflecting a rise of 56.6 percent from 2021. Despite the 24 percent drop in incoming visitors in Q4 2023 in comparison with Q4 2022, the sector still accounted for around 8.6 percent of GDP in 2023; when including expatriate spending, the sector's contribution to GDP is expected to be even higher. Employment in the tourism and hospitality sector is estimated to be around 4.4 percent of total employment⁴³ and accounts for up to 20 percent of the sector's total input costs.
- **Damage and losses:** Damage to the tourism and hospitality sector is estimated at US\$18 million, with losses estimated at US\$1.1 billion reflecting the national impact of the conflict on the sector. An estimated 43 percent of losses are expected to accrue in conflict-affected areas, with 57 percent occurring in the rest of Lebanon. Losses include US\$183 million in lost wages along with other lost economic activity including payments for rent, consumable inputs, and profits. Losses are mainly due to a drastic drop in tourist arrivals and hotel occupancy. Multiple evacuation calls and travel advisories led to a 75 percent reduction in airport arrivals and less than 10 percent hotel occupancy rates in the summer of 2024, as the impact of the conflict spread from directly affected areas to tourism and hospitality across the whole country. This decline has adversely impacted activities such as restaurants, retail, and transportation, and job losses are expected to increase. The small segment of local consumers with spending power has also shrunk as many have fled the country. In the long term, the resumption of tourism activity may be delayed, possibly complicating post-conflict economic recovery.

METHODOLOGY, DATA AND LIMITATIONS

DAMAGE AND LOSS ASSESSMENT

The assessment employs the established DaLA methodology developed by the World Bank in collaboration with the European Union (EU), United Nations (UN), and other partners.⁴⁴ This approach integrates both quantitative and qualitative data, bringing a sectoral lens to the analysis of impacts to ensure a comprehensive understanding of the situation. Damage refers to the current costs of replacing damaged and destroyed assets, while losses refer to the changes in economic flows resulting from the interruption or reduction of production and services due to the conflict, estimated for a period of twelve months.

The methodology leverages high-resolution and hyperspectral imagery provided by Ipsos, a multinational research firm with a global network of over 22,000 surveyors in 95 countries and an extensive network of data suppliers. It also relies on publicly available information from trusted sources, including the UN, to triangulate and improve the veracity of the data. The use of AI-based machine learning enables rapid processing of this data. Where possible, findings are corroborated by ground information, enhancing the reliability of the assessment.

Given that the conflict is ongoing with damage already observed beyond the sector cut-off dates for this assessment, and that losses will likely accumulate over a longer period than the assessment considers, estimates presented are likely to be conservative. Additional details on methodology, data and limitations are available in [Annex A](#).

METHODOLOGY FOR THE MACRO-ECONOMIC IMPACT ANALYSIS

The macroeconomic impact analysis presented focuses on 2023 and 2024 and assumes the conflict will persist for the remainder of 2024. This analysis adopts an expenditures-based approach to assess the losses in the economy's two main components: consumption⁴⁵ and net exports. These channels of impact are examined in detail, in view of their contribution as key drivers of real GDP growth. The macroeconomic analysis complements the DaLA, which examines sector-level damage and extends over a longer period. The damage identified in the DaLA will ultimately affect the capital stock across all sectors of the economy; however, they will not immediately influence GDP projections for 2024. Instead, they are expected to significantly impact Lebanon's future GDP potential, with the effects of fixed capital destruction likely to persist for years to come.

NEXT STEPS

The DaLA findings will contribute to a more comprehensive RDNA to be conducted by the World Bank in collaboration with the Government of Lebanon, the EU, UN agencies, and other development partners once the situation allows and the government indicates its readiness to proceed. This RDNA will encompass the entire country, provide a full assessment for all impacted sectors (including needs), and develop recovery options for all sectors, culminating in a sequenced and prioritized reconstruction and recovery strategy.

Endnotes

- 1 Numbers reported by the Lebanon Ministry of Public Health on November 7, 2024.
- 2 Based on the latest IOM/DTM mobility snapshots available, as of November 6, 2024, a total of 875,180 people have been displaced internally within Lebanon: International Organization for Migration (IOM), Nov 07 2024. DTM Lebanon - Mobility Snapshot - Round 60 - 07-11-2024. IOM, Lebanon. External displacement data, reported by UNHCR, only includes the number of people who have crossed the border to Syria and does not account for external displacement to other destinations. This data reports that 440,000 people have arrived to Syria from Lebanon as of October 22, 2024: UNHCR Syria Flash Update #18: Response to Displacement from Lebanon to Syria (Reporting period: 24 September - 25 October 2024).
- 3 Agriculture includes crops and livestock; commerce includes trade, industries and services, but excludes financial services; education covers losses related to school operating costs and tuition fees; environment includes natural resources, ecosystem services and solid waste management; health includes hospitals and primary healthcare centers; housing covers the residential housing stock; tourism and hospitality covers restaurants, hotels, hospitality services, and other tourism-related facilities.
- 4 The DaLA estimates sectoral damage that has occurred between October 8, 2023, and September 27, 2024 (inclusive) for agriculture and environment, and October 27, 2024 (inclusive) for commerce, health, housing, and tourism and hospitality. The rationale for the different cut-off dates is as follows:
 - Agriculture and environment: These sectors were assessed up to September 27, 2024, as the primary damage was largely stabilized by this date, capturing a full cycle of agricultural activities and environmental impacts over a year.
 - Commerce, health, housing, and tourism and hospitality: the cut-off date for these sectors was extended to October 27, 2024, due to significant conflict escalation in urban areas after September 27, 2024. This escalation led to increased damage in these sectors, necessitating an updated assessment to capture the full extent of the impact.
- 5 Damage to the education sector was not estimated for this interim DaLA since it was considered limited at the time of the data cut-off date. However, this may change as the conflict is still ongoing. Damage for the education sector will be evaluated as part of the upcoming RDNA.
- 6 Sector-specific transmission channels refer to factors such as reduced or absent travel (specific to tourism), use of facilities as shelters (e.g., schools), economic disruptions, and supply chain interruptions.
- 7 Tuition payments represent a direct and quantifiable economic impact on private educational institutions, which rely on these funds for operational sustainability. The loss of tuition payments reflects a disruption in the education sector's economic ecosystem, affecting not only schools but also associated services and employment. While parents might redirect their spending, the specific economic contribution of the education sector, including its multiplier effects, cannot be fully replaced by other expenditures. This approach to calculating losses aligns with the DaLA methodology's objective to capture sector-specific economic disruptions comprehensively.
- 8 The total damage amount is US\$3.413 billion. The table presented does not sum due to rounding at the row level.
- 9 For the governorate of Baalbek-Hermel, only the environmental and health damage was assessed as damage to other sectors remained relatively minor until October 27, 2024. The damage number thus does not account for housing, which is expected to be significant due to conflict escalation in the governorate after the cut-off date of October 27, 2024. This will be evaluated as part of the upcoming RDNA.
- 10 Damage for the governorate of Beirut amounts to US\$1.3 million. Damage for the governorate of Mount Lebanon, which includes the southern suburbs of Beirut, amounts to US\$143 million.
- 11 The total damage amount is US\$3.413 billion. The table presented does not sum due to rounding at the row level.
- 12 The total losses amount is US\$5.062 billion. The table presented does not sum due to rounding at the row level.
- 13 IOM, Nov 07 2024. DTM Lebanon - Mobility Snapshot - Round 60 - 07-11-2024. IOM, Lebanon.
- 14 Children are particularly affected by the conflict with 35 percent of IDPs being under 18, and many at risk of disease due to low vaccination coverage. Women and girls face significant challenges, including lack of privacy in shelters and limited access to reproductive healthcare for 11,600 pregnant women (based on numbers from UNFPA as of October 15, 2024, which may have evolved since then. Source: UNFPA, 2024. Situation Report #2: UNFPA response to the escalation of hostilities in Lebanon, October 23, 2024).
- 15 As of 30 October 2024, a total of 3,669 IDPs are registered in UNRWA shelters. Source: UNRWA Situation Report #11 on the Lebanon Emergency Response dated Sunday November 3, 2024. Link: <https://www.unrwa.org/resources/reports/unrwa-situation-report-11-lebanon-emergency-response>.
- 16 UNHCR Syria Flash Update #18, October 25, 2024. Available at https://www.unhcr.org/sy/wp-content/uploads/sites/3/2024/10/UNHCR-FLASH-UPDATE-18_Displacement-from-Lebanon_25-October-2024.pdf.
- 17 Some information on the social and environmental impact of the conflict included in this report extends beyond the cut-off date for the assessment, to give a more comprehensive understanding of the ongoing situation.
- 18 World Bank. (2024). Lebanon Poverty and Equity Assessment: Weathering a Protracted Crisis. Washington DC. © World Bank.
- 19 Data retrieved from ACLED: <https://acleddata.com/conflict-exposure/#calculator>.
- 20 The alleged use of white phosphorus in Lebanon was not independently and scientifically verified by the World Bank as part of this interim assessment, nor by any other international independent investigator. Media and non-governmental agencies have reported on the alleged use of white phosphorus in Southern Lebanon, including: (i) Human Rights Watch (see: <https://www.hrw.org/news/2024/06/05/lebanon-israels-white-phosphorous-use-risks-civilian-harm>); (ii) The Washington Post (see: <https://www.washingtonpost.com/investigations/2023/12/11/israel-us-white-phosphorus-lebanon/>); (iii) and Amnesty International (see: <https://www.washingtonpost.com/investigations/2023/12/11/israel-us-white-phosphorus-lebanon/>).
- 21 United Nations Office for Disarmament Affairs (UNODA). Incendiary weapons. <https://disarmament.unoda.org/convarms/incendiary-weapons/>.
- 22 Duerksen-Hughes, P., & Richter, P. 1997. Toxicological profile for white phosphorus. Agency for Toxic Substances and Disease Registry (US), chapter 5. <https://www.ncbi.nlm.nih.gov/books/NBK598122/>
- 23 According to the World Food Program (WFP), the Survival Minimum Expenditure Basket (SMEB) for a family of five in Lebanon is approximately US\$435 per month. This basket includes essential food items necessary for basic survival. The SMEB is designed to meet the basic survival food needs of households, particularly in crisis situations. This basket is valued at approximately US\$2.90 per person per day.

- 24 FAO, 2024. Lebanon at a Glance. <https://www.fao.org/lebanon/our-office/lebanon-at-a-glance/en#:~:text=Agriculture%20plays%20an%20important%20role,to%2013%20percent%20in%202020.>
- 25 UNDP, 2023. Gaza war: preliminary findings on the socio-economic and environmental impact on Lebanon. December 2024. https://www.undp.org/sites/g/files/zskgke326/files/2023-12/gaza_war_preliminary_findings_on_the_socio-economic_and_environmental_impact_on_lebanon.pdf.
- 26 US\$16.25 million out of US\$22.5 million in total. Jalkh, Jeanine, 2024. Lebanon's Economy, Another Victim of Hezbollah-Israel War. L'Orient Today, 26 Mar. 2024. <https://today.lorientlejour.com/article/1408350/lebanons-economy-another-victim-of-hezbollah-israel-war.html>.
- 27 Ministry of Agriculture, 2010. الإحصاء الزراعي الشامل لعام. وزارة الزراعة - <http://www.agriculture.gov.lb/Statistics-and-Studies/Comprehensive-Agricultural-Statistics/statistics-2010>.
- 28 Ibid.
- 29 Abdallah, C., Der Sarkissian, R., Termos, S., Darwich, T. & Faour, G., 2018. Agricultural risk assessment for Lebanon to facilitate contingency & DRR/CCA planning by the Ministry of Agriculture. Beirut, Centre National de la Recherche Scientifique and Food and Agriculture Organization of the United Nations (FAO).
- 30 International Labour Organization (ILO), 2018. The Cooperative Sector in Lebanon: What Role? What Future? / International Labour Organization, Regional Office for Arab States. ILO: Beirut. <https://researchrepository.ilo.org/esplora/outputs/report/The-cooperative-sector-in-Lebanon-what/995219323902676>.
- 31 Full recovery in the agriculture sector will take up to three years. As such, losses are likely to accumulate beyond the 12-month period used for this assessment.
- 32 At current price, Lebanon National Accounts 2004–2021, CAS. Sub-sectors included: food and beverage, light manufacturing, heavy manufacturing, repair (vehicles), wholesale and retail trade, services.
- 33 World Bank Group. 2018. Lebanon PISA 2018. <https://thedocs.worldbank.org/en/doc/435071580399593024-0280022020/original/LEBANONPISABrief2018.pdf>.
- 34 Gajderowicz, Tomasz Janusz; Jakubowski, Maciej Jan. Lessons from TIMSS 2019 to Improve Education in Lebanon (English). Washington, D.C.: World Bank Group. <http://documents.worldbank.org/curated/en/099052423032013756/P1758141d8e28a4d16482140a218488143ec88da5ec3>
- 35 Pushparatnam, A., Kheyfets, I., El-Ghali, H., & El Franji, N. (2023). Another Lost Year: Estimating the Educational and Economic Costs of Lebanon's Public-School Closures in 2022-23. World Bank. <https://documents.worldbank.org/pt/publication/documents-reports/documentdetail/099092623073542135/p1758140ac57150b0aeb70e40d19f082b5>.
- 36 As reported by the Ministry of Education & Higher Education (MEHE).
- 37 According to latest available data from the MEHE and UNICEF, as of October 31, 2024, a total of 506 public schools have been repurposed as collective shelters for IDPs. This assessment only accounts for 421 public schools as shelters, as of September 27, 2024 (cut-off date for data collection for the education sector).
- 38 It is assumed that 40 percent of all displaced private school students withdraw from private schools, and 60 percent of them will continue to stay enrolled and pay tuition despite being displaced. For the 2023-24 academic year, it is assumed that affected schools lost a full year of tuition fees for the 40 percent displaced students, and for the 2024-25 academic year, losses include tuition fees for the first term (3 months). If the conflict continues, affected private schools stand to lose a similar amount for each of the next two terms of the 2024-25 academic year (January-June 2025).
- 39 Initial analysis based on approaches developed over recent years in Lebanon indicates a further potential long-term impact on the economy as a result of lost earnings accruing at an estimated net present value of at least US\$3.3 million per day. Based on this analysis, if the conflict continues throughout the 2024-25 academic year, total reductions of future earnings could exceed US\$496 million. See for example: Pushparatnam, A., Kheyfets, I., El-Ghali, H., & El Franji, N. (2023). Another Lost Year: Estimating the Educational and Economic Costs of Lebanon's Public-School Closures in 2022-23. World Bank.
- 40 Ministry of Environment (MoE)/UNDP. 2022. Calculating the Quarrying Sector's Dues to the National Treasury in Lebanon. Beirut. <https://www.undp.org/lebanon/publications/calculating-quarrying-sectors-dues-national-treasury-lebanon>.
- 41 MoE/World Bank, 2023. Lebanon Solid Waste Roadmap 2023–2026: Towards an Integrated Solid Waste Management System. Lebanon. <https://documents1.worldbank.org/curated/en/099112023054014380/pdf/P179435059e4c00080bd5a091bc0270002d.pdf>.
- 42 At current price, Lebanon National Accounts 2004–2021, Central Administration of Statistics (CAS).
- 43 Labor Force Survey 2018–2019, CAS.
- 44 For further information on the methodology, please refer to the guidance notes available at: <https://www.gfdrr.org/en/damage-loss-and-needs-assessment-tools-and-methodology>.
- 45 Consumption alone accounts for more than 100 percent of GDP.

ANNEX A: DETAILED METHODOLOGICAL NOTE

1. Assessment Summary

	Macroeconomic Impact	Damage	Losses
Purpose	Estimate overall impact of the conflict on 2024 GDP	Quantify the physical damage induced by the conflict based on pre conflict dollar value	Estimate economic losses, including reductions in revenues
Geographic Scope	National	Conflict-affected areas in Lebanon	Conflict-affected areas plus indirect impact nationwide
Sector Scope	Whole Economy	Agriculture, commerce, environment, health, housing, tourism and hospitality	Agriculture, commerce, education, environment, health, housing, tourism and hospitality
Time Period	2024 (projected)	Agriculture and environment: October 8, 2023 – September 27, 2024; Commerce, health, housing, and tourism and hospitality: October 8, 2023 – October 27, 2024	12-month losses
Approach	Expenditure based econometric modelling of shocks to consumption and net exports (specifically tourism revenues)	Identification (remote sensing, field reports) and quantification of partially and fully damaged assets	Assumption-based sectoral losses based on damage and displacement data as well as sector-specific transmission channels
Unit of Results	Percent GDP	Monetary value (USD, pre-conflict prices)	
Key Data Sources	Central Administration of Statistics, Nighttime Lights Data, World Bank Datalab, World Bank macro modelling.	Satellite imagery; Synthetic Aperture Radar (SAR); Key informers' interviews (KII); Hyperspectral imagery; Artificial intelligence and algorithms.	Damage data, sectoral data, displacement data

2. Sector-specific Geographic Scope for Damage Assessment

- **Agriculture:** all districts in the Governorates of Bekaa, Nabatiyeh and South.
- **Commerce:** Greater Beirut (Beirut Governorate and Baabda District in Mount Lebanon Governorate), South, Nabatiyeh and Bekaa Governorates.
- **Health:** all districts in the Governorates of Beirut, Bekaa, Nabatiyeh, South and Baalbek-Hermel; districts of Aley and Baabda in Mount Lebanon Governorate.
- **Environment:** for the Green and the Brown Environment, the Governorates of Beqaa, Nabatiyeh, and South. For the Brown Environment, the districts of Baalbek and Hermel in Baalbek-Hermel Governorate, and the districts of Aley and Baabda in Mount Lebanon Governorate.
- **Housing:** Greater Beirut (Beirut Governorate and Baabda District in Mount Lebanon Governorate), South, Nabatiyeh and Bekaa Governorates.
- **Tourism and hospitality:** Greater Beirut (Beirut Governorate and Baabda District in Mount Lebanon Governorate), South, Nabatiyeh and Bekaa Governorates.

3. General DaLA Methodological Approach

The assessment is based on the Damage and Loss Assessment (DaLA) methodology, jointly developed by the EU, the UN and the World Bank (WB), which has been successfully applied in numerous countries.¹ It differs from a Post-Disaster Needs Assessment (PDNA), as the DaLA doesn't include the needs and costs associated with the restoration of service delivery and recovery and reconstruction across a broader array of sectors.

This rapidly and primarily remotely conducted Interim DaLA for Lebanon provides preliminary estimates of: i) damage to physical assets, estimated as the replacement value of completely destroyed or partially damaged physical assets; and ii) economic losses, estimated as changes in economic flows that result from the interruption or reduction of production and services due to the conflict. More specifically:

Baseline. The baseline consists of the pre-conflict situation in terms of number and geographical distribution of assets, as well as their economic values (pre-conflict replacement cost of the asset).

Damage. The damage estimates are calculated based on: (i) the pre-conflict replacement cost per asset category; (ii) the number of assets damaged in each category assessed within the sector; and (iii) the physical status of the assets (partially damaged or completely destroyed). As a general assumption in line with standard DaLA methodology, completely destroyed assets were costed at 100 percent of the replacement cost; partially damaged assets, at 40 percent.

Losses. Estimating losses entails capturing the effects of the conflict beyond the immediate damage and destruction of physical assets. This can include lost income, increased operational costs, and reduced productivity. Given that the conflict is still ongoing, losses were estimated for a period of 12 months based on damage incurred, displacement patterns and other sector-specific transmission channels, as of the cut-off date for each sector. Sector-specific transmission channels refer to factors such as reduced or absent travel (specific to tourism), use of facilities as shelters (such as schools), economic disruptions, and supply chain interruptions, all contributing to sectoral losses. However, it is likely that losses will continue to accumulate beyond this period, depending on the continuation of the conflict, the speed of sectoral recovery, and sector-specific criteria.

4. Data Sources and Analysis

The assessment predominantly relied on remotely collected data, using triangulation of sources to strengthen the veracity and accuracy of the estimates. Data was provided to a large extent by Ipsos, a multinational research firm.¹¹ The following type of data sources were used:

- **High-resolution optical imagery:** at 30-50cm, from Airbus and Planet Labs, with pre-conflict imagery taken as closely as possible prior to the onset of conflict and recent imagery acquired by October 27, 2024 (commerce, health, housing, and trade and hospitality) and by September 27, 2024 (agriculture and environment). Both pre-conflict and recent snapshots were used to provide accurate estimate of sectoral baselines and damage.
- **Hyperspectral imagery:** that captures images across a wide range of wavelengths in the electromagnetic spectrum, allowing to distinguish between different materials or objects based on their unique spectral signatures. It informed the assessments of the environmental and agriculture damage. This imagery was obtained from Wyvern Space, which provides imagery at 5m resolution and 26 bands from a satellite considered the world's highest resolution hyperspectral satellite.
- **Synthetic aperture radar** to capture areas not covered by high resolution optical imagery.
- **Artificial intelligence and algorithms,** refined via manual review: This was used for object detection and for activity detection to integrate data from multiple sources to achieve highest level of accuracy possible. Object detection algorithms include YOLO V8 and Segment Anything Mode and its models for activity detection focus on proprietary models built on top of spatial-temporal graph neural, spectral analysis techniques, including common techniques such as Normalized Difference Vegetation Index, Normalized Difference Snow Index, spectral unmixing and isolation forest for anomaly detection, among others. Automated results were further refined via manual review of trained imagery analysts.
- **Key Informer Interviews (KIIs)** were conducted with about 50 people who collected their own damage assessment information, and sectoral experts.
- **Anonymized cell phone data:** Anonymized mobile phone data compliant with the General Data Protection Regulation (GDPR) has been used across Lebanon for the assessment on displacement

- **Publicly available information (PAI)**, including social media analytics, available datasets (e.g.: census data, national accounts, etc.) and news reporting.
- **(Limited) Partner data collection**, including from government (when data was already available) and development partners (in particular from United Nations agencies).
- **Proxy indicators**: from other similar countries and/or similar assessments (e.g.: Beirut RDNA, 2020).

Each sector proceeded with the following assumptions and data sources for the sectoral analysis of baseline, damage, and losses:

Assessment item	Approach and assumptions	Data sources
Agriculture (includes crops and livestock)		
Baseline	Identification of main cropland and geographical distribution, per type of crops; Identification of the type of livestock; Determination of average unit size of assets (harvest quantities per ha, average livestock production per head), and replacement costs.	PAI (Census), Partner's data (FAO, ILO, Ministry of Agriculture), KIIs, literature review.
Damage	Damage consists of the value of replacement costs of crops, trees, and livestock. Damage to cropland was established through the percentage of agriculture areas burned; Damage to livestock was established through extrapolation and data triangulation.	Normalized Burn Ratio derived from LandSat 8 satellite imagery and Wyvern Hyperspectral Imagery, KIIs
Losses	Losses encompass the market price in Lebanon of crop harvest and livestock revenues. For fruit orchards, average yield per hectare and farmgate price per kilo for apricot and avocado orchards were used. Mixed orchards average yield and farmgate price include those of tomatoes, zucchini, avocado, and apricot. Potato and vegetable yields and prices were averaged, while yields for bananas, citrus, tobacco, vineyards, wheat, and barley were obtained through KIIs. Olive yields and prices were averaged between those for consumption and oil production. Livestock revenues consist of the value of meat as the single unit price, and animal-specific byproducts like milk, eggs, tallow, and wool. Production assumptions were made for chicken, cattle, goats, and sheep based on KIIs.	KIIs, literature review.
Commerce (commercial trade, professional services, and manufacturing/ industry; excludes financial services) Tourism & Hospitality (restaurants, hotels, hospitality services, and other tourism-related facilities)		
Baseline	Population growth projection on the commerce/tourism establishment census of 2004, as it is the only and most recent source providing a distribution of commerce establishments nation-wide over the concerned economic activities.	Establishment Census of 2004 (Lebanese Central Administration of Statistics)
Damage	The team used the geographic distribution of housing damage at subdistrict level as a proxy to estimate damage to commerce/ tourism establishments in conflict-affected areas.	Proxy Data

Assessment item	Approach and assumptions	Data sources
Losses	<p>The loss estimates for the commerce as well as tourism and hospitality sectors utilize two key data sources: (i) the 2004 establishment census that contains the distribution of establishments by economic activity and by district – a growth factor relative to population growth was applied to obtain an approximation of the 2023 distribution, and (ii) the national accounts, which provides the value added of economic activity – the data was based on past trends and team estimates of the market progression. Due to lack of data on size and production capacity of establishments, the team assumed that all establishments in all districts produce equal outputs. Districts were divided into direct high impact areas; direct moderate impact (districts adjacent to high impact areas that have seen moderate levels of conflict incidents); and indirect impact zones (without direct conflict incidents) with assumptions developed relevant to each zone and asset type. A time variable was also integrated across districts to account for the geographic escalations of the conflict.ⁱⁱⁱ These percentages were then applied to the GDP estimates (of each establishment) to obtain proxies on output losses and estimated wage losses.</p>	<p>Establishment Census of 2004 (Lebanese Central Administration of Statistics) 2020 National Accounts Proxy Data KIIs</p>

Displacement

Displacement tracking and analysis

- Displacement tracking data is indicative in light of the emergency situation and the informal nature of displacement. IDP is defined as per the definition of the IOM DTM.
- Emergency needs for this assessment include basic needs as defined in the Poverty and Equity Assessment (excluding shelter and education) based on the updated poverty line.
- Assumption that all IDPs in collective shelters need assistance and at least 50 percent of IDPs outside collective shelters need assistance.
- Assumption that women, children, the elderly, persons with disabilities, refugees and some migrant workers are particularly vulnerable.
- IOM, Oct 10 2024. DTM Lebanon - Mobility Snapshot - Round 52 - 10-10-2024. IOM, Lebanon.
- International Organization for Migration (IOM), Nov 07 2024. DTM Lebanon - Mobility Snapshot - Round 60 - 07-11-2024. IOM, Lebanon..
- UNHCR Syria Flash Update #18: Response to Displacement from Lebanon to Syria (Reporting period: 24 September - 25 October 2024).
- World Bank. 2024. "Lebanon Poverty and Equity Assessment 2024: Weathering a Protracted Crisis.
- IPSOS displacement data extrapolated based on anonymized GDPR-compliant cellphone data across Lebanon.

Assessment item	Approach and assumptions	Data sources
Employment Losses	Based on IOM's estimated number of IDPs and their demographics, the size of the working age population (WAP) amongst them (aged 19+) was estimated. Based on their place of origin, corresponding labor force participation rates (LFPRs) and Unemployment Rates (URs) were applied to reach to an estimated size of the employed amongst IDPs pre-conflict. It is important to note the following assumptions (A) made and notes (N) to keep in mind: (i) A1: IDPs have the same LFPR and UR than the WAP in the places of origin; (ii) A2: all those in the labor force have lost their employment; (iii) A3: applying the same demographic share by age category for all places of origin (which might not be the case, for e.g., more women/children might be IDPs than other regions); (iv) N1: estimated LFPR cover 15+ age group while the WAP is calculated for 19+ based on data available from IOM; (vi) N2: it does not take into account the impact of employment from the reduced economic activities in 'safer' areas; (vii) N3: as per CAS' 2022 follow up to the labor force survey, the average monthly earnings of employees was 2,300,000 LBP, applying the World Bank estimate of the exchange rate average in 2022 of 27,309 LBP/US\$ leads to an average monthly earnings equivalent to US\$84.22.	IDPs numbers from IOM's Mobility Snapshot Round 60; LFPR, UR and average earnings from CAS 2022 follow up to the LFS

Education		
Baseline	Lebanon ranking in 2018 PISA results, Lebanon results in TIMSS, QITABI 2 literacy and numeracy (evolution of Student Performance in Primary Public schools in Lebanon), World Bank 2022-2023 simulated learning outcomes.	<i>World Bank: Lebanon PISA 2018 QITABI 2 literacy and numeracy baseline report</i> (USAID) <i>Another lost year: Estimating the educational and economic costs of Lebanon's public-school closures in 2022-23</i> (World Bank)
Damage	Damage to schools was not calculated in the DaLA as it was minimal as of September 27, 2024.	N/A
Losses	<p>Time Frame: Losses are calculated for the full 2023-24 academic year and the first term of the 2024-25 academic year (September-December 2024), based on displacement up until September 27, 2024.</p> <p>Temporary Learning Spaces: Additional costs associated with setting up temporary learning spaces are estimated at US\$ 75 per affected student.</p> <p>Private School Revenues: Losses in private school revenues are estimated based on the assumption that 40 percent of displaced students will withdraw from private schools (primary and secondary), assuming 40 percent of all displaced private school students withdraw from private schools, while 60 percent continue to stay enrolled and pay tuition despite being displaced. However, this estimate likely underestimates the total revenue loss, as it does not account for lost fees from private TVET centers and private universities.</p> <p>Tuition Fees: For the 2023-24 academic year, it is assumed that affected schools lost a full year of tuition fees for the 40 percent of displaced students. For the 2024-25 academic year, losses are calculated for the first term (3 months, September-December 2024) of schooling, as private school tuition fees are paid termly. If the conflict continues, affected private schools are expected to lose a similar amount for each of the next two terms of the 2024-25 academic year (January-June 2025).</p>	<p>Calculated based on Beirut RDNA methodology, with triangulation from IPSOS data.</p> <p>Another lost year: estimating the Educational and Economic Costs of Lebanon's Public School Closures in 2022 – 23 (World Bank)</p>

Assessment item	Approach and assumptions	Data sources
Environment (includes natural resources or the “Green environment”, and solid waste or the “Brown environment”)		
Baseline	<p>The areas for riverine ecosystem are estimated based on a width of 100m (50m from each side of the stream).</p> <p>The areas for coastline ecosystem are estimated based on a width of 1 km.</p> <p>The assessment of the number of waste collection bins and trucks in each district was made using assumptions based on the number of inhabitants and the quantity of waste generated. The estimates were based on an assumed collection frequency of 3-4 days per week and a filling rate of bins up to 80 percent of their volumes. For simplification in the absence of relevant data, all trucks were assumed to have a 6 tons capacity while bin volumes are 240 liters, which is in line with the recent assessment and roadmap conducted jointly by the Ministry of Environment and the World Bank.</p> <p>Trucks vary in size from open tipper pick-up truck (5-6 m³) to compactor vehicles (6 tons or 10 tons). Sorting and composting facilities vary in capacity from 1 ton per day to 25 ton per day (in Kham) and depending on technology used.</p>	<p>Hyper-Spectral Satellite Imagery</p> <p>Partner 's data</p> <p>Proxy Data</p> <p>Government and World Bank data^{iv}</p>
Damage	<p>Damage to Green Environment assets was established through the percentage of Environment Areas burned. It is assumed that 40 percent of waste collection bins and trucks across the affected districts have suffered some level of damage, which was corroborated through ground verification conducted with local authorities from the affected area. In Baabda district, damage to bins was assumed to be 60 percent while on trucks it was assumed to be 10 percent. Damage to sorting and composting facilities were estimated based on the capacity of the facilities (from 1 ton per day to 25 ton per day) and the technology used.</p>	<p>Normalized Burn Ratio derived from LandSat 8 satellite imagery, Wyvern Multi-spectral Satellite Imagery, KIIs</p>
Losses	<p>Losses from the Green Environment encompass losses from ecosystem services provided by the different Green Environment assets (forest, grassland, riverine ecosystems, wetland and coastline).</p> <p>Losses from the Brown Environment include the loss of revenues from waste recycling and the additional cost for waste management generated by displaced populations in host communities.</p>	<p>Literature review</p> <p>Proxy Data</p> <p>WB and Ministry of Environment, 2023. Solid Waste Management Roadmap. https://documents1.worldbank.org/curated/en/099112023054014380/pdf/P179435059e4c00080bd5a091bc0270002d.pdf</p> <p>IOM DTM Displacement tracking Matrix Round 52 dated October 10, 2024.</p>

Assessment item	Approach and assumptions	Data sources
Health (includes hospitals and primary healthcare centers)		
Baseline	47 Hospitals (public and private) and 72 Primary Healthcare Centers were providing health services in the affected areas prior to the conflict	MoPH data
Damage	Asset-based damage assessment of facilities included in baseline. A field study for a sample of them took place through direct contact with administrators at each of the facilities.	Field Based Data, MoPH data, satellite imagery
Losses	Losses were assessed through a field survey led on the ground and by phone for a sample of facilities, complemented by data provided by the Ministry of Health. They include: <ul style="list-style-type: none"> (i) Additional costs due to increased utilization of health resources for treatment of injuries and sicknesses resulting from conflict and displacement; (ii) loss due to decreased revenue in health facilities rendered inoperable, calculated based on functionality data and average health facility revenue; (iii) loss due to reduced availability of Human Resources for Health in affected areas calculated based on number of health personnel killed and injured. 	Literature review, MoPH data, proxy data, 2020 Beirut RDNA
Housing (includes residential properties for rent or ownership)		
Baseline	Inventory ratios were applied to the housing stock for each district. Unit costs were estimated based on KIIs and PAI; these are likely to be conservative estimates. The following housing typology was used: House, Villa, Apartment Building, Informal. Apartment buildings were assumed to have 16 housing units in Mount Lebanon (Baabda district – Southern Beirut), 8 for Beirut and 3.01 for all other administrative areas covered, to reflect variable urban density.	Central Administration of Statistics, Global Urban Heights Footprint, KII, PAI, building footprint baseline was collected from the Microsoft Machine Learning building and from Open Street Map building databases and intersected with the areas of interest admin areas.
Damage	Damage was assessed by initially running SAR analysis across the entire area of concern. This was followed by a manual review of high-resolution satellite imagery for approximately 10.5% of the grid cells, including sensitive areas such as Beirut, Mount Lebanon, and Tyre. The assessment was further refined by cross-referencing incidents from the ACLED and WNEP databases, excluding outlier districts with no recorded incidents. Damage costs were estimated based on physical status (partial damage or complete destruction) and the replacement value of the asset class (unit cost). The replacement values only include construction costs; they don't cover any land value and profit margins and can therefore not be compared with advertised real estate values.	SAR, Very High-Resolution Satellite Imagery (30cm) and KIIs
Losses	Losses included the rental revenue generated by the residential properties (applying an 18.4 percentage of housing under rent), operating and maintenance revenue generated by the housing wraparound services providers, the wage income receivable to the domestic workers and housekeeping staff employed by the families, and the property tax.	Field Based Data, Literature Review

5. Average unit sizes and unit costs

The following average unit sizes and unit costs were used in this assessment. These were obtained through data triangulation from different sources, including PAI, information shared by government and development partners, a private construction company in Lebanon, the Lebanese Order of Engineers and Architects (OEA), and proxy data from other assessments conducted in countries with similar geographic and socio-economic contexts.

Asset	Unit Size	Unit of Measurement	Unit Cost (US\$)	Sources
Agriculture				
Banana Plantations (Plants)	N/A	ha	\$1,941	KIIs, Team Estimate
Banana Plantations (Harvest)	10,000 Kg/ha	Kg	\$0.7	KIIs
Citrus Orchard (Plants)	N/A	ha	\$1,000	KIIs, Team Estimate
Citrus Orchard (Harvest)	27,400 Kg/ha	Kg	\$0.7	KIIs
Fruit Orchard (Plants)	N/A	ha	\$2,250	KIIs
Fruit Orchard (Harvest)	35,000 Kg/ha	Kg	\$1.4	KIIs
Mixed Orchards and Fields (Plants)	N/A	ha	\$2,475	KIIs
Mixed Orchards and Fields (Harvest)	50,000 Kg/ha	Kg	\$0.9	KIIs
Olive Groves (Plants)	N/A	ha	\$3,400	KIIs, Team Estimates
Olive Groves (Harvest)	650 Kg/ha	Kg	\$4	KIIs
Potatoes and Vegetables (Seeds)	N/A	ha	\$2,700	KIIs, Team Estimates
Potatoes and Vegetables (Harvest)	55,000 Kg/ha	Kg	\$0.5	KIIs, Team Estimates
Tobacco (Plants)	N/A	ha	\$4,300	KIIs
Tobacco (Harvest)	1,000 Kg/ha	Kg	\$10	KIIs
Vineyard (Plants)	N/A	ha	\$3,823	KIIs
Vineyard (Harvest)	5,000 Kg/ha	Kg	\$1.2	KIIs
Wheat and Barley (Seeds)	N/A	ha	\$1,606	KIIs, Team Estimate
Wheat and Barley (Harvest)	3,500 Kg/ha	Kg	\$0.26	KIIs, Team Estimate
Chicken (Animal)	N/A	Head	\$10	KIIs
Chicken (Eggs)	300 eggs/year	Egg	\$0.2	KIIs
Cattle (Animal)	N/A	Head	\$1,000	KIIs
Cattle (Milk)	10,000 L/year	L	\$1	KIIs
Ducks (Animal)	N/A	Head	\$20	KIIs

Asset	Unit Size	Unit of Measurement	Unit Cost (US\$)	Sources
Ducks (For consumption)	N/A	Head	\$30	KIIs
Goats (Animal)	N/A	Head	\$100	KIIs
Goats (Milk)	575 L/year	L	\$1	KIIs
Horses (Animal)	N/A	Head	\$3,000	Team Estimate
Pigs (Animal)	N/A	Head	\$300	Team Estimate
Sheep (Animal)	N/A	Head	\$300	KIIs
Sheep (Milk)	300 L/year	L	\$1	KIIs
Commerce				
Industry				
Food and Beverage	293.6	m ²	\$1,200	KIIs
Light Manufacturing	532.9	m ²	\$1,100	KIIs
Heavy Manufacturer	462.2	m ²	\$1,450	KIIs
Repair (Vehicles and Motorbikes)	333.6	m ²	\$900	KIIs
Commercial Trade				
Retail	387.5	m ²	\$750	KIIs, team estimates
Wholesale	454 m ²	m ²	\$1,150	KIIs, team estimates
Trade Logistics	500 m ²	m ²	\$700	KIIs, team estimates
Services	250	m ²	\$750	KIIs, team estimates
Education				
Additional cost for temporary learning spaces	N/A	student	\$75	Team estimates based on Minister's decision (prior to the conflict) to ask parents to contribute \$50 per first shift (Lebanese) and \$100 per second shift (non-Lebanese) student towards school operating costs.
Lost Private School Fees	N/A	Academic year	\$4,500	Team estimates

Asset	Unit Size	Unit of Measurement	Unit Cost (US\$)	Sources
Environment				
Damage to Riverine zone	N/A	ha	\$33,000	Proxy (Gaza RDNA/ wetland)
Loss of Riverine Ecosystem services (per month)	N/A	ha	\$2,513	WB, Cost of Environmental Degradation in Lebanon for 2023
Damage to Forest including shrubland	N/A	ha	\$2,390	Proxy (Previous Gaza & Libya RDNAs)
Loss of Forest ecosystem services (per month)	N/A	ha	\$123	WB, Cost of Environmental Degradation in Lebanon for 2023
Damage to Wetland	N/A	ha	\$33,000	Proxy (Gaza RDNA)
Loss of Wetland ecosystem (per month)	N/A	ha	\$1,183	Proxy (Previous Gaza & Libya RDNAs)
Damage to Coastline	N/A	ha	\$80,000	Proxy (Gaza RDNA)
Loss of Coastline ecosystem services (per month)	N/A	ha	\$6,158	Proxy (Previous Gaza & Libya RDNAs)
Loss of Grassland ecosystem services (per month)	N/A	ha	\$18.42	WB, Cost of Environmental Degradation in Lebanon for 2023
Collection Trucks	6 tons	Unit	\$35,000	Team estimates
Collection Trucks	10 tons	Unit	\$60,000	Team estimates
Waste Bins	240 L	Unit	\$50	Team estimates
Waste Bins	1100 L	Unit	\$300	Team estimates
Treatment Facility	12 tons per day	Unit	\$350,000	Team estimates

Asset	Unit Size	Unit of Measurement	Unit Cost (US\$)	Sources
Health				
Hospital	1,224	m ²	\$1,800	Proxy (Port of Beirut explosion RDNA)
Primary Health Care Center	253	m ²	\$900	Proxy (Port of Beirut explosion RDNA)
Breakdown of severity of injuries	N/A	N/A	45% minor, 30% moderate, 17% critical requiring surgery, 4% severe requiring intensive care without surgery, 2% severe requiring one surgery and 2% severe requiring multiple surgeries	Team estimates based on MoPH severity categories
Average cost of treatment for injuries	N/A	N/A	\$50 minor, \$250 moderate, \$1,200 critical requiring surgery, \$1,200 severe requiring intensive care without surgery, \$2,400 severe requiring one surgery and \$3,600 severe requiring multiple surgeries	MoPH tariffs
Average revenue per hospital bed per day	N/A	N/A	\$1,875	Team estimates based on proxy (Port of Beirut RDNA)
Average revenue per Primary Health Care Center per day	N/A	N/A	\$1,250	Team estimates based on proxy (Port of Beirut RDNA)
Average duration required before damaged health facility is rendered operable	N/A	N/A	90 days	Team estimates based on proxy (Port of Beirut RDNA)

Asset	Unit Size	Unit of Measurement	Unit Cost (US\$)	Sources
Housing				
House (replacement cost, just construction)	170 m ²	m ²	\$400	OEA ^v
Villa (replacement cost, just construction)	280 m ²	m ²	\$600	OEA, team estimates
Apartment (unit) (replacement cost, just construction) - other districts	120 m ²	m ²	\$450	OEA, team estimates
Informal (replacement cost, just construction)	60 m ²	m ²	\$300	Team Estimates
House (Monthly Rent)	N/A	Unit	\$300	KII, Team estimates
Luxury Villa (Monthly Rent)	N/A	Unit	\$800	KII, Team estimates
Apartment (unit) (Monthly Rent)	N/A	Unit	\$200	KII, Team estimates
Informal (Monthly Rent)	N/A	Unit	N/A	KII, Team estimates
House (Monthly Maintenance)	N/A	Unit	\$100	KII, Team estimates
Villa (Monthly Maintenance)	N/A	Unit	\$200	KII, Team estimates
Apartment (unit) (Monthly Maintenance)	N/A	Unit	\$50	KII, Team estimates
Informal (Monthly Maintenance)	N/A	Unit	0	KII, Team estimates
Property Tax (per property value)	N/A	\$	0.65%	OEA
House (Employed persons monthly wage)	1	Unit	\$200	Team estimates
Villa (Employed persons monthly wage)	3	Unit	\$400	Team estimates
Apartment (unit) (Employed persons monthly wage)	1	Unit	\$200	Team estimates
Tourism & Hospitality				
Restaurants and cafes	250	m ²	\$1,100	KIIs, team estimates
Hotels	550	m ²	\$1350	KIIs, team estimates
Other tourism-related facilities and hospitality services	400	m ²	\$950	KIIs, team estimates

6. Limitations

Limited sectoral scope. The assessment focuses on seven key sectors. This limitation inherently means that the analysis does not encompass the full spectrum of the country's economic, social, and infrastructural landscape.

Limited spatial scope. The damage assessment covers a minimum of 80 percent of conflict-affected areas in six out of Lebanon's nine governorates (Baalbek-Hermel, Beirut, Bekaa, Mount Lebanon, Nabatiyeh, and South), which are the most-affected governorates as of the cut-off dates for this assessment. This limitation means that not all conflict incidents and related impacts have been captured.

Remote nature of the assessment. Given the security challenges and logistical constraints linked to the conflict, the assessment has been conducted primarily through remote means. This reliance on remote data collection methods increases the risk of inaccuracy in the assessment. For these reasons, the findings should be interpreted as preliminary estimates.

Snapshot character. The assessment covers the estimated impact of the ongoing conflict taking place in Lebanon between October 8, 2023, and October 27, 2024, for commerce, health, housing, tourism and hospitality and September 27, 2024, for agriculture and environment, and estimates losses for a period of 12 months only. With the conflict still ongoing at the time of publication of this assessment, it is likely that both damage and losses will further accumulate. In addition, the type of losses that have been assessed usually last longer than one year (e.g. they can go up to 10 years for some sectors such as the environment).

No coverage of recovery and reconstruction needs. The current assessment is inherently backward-looking, focusing on estimating the damage that has already occurred and losses for a one-year time inferred from the damage and conflict-related displacement. Contrary to a full-fledged RDNA or PDNA, it does not identify forward-looking recovery and reconstruction needs, which are critical for recovery planning.

Annex A endnotes

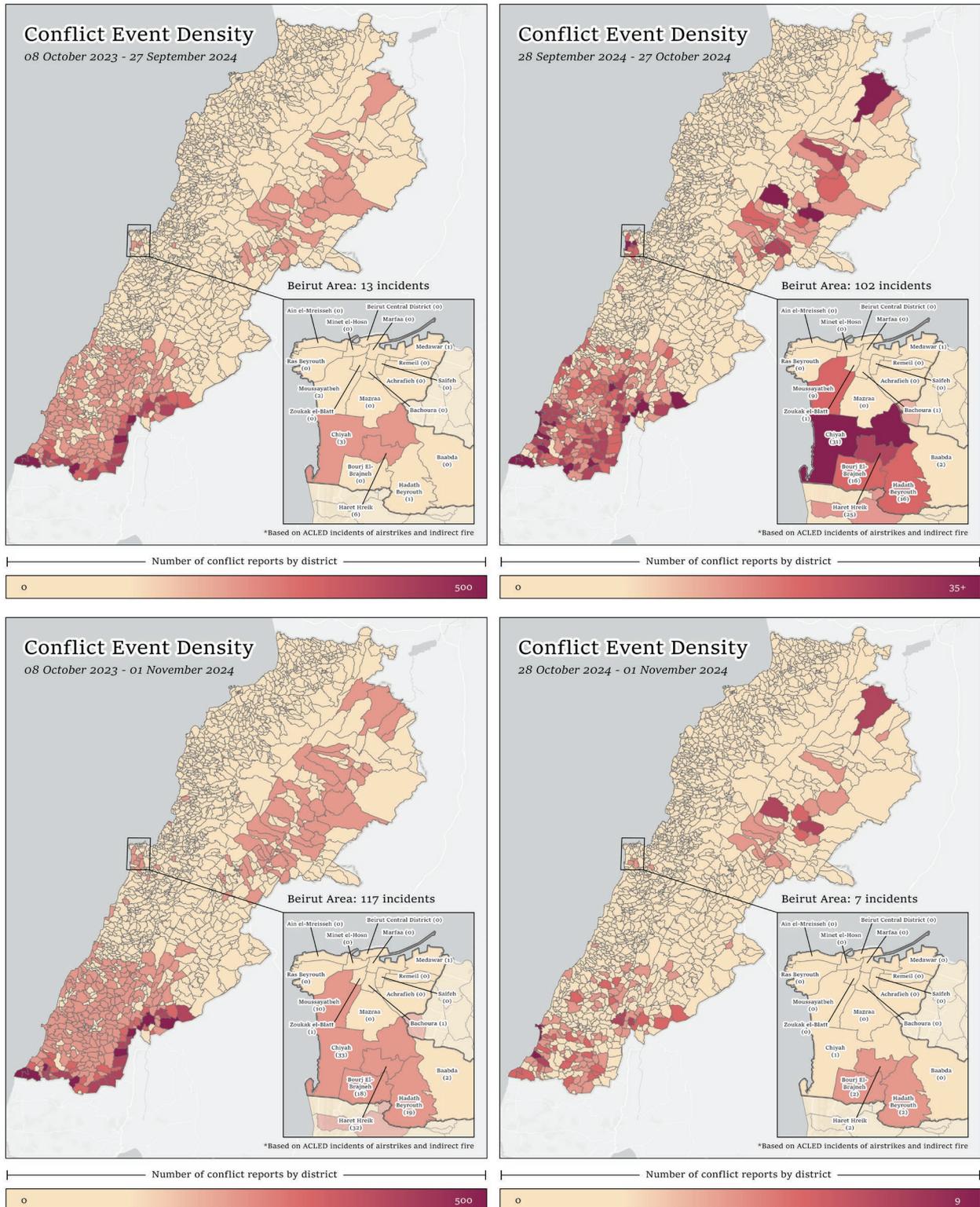
- i For example: Gaza (2021 and March 2024), Libya Floods (February 2024), Syria Earthquake (2023), Ukraine (2022), Pakistan Floods (2022), Beirut (2020).
- ii Ipsos is a multinational research firm with a global network of over 22,000 surveyors in 95 countries and an extensive network of data suppliers. Ipsos has extensive experience in damage data collection, having undertaken multiple projects on this topic for the WB.
- iii

		Direct high impact area	Direct moderate impact area	Indirect impact area
High conflict intensity (October - December 2023 & July - October 2024)	Manufacturing - light and heavy	95%	70%	10%
	Wholesale and retail	95%	60%	20%
	Tourism and hospitality	100%	85%	75%
	Services	90%	50%	5%
	Food and beverage	90%	50%	0%
		Direct high impact area	Direct moderate impact area	Indirect impact area
Moderate conflict intensity (January 2024 - June 2024)	Manufacturing - light and heavy	20%	10%	3%
	Wholesale and retail	20%	10%	10%
	Tourism and hospitality	70%	60%	50%
	Services	20%	10%	3%
	Food and beverage	15%	5%	0%

- iv MoE/World Bank, 2023. Lebanon Solid Waste Roadmap 2023–2026: Towards an Integrated Solid Waste Management System. Lebanon. <https://documents1.worldbank.org/curated/en/099112023054014380/pdf/P179435059e4c00080bd5a091bc0270002d.pdf>.
- v Order of Engineers and Architects, Lebanon. https://www.oea.org.lb/Library/Files/Arabic/Downloads/%D8%A7%D8%B3%D8%AA%D9%85%D8%A7%D8%B1%D8%A7%D8%AA/Construction_Applications/namazij%20moamat%20feb%202018/%D9%85%D9%84%D8%AD%D9%82%20%D8%A7%D9%84%D8%AA%D9%83%D9%84%D9%8A%D9%81.pdf.

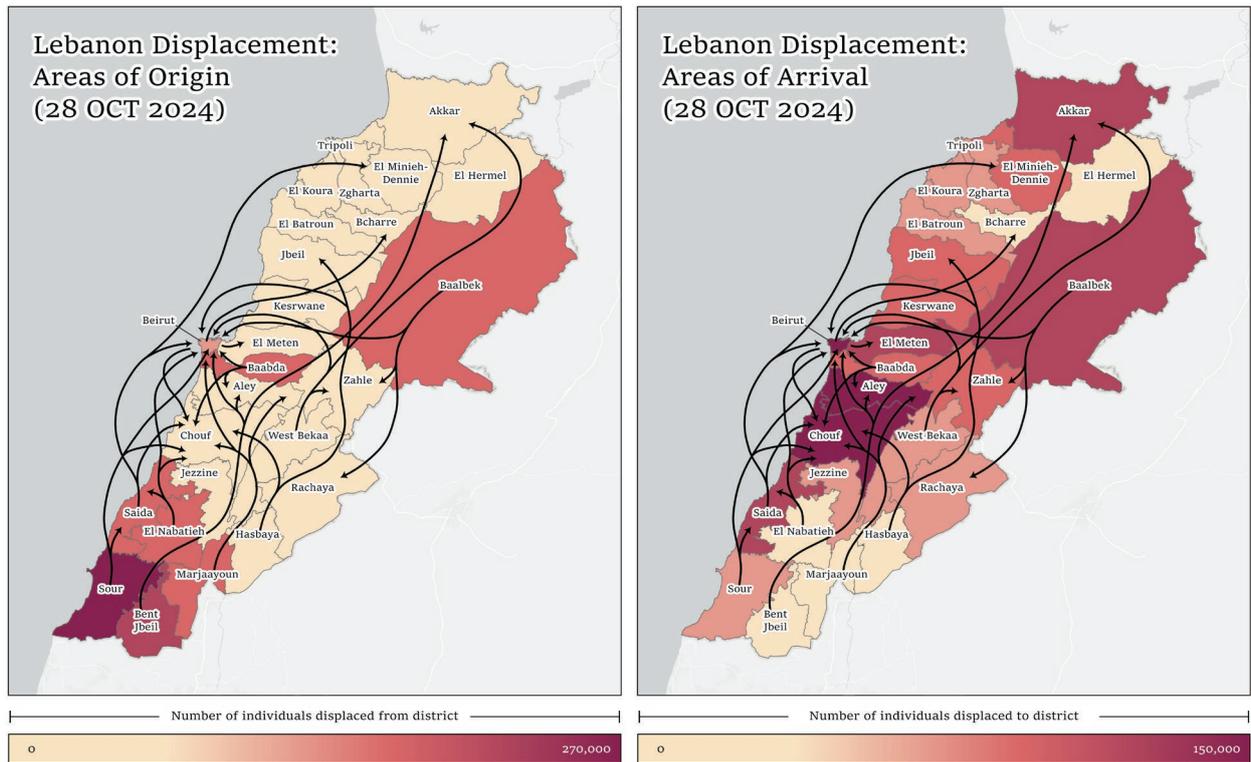
ANNEX B: MAPS AND FIGURES

Figure 1: Evolution of conflict before and after assessment cut-off dates



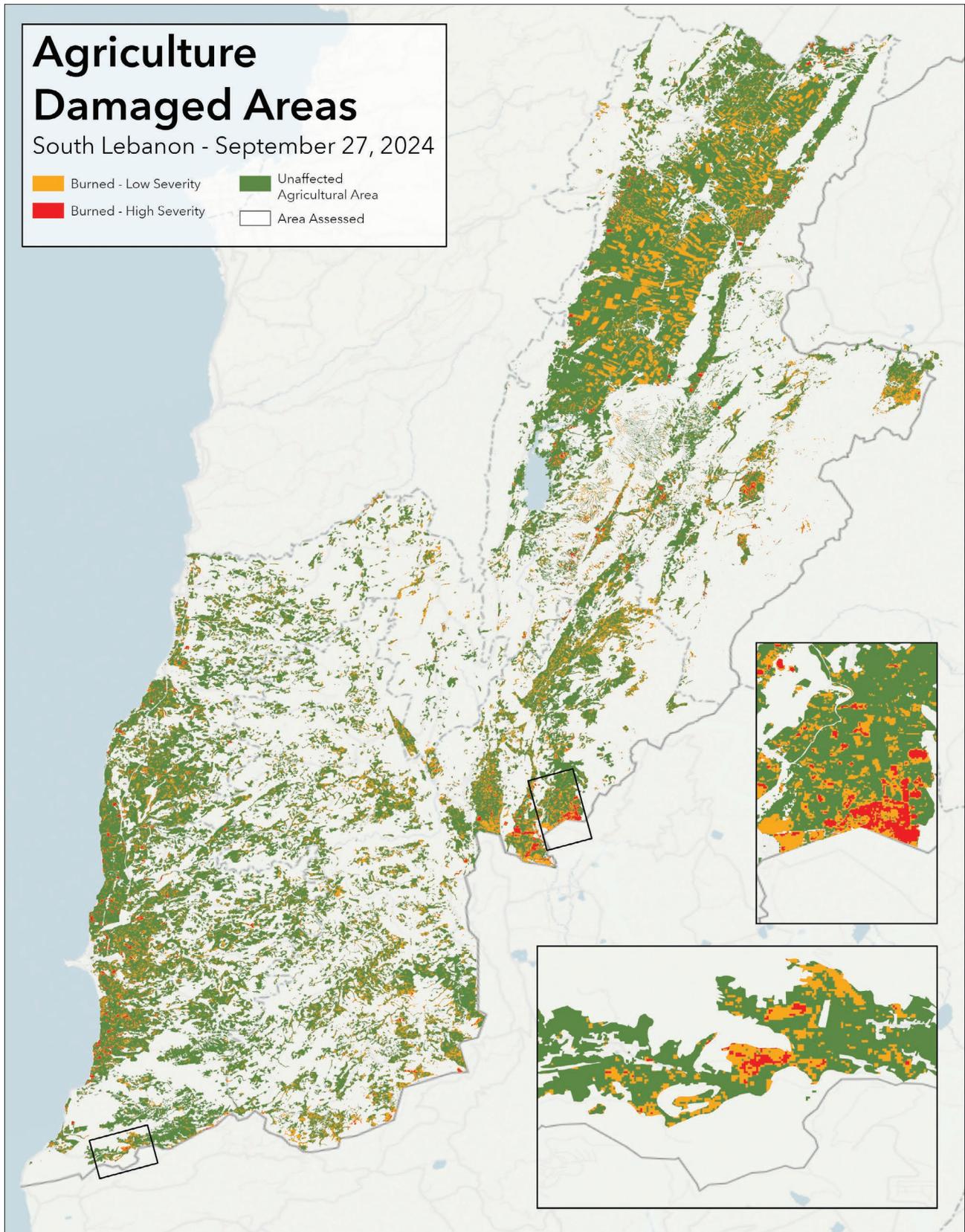
Source: Maps generated for the World Bank, IPSOS

Figure 2: Displacement patterns as of October 28, 2024



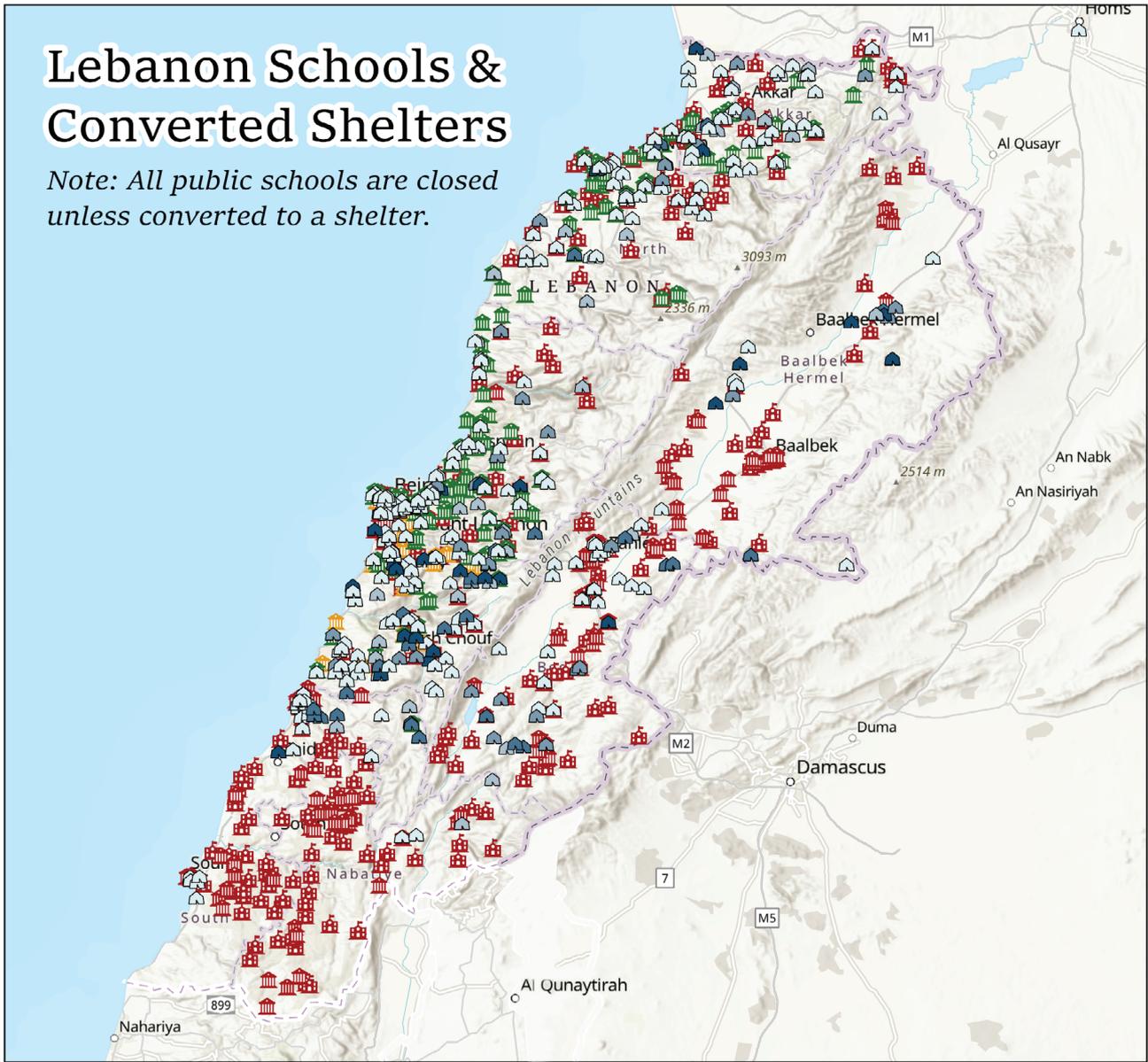
Source: Maps generated for the purpose of this assessment, IPSOS

Figure 3: Agriculture damaged areas in Southern Lebanon as of September 27, 2024



Source: Map generated for the purpose of this assessment, IPSOS

Figure 4: Functionality of schools in Lebanon as of September 27, 2024



Lebanon Schools & Converted Shelters

Note: All public schools are closed unless converted to a shelter.

Facility Type	Fully Functional	Fully Functional (Hybrid)	Fully Functional (In Person)	Fully Functional (Online)	Partially Functional (Online)	Partially Functional	Not Functional	Converted Shelter	Grand Total
Private School	92	1	40	9	20	7	131		300
Private School - Converted Shelter								5	5
Public School							300		300
Public School - Converted Shelter								416	416
Grand Total	92	1	40	9	20	7	431	421	1021

Functional

Partially Functional

Not Functional

Private Schools Public Schools

o

18

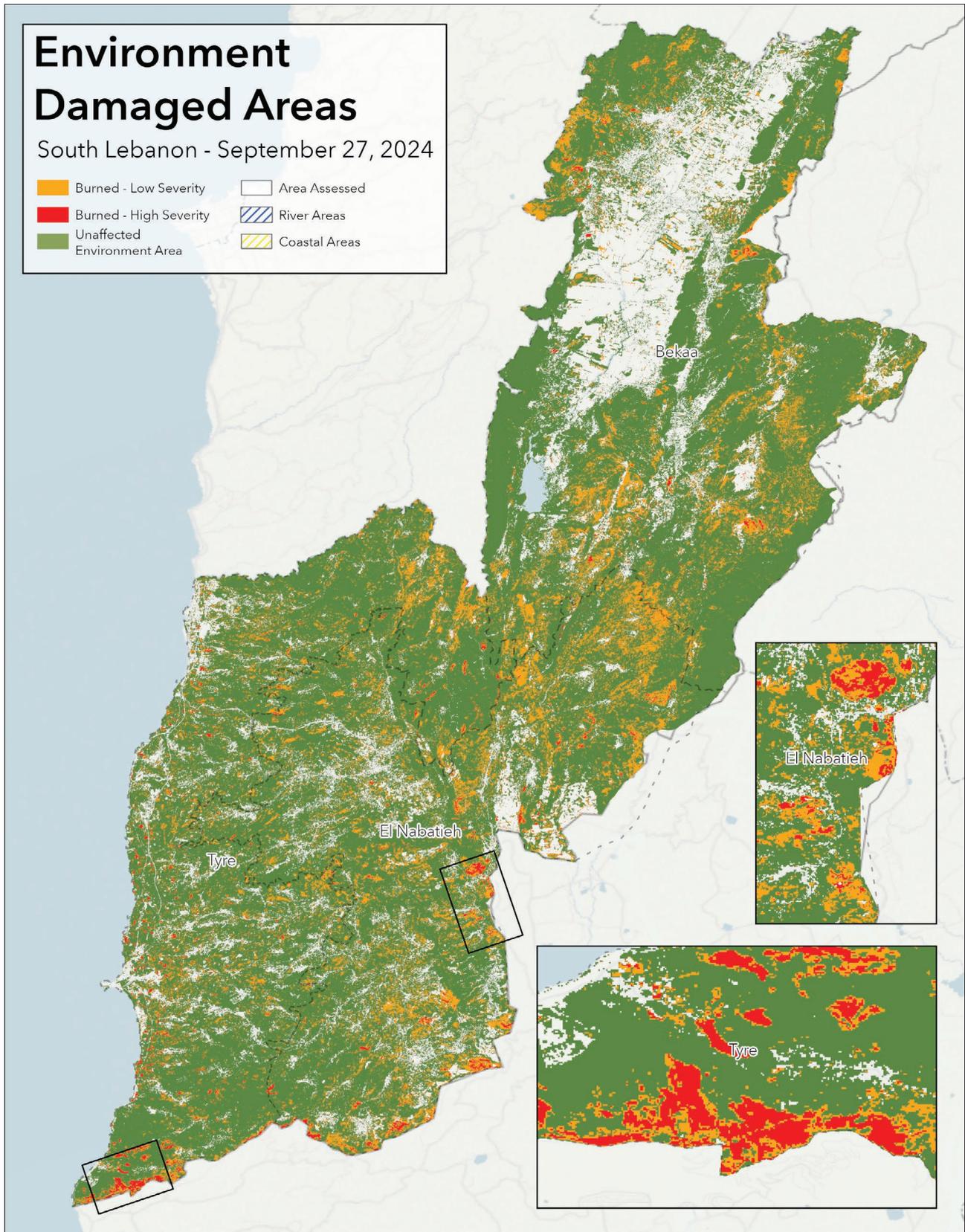
Shelter Capacity (Median: 120)

550

Shelters (421 converted schools)

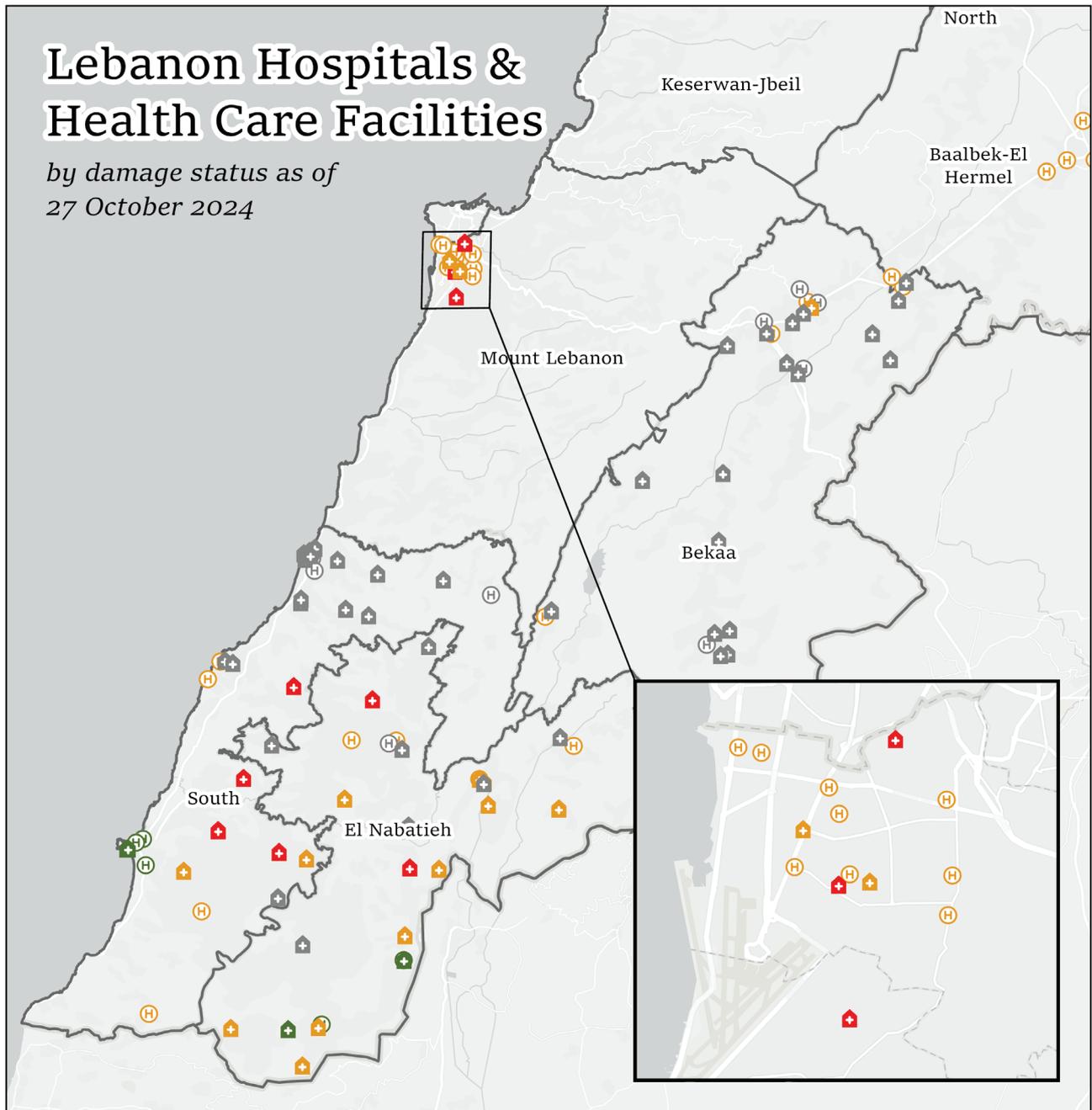
Source: Map generated for the purpose of this assessment, IPSOS

Figure 5: Environment damage as of September 27, 2024



Source: Maps generated for the purpose of this assessment, IPSOS

Figure 6: Damage to hospitals and healthcare facilities as of October 27, 2024

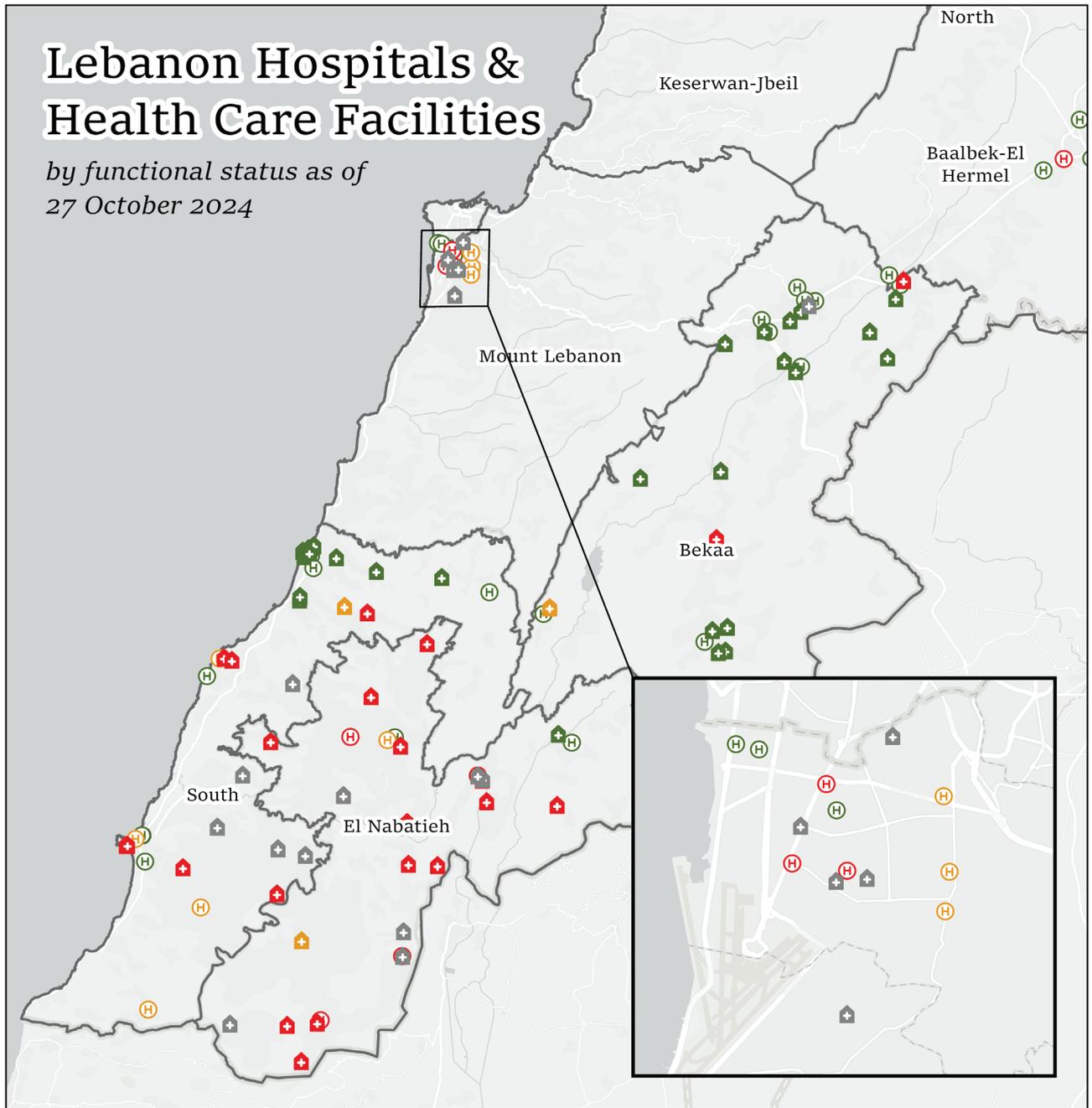


 Hospitals  Primary Healthcare Facilities

Facility Type	Destroyed	Partial Damage	No Observable Damage	Unknown	Baseline	% Impacted
Hospital		31	6	10	47	66.00%
Primary Health Care Centers	10	16	4	42	72	36.10%
Baseline	10	47	10	52	119	47.90%

Source: Maps generated for the purpose of this assessment, IPSOS

Figure 7: Functionality of hospitals and healthcare facilities as of October 27, 2024

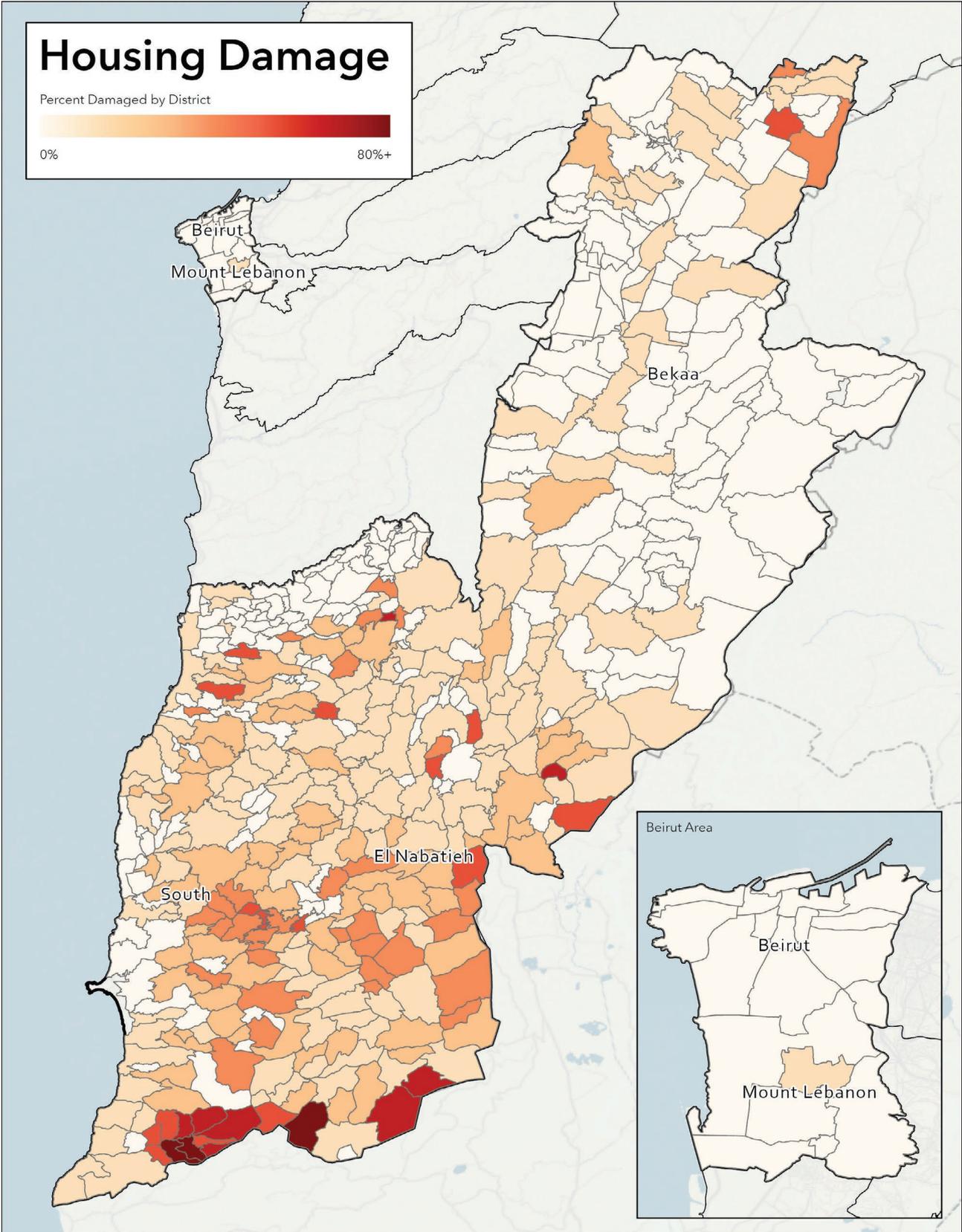


 Hospitals  Primary Healthcare Facilities

Facility Type	Closed	Not Functional	Partially Functional	Fully Functional	Unknown	Baseline	% Impacted	
Hospital		1	9	8	29	47	36.2%	
Primary Health Care Centers			22	4	27	19	72	36.1%
Baseline		1	31	12	56	119	36.1%	

Source: Maps generated for the purpose of this assessment, IPSOS

Figure 8: Housing damage map as of October 27, 2024



Source: Map generated for the purpose of this assessment, IPSOS



GFDRR
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