

PHASE I DIAGNOSIS

Urban Resilience Diagnosis

Union of Municipalities of Saida-Zahrani

SOUTH LEBANON • 2025

MUNICIPALITY OF SAIDA • MEDCITIES • BARCELONA CITY COUNCIL

Prepared by the Hariri Foundation for Sustainable Human Development

APPLYING UN-HABITAT'S CITY RESILIENCE PROFILING TOOL

About this diagnosis

THE DIAGNOSIS

This diagnosis was prepared by the **Hariri Foundation for Sustainable Human Development** through its Saida Urban Observatory, established within the Municipality of Saida. It was commissioned by **Barcelona City Council** and coordinated by **MedCities** under the Risk Map of Saida and Multilevel Resilience Diagnosis project, with the Municipality of Saida and the Union of Municipalities of Saida-Zahrani as institutional counterparts. The analytical framework is **UN-Habitat's City Resilience Global Programme** (CRGP) and its City Resilience Profiling Tool (CRPT, 2018), applied at Union scale. The diagnosis is the first analytical output of the Observatory.

Disaster data: Lebanese Red Cross Disaster Risk Reduction Unit (LRC-DRR). Hazard maps: National Centre for Scientific Research, Lebanon (CNRS-L). Methodological support: Urban Resilience Hub, UN-Habitat City Resilience Global Programme, Barcelona.

PARTNERS

OWNED BY	PREPARED BY	FRAMEWORK
Municipality of Saida · MedCities · Barcelona City Council	Hariri Foundation for Sustainable Human Development	UN-Habitat CRGP · CRPT

INSTITUTIONAL ACKNOWLEDGEMENTS

Appreciation is extended to the Governorate of South Lebanon, the Union of Municipalities of Saida-Zahrani, Lebanese Civil Defence, UN-Habitat (Barcelona and Lebanon), local civil society organisations, and the private sector, for data provision and institutional collaboration. The diagnosis benefited from sustained engagement by mayors and municipal staff across the sixteen member municipalities.

HOW THIS DIAGNOSIS IS TO BE USED

01 A standing baseline. The ranked catalogues, indicator audit and synergy network pass to the Saida Urban Observatory as its monitoring baseline, a continuous evidence instrument rather than a one-off study.	02 A hand-off to Phase II. The diagnosis frames the forthcoming Saida-Zahrani Resilience Action Plan, where resilience actions are designed, sequenced and costed.
--	--

RECOMMENDED CITATION

Municipality of Saida, MedCities and Barcelona City Council (2025). *Saida-Zahrani Urban Resilience Diagnosis: Phase I*. Prepared by the Hariri Foundation for Sustainable Human Development. Saida, Lebanon.

Union of Municipalities of Saida-Zahrani, South Lebanon. Owned by the Municipality of Saida, MedCities and Barcelona City Council. Prepared by the Hariri Foundation for Sustainable Human Development, applying UN-Habitat's City Resilience Profiling Tool. First analytical output of the Observatory. Report window July to December 2025, validated early 2026.

SAIDA-ZAHRANI · URBAN RESILIENCE DIAGNOSIS

Credits and Acknowledgements

This diagnosis was commissioned by Barcelona City Council and coordinated by MedCities under the Risk Map of Saida and Multilevel Resilience Diagnosis project, with the Municipality of Saida and the Union of Municipalities of Saida-Zahrani as institutional counterparts. It was developed and authored by the Hariri Foundation for Sustainable Human Development through the Saida Urban Observatory, established within the Municipality of Saida, applying UN-Habitat's City Resilience Global Programme (CRGP) and its City Resilience Profiling Tool (CRPT) as the analytical framework. The diagnosis is the first analytical output of the Observatory and provides a multi-dimensional baseline for the forthcoming Saida-Zahrani Resilience Action Plan.

Funding and coordination

Funding: the work is funded by Barcelona City Council (project representatives Eduard Jose Carrasco Gonzales and Jorge Cortes Roldan).

Coordination: coordinated through MedCities (Josep Canals Molina, Pedro Fernandez Bautista, Carolina Pérez Valverde).

Implementation: senior lead roles from the Hariri Foundation, Kareem Salameh and Mohamad Toufaily, with senior consultant Karine Zoghby. Junior individual expert: Dr Rana Khawand. Field-mission contributors: Amaia Celeya and Helene Fourniere, as freelance contractors.

Institutional partner: the Municipality of Saida and the Union of Municipalities of Saida-Zahrani, with the Mayor of Saida Mr Moustafa Hijazi and DRM Unit Manager Mrs Wafaa Choueib.

Methodological support: Urban Resilience Hub, UN-Habitat City Resilience Global Programme, Barcelona (Esteban Leon, Anna Katrina Karaan, Carol Tadros, and Matias Lastra).

Data and technical partners

The diagnosis draws on geospatial and tabular disaster data from the Lebanese Red Cross Disaster Risk Reduction Unit (LRC-DRR), and hazard maps for floods, wildfires, earthquakes, and landslides from the National Centre for Scientific Research, Lebanon (CNRS-L). Their contribution as data providers is gratefully acknowledged.

Institutional acknowledgements

Appreciation is extended to the Governorate of South Lebanon, the Union of Municipalities of Saida-Zahrani, Lebanese Civil Defence, UN-Habitat (Barcelona and Lebanon), local civil society organisations, and the private sector, for data provision and institutional collaboration. The diagnosis benefited from sustained engagement by mayors and municipal staff across the sixteen member municipalities of the Union, whose participation in workshops, key informant interviews, and focus group discussions grounded every priority finding in institutional reality.

How to cite this report

Recommended citation: Municipality of Saida, MedCities and Barcelona City Council (2025). *Saida-Zahrani Urban Resilience Diagnosis: Phase I*. Prepared by the Hariri Foundation for Sustainable Human Development. Saida, Lebanon.

Commissioned by Barcelona City Council; coordinated by MedCities; produced with the Municipality of Saida and the Union of Municipalities of Saida-Zahrani; analytical framework applied under UN-Habitat's City Resilience Profiling Tool. Partner roles are set out in the Credits above.

SAIDA-ZAHRANI • URBAN RESILIENCE DIAGNOSIS

Table of Contents

Credits and Acknowledgements	3
Funding and coordination.....	3
Data and technical partners.....	3
Institutional acknowledgements.....	4
How to cite this report.....	4
Table of Contents	4
List of Figures	7
List of Tables	8
Abbreviations and Acronyms	9
How to Read This Diagnosis	10
Executive summary	11
The Union.....	11
The method.....	12
The headline priority picture.....	12
Three anchor findings.....	13
A diagnosis, not an action plan.....	14

1 Introduction.....	16
1.1 Background and objectives.....	16
1.2 Geographical scope.....	17
1.3 Why the Union scale.....	18
1.4 The City Resilience Profiling Tool: applied and retrofitted.....	19
1.5 Report structure.....	20
2 Methodology.....	23
2.1 Localising the CRPT.....	23
2.2 Stakeholder engagement.....	24
2.3 Data sources.....	26
2.4 Analytical framework for risk diagnosis and prioritisation.....	27
2.5 Composite priority score.....	28
2.6 Project timeline.....	32
2.7 Limitations.....	32
2.8 International alignment.....	33
3. Saïda-Zahrani in Context.....	36
3.1 Historical context.....	36
3.2 Geographic and spatial profile.....	39
3.3 Demographic and climatic profile.....	44
3.4 Governance and institutional profile.....	49
3.5 Mayor-reported readiness: the readiness paradox.....	54
3.6 Camps as parallel governance geography.....	56
4. Urban Performance Snapshot.....	60
4.1 Data completeness by dimension.....	60
4.2 Environmental dimension.....	61
4.3 Social dimension.....	64
4.4 Economic dimension.....	68
4.5 Institutional dimension.....	71
5. Stresses.....	74
5.1 Overview of the catalogue.....	74
5.2 Four concentrations, and the cross-cutting institutional driver.....	75
5.3 Institutional stresses.....	76

5.4 Economic stresses.....	81
5.5 Environmental stresses.....	86
5.6 Social stresses.....	91
5.7 Stresses under-represented by the workshop channel.....	95
6. Shocks.....	97
6.1 Overview of the catalogue.....	97
6.2 Priority shock cards.....	98
6.3 Shocks below the composite threshold.....	109
6.4 Cascading shock concentrations.....	114
6.5 The Zahrani industrial corridor: a Natech case study (ADJ-3).....	118
7 Risk Synergies.....	123
7.0 The risk landscape: challenges, stresses, shocks.....	124
7.1 Synergy hub atlas.....	124
7.2 Stress-to-stress synergies.....	126
7.3 Shock-to-shock cascades.....	127
7.4 Cross-typology bridges (stress to shock).....	128
7.5 Consensus edges and clusters.....	129
7.6 The full stress-to-shock interaction matrix.....	130
7.7 Priority load by CRPT dimension: a scorecard.....	130
8 Risk Clusters.....	134
8.1 The six clusters at a glance.....	134
8.2 Clustering method.....	135
8.3 Cluster diagnostic logic.....	137
8.4 Cluster composition and PAP impact profiles.....	137
8.5 Individual cluster profiles.....	138
8.6 Hub intensity and priority leverage.....	140
8.7 Cross-cluster synergy interfaces.....	140
9 Systemisation.....	143
9.1 The Urban Observatory.....	143
9.2 Urban Action Profiles.....	144
9.3 The DRM Unit.....	144
9.4 The Regional Technical Office.....	144

9.5 Resilience trajectory to 2050 (CRPT Step 4).....	144
9.6 Resilience-qualities profile (CRGP).....	147
10 Conclusion and Phase II Signals.....	151
10.1 Three anchor findings.....	151
10.2 From evidence to signals.....	153
10.3 Phase II signals.....	153
10.4 The Union's capacities: assets and gaps.....	158
10.5 Post-ceasefire reconstruction context.....	159
10.6 Comparability with the CRGP flagships.....	160
10.7 Lessons-learnt contribution to the CRPT community.....	161
11 References.....	164

List of Figures

Figure 0.1 How to read this report: marker conventions, dimension palette, analytical layers, and the four phases of the diagnostic narrative.....	11
Figure ES.1 The headline priority picture: the leading priority stresses and shocks by composite score, with failure of essential infrastructure (Sh-Tech-1) as the cascade hub through which the others propagate.....	13
Figure 1.1 City ID: the Union of Municipalities of Saida-Zahrani at a glance.....	18
Figure 1.2 The CRPT framework.....	19
Figure 1.3 How this diagnosis is organised.....	21
Figure 2.1 CRPT conceptual framework applied to Saida-Zahrani.....	24
Figure 2.2 Stakeholder engagement profile.....	26
Figure 2.3 Composite priority score construction.....	30
Figure 2.4 Project timeline, July 2025 to February 2026.....	32
Figure 2.5 International alignment matrix.....	34
Figure 3.1 Lebanon's compound-shock timeline, 2019–2025.....	38
Figure 3.2 Post-2019 economic transmission.....	39
Figure 3.3 Administrative boundaries of the Union of Municipalities of Saida-Zahrani, with member municipalities labelled.....	40
Figure 3.4 Named river network of the Union.....	41
Figure 3.5 Urban fabric (green) and recent urban expansion (orange).....	42
Figure 3.6 Population density across the Union.....	45
Figure 3.7 Composite natural-hazard exposure across the Union, aggregating landslide, wildfire, storm, riverine flooding, coastal flooding, tsunami and earthquake hazard layers.....	46
Figure 3.8 Compound exposure: hazard envelope by exposure category.....	47
Figure 3.9 Saida-IBC municipal waste dashboard snapshot, January 2026.....	49
Figure 3.10 Service-delivery architecture across the Union of Municipalities of Saida-Zahrani.....	52
Figure 3.11 Institutional readiness across the sixteen municipalities.....	56
Figure 4.1 The Union's priority load by CRPT dimension, stresses against shocks, from the composite scores in Sections 5 and 6.....	60
Figure 4.2 Environmental dimension panel.....	62
Figure 4.3 Électricité du Liban medium-voltage network across the Union.....	63
Figure 4.4 Distribution of agricultural plantations across the Union.....	64
Figure 4.5 Social dimension panel.....	65
Figure 4.6 Spatial distribution of health facilities in the Union: hospitals, pharmacies, PHCCs, clinics, and civil-defence and Red Cross posts.....	66

Figure 4.7 Distribution of public schools, private schools, UNRWA schools and universities across the Union.....	67
Figure 4.8 Public lighting-pole distribution in Saida by road type.....	68
Figure 4.9 Economic dimension panel.....	69
Figure 4.10 Banking infrastructure relative to population density.....	70
Figure 4.11 Market Functionality Index (left) and Lebanon annual inflation 2018–2025 (right)...	71
Figure 4.12 Institutional dimension panel.....	72
Figure 5.1 Top fifteen stresses ranked by composite priority score on the 0 to 25 scale.....	75
Figure 6.1 Top ten shocks ranked by composite priority score on the 0 to 25 scale.....	98
Figure 6.2 Coastal flooding: areas below 10 m elevation and modelled tsunami inundation...	109
Figure 6.3 Wildfire hazard across the Union.....	110
Figure 6.4 Schools within 100 m of wildfire hazard zones.....	111
Figure 6.5 School exposure structure.....	111
Figure 6.6 Riverine flood hazard along the Awwali, Sinniq, and Zahrani corridors.....	112
Figure 6.7 Storm hazard across the Union, concentrated along the coastal strip.....	113
Figure 6.8 Landslide hazard in the eastern hill zone, coincident with the wildfire envelope...	114
Figure 6.9 Hospitals in hazardous zones, gridded hazard-risk matrix.....	115
Figure 6.10 Primary health-care centres and clinics in hazardous zones.....	116
Figure 6.11 Pharmacies in hazardous zones.....	117
Figure 6.12 Agricultural plantations within wildfire hazard zones.....	118
Figure 6.13 The two coastal industrial clusters.....	120
Figure 7.1 Reading the synergy section.....	124
Figure 7.2 Synergy hub atlas.....	125
Figure 7.3 Stress-to-stress synergy chord diagram.....	126
Figure 7.4 Shock-to-shock cascade chord diagram.....	128
Figure 8.1 Risk cluster architecture.....	136
Figure 8.2 The synergy network as a node-link model: the twenty-five priority items sized by their weighted workshop connections, coloured by CRPT dimension and marked by type, with failure of essential infrastructure (Sh-Tech-1) as the central hub.....	136
Figure 8.3 Cluster composition and PAP impact profiles.....	137
Figure 9.1 The Union against the seven CRGP resilience qualities, a derived analytical profile offered for confirmation.....	149
Figure 10.1 The three anchor findings of the Saida-Zahrani Urban Resilience Diagnosis: compound exposure is territory-wide; a single infrastructure-failure hub structures the shock cascade; institutional weakness is the cross-cutting driver, analytically central but politically displaced.....	151

List of Tables

Table 2.2 Data analysis scheme across data collection methods.....	27
Table 4.1 Indicator completeness by CRPT thematic dimension.....	61
Table 4.1a Selected raw indicators, environmental dimension.....	62
Table 4.1b Selected raw indicators, social dimension.....	65
Table 4.1c Selected raw indicators, economic dimension.....	69
Table 4.1d Selected raw indicators, institutional dimension.....	72
Table 6.2 Agricultural land at wildfire risk by plantation type.....	118
Table 7.7 Priority load by CRPT dimension.....	131
Table 8.1 Six analytical clusters and their member items.....	135
Table 8.7 Cross-cluster synergy interfaces.....	141
Table 9.5a The regional climate signal.....	145
Table 9.5b Resilience trajectory linked to diagnosed priorities.....	146
Table 9.6 Proposed resilience-qualities profile.....	149
Table 10.3 Phase II signals by cluster.....	156
Table 10.4 The Union's capacities.....	159
Table 10.6 Comparability crosswalk.....	161

Abbreviations and Acronyms

ACRONYM	MEANING
ADJ	Methodological Adjustment (disclosed for data reliability)
CAS	Central Administration of Statistics (Lebanon)
CDR	Council for Development and Reconstruction
CNRS-L	National Centre for Scientific Research, Lebanon
CPS	Composite Priority Score (in-house score)
CRGP	City Resilience Global Programme (UN-Habitat)
CRPT	City Resilience Profiling Tool (UN-Habitat, 2018)
CRPiT	City Resilience Profiling interactive Tool (UN-Habitat)
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EDL	Electricité du Liban
ESCWA	Economic and Social Commission for Western Asia
FGD	Focus Group Discussion
GIS	Geographic Information System
HF or HFSHD	Hariri Foundation for Sustainable Human Development
ImF	Independent Municipal Fund (Lebanon)
KII	Key Informant Interview
LCRP	Lebanon Crisis Response Plan
LRC-DRR	Lebanese Red Cross, Disaster Risk Reduction Unit
MEHE	Ministry of Education and Higher Education (Lebanon)
MoIM	Ministry of Interior and Municipalities (Lebanon)
MoPH	Ministry of Public Health (Lebanon)
MoSA	Ministry of Social Affairs (Lebanon)
MRR	Map of Risks and Resources
NATECH	Natural-Hazard-Triggered Technological Accident
NUA	New Urban Agenda
PAP	People, Assets and Processes (CRPT analytical core)
PHCC	Primary Health Care Centre

PPI	Policies, Plans, and Initiatives
PRL	Palestine Refugees in Lebanon
PRS	Palestine Refugees from Syria
RM&MRD	Risk Map of Saida and Multilevel Resilience Diagnosis
SDG	Sustainable Development Goal
SLWE	South Lebanon Water Establishment
SSC	Shocks, Stresses and Challenges
SZ	Saida-Zahrani
UAP	Urban Action Profile
UN-Habitat	United Nations Human Settlements Programme
UNHCR	Office of the UN High Commissioner for Refugees
UNRWA	UN Relief and Works Agency for Palestine Refugees
UoM	Union of Municipalities
WASH	Water, Sanitation, and Hygiene

SAIDA-ZAHRANI • URBAN RESILIENCE DIAGNOSIS

How to Read This Diagnosis

This diagnosis is organised in four narrative phases, running from setup and methodology, through context and diagnosis, to synthesis and action. The visual vocabulary is consistent: every stress is rendered with an open-ring marker on a sand background, and every shock with a filled square on a crimson band. The four CRPT thematic dimensions, Environmental, Social, Economic, and Institutional, carry stable colours throughout. Composite priority scores are reported on a 0 to 25 scale. Priority membership is carried from the expert baseline and validated against the workshop signal rather than fixed by a single strict cut; the lowest-scoring item retained sits at **CPS 14.19** for stresses and 15.00 for shocks, with two disclosed stress hold-outs above that boundary set out in [Section 2.5.2](#).

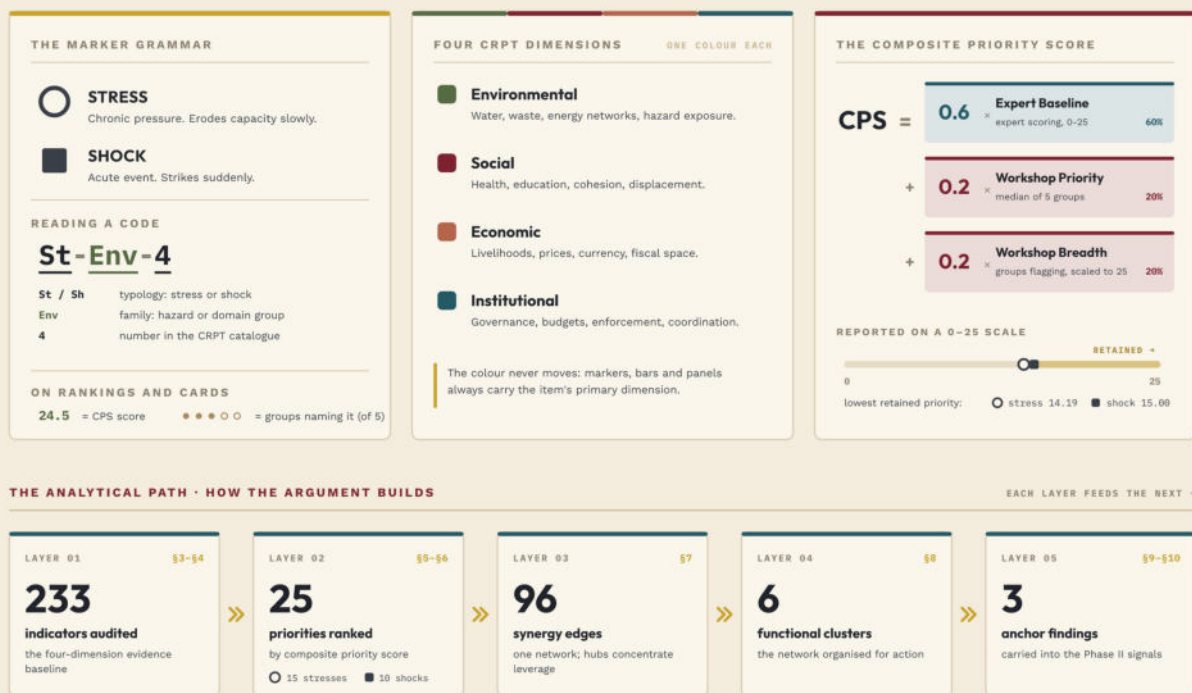


Figure 0.1. How to read this report: marker conventions, dimension palette, analytical layers, and the four phases of the diagnostic narrative. Source: Saida Urban Observatory, Hariri Foundation, 2025.

SAIDA-ZAHRANI · URBAN RESILIENCE DIAGNOSIS

Executive summary

Every part of this territory lives with compound risk. No part of the Union of Municipalities of Saida-Zahrani scores below 0.41 on the composite natural-hazard scale; the two chronic stresses at the top of its catalogue are the water network and the waste system; and the institutions that would have to manage both are the least measured and least resourced layer of the system. That is the diagnosis in brief. What follows sets out the territory, the method, the ranked priorities, and the three findings on which Phase II should build.

The Union

The Union of Municipalities of Saida-Zahrani is sixteen municipalities forming a single functional urban territory: roughly 59.95 km² and approximately 378,039 residents on the South Lebanon coast, about 40 km south of Beirut, with Saida city as its commercial, health, education, and administrative hub (§1.2). Established in 1978, it is among Lebanon's earliest inter-municipal unions (§3.4). Built-up density reaches 18,770 persons per km² in the coastal core, among the highest recorded in any Lebanese urban area (§3.3).

Two features of the territory condition everything else in this report. First, roughly 69,049 residents, about 18% of the population, live in the Ain El-Helweh and Mieh w Mieh Palestinian refugee camps, serviced primarily by UNRWA but drawing on shared water, electricity, waste, and education networks; the Union operates as one territory under two parallel governance

geographies (§3.6). Second, the diagnosis is delivered into a post-ceasefire reconstruction context. The October 2023 conflict and the November 2024 ceasefire have reordered the financing windows and the operational tempo of every recommendation that follows. South Lebanon is the front line of that reconstruction, and the Union enters it among the more institutionally prepared sub-territories, with Lebanon’s earliest inter-municipal Union (1978), a Union-level DRM Unit, and a standing Urban Observatory (§10.5).

The method

The diagnosis applies UN-Habitat’s City Resilience Profiling Tool (CRPT, 2018), the analytical instrument of the City Resilience Global Programme, at the Union scale, retrofitted for a sub-national union operating under protracted national crisis and data scarcity (§1.4; §2.1). Evidence is assembled as a stack and triangulated, so that no finding rests on a single channel: desk review and national statistics; a 2025 GIS inventory of all sixteen municipalities; expert risk scoring of the full CRPT catalogue (25 stresses, 34 shocks) produced with the Municipality of Saida, UN-Habitat CRGP, and MedCities; a participatory workshop programme (September and October 2025) that ranked stresses, shocks, and their synergies across five working groups; and Key Informant Interviews with member mayors, eight of the sixteen responding through nine submissions in November 2025 (§2.3). In total, 88 participation records were logged across 48 organisations (§2.2).

The central methodological retrofit is a Composite Priority Score (CPS) on a common 0 to 25 scale, built to triangulate priority under severe data scarcity, with institutional-dimension indicator completion at 32% (§2.5; §4.1):

$$\text{CPS} = 0.6 \times \text{Expert Baseline} + 0.2 \times \text{Workshop Priority} + 0.2 \times \text{Workshop Breadth}$$

The 0.6 weight ties the score to the indicator audit; the 0.4 participatory share keeps the workshop signal material without letting any single group dominate. Weighted composite indices of this kind are an established method in resilience and risk measurement (OECD and JRC, 2008; Beccari, 2016), and the ranking holds when the weights are re-run at 0.5/0.25/0.25 and 0.7/0.15/0.15 (§2.5). Five data-reliability disclosures (ADJ-1 to ADJ-5) document where local evidence justified refining the strict rank order: reclassifying air and water pollution from shock to stress (ADJ-1); retaining medical-supply disruption despite workshop silence (ADJ-2); raising the Natech severity in the Zahrani industrial corridor to the maximum on documented local evidence (ADJ-3); narrowing the overcrowded-facilities item to schools only, to prevent double-counting (ADJ-4); and retaining rising crime in the priority stresses on documented post-2019 evidence though its raw score sits just below two held-out items (ADJ-5) (§2.5.2). The raw indicator values underpinning the audit are retained in the indicators workbook (Annex C) for comparability; the CPS sits alongside them as a triangulation layer, not a replacement.

The headline priority picture

The fifteen priority stresses and ten priority shocks, ranked by composite score, are documented on standalone cards in Sections 5 and 6. The top of each catalogue:

URBAN RESILIENCE DIAGNOSIS • SAIDA-ZAHRANI • PHASE I

The headline priority picture.

Twenty-five priority items ranked by Composite Priority Score: chronic pressure led by water and waste, acute risk led by infrastructure failure.



Figure ES.1. The headline priority picture: the leading priority stresses and shocks by composite score, with failure of essential infrastructure (Sh-Tech-1) as the cascade hub through which the others propagate. The full ranked catalogues are on the priority cards in Sections 5 and 6. Source: Saida Urban Observatory, Hariri Foundation, 2026.

Read together, the two columns tell one story. The chronic catalogue is led by degraded basic services: water and waste hold the top two positions, with the post-2019 economic distress of unemployment, inflation, and poverty immediately behind them. The acute catalogue is led by essential-infrastructure failure and shaped by conflict, macro-fiscal collapse, and health-system exposure. The columns are also connected. Essential-infrastructure failure (Sh-Tech-1) is the cascade hub through which most other shocks propagate, while the environmental basic-service stresses form the substrate that lowers the threshold at which any given disruption becomes systemic (§7; §8.5).

Three anchor findings

The diagnosis consolidates into three anchor findings (§10.1).

First, **compound exposure is territory-wide**. No part of the Union falls below a composite hazard score of 0.41 on the normalised 0 to 1 scale, and the coastal strip and western urban edge score 0.61 to 1.00. Hospitals, health centres, pharmacies, schools, and agricultural plantations concentrate where multiple hazard layers overlap. No single-municipality, single-hazard intervention can reach this exposure (§6.4).

Second, **a single infrastructure-failure hub structures the shock cascade**. Failure of essential infrastructure (Sh-Tech-1) tops the shock catalogue at the maximum composite score of 25.0 and is the dominant hub of the 96-edge synergy network: nine other priority items, six stresses and three shocks, link to it directly, and as many as seven of the nine other priority

shocks are reachable from it through multi-step pathways. The cascade is radial rather than chain-like, so it can be defended at its centre: protecting lifeline infrastructure both prevents the lead shock and weakens the pathways that carry the others, and no other single investment in the catalogue carries that multiplier (§7.3; §8.5.1).

Third, **institutional weakness is the cross-cutting driver, analytically central but politically displaced.** No single institutional item tops either catalogue, and none needs to. Four of the top-ten stresses are institutional (corruption, absent DRR budgets, weak enforcement, aid dependence) and they saturate the middle of the table; the pivotal public-sector-collapse shock is institutional; the Institutional Capacity cluster connects to every other cluster; and institutional weakness is what converts an aging asset into a failed service and a price shock into a household crisis. The political signal runs the other way: in the mayor survey, mayors rated institutional capacity the weakest of the four CRPT dimensions, then placed zero institutional strengthening in their top investment choice, and an independent territorial readiness scan corroborates the self-assessment, with 53% of 80 cells (sixteen municipalities by five readiness indicators) scoring 0 to 1, absent or nominal, and none reaching mature. Two evidence lines, one self-reported and one documentary, point the same way, and that is what gives the finding its weight (§8.5.3; §5.2; §3.5).

A diagnosis, not an action plan

This report ranks the priority stresses and shocks, exposes their synergy network, and organises them into six analytical clusters; its deliverable is a defensible, audit-ready, multi-dimensional baseline (§1.1; §10). The design and sequencing of participatory resilience actions, including the targeted consultation cycles with groups under-represented in the Phase I workshop, is deliberately held for a separate Phase II, the forthcoming Saida-Zahrani Resilience Action Plan (§9; §10.3). What carries the work forward in the meantime is the Saida Urban Observatory, established within the Municipality of Saida and operated by the Hariri Foundation: the standing institutional pillar that converts this diagnosis from a one-off baseline into a continuous monitoring instrument (§9.1; §3.4).

The ask that follows is specific, and legible before any costing. Phase II is signalled as three concurrent directions launched together, foundations, lifelines, and livelihoods, anchored by the Observatory, over an indicative first horizon of 24 months that also carries institutional-dimension data completion from 32% to 60% (§10.3; §9.1). The decision requested of MedCities and Barcelona City Council, and of reconstruction-window donors, is to commit Phase II design-and-financing support now, while the post-ceasefire financing window is open, on the institutional, fiscal, and data-readiness conditions set out in Section 10.3. Project definition and costing are held for the Resilience Action Plan.

01

Introduction

Why this diagnosis, the tool it applies, and the coastal Union it reads.

1 Introduction

In cities under protracted crisis, chronic stress has come to decide how badly acute shocks land. Economic volatility, environmental degradation, climate change, social inequality, and institutional fragility rarely arrive one at a time; they interact and amplify one another inside the urban system (UN-Habitat, 2018; IPCC, 2022). Urban assessment has followed the risk: UN-Habitat's City Resilience Global Programme now works through integrated, evidence-based resilience diagnostics rather than sector-by-sector reviews (Meerow, Newell and Stults, 2016; UN-Habitat, 2023). Few places test that approach harder than the Union of Municipalities of Saida-Zahrani, where slow failures of infrastructure, finance, and institutions set the severity of every acute event.

This report is the Urban Resilience Diagnosis for the Union of Municipalities of Saida-Zahrani in South Lebanon. It was conducted between July and December 2025 and validated in early 2026. It is the first integrated, multi-sectoral resilience assessment carried out at the Union scale in the Mediterranean periphery of South Lebanon, and the first analytical output of the Saida Urban Observatory, established within the Municipality of Saida and operated by the Hariri Foundation for Sustainable Human Development.

The diagnosis applies UN-Habitat's City Resilience Profiling Tool (CRPT), the assessment instrument of the City Resilience Global Programme (UN-Habitat, 2018). The tool was chosen because it provides a globally consistent yet adaptable, people-centred, evidence-based framework that suits cities facing protracted crises, governance fragmentation, and data constraints, which are the conditions of the Union.

The diagnosis is benchmarked against the flagship profiles of the City Resilience Global Programme, principally the Teresina city profile and the Terres de l'Ebre territorial pilot (UN-Habitat, 2020a; UN-Habitat, n.d.), the pair carried through to the comparability crosswalk in [Section 10.6](#), with the Asunción and Yakutsk city profiles as further references (UN-Habitat, 2019; 2020b), and is situated within the MedCities network alongside comparable diagnoses in Tetouan, Tangier, Mahdia, and Larnaca. It follows UN-Habitat's 2024 Multilayered Vulnerability Assessment Handbook (UN-Habitat, 2024), the most recent statement of UN-Habitat resilience-planning practice. The full cross-walk to the Sendai Framework, the New Urban Agenda, and the Sustainable Development Goals is set out in [Section 2.8](#).

1.1 Background and objectives

The Saida-Zahrani Urban Resilience Diagnosis is implemented under the Risk Map of Saida and Multilevel Resilience Diagnosis (RM&MRD) project, developed within a regional resilience programme led by MedCities. Funded by Barcelona City Council, the initiative aims to strengthen resilience capacities across Mediterranean cities and to translate global resilience principles into locally grounded, operational diagnostics that respond to the specific vulnerabilities of Mediterranean urban contexts (MedCities, 2021; UN-Habitat, 2018).

Implementation is driven by continuous coordination among MedCities, the Saida-Zahrani Diagnosis Team from the Hariri Foundation and its individual experts, the Municipality of Saida and its institutional partners, the Barcelona City Council Urban Resilience Team, and UN-Habitat CRGP.

Saida, capital of South Lebanon Governorate, functions as the main urban, economic, and service hub for a wider functional urban area. This metropolitan reality extends beyond administrative boundaries and has been shaped by rapid demographic growth, increased service demand, environmental pressure, and socio-economic vulnerability. Lebanon's prolonged national crisis since 2019, the October 2023 conflict and November 2024 ceasefire, and recurring regional instability have all intensified those pressures (ESCWA, 2022; World Bank, 2023).

1.1.1 Three diagnostic objectives

First, to characterise the Union's exposure to chronic stresses and acute shocks across the four CRPT thematic dimensions of environmental, social, economic, and institutional resilience.

Second, to identify priority risks, their spatial distribution across the sixteen municipalities, and the cascading interactions that link them.

Third, to prepare a defensible, audit-ready evidence base that supports the design and sequencing of resilience investments under Phase II.

1.2 Geographical scope

The diagnosis is conducted at the scale of the Union of Municipalities of Saida-Zahrani, which encompasses sixteen municipalities that together form a functionally interconnected urban and territorial system of approximately 60 km² and a combined population of approximately 378,039 residents (LRC-DRR, 2025). This spatial scope reflects the reality that key risks, services, and resilience capacities extend beyond the administrative boundaries of Saida city, and are shaped by shared infrastructure networks, environmental systems, mobility patterns, and governance arrangements.

The Union comprises Saida (administered through three cadastres: Ed-Dekerman, El-Wastani, and El-Qadimeh), together with Abra, Ain ed-Delb, Aanqoun, Bqosta, Bramiyeh, Darb es-Sim, Ghazieh, Haret Saida, Hlaliyeh, Maghdoucheh, Majdelyoun, Mieh w Mieh, Qraiyyet, Salhiyeh, and Tanbourit. Two further towns with no municipal structure, Zaghdraiya and Mtayriyeh (Arab el Jal), lie within the territorial envelope but are not part of the Union's administrative structure; they appear in figures where the full envelope is relevant, but are excluded from Union-specific analysis. Selecting the Union of Municipalities as the unit of analysis builds on existing inter-municipal coordination mechanisms, notably the Disaster Risk Management (DRM) Unit operating at the Union level, and aligns with the CRPT principle of analysing cities as functional urban systems (UN-Habitat, 2018). A further enabling factor is the institutional maturity of the Union: established in 1978, Saida-Zahrani is among Lebanon's earliest inter-municipal unions (Samaha, 2022).

1.2.1 City ID: the Union of Municipalities of Saida-Zahrani at a glance

TERRITORY	POPULATION	DENSITY (BUILT)	METHOD
59.95 km ² ; 16 member municipalities	~378,039; including 69,049 in PRL camps	18,770/km ² ; Old Saida and coastal core	CRPT 2018; UN-Habitat (retrofitted)
GOVERNORATE	UNION FOUNDED	HAZARD INDEX	REPORT WINDOW
South Lebanon; Saida is governorate capital	1978; Lebanon's earliest UoM	at least 0.41 union-wide; coastal maximum 0.61 to 1.00	July to December 2025; validated early 2026



Figure 1.1. City ID: the Union of Municipalities of Saida-Zahrani at a glance. The eight-card briefing summarises territorial scale, demographic profile, governance scale, and the data window of the diagnosis. Source: Saida Urban Observatory, Hariri Foundation, 2025.

1.3 Why the Union scale

The Union functions as a single socio-economic territory. Saida city concentrates commercial, health, education, and administrative functions, while surrounding municipalities accommodate residential growth and small-scale economic activity (Mahdi et al., 2023). Daily commuting flows, shared service catchments, and inter-municipal labour markets reinforce functional integration. Key informant interviews with member mayors confirm the pattern: 90% of the crises that mayors identified as top priorities were framed as Union-wide in spatial scope (Saida Urban Observatory, KII mayor survey, November 2025; see [Section 2.3](#) and Annex E). Analysing risk at the Union scale therefore replaces fragmented, city-centric assessment with a view that matches how the territory actually works.

The administrative municipal boundaries also do not contain the risks addressed in this diagnosis. Floods, wildfires, infrastructure failures, and supply-chain disruptions propagate along hydrological basins, transport corridors, and networked service systems that span municipal boundaries (Cutter, 2014; Meerow, Newell and Stults, 2016). The Union of Saida-Zahrani is therefore the minimum analytical unit at which compounding risk can be assessed without losing the cross-boundary structure that defines it.

1.4 The City Resilience Profiling Tool: applied and retrofitted

The analytical ground of the diagnosis is UN-Habitat's City Resilience Global Programme (CRGP) and its profiling tool. [Section 1](#) has already said why the framework suits the Union; what remains is to show how it was applied, and where it had to be adjusted. The CRGP treats the city as one interconnected system rather than a stack of sectors, and aligns its diagnostics with the New Urban Agenda and the Sustainable Development Goals (UN-Habitat, 2018; 2023).

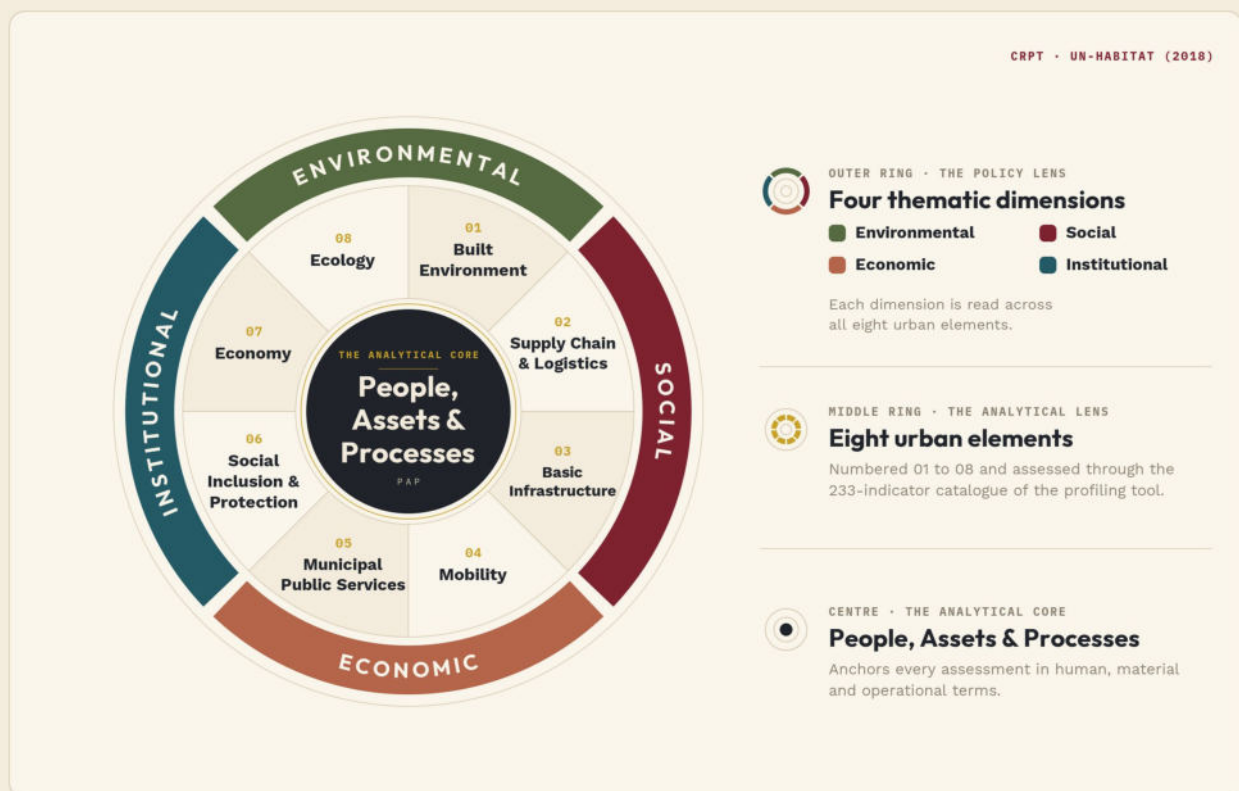


Figure 1.2. The CRPT framework. The four thematic dimensions (Environmental, Social, Economic, Institutional) follow the City Resilience Profiling interactive Tool and operate as the outer policy lens. The eight urban elements of the City Resilience Profiling Tool (Built Environment; Supply Chain and Logistics; Basic Infrastructure; Mobility; Municipal Public Services; Social Inclusion and Protection; Economy; Ecology) operate as the inner analytical lens. The People, Assets and Processes core sits at the centre, anchoring every assessment in human, material, and operational terms. Source: Saida Urban Observatory, Hariri Foundation, 2025, adapted from UN-Habitat (2018), *Guide to the City Resilience Profiling Tool*.

1.4.1 The CRPT core: considered and retrofitted

The CRPT was designed by UN-Habitat with the support of the European Commission as a globally portable instrument. Its full architecture, spanning the four thematic dimensions, the indicator set, the eight urban elements (UN-Habitat, 2018), and the People, Assets and

Processes core, was studied in full at the inception of this diagnosis and constitutes the analytical spine of every subsequent decision.

At the same time, applying the CRPT to a sub-national Union of sixteen municipalities operating under protracted national crisis, displacement, and post-conflict reconstruction conditions required deliberate localisation. Three retrofitting decisions shape the diagnosis. First, a composite priority score (CPS) that integrates expert baseline, workshop priority, and workshop breadth, added to triangulate findings under conditions of severe data scarcity (institutional-dimension data completion is 32%; see [Section 4.1](#)). Second, indicator selection was calibrated to data availability in South Lebanon and to the capacity of the Saida Urban Observatory team to gather primary data within the project timeline. Third, five explicit data-reliability disclosures (ADJ-1 to ADJ-5, set out in [Section 2.5.2](#)) document where local evidence justified refining the strict rank order of stresses and shocks.

Lessons learnt: CRPT retrofit as an evidence-based contribution

These retrofits are not departures from the CRPT but locally grounded extensions of it. They are documented end to end in the composite priority score workbook (Annex A) so that other Mediterranean and crisis-affected cities can replicate, refine, or refute them. Where the diagnosis diverges from the CRPT default, the divergence is named, reasoned, and offered as a lesson learnt back to the CRPT community: a contribution from local evidence under crisis conditions to a globally portable instrument. The raw indicator values underpinning the audit are retained in the indicator workbook (Annex C) for cities seeking comparability; the CPS sits alongside them as a triangulation layer, not a replacement.

1.4.2 Principles guiding the assessment

Nine principles, drawn from CRPT doctrine and the resilience literature, guide the assessment (UN-Habitat, 2018; 2020b; Béné et al., 2014; Meerow, Newell and Stults, 2016). It is holistic, reading resilience across interrelated thematic dimensions, and systems-based, attending to interdependencies, feedback loops, and cascading effects. It is evidence-based: quantitative indicators, spatial data, and qualitative inputs are combined, and data gaps are documented rather than smoothed over. It is multi-level, because resilience outcomes are shaped by interactions between municipalities, unions, governorates, and national institutions, and people-centred, integrating vulnerability, exposure, and equity. It is participatory, pairing technical analysis with structured engagement, and context-sensitive, tailoring method to local realities while keeping international comparability. Finally, it is iterative, designed to be updated over time, and explicitly action-oriented.

1.5 Report structure

The diagnosis proceeds through four narrative phases. The setup phase ([Section 1](#) and [Section 2](#)) frames the diagnostic mandate and locks the methodology. The context phase ([Section 3](#) and [Section 4](#)) establishes the Union's territorial, demographic, environmental, and governance baseline, and translates the indicator inventory into a dimension-by-dimension performance snapshot. The diagnosis phase ([Section 5](#) to [Section 7](#)) ranks the priority stresses and shocks through the composite priority score, examines them spatially through hazard overlays, and exposes the synergy network that binds them. The synthesis phase ([Section 8](#) to [Section 10](#)) consolidates the findings into six analytical clusters, seats them in the Union's standing

institutions, the Urban Observatory, the DRM Unit, and the Regional Technical Office, and concludes with three anchor findings and the Phase II signals.

The annex package carries the audit trail: Annex A the composite priority score computation; Annex B the incident log; Annex C the indicator navigation and CRPT scoring audit; Annex D the Policies, Plans and Initiatives inventory; Annex E the key informant interview survey; and Annex F the risk-synergy network. The Card Data Repository holds the underlying data for the priority stress and shock cards in [Section 5](#) and [Section 6](#).



Figure 1.3. How this diagnosis is organised. Ten sections grouped into four narrative phases: setup, context, diagnosis, and synthesis to action. The mapping aligns with the section vocabulary used throughout the report. Source: Saida Urban Observatory, Hariri Foundation, 2025.

02

Methodology

How the evidence was assembled and how priority was computed.

2 Methodology

One commitment governs the methodology: no finding in this diagnosis rests on a single evidence channel. This section locks the four decisions that deliver on it: how the CRPT was localised for the Union context, what data sources fed the analysis, how the composite priority score was constructed, and what data-reliability disclosures were applied to the strict rank order of stresses and shocks. The evidence stack runs from desk review and GIS through expert scoring, workshop priority, and workshop breadth to key informant interviews, and every finding is triangulated across it.

2.1 Localising the CRPT

The retrofit logic is set out in [Section 1.4.1](#). The CRPT's universal architecture (four thematic dimensions, the eight urban elements, and the People, Assets and Processes core) is preserved, and the Union's applied indicator inventory runs to 233 catalogued indicators, with three localisations layered on top: a 0 to 25 composite priority score for stress and shock ranking, indicator selection calibrated to data availability in South Lebanon, and five named data-reliability disclosures (ADJ-1 to ADJ-5) set out in [Section 2.5.2](#). This section reports the operational consequences of those choices: how stakeholders were engaged, what data sources fed the analysis, how the composite score was constructed, and where the diagnosis flagged its own boundary conditions.

The methodology prioritises a strong territorial baseline at the Union scale; triangulation of secondary data, spatial analysis, and stakeholder inputs; and structured participatory validation to secure institutional ownership. Of the 233 catalogued indicators, 142 carried populated primary data at the time of writing, an overall completion of 61% that ranges from 79% on the economic dimension to 32% on the institutional dimension (Annex C); the remainder are documented as data gaps. Every indicator reported is defensible rather than estimated. Cluster construction ([Section 8](#)) is an analytical product of this diagnosis, calibrated to the Union's institutional structure, displacement geography, and workshop-validated synergy network. The CRPT does not prescribe how stresses and shocks should be grouped for intervention design; the six clusters in [Section 8](#) are this diagnosis's reasoned interpretation.

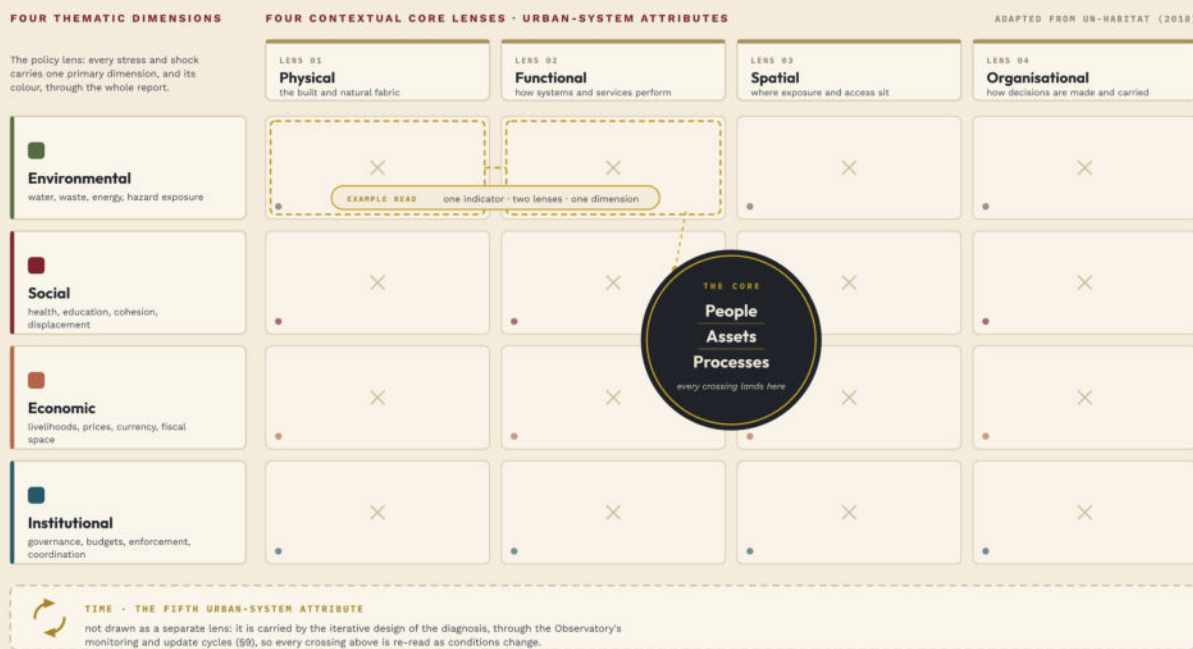


Figure 2.1. CRPT conceptual framework applied to Saida-Zahrani. Four thematic dimensions (Environmental, Social, Economic, Institutional) cross four contextual core lenses (Physical, Functional, Spatial, Organisational), with People, Assets and Processes at the centre. Each indicator engages one or more core lenses and one or more thematic dimensions. The four contextual lenses shown are four of the CRPT's five urban-system attributes; the fifth attribute, Time, is addressed through the iterative design of the diagnosis rather than as a separate lens (UN-Habitat, 2018). Source: Saida Urban Observatory, Hariri Foundation, 2025, adapted from UN-Habitat (2018).

2.2 Stakeholder engagement

Stakeholder engagement was designed as an integral component of the methodology rather than a parallel consultative activity. In line with the CRPT, engagement processes were designed to support co-production of knowledge, institutional anchoring, and participatory validation of analytical findings, so that the diagnosis reflects both technical evidence and local realities (UN-Habitat, 2018; Sengupta and Verma, 2022).

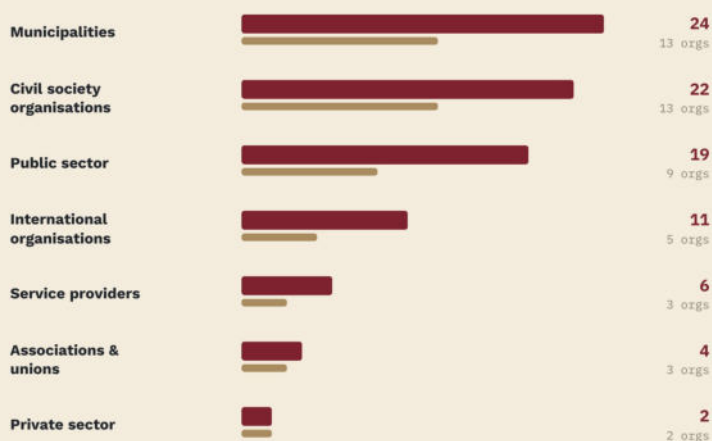
An initial stakeholder mapping exercise identified relevant actors across governance levels and sectors: municipal and national institutions, service providers, civil society organisations, academia, private sector actors, humanitarian and development agencies, security and civil defence units, and community representatives. Stakeholders were assessed and prioritised using a two-axis matrix based on impact on the project and awareness of the initiative, each scored on a five-point scale. Engagement combined formal and informal mechanisms: coordination meetings, technical workshops, key informant interviews, focus group discussions, participatory validation sessions, data-sharing agreements, and structured briefings. Interactive tools such as Mentimeter polling were used during high-level meetings to capture perceptions and support collective prioritisation.

In total, 88 participation records were logged across 48 unique organisations in three event types (Hariri Foundation, 2025). Three patterns stand out. Municipalities were the most engaged sector, with 24 participations across 13 unique organisations, confirming the Union scale as the appropriate engagement horizon. Civil society organisations contributed 22

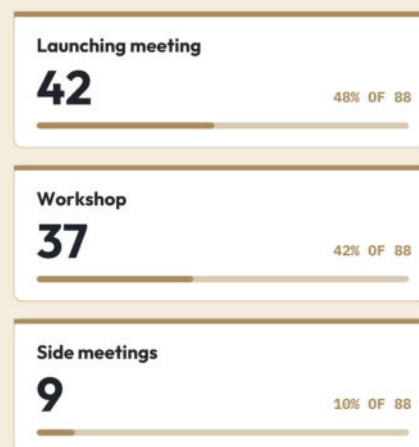
participations across 13 organisations, with disproportionate presence in workshops where their domain knowledge proved most valuable. Side meetings were concentrated with the municipalities themselves (9 side-meeting records), reflecting the iterative coordination required to align the Union and its member municipalities on the diagnosis.

Specific attention was given to inclusive engagement and to mitigating participation risks. Groups at risk of exclusion (refugees, youth, persons with disabilities, elderly populations, and low-literacy groups) were identified early, and tailored mitigation measures were applied, including collaboration with local NGOs, plain-language and visual tools, and facilitation through trusted community channels. In addition, two municipal capacity-building sessions were conducted to familiarise the municipalities of the Union with the concepts of the CRPT and of urban resilience. Invitations were extended to increase representation from camp residents and housing-rights actors; however, engagement remained weak. This gap is documented in [Section 5.7](#) as a workshop-channel under-representation that future monitoring cycles should close.

A · PARTICIPATIONS BY SECTOR



B · PARTICIPATIONS BY EVENT TYPE



C · SECTOR-BY-EVENT PARTICIPATION MATRIX

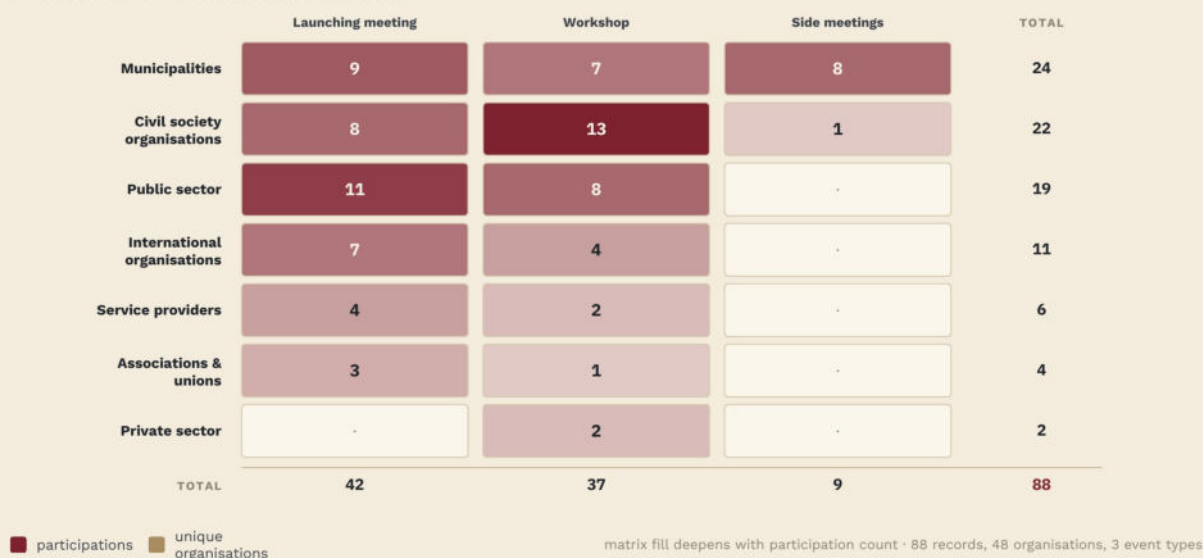


Figure 2.2. Stakeholder engagement profile. Panel A: participations by sector, led by municipalities (24 participations, 13 organisations), followed by civil society organisations (22 participations, 13 organisations) and the public sector (19 participations, 9 organisations). Panel B: participations by event type, across launching meeting, workshop, and side meetings. Panel C: sector-by-event participation matrix. The 88 records confirm the Union scale as the appropriate engagement horizon and document the engagement gaps named in Section 2.2. Source: Saida Urban Observatory, Hariri Foundation, 2025.

2.3 Data sources

The diagnosis draws on four types of data, collected through both secondary and primary means and classified by their proximity to the workshop record.

Secondary data for the indicator baseline was assembled from Lebanese official statistics, national hazard databases, and published institutional reports. The Lebanese Central Administration of Statistics provided population and household data (CAS and CBS, 2019). CNRS-L contributed the hazard inventory covering riverine flooding, wildfire, tsunami, storm, and landslide exposure. The Lebanese Red Cross provided health-sector and crisis-associated logistics data. Additional contextual data was drawn from the World Bank, IMF, ILO, and the broader academic and policy literature.

Primary spatial data was collected by the Hariri Foundation through its 2025 GIS inventory of the Union, covering infrastructure, facilities, and land use across all sixteen municipalities, drawing on previous projects and activities. This inventory constitutes the primary geographic evidence base for [Section 4](#) and the spatial overlays in [Section 6](#).

Expert risk scoring was produced by the Saida-Zahrani Diagnosis Team, the Municipality of Saida, UN-Habitat CRGP, and MedCities during a visit to Barcelona. Each stress and shock in the CRPT catalogue (25 stresses and 34 shocks) was rated on a 25-point scale against likelihood and impact criteria. These scores constitute the baseline component of the composite priority score (see [Section 2.5](#)).

Participatory data was collected through engagement sessions, including workshops and seminars, conducted in Saida between September and October 2025 in coordination with MedCities. Participants included mayors, municipal staff, civil society organisations, UNRWA, and sector experts. Stresses, shocks, and their synergies were ranked using structured Miro boards and Mentimeter polls. Key informant interviews captured the perspective of member mayors through two modalities: in-person structured visits to six municipalities (voluntarily selected), and a survey instrument distributed to all sixteen mayors in November 2025. Eight of the sixteen mayors responded to the survey, via nine responses (one municipality submitted twice), a 50% response rate among mayoral leadership.

2.3.1 Data analysis scheme

[Table 2.2](#) summarises which data collection channels feed each analytical component, so that triangulation between secondary data, GIS analysis, qualitative engagement, and digital tools remains traceable.

ANALYTICAL COMPONENT	SECONDARY	GIS	KII / FGD	WORKSHOP	POWER BI / MIRO
Territorial	yes	yes	yes	.	.

and institutional context					
Governance and institutional capacity	yes	·	yes	yes	·
Population and vulnerability profiles	yes	yes	yes	yes	·
Environmental conditions and pressures	yes	yes	yes	yes	·
Economic and livelihood dynamics	yes	yes	yes	yes	·
Infrastructure and basic services	yes	yes	yes	yes	·
Shocks, stresses and incident logs	yes	yes	yes	yes	yes
Indicator assessment and gap analysis	yes	yes	·	yes	yes
Policies, plans and initiatives (PPIs)	yes	·	yes	yes	yes
Risk prioritisation and clustering	·	·	yes	yes	yes
Synthesis and systemisation	·	·	·	yes	yes

Table 2.2. Data analysis scheme across data collection methods. Source: Saida Urban Observatory, Hariri Foundation, 2025.

2.4 Analytical framework for risk diagnosis and prioritisation

While [Section 2.1](#) sets what is analysed and [Section 2.3](#) sets how data is gathered, this sub-section sets how evidence becomes insight. In line with the CRPT, analysis is organised around interactions among People, Assets, and Processes (PAP), and is applied consistently across the environmental, social, economic, and institutional domains. All analytical outputs, including indicators, PPIs, incident logs, and stakeholder inputs, are explicitly tagged to both thematic and core CRPT dimensions, which secures comparability, traceability, and internal coherence.

The analytical framework is action-oriented: its purpose is to structure evidence so that it supports prioritisation, comparison, and decision-making.

2.4.1 Digitisation of participatory data

To preserve data integrity, digital tools were adopted across key informant interviews, perception collection, and the scoring of shocks, stresses, indicators, and PPIs. The workshop dynamic required physical artefacts, sticky notes and illustrations, that were later transformed into Miro-board structured records and coded into a master spreadsheet for shocks, stresses, and their linkages. The coded record (shocks and stresses coded as Sh and St with their respective dimension, for example “Sh-Env-1”) is the foundation for the synergy analysis in [Section 7](#).

2.4.2 Standardisation and aggregation

Workshop impact ratings were normalised on a per-group, per-item basis. Raw impact equals People times Assets times Processes times Scope, each rated 1 to 5 (product range 1 to 625). Normalised impact on the 25-point scale equals (raw impact divided by 625) times 25. Cross-group consensus was computed as the median of normalised impacts across the five working groups, the median chosen for its resistance to outlier scores. The expert baseline was scored directly on the 25-point scale during inception, anchored in the desk review and the indicator audit.

2.5 Composite priority score

A composite priority score (CPS) ranks the stresses and shocks on a common 0 to 25 scale. It integrates three independent channels, each first expressed on that same 0 to 25 scale so the weights act on comparable quantities. The **expert baseline** (Baseline_{25}) is the inception expert scoring, computed as Scale (1 to 5) $\times$ Severity (1 to 5) and grounded in the indicator audit. The **workshop priority** (Workshop_{25}) is the median, across the groups that scored an item, of a normalised impact score, $\text{NormImpact}_{25} = (\text{People} \times \text{Assets} \times \text{Processes} \times \text{Scope} \div 625) \times 25$. The **workshop breadth** (Breadth_{25}) is the number of groups that independently flagged the item, divided by the number of groups and scaled to 25. The three are combined by weighted linear aggregation:

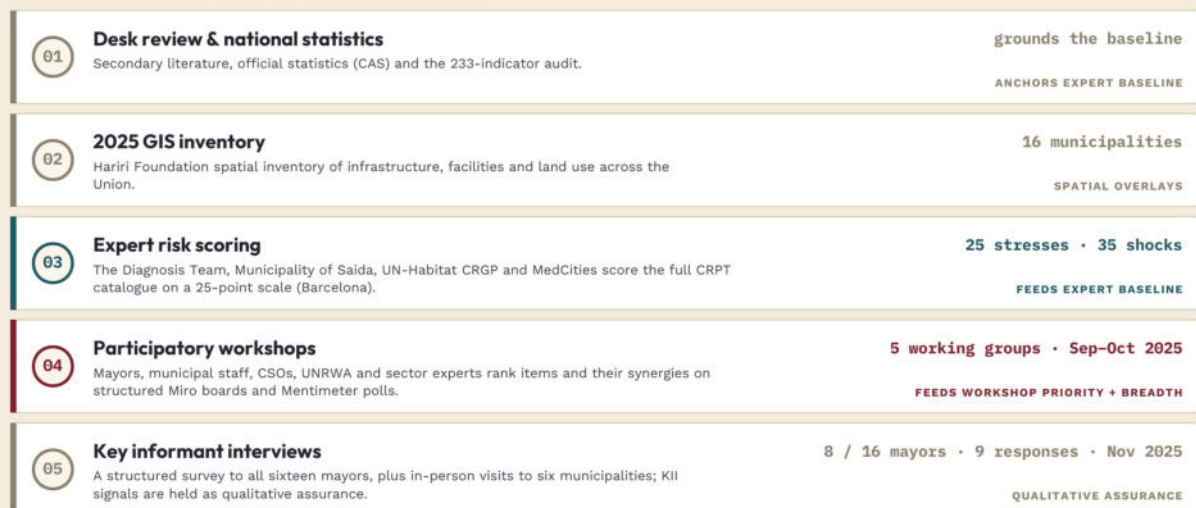
$$\text{CPS}_{25} = 0.6 \times \text{Baseline}_{25} + 0.2 \times \text{Workshop}_{25} + 0.2 \times \text{Breadth}_{25}$$

To read the formula concretely: the aging water network (St-Env-4) carries an expert baseline of 25 (Scale 5 $\times$ Severity 5), a workshop-priority median of 22.5, and was flagged by all five groups, so $\text{Breadth}_{25} = 25$. Its composite score is $0.6 \times 25 + 0.2 \times 22.5 + 0.2 \times 25 = 15.0 + 4.5 + 5.0 = 24.5$, the highest in the stress catalogue. The 0.6 weight on the expert baseline anchors the ranking in the indicator audit; the combined 0.4 weight on the two participatory channels validates it without letting any single workshop dominate. Scores above 20 correspond to items flagged consistently across channels; scores of 15 to 20 correspond to moderate priority. Every item's full calculation, raw expert scores, workshop impact, breadth, and the composite, is held in the composite priority score workbook (Annex A).

The 0.6 / 0.2 / 0.2 split is a deliberate value judgement, and it follows established composite-indicator practice. Weights in composite indices are recognised as informed value judgements rather than statistical constants, and the deliberate allocation of a fixed weight budget across a small set of inputs is a documented technique, the budget allocation process, set out in the OECD and JRC Handbook on Constructing Composite Indicators (Nardo et al., 2008). Combining an expert or technical baseline with participatory, stakeholder-derived inputs is standard in urban-resilience and disaster-risk indices: Beccari's (2016) review of 106 such indices found expert-selected weighting and participatory weighting (workshop-based, ranking-based, and analytic-hierarchy-process-based) among the most common approaches. The most widely used urban-resilience instrument, the City Resilience Index, is likewise built on an expert-designed structure populated with mixed and locally elicited evidence (Arup and The Rockefeller Foundation, 2014), and comparable municipal weighted resilience indices exist, including for Italy (Marzi et al., 2019). Participatory municipal indicator systems built through stakeholder workshops are already established in Lebanon itself (Nader et al., 2008). No published index uses this exact 60/40 emphasis; the point is that the method, weighted linear aggregation of an expert baseline with participatory signals, is an accepted one. The emphasis on the expert baseline anchors prioritisation in technical evidence, while the 40% given to the workshop and group-consensus channels keeps the participatory signal material to the result.

A sensitivity check confirms that the ranking is not an artefact of the exact weights. Re-running the priorities at 0.5 / 0.25 / 0.25 and at 0.7 / 0.15 / 0.15 leaves the top-priority ordering broadly stable; the full re-run is retained in Annex A.

THE EVIDENCE STACK - FIVE TRIANGULATED CHANNELS



88 participation records • 48 organisations

TRIANGULATED INTO ONE COMPOSITE SCORE

no finding rests on a single channel

THE COMPOSITE PRIORITY SCORE (CPS) - 0-25 SCALE



Weights follow OECD/JRC budget-allocation practice: the expert baseline anchors the ranking; the 40% participatory share keeps it material.

Stable under sensitivity: re-running at 0.5/0.25/0.25 and 0.7/0.15/0.15 leaves the top-priority order broadly unchanged (Annex A).

Figure 2.3. Composite priority score construction. The expert baseline (weight 0.6) provides indicator-grounded scoring; workshop priority (weight 0.2) and workshop breadth (weight 0.2) provide participatory validation. The lowest-scoring items retained sit at **CPS 14.19** (stresses) and 15.00 (shocks); priority membership is carried from the expert baseline rather than a strict composite cut, with two disclosed stress hold-outs above that boundary (Section 2.5.2, ADJ-5). Source: Saida Urban Observatory, Hariri Foundation, 2025.

2.5.1 Selection for reporting

Stresses are ranked by CPS and the top 15 are reported in [Section 5](#). Shocks are ranked by CPS and the top 10 are reported in [Section 6](#). Items below the threshold are retained in the 25-stress and 34-shock catalogue documented in Annex A. KII signals (up-arrow reinforces, down-arrow challenges, right-arrow adds nuance) are treated as qualitative assurance and reported on the cards in [Section 5](#) and [Section 6](#) without modifying the quantitative score.

2.5.2 Data-reliability and robustness disclosures (ADJ-1 to ADJ-5)

The priority sub-set rests on five judgement calls, set out here as transparency disclosures rather than silent edits. Disclosing them is what allows the priority catalogue to be audited from end to end: a reader can see where local evidence overrode a default, why, and on what source. The five disclosures do not alter the composite formula. Each is named, reasoned, and logged in the Annex A audit workbook. ADJ-1 corrects a taxonomic mis-assignment in the catalogue. ADJ-2 documents a workshop-record suppression and the expert evidence that reinstates the item. ADJ-3 escalates an under-scored Natech severity on locally documented evidence. ADJ-4 narrows an item scope to prevent double-counting against another item already in the catalogue. ADJ-5 documents the retention of a priority stress whose raw composite score sits just below two held-out items, and a related membership note records

that refugee influx (Sh-S-3) is folded into the war-and-displacement shock rather than listed separately. Together they keep the analysis auditable: every judgement call is on the record, with its reasoning and its source, and the priority ordering can be reproduced independently.

ADJ-1. Air and water pollution (Sh-Env-1) is reclassified as a stress, not a shock.

The CRPT distinguishes shocks (acute, time-bounded events) from stresses (chronic, slow-onset pressures). Air and water pollution in the Union is sustained chronic exposure: generator emissions across the residential fabric, untreated wastewater discharges along the coastal strip, and industrial-source emissions from the southern corridor. PM2.5 daily-limit exceedances at coastal sites average 40 days per year (AUB, 2019); marine pollution is well documented (UNDP and UNEP Lebanon, 2007; MoE Lebanon, 2020). Air and water pollution is therefore moved out of the priority shock sub-set and treated through the Environmental Hazard cluster (Section 8) and the Infrastructure and Utilities cluster (Section 8). The pollution pathway remains analytically intact: this is reclassification, not removal.

ADJ-2. Health and medical supply disruption (Sh-Tech-4) is retained at rank 9 despite the workshop silence.

The item carries an expert score of 25, and the Lebanon-recency evidence is unambiguous: medication shortages across 2021 to 2024 are documented by WHO, MSF, ICRC, and AUBMC. Workshop participants did not name the item independently because they had absorbed it into Sh-Tech-1 (infrastructure failure) as a cascade outcome rather than a separate shock. This is an availability-heuristic effect in participatory diagnosis (Tversky and Kahneman, 1973; Wilkinson, 2012), not an absence of risk. Retaining the item at rank 9 corrects the workshop suppression with named expert evidence. The item connects diagnostically to St-Soc-6, Sh-Eco-1, and Sh-Eco-4.

ADJ-3. Natech (Sh-Tech-5) expert score revised from 16 to 25 on documented local evidence.

The Union's heavy and hazardous industry sits in two coastal clusters roughly four kilometres apart (Section 3.2.3). On Saida's southern edge, LPG refill and oxygen-bottling facilities, chemical units, and the waste-treatment complex stand about one kilometre from the Ain El-Helweh camp and its roughly 63,000 residents, whose evacuation routes are constrained. On the Zahrani coast, the state oil terminal holds 4.5 to 4.9 million barrels of petroleum products beside the Zahrani combined-cycle power plant of roughly 435 to 465 MW: the largest concentrated flammable inventory in the territory, co-located with a national electricity asset. The CRPT methodology supports maximum severity for low-probability, high-consequence events where local-context evidence justifies it, and the 2020 Beirut port ammonium nitrate explosion provides the regional precedent (Human Rights Watch, 2021; World Bank RDNA, 2020). The escalation from 16 to 25 is the only disclosure in this diagnosis that revises an expert score upward. It is traced end to end, with the corridor map and three named conditions, in Section 6.5.

ADJ-4. Overcrowded schools and health centres (St-Soc-1) narrowed to schools only.

The original CRPT item bundles two distinct service systems with different drivers and different policy levers. Health-facility capacity is treated under St-Soc-6 (weak public health systems and coverage); separating the two prevents double-counting. St-Soc-1 in this diagnosis covers public schooling capacity exclusively: enrolment pressure, classroom density, teacher-to-student ratios, and hazard exposure of school facilities. Both items retain their composite scores; only the analytical scope of St-Soc-1 narrows.

ADJ-5. Increasing crime rates (St-Soc-7) retained in the priority stresses although its raw score sits below two higher-scoring items.

The strict composite ordering places St-Soc-7 at CPS 14.19, just below absence of green and public spaces (St-Env-2, 17.2) and weak public schooling (St-Soc-2, 15.7). Both hold-outs are kept in the 25-stress catalogue but reported below the priority boundary. Crime is nonetheless carried into the top-fifteen priority set on the strength of a documented post-2019 rise in property crime alongside contracting public-security and policing capacity (International Crisis Group, 2025; EUAA, 2025). This is a disclosed retention on recency evidence, not a change to the composite score; the two higher-scoring hold-outs and this retention are logged together in Annex A so the priority boundary is auditable end to end.

Membership note. Refugee influx (Sh-S-3) folded into war and displacement (Sh-S-7).

On raw composite score, refugee influx (Sh-S-3, CPS 18.1) would enter the top-ten shocks. It is treated within the war-and-aggression shock (Sh-S-7) and the parallel camps geography (Section 3.6) rather than listed as a separate priority shock, to avoid double-counting the same displacement dynamics across two items. The decision is disclosed here and in Annex A so the shock ranking remains fully auditable.

2.6 Project timeline

The diagnosis was delivered across eleven project phases between July 2025 and February 2026, moving from inception and capacity-building, through methodological consolidation, indicator-process launch, institutional onboarding, multi-level coordination, stakeholder engagement, expert and participatory validation, and the institutional deep dive, to synthesis and reporting. Figure 2.4 documents the full sequence.



Figure 2.4. Project timeline, July 2025 to February 2026. Eleven phases from inception through synthesis and reporting, colour-coded by stage in the brand palette: setup and methodology; institutional alignment and coordination; engagement and participatory validation; and deep dive and synthesis. Source: Saida Urban Observatory, Hariri Foundation, 2025.

2.7 Limitations

The diagnosis should be read as a baseline produced under compounding crisis conditions. Five limitations qualify the findings.

First, stakeholder engagement did not reach full representation across all sixteen municipalities, and the workshop cohort did not include dedicated representation from camp residents or housing-rights actors. Although an inclusive stakeholder engagement plan was developed in the early inception phase to include all actors, participation from these groups remained weak. This shaped the under-representation analysed in [Section 5.7](#) and [Section 6.3](#).

Second, the temporal context is exceptional and volatile. The assessment was conducted in the aftermath of the 2024 armed escalations and amid ongoing insecurity, layered onto the continued effects of COVID-19, prolonged economic and currency collapse, loss of remittances, repeated fuel and electricity disruptions, and broader geopolitical shifts. This anchors community prioritisation in recent and lived disruption, and limits space for anticipatory and long-horizon resilience thinking.

Third, crisis severity shapes the nature of priorities. Many stakeholders operate under daily survival pressures, which naturally elevate urgent short-term relief needs over longer-term structural and systemic interventions, even where the latter are recognised as underlying drivers.

Fourth, data constraints remain significant. Indicator completion varies by dimension: 79% for economic, 78% for social, 56% for environmental, and 32% for institutional (Hariri Foundation, 2025). The institutional gap is itself a finding of the diagnosis. Data fragmentation across initiatives, uneven digitisation, and gaps in timely disaggregated records limit trend analysis, comparability across municipalities, and the resolution of certain spatial assessments.

Fifth, the CRPT requires a shared understanding of urban resilience concepts. The tool's complexity, combined with uneven local familiarity, indicates a continued need for structured capacity-building among municipal and community stakeholders, to strengthen interpretation, participation, and uptake of the diagnosis into planning and investment processes. This was addressed through two municipal staff induction sessions at the Municipality of Saida, to familiarise participants with the tool and its concepts, together with a one-page handout sent to mayors.

2.8 International alignment

The diagnosis is calibrated against three international frameworks that govern urban resilience and disaster risk reduction: the Sendai Framework for Disaster Risk Reduction 2015 to 2030, the New Urban Agenda (UN-Habitat, 2017), and the Sustainable Development Goals, particularly SDG 11 (Sustainable Cities and Communities). Each priority cluster identified in [Section 8](#) maps to specific Sendai targets, New Urban Agenda paragraphs, and SDG 11 indicators. [Figure 2.5](#) makes the cross-walk explicit. The same alignment anchors the comparative frame used throughout: the MedCities comparator set for this diagnosis is Tetouan, Tangier, Mahdia, and Larnaca, and the CRGP flagship references are the Teresina profile and the Terres de l'Ebre territorial pilot, against which [Section 10.6](#) sets the comparability crosswalk ([Section 1.1](#)).

PRIORITY CLUSTER	SENDAI FRAMEWORK TARGET	NEW URBAN AGENDA ¶	SDG 11 INDICATORS
Infrastructure & Utilities	D, G	\$73 - \$76 - \$119	11.1 - 11.5
Economic Security	D, G	\$43 - \$57 - \$60	11.a - 11.b
Institutional Capacity	E, F	\$85 - \$86 - \$87	11.3 - 11.b
Health & Care Capacity	B, D	\$73 - \$107 - \$111	11.7 - 11.b
Environmental Hazard	C, D	\$63 - \$65 - \$70	11.6 - 13.1
Safety & Social Cohesion	E, F	\$103 - \$104 - \$148	11.7 - 16.a

Sendai targets: A loss of life - B affected - C economic loss - D infrastructure - E DRR strategies - F international cooperation - G early-warning

NUA = New Urban Agenda (UN-Habitat, 2017) - SDG = Sustainable Development Goals (UN, 2015). The six analytical clusters mapped to the frameworks that Phase II financing indexes against.

Figure 2.5. International alignment matrix. The six analytical clusters mapped against Sendai Framework targets (A loss of life, B affected, C economic loss, D infrastructure, E DRR strategies, F international cooperation, G early-warning), New Urban Agenda paragraphs, and SDG 11 indicators. The matrix supports comparability across MedCities and other CRPT-applying cities, and supports the Phase II financing dialogue with multilateral donors that index against these frameworks. Source: Saida Urban Observatory, Hariri Foundation, 2025.

The Mediterranean comparator framing matters as well. Saida-Zahrani is one of MedCities' partner cities, and comparable diagnostic work has been conducted in Tetouan, Tangier, Mahdia, and Larnaca within the same network. The cluster vocabulary used here (Infrastructure and Utilities, Economic Security, Institutional Capacity, Health and Care Capacity, Environmental Hazard, and Safety and Social Cohesion) is intentionally portable across MedCities partners, so tha

03

Saida-Zahrani in Context

The territorial history that made the Union's vulnerabilities structural.

SAIDA-ZAHRANI • URBAN RESILIENCE DIAGNOSIS

3. Saida-Zahrani in Context

“Saida is the third largest city in Lebanon, but its demographic strength is primarily due to the cluster of municipalities surrounding it. Resilience must be approached as a Union-scale challenge, not a city-only one.”

Hallaj, Ramadan and Stuart, 2014, *Cities and Refugees: The Lebanon Conundrum*

The Union of Municipalities of Saida-Zahrani is a functional territory of sixteen municipalities on Lebanon’s southern coast. Its combined area is approximately 60 km² and its population approximately 378,039, of which 69,049 reside in the Ain El-Helweh and Mieh w Mieh refugee camps (CAS and CBS, 2019; UNRWA, 2022; Hariri Foundation, 2025). Two further towns, Zaghdraiya and Mtayriyeh, lie within the territorial envelope but are not part of the Union’s administrative structure, as neither is categorised as an independent municipality.

The Union’s vulnerabilities did not arrive with the post-2019 crisis; they accumulated, layer on layer, through a century of centralisation, displacement, and under-investment. This section reads that accumulation as one account, in six parts: historical layering; geographic and spatial structure; the demographic and climatic profile; the governance and institutional architecture, including how the Union is financed; the readiness of the Union’s political leadership as reported through Key Informant Interviews with member mayors; and the parallel governance geography of the two Palestinian refugee camps.

3.1 Historical context

Located approximately 40 kilometres south of Beirut, Saida, also known as Sidon, is Lebanon’s third largest city. Its natural harbour, among the oldest in the Levant, functioned for centuries as the principal maritime gateway linking Damascus and the eastern Mediterranean to regional and international trade, a role it held until the early twentieth century. Saida’s demographic weight rests less on the city itself than on the cluster of municipalities around it (Hallaj et al., 2014).

The Union of Municipalities of Saida-Zahrani was founded in 1978 as the first Union of Municipalities in Lebanon, established to coordinate municipal resources and functions at the meso-level (Samaha, 2022). The territory has evolved as a polycentric urban system built around the coastal city of Saida, which serves as the primary administrative, economic and service hub for the wider sub-region. This functional relationship, rather than municipal boundaries alone, has shaped settlement, service provision and vulnerability across the territory over time (UN-Habitat and UNICEF, 2019; Mahdi et al., 2023).

Saida’s role as a port city and later as the capital of the South Lebanon Governorate made it the primary node for trade, governance and service provision across its hinterland (UNESCO, 2019). Over time this centrality produced a functional urban hierarchy: higher-order services in healthcare, education, markets and public administration concentrated in Saida, while surrounding municipalities took on residential, agricultural and peri-urban functions. The

result is a set of structural interdependencies across the Union. Saida city continues to absorb daily inflows for employment and services, while surrounding municipalities increasingly host population growth without matching investment in infrastructure or institutional capacity. This imbalance is a foundational condition for understanding resilience at the Union scale (UN-Habitat, 2018).

Religious composition in downtown Saida mirrors Lebanon's wider pluralism: a Sunni Muslim majority of approximately 79%, alongside Shiite Muslims of around 10% and Christian communities, Catholic and Maronite, of approximately 7% (Makhzoumi and Al-Sabbagh, 2014). The result is a dense, layered urban environment where heritage, displacement, ecology and growth press against one another. Contemporary resilience challenges have to be read inside that structure.

3.1.1 Post-war urban expansion and spatial fragmentation

The end of the Lebanese civil war marked a turning point in the Union's spatial development. Post-war reconstruction, economic zoning policies and weak enforcement of planning regulations enabled residential expansion beyond Saida's administrative boundaries into neighbouring municipalities (Mahdi et al., 2023). Expansion followed transport corridors and peri-urban land, producing dispersed settlement and the progressive fragmentation of agricultural and open spaces.

A growing share of Lebanese citizens registered in Saida now reside in surrounding municipalities within the Union. This reinforces the functional integration of the territory while complicating service provision, land management and environmental protection (UN-Habitat and UNICEF, 2019). These dynamics show the limits of city-only analysis and justify a Union-level lens for resilience assessment.

Successive waves of displacement have further reshaped the Union. The long-standing presence of Palestinian refugee camps, most notably Ain El-Helweh and Mieh w Mieh, has influenced urban density, service demand and governance arrangements for decades. By 2021, 25% of Palestinians in Lebanon (PRL and PRS) were concentrated within Saida city, making it the highest-hosting Lebanese city (UN-Habitat Lebanon and ESCWA, 2021). After 2011, the Syrian crisis added demographic pressure: by 2021 Saida city alone hosted over 25,000 Syrian refugees, with significant spillover into neighbouring municipalities. These shifts intensified demand for housing, basic services and livelihoods, often in municipalities with limited fiscal and administrative capacity, deepening spatial and social inequalities. The 2024 armed escalations offer a recent example, with internal displacement into Saida city alone totalling approximately 21,000 individuals (Administrative Boundaries of the Municipality of Saida).

3.1.2 Economic restructuring and chronic stress

The Union's historical economic base of trade, agriculture and small-scale manufacturing has eroded over recent decades. Declining agricultural viability, labour informality and limited productive investment weakened local livelihoods well before Lebanon's economic crisis (UN-Habitat and UNICEF, 2019). By 2018, unemployment among Lebanese adults in Saida reached 9.6%, while youth unemployment exceeded 23%, with similar or higher vulnerability across

surrounding municipalities (Mahdi et al., 2023). In 2022, the unemployment rate in the South Lebanon Governorate rose by 24 percentage points to 36.5% (CAS and ILO, 2022).

Since 2019, Lebanon's financial collapse has amplified these long-term stresses, sharply reducing purchasing power, municipal revenues and service-delivery capacity (World Bank, 2023). The crisis interacts with pre-existing structural weaknesses rooted in earlier development trajectories rather than standing apart from them. Contemporary stresses, analysed in [Section 5](#), should therefore be read as an amplification of long-running structural conditions, not as freestanding events. [Figure 3.1](#) documents the six-year compound-shock window that conditions the entire diagnostic baseline.

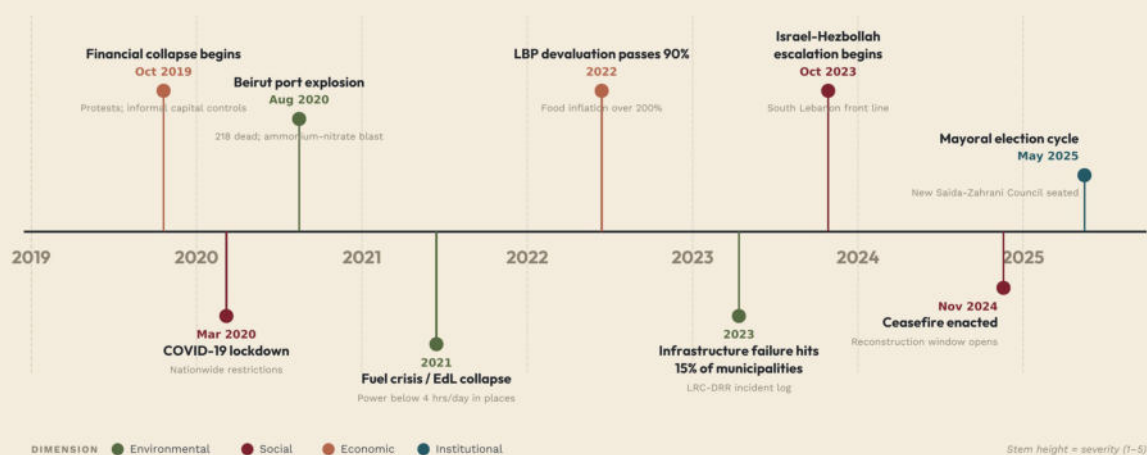


Figure 3.1. Lebanon's compound-shock timeline, 2019–2025. Nine major events across financial, social, environmental and institutional dimensions, stacked over six years. Saida-Zahrani sits inside this compounding window, and the diagnostic baseline reflects all of it. Stem height encodes severity on a 1-to-5 scale; dimension colour follows the unified palette. Source: World Bank Lebanon Economic Monitor; HRW; LRC-DRR; Saida Urban Observatory, Hariri Foundation, 2025.



Figure 3.2. *Post-2019 economic transmission. Five concurrent transmission channels (unemployment, food inflation, currency, banking access, poverty) compressed into a single dashboard. Each amplifies the others, and together they form the macro-economic envelope within which every priority stress and shock in this diagnosis operates. Source: World Bank, ESCWA, BdL, WFP, ILO. Compiled by Saida Urban Observatory, Hariri Foundation, 2025.*

3.1.3 Implications for resilience analysis

Anchor framing: territorial history. Centralisation, spatial spillover, displacement and chronic economic stress have produced vulnerabilities that are territorial, cumulative and systemic, rather than isolated to individual municipalities or sectors. Resilience in the Union of Saida-Zahrani must therefore be approached as a Union-scale challenge that requires coordinated governance, integrated planning and interventions differentiated to both inherited structural conditions and emerging risks (UN-Habitat, 2018; UN-Habitat, 2023).

3.2 Geographic and spatial profile

The Union is defined by a coastal-inland gradient that shapes settlement, land use and exposure to environmental risk. The territory runs from the Mediterranean coastline westwards into rising foothills and agricultural hinterlands, forming a continuous system that integrates dense urban areas with peri-urban and rural landscapes. Saida city occupies a narrow coastal plain, while surrounding municipalities such as Haret Saida, Hlaliyeh, Ghazieh, Bqosta and Mieh w Mieh sit in transitional zones between the coast and inland elevations, accommodating much of the region's post-war urban expansion (UN-Habitat and UNICEF, 2019; Mahdi et al., 2023).

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Administrative boundaries

Union of Municipalities of Saida-Zahrani

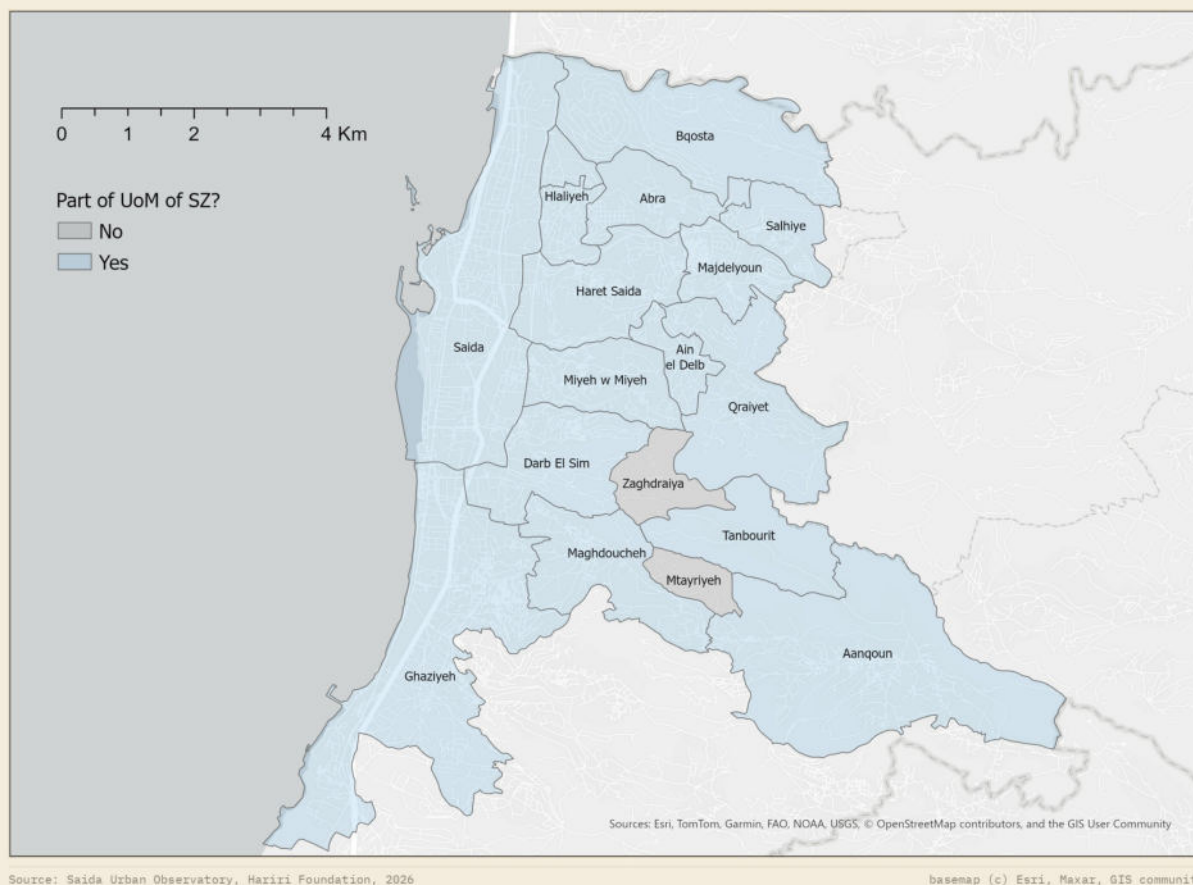


Figure 3.3. Administrative boundaries of the Union of Municipalities of Saida-Zahrani, with member municipalities labelled. Zaghdraiya and Mtayriyeh lie within the geographic envelope but are not administratively part of the Union. Source: Hariri Foundation, 2025.

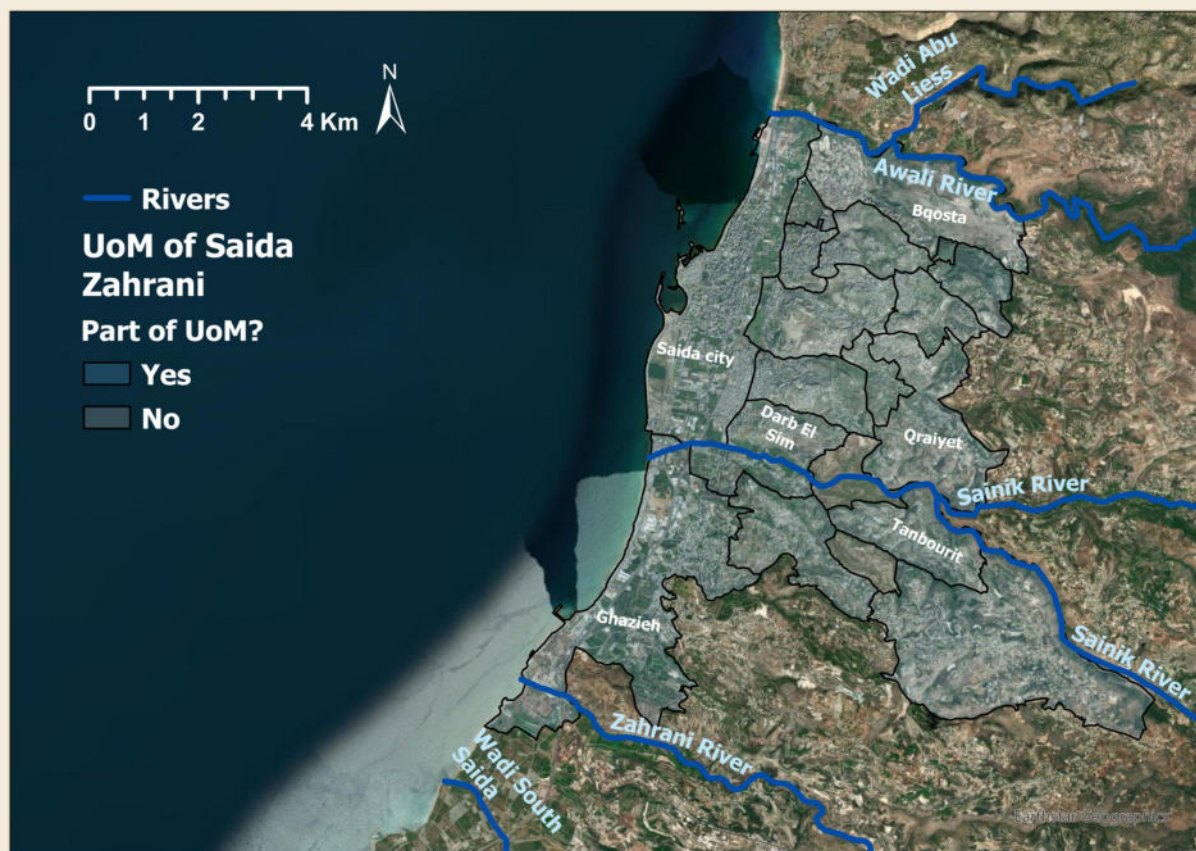
3.2.1 Hydrology and natural drainage

The territory is structured by major river systems. The Awwali River to the north and the Zahrani River to the south define the outer boundaries of the Union and shape flood dynamics in adjacent municipalities. The Sinniq River crosses the central territory. A network of seasonal streams and wadis, particularly Wadi Abu Liess and Wadi South Saida, functions as natural drainage but also forms zones of heightened flood risk where encroachment, inadequate maintenance and solid-waste accumulation constrict flow. These water bodies act at once as ecological assets and as sources of vulnerability, especially under intense rainfall and climate variability.

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Named river network

Union of Municipalities of Saida-Zahrani



Source: Saida Urban Observatory, Hariri Foundation, 2026

basemap (c) Esri, Maxar, GIS community

Figure 3.4. Named river network of the Union. The Awwali, Sinniq and Zahrani rivers frame the territory; two seasonal wadis carry winter flows. Source: Hariri Foundation, 2025; Earthstar Geographics.

3.2.2 Urban fabric and post-war expansion

Built urban fabric covers 21.89 km², approximately 37% of the Union's total area (CNRS-L, 2021). Fabric is dense in the coastal strip and in Saida's old core, and fragments into dispersed residential development across the peri-urban municipalities. Recent urban expansion totals 0.9 km², concentrated in Qraiyet and Darb es-Sim and consisting mainly of residential construction on former agricultural land. The expansion-to-fabric ratio of about 4% is low relative to other Lebanese coastal regions, but it should not be read as containment through planning. The territory is already substantially built, and construction capacity has contracted sharply under Lebanon's post-2019 financial crisis (World Bank, 2023). Expansion pressure in the peri-urban zone is expected to resume as crisis conditions ease.

Saida's old port and the heritage core. The Union's most distinctive urban-form feature is the heritage core of Old Saida, organised around the natural harbour and the surviving fabric of the 13th-century Crusader Sea Castle (Qal'at al-Bahr) and the adjacent Khan El Franj. Old Saida is on UNESCO's tentative list of World Heritage Sites (UNESCO, 2019) and was the subject of the World Bank-financed Cultural Heritage and Urban Development Project (CHUD), implemented from 2003 to 2014, which rehabilitated the souk fabric, the public realm of Bab El-Serail Square and key heritage buildings (Al-Hagla, 2010). The CHUD legacy is a defining

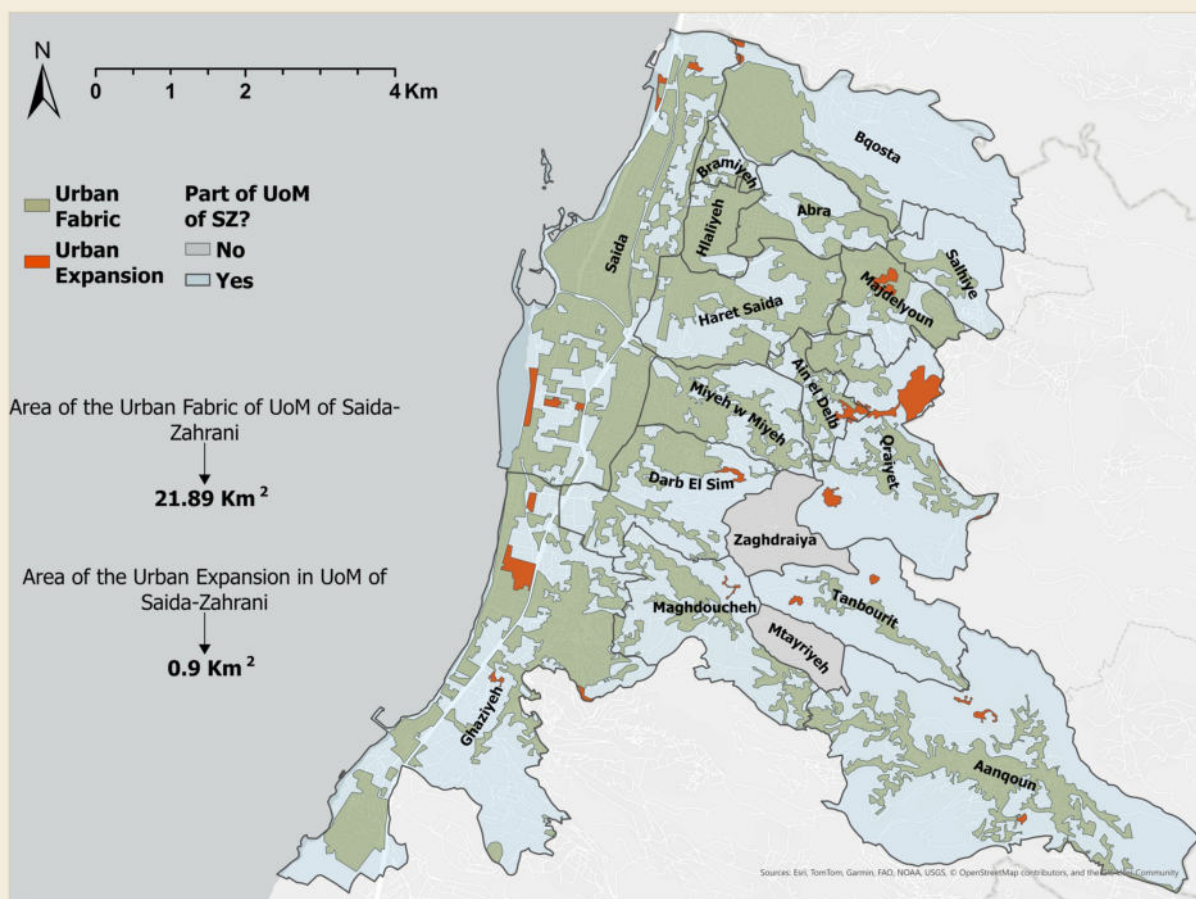
asset for Phase II planning: it provides documented baseline conditions for the heritage core, established institutional relationships between Saida Municipality and CDR that remain active, and demonstrated that integrated heritage-livelihoods regeneration is achievable in this fabric (UNESCO, 2019; CDR, 2001).

The heritage core also concentrates exposure. Approximately 4 km² of the coastal fabric, including the historic core, sits below 10 metres elevation and within the modelled tsunami inundation envelope (CNRS-L, 2025; see [Section 6.3.1](#)). The same fabric carries some of the highest building-density values in the Union and the oldest infrastructure stock, including water-network segments that in many cases pre-date Lebanese independence (LCPS, 2025). The heritage core is therefore at once the Union's most distinctive cultural asset and one of its highest-exposure spatial concentrations, a duality the Phase II pathway in [Section 10](#) must address directly.

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Urban fabric and recent expansion

Union of Municipalities of Saida-Zahrani



Source: Saida Urban Observatory, Hariri Foundation, 2026

basemap (c) Esri, Maxar, GIS community

Figure 3.5. Urban fabric (green) and recent urban expansion (orange). Fabric: 21.89 km². Expansion: 0.9 km², concentrated in Qraiyyet and Darb es-Sim. Source: Hariri Foundation, 2025.

The inherited fabric is itself a source of vulnerability. In the Saida EL-Qadimeh cadastre, approximately 80% of building clusters were constructed before 1920 (UN-Habitat and UNICEF, 2019). The resulting dense historic core concentrates exposure to fire, earthquake and infrastructure failure, while narrow street widths limit emergency-vehicle access. Following

major destruction in Old Saida during the 1956 earthquake and the 1982–1985 Israeli invasion, displacement and reconstruction increasingly occurred outside the historic core (CDR, 2001; UN-Habitat Lebanon, 2019). Later investment in transport infrastructure, notably the Prime Minister Rafic El-Hariri coastal highway and its southern extension, improved regional connectivity but also reinforced peri-urban residential growth.

3.2.3 Industrial geography: two coastal clusters

The Union's heavy and hazardous industry does not form a single southern corridor. The facility inventory records two distinct coastal clusters roughly four kilometres apart, with different hazard signatures (Hariri Foundation facility inventory, 2025).

The first cluster sits on Saida's southern edge, in the Sinniq–Dakerman area. It concentrates the IBC solid-waste treatment plant, the wastewater treatment plant, butane and LPG refill stations, an oxygen-bottling facility, a detergents-and-chemicals unit, an industrial-printing works, an abattoir, a glass manufacturer, scrap yards, and steel and furniture workshops. The inventory records a horizontal distance of roughly one kilometre from the IBC facility to the nearest edge of the Ain El-Helweh camp. This is the Union's dense-residential, mixed-industrial and camp-adjacent cluster. Its defining hazard is the proximity of multiple flammable and toxic point sources, where LPG refill and oxygen bottling are credible ignition and explosion hazards, to a camp population of roughly 63,000 with constrained evacuation routes.

The second cluster lies on the Zahrani coast, about four kilometres further south, and concentrates two nationally significant state-affiliated installations. The Zahrani Oil Installations comprise a state oil terminal and tank farm managed by the Directorate General of Oil under the Ministry of Energy and Water, together with the mothballed MEDRECO refinery. The site was historically the Mediterranean terminus of the Trans-Arabian Pipeline (Tapline), which from 1950 carried Saudi crude across Jordan and Syria to Zahrani; ownership passed to the Lebanese state on 31 December 1983 (Directorate General of Oil, Lebanon). The refinery, commissioned around 1950 at roughly 17,500 barrels per day, was abandoned by its owners in 1986 and has not refined since; the site now functions as an import, storage and distribution terminal. The tank farm holds on the order of 4.5 to 4.9 million barrels of petroleum products across some 22 to 25 coastal tanks, the largest concentrated flammable inventory in the territory (Directorate General of Oil, Lebanon; GlobalData / Offshore-Technology, 2021). Immediately south sits the Zahrani combined-cycle power plant, an Électricité du Liban generation asset of roughly 435 to 465 MW commissioned in 1998, dual-fuelled on diesel or natural gas and supplied from the adjacent terminal (Power-Technology, 2022; Global Energy Monitor, 2026). Plastics, paints and metal-construction units and public beaches are interleaved between the two installations.

This second cluster is the large-fuel-storage, lifeline-generation and coastal-ecology concentration. It co-locates the territory's largest hazardous inventory with a national electricity asset and a publicly used, ecologically sensitive coastline. For that reason the Natech scenario in [Section 6](#) (a natural hazard that triggers a technological accident) anchors on the Zahrani corridor, while the camp-adjacency exposure is carried by the Saida-edge

cluster. Neither cluster is a cement works: no cement or clinker plant appears among the recorded facilities, and any earlier reference to a Saida cement plant is superseded by this two-cluster description. Read against the diagnosis clusters ([Section 8](#)), the Zahrani plant is an Infrastructure and Utilities node whose loss would cascade territory-wide, and the Saida-edge sources sit within the same constrained service and evacuation geography as the camps ([Section 3.6](#)).

3.3 Demographic and climatic profile

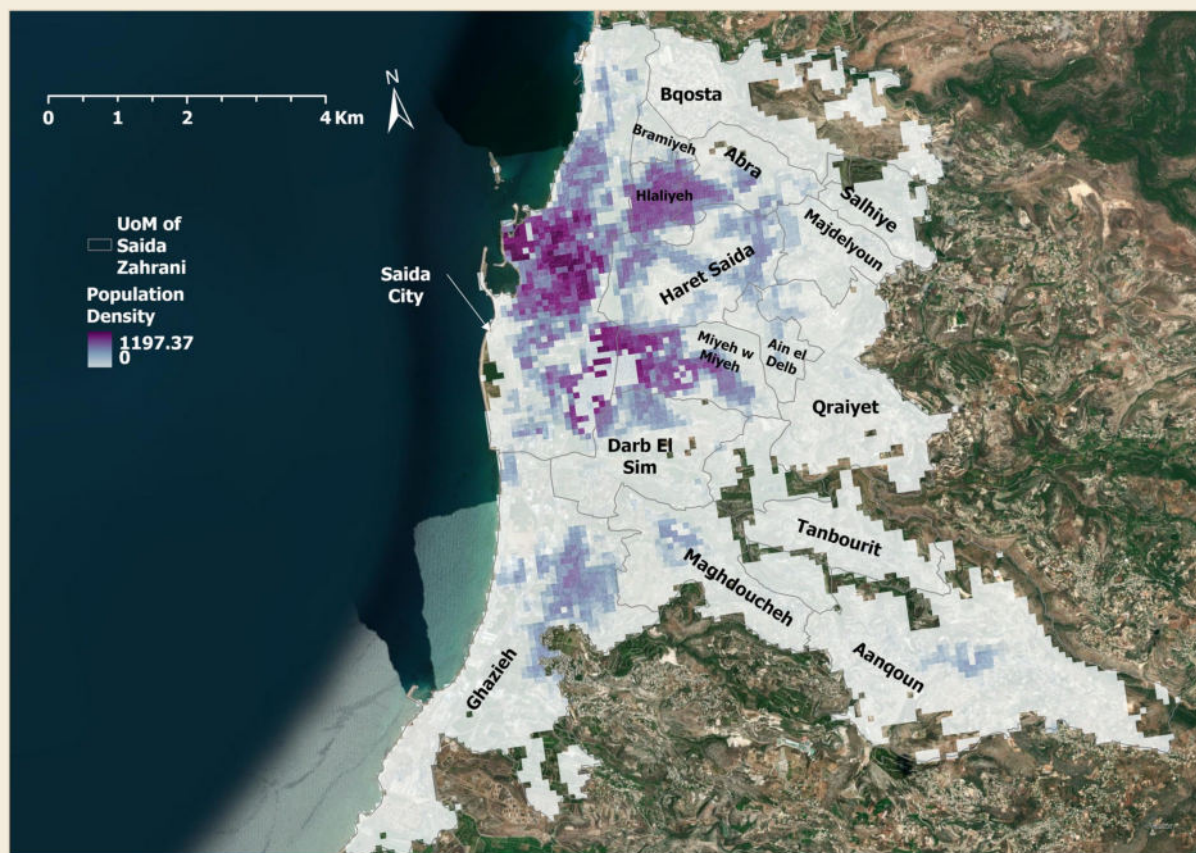
Demographic dynamics in the Union are strongly shaped by forced displacement and must be read through both official statistics and spatial distribution. According to the Lebanese Central Administration of Statistics (CAS and CBS, 2019), the total population of Saida is estimated at approximately 90,692 inhabitants, comprising 78,450 Lebanese nationals and 12,242 Syrian refugees. This contrasts with local estimates, which put the Syrian refugee figure far higher, peaking at around 60,000 before 2017 and declining to approximately 25,000 by 2017. The gap is itself diagnostic: a single data source cannot capture a dynamic displacement context (World Bank, 2021).

Beyond Syrian displacement, the Union hosts a significant Palestinian refugee population (PRL) of approximately 59,200 individuals, close to 36% of the Palestinian refugee population in Lebanon (Mahdi et al., 2023). Two camps lie within the territory. Ain El-Helweh, within the municipality of Saida, hosts approximately 63,000 registered residents and is the largest Palestinian camp in Lebanon (UNRWA, 2022); Mieh w Mieh hosts approximately 6,049 residents. The combined camp population is 69,049, approximately 18% of the Union total. The camps are serviced primarily by UNRWA but generate demand on shared water, electricity and education networks beyond their boundaries.

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Population density

Union of Municipalities of Saida-Zahrani



Source: Saida Urban Observatory, Haziri Foundation, 2026

basemap (c) Esri, Maxar, GIS community

Figure 3.6. Population density across the Union. Density peaks in Saida's old core and along the coastal axis, where intensification has consistently outpaced infrastructure capacity. Density within the Palestinian camps is higher still, with severe overcrowding documented. Source: WorldPop, 2025, via Humanitarian Data Exchange.

Population density averages 12,220 persons per km² across built and unbuilt land, rising to 18,770 persons per km² when restricted to built-up land (UN-Habitat Lebanon and ESCWA, 2021). The built-up figure is among the highest recorded in any Lebanese urban area, and local density in Saida El-Qadimeh exceeds it. These demographic layers, Lebanese residents, long-term Palestinian refugees and post-2011 Syrian refugees, produce differentiated patterns of vulnerability and resilience, with tensions over housing, services, livelihoods and social protection. The 2024 armed conflict added a further influx of internally displaced people seeking refuge, with longer-term demographic effects still settling.

3.3.1 Climatic, environmental and ecological profile

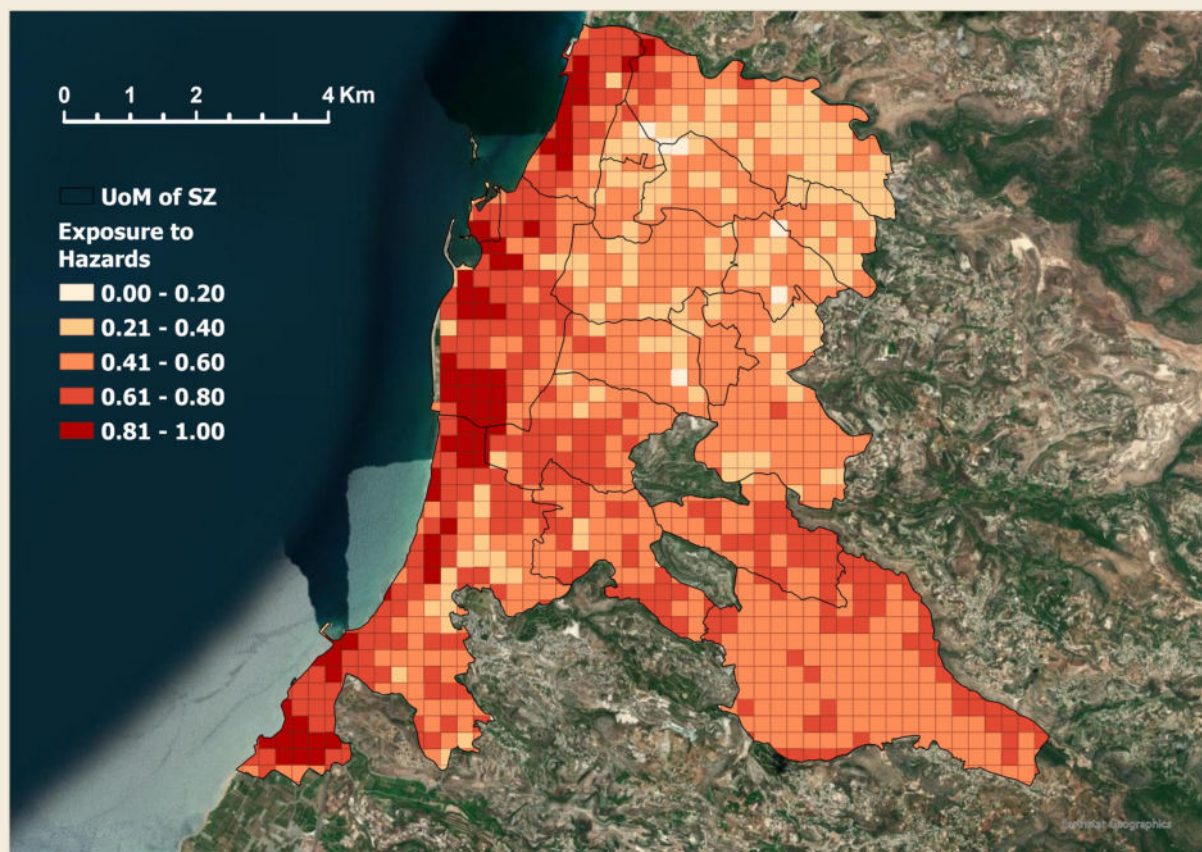
Climatic and environmental conditions in the Union act as structural stressors that interact with demographic pressure, urban form and service provision, shaping both everyday vulnerability and shock-response capacity. The territory has a Mediterranean climate, with rainfall concentrated over short winter periods and prolonged summer heat. Recent assessments point to increasing rainfall variability and intensity, raising the likelihood of surface runoff and localised flooding, particularly where rapid urbanisation has reduced soil permeability and disrupted natural drainage (ESCWA, 2022; IPCC, 2022; Zittis et al., 2022).

Environmental stress is compounded by the progressive degradation of natural systems. Seasonal watercourses and drainage corridors, historically ecological buffers, are increasingly constrained by drought, inadequate maintenance, solid-waste accumulation and untreated wastewater. Under these conditions, climatic events that would otherwise be manageable can trigger cascading impacts: flooding of residential areas, damage to infrastructure and contamination of coastal and marine environments. Environmental degradation turns climate variability into amplified urban risk.

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Composite natural-hazard exposure

Union of Municipalities of Saida-Zahrani



Source: Saida Urban Observatory, Hariri Foundation, 2026

basemap: (c) Esri, Maxar, GIS community

Figure 3.7. Composite natural-hazard exposure across the Union, aggregating landslide, wildfire, storm, riverine flooding, coastal flooding, tsunami and earthquake hazard layers. No part of the Union's territory scores below 0.41 on the normalised 0-to-1 scale; the coastal strip and western urban edge score between 0.61 and 1.00. Source: Hariri Foundation, 2025; hazard data: CNRS-L, 2025.

Anchor framing: compound exposure is territory-wide. No part of the Union's territory falls below the composite-hazard threshold of 0.41. Interventions designed around a single municipality or a single hazard will not address compound exposure. [Section 5](#) and [Section 6](#) treat this compounding as structural rather than local.

The composite hazard envelope is the analytical foundation of every spatial finding in this diagnosis. Read against four exposure categories, population, infrastructure, schools and hospitals, its compounding logic becomes concrete. [Figure 3.8](#) presents that reading.

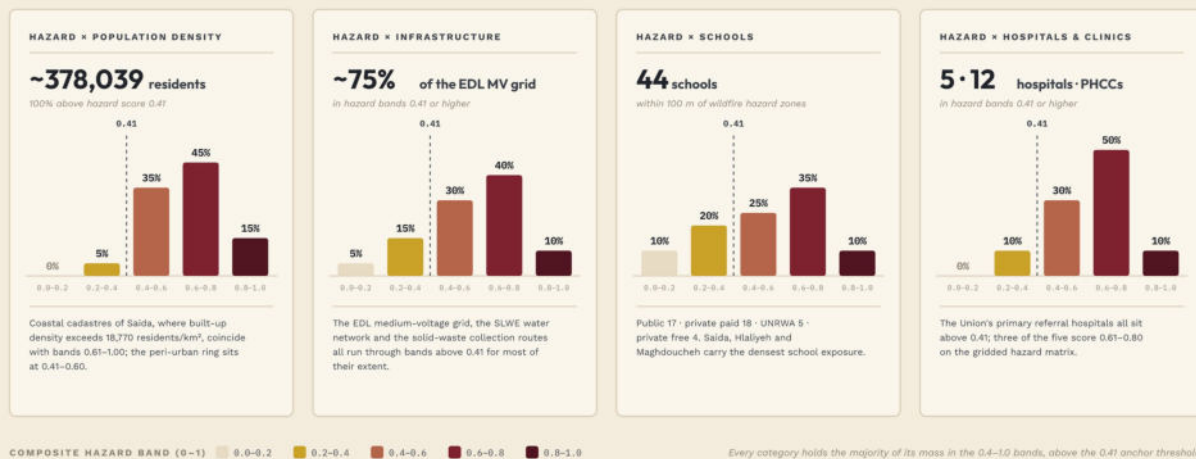


Figure 3.8. Compound exposure: hazard envelope by exposure category. Four small-multiple panels show the distribution of the Union's population, lifeline infrastructure, schools and health facilities across the five hazard bands. Every category has the majority of its mass in the 0.4-1.0 bands, above the 0.41 anchor threshold. Population and hospital concentrations sit highest in the 0.6-0.8 band; schools spread more evenly; infrastructure carries the broadest distribution. Source: Hariri Foundation, 2025 GIS inventory; CNRS-L, 2025; CAS and CBS, 2019. Saida Urban Observatory, Hariri Foundation, 2025.

3.3.2 Solid waste: a multiplier of environmental and climate risk

Solid-waste management is one of the Union's most consequential environmental stressors, and its history explains why. Waste is managed at the Union scale: collection, transport and street sweeping are outsourced to a private contractor, and treatment is handled at the solid-waste treatment plant on the southern edge of Saida city, operated by IBC s.a.l. The plant serves all sixteen municipalities and processes around 250 tonnes of mixed waste a day against an operator-stated capacity of about 500 tonnes, and at times it has taken additional waste from outside the territory (UN-Habitat, 2019; Annahar, 2026).

The present arrangement is the latest turn in a four-decade cycle. An open dump was started in 1982 on the public maritime shore at Saida's southern edge during the Israeli invasion, first to consolidate war rubble and then as the city's main disposal site. It grew into the notorious garbage mountain, receiving around 300 tonnes a day from roughly 250,000 people across some 15 municipalities and rising to a height of 45 to 58 metres over about 60,000 m², with no basal liner or leachate system, recurrent fires and winter waste-slides into the sea, with debris reaching as far as Cyprus (Legal Agenda, 2016; UNDP and ReliefWeb, 2016; IPEN, 2006).

In 2002, Cabinet Ordinance No. 33 licensed Saida Municipality to infill the sea near Dakerman (about 28,095 m²) and to build a waste-treatment plant on the reclaimed land, the legal basis for the later IBC arrangement (Legal Agenda, 2016). Between 2008 and 2010, IBC s.a.l. established the mechanical-biological-treatment and anaerobic-digestion plant at Sinniq. From 2012 the old dump was closed and rehabilitated: a seawall was built (around USD 29 million, of which about USD 20 million came as a Saudi grant), and in October 2012 a Ministry of Environment and UNDP agreement (around USD 25 to 30 million) began converting the dump into a seafront park, with waste diverted to the Sinniq plant (Business News, 2012; Daily Star, 2012). Sorting from 2013 found about 60% of the heap to be construction rubble, reused for land reclamation; by 2016 the mountain had been cut from 55 to 58 metres down to an 8-

metre capped, lined mound, and roughly 33,000 m² of reclaimed land opened as a UNDP seafront park, part of a planned 100,000 m² (phys.org and AFP, 2014; UNDP and ReliefWeb, 2016). This is the internationally praised rehabilitation, described at the time as a move from shame to fame.

The model then unravelled. Around a change of management in 2021, plant operations deteriorated, a period of non-operation allowed about 40,000 tonnes of untreated waste to accumulate, and a 2022 Ministry of Environment and World Bank study estimated around USD 863,000 to restart it (ARIJ, 2025; Daraj, 2025). In late 2022 the street-collection contractor halted work over unpaid state dues, around LL 30 billion owed since 2019, and fuel shortages (L'Orient Today, 2022). By January 2023 the treatment plant was fully shut, the landfill had regrown into a resurrected garbage mountain, and the seafront park was found gated (L'Orient Today, 2023). A precarious interim followed. A new tender re-contracted street collection in mid-2024, IBC pledged to clear the accumulated waste and reported roughly 60% daily treatment after adding shifts, a municipal solidarity fund covered collection during a contract gap, and Decree No. 13 provided for paying treatment plants about 60 to 65% of invoice value in fresh dollars as a workaround for currency devaluation (L'Orient Today, 2024; Lina News, 2024). Independent dives in 2014 and 2017 had already documented hundreds of tonnes of submerged waste offshore and a lagoon of roughly 50,000 m² within the plant footprint, described in official documents as among the most polluted sites; a plan costed at around USD 6 million (LL 9 billion) in 2019 to fill it was never implemented (ARIJ, 2025; Daraj, 2025). In January 2026 the Union decided to stop receiving waste from Jezzine city and the Jezzine–Ain Majdaleen union on capacity and environmental grounds, reopening inter-union tensions (Annahar, 2026).

Present performance reflects this trajectory. The plant does not operate at full capacity because of political and budgetary constraints. Around 50% of the solid waste produced is mishandled or improperly disposed of, and the volume recycled is roughly 129,927 m³, or 20% of total solid waste collected (Hariri Foundation and UNEP, 2025).

From a resilience standpoint, solid waste is a multiplier of environmental and climate risk. Inadequate disposal amplifies the impact of intense-rainfall events, degrades drainage performance and raises exposure to health hazards, particularly in dense urban areas. The physical infrastructure exists; the fragile link is the operating and financing arrangement. This ties the waste file directly to the municipal-finance mechanics in [Section 3.4.5](#) and to the Institutional Capacity cluster in [Section 8](#).

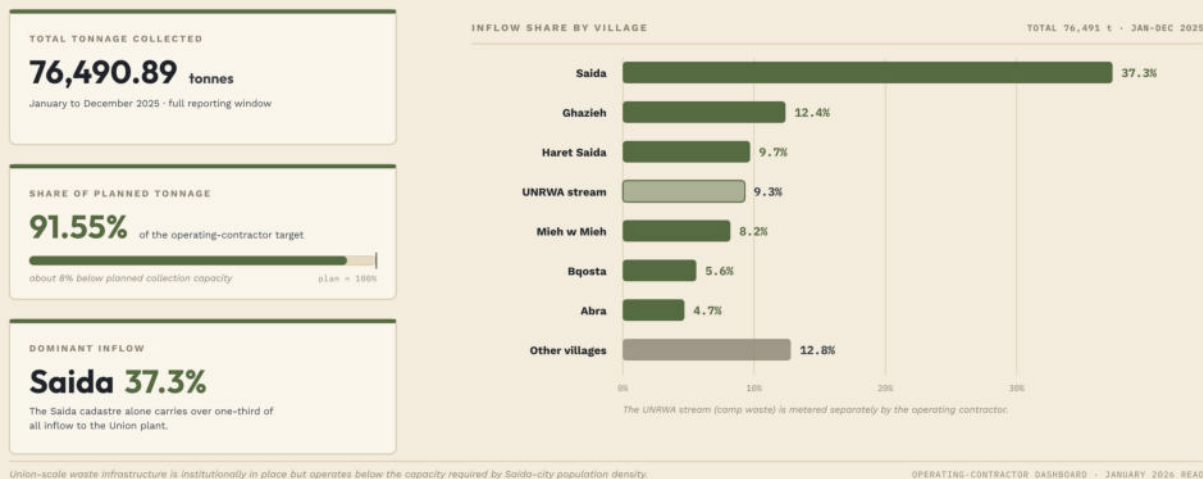


Figure 3.9. Saida-IBC municipal waste dashboard snapshot, January 2026. Cumulative weight collected during the reporting window: 76,490.89 tonnes across the Union, with 91.55% of the planned tonnage processed. The Saida cadastre accounts for 37.3% of total inflow, with the remaining inflow distributed across the member localities and UNRWA-served streams. Source: Operating contractor dashboard, January 2026. Compiled by Saida Urban Observatory, Hariri Foundation, 2025.

3.4 Governance and institutional profile

Governance in the Union is structured across several administrative and institutional levels: the sixteen municipalities and their elected councils; the Union of Municipalities; the South Lebanon Governorate; and the relevant national line ministries and utilities, including the Ministry of Interior and Municipalities (MoIM), the Ministry of Social Affairs (MoSA), the Ministry of Education and Higher Education (MEHE), the Ministry of Public Health (MoPH), the South Lebanon Water Establishment (SLWE), Électricité du Liban (EDL) and Ogero (telecoms), among others. This multi-level architecture shapes how urban risks are managed, how services are delivered and how resilience capacities are mobilised across the territory.

Saida city has a dual role as both a municipal authority and a regional service hub. Saida Municipality also heads the Union of Municipalities, providing a coordination platform across the sixteen members that enables shared service provision, pooled resources and collective action on issues beyond individual municipal capacity. This arrangement, established in 1978, matters for resilience because many shocks and stresses, flooding, waste-management disruptions, infrastructure failures and public-health risks, manifest at a sub-regional scale rather than within municipal boundaries. Administrative governance is supported by a network of mukhtars elected to expedite residents' civil processes. The Municipality of Saida is currently re-establishing its organisational structure with the support of the Council for Civil Service, adding staffing for urban observation, disaster management, data science and urban planning, which reflects both the willingness and the necessity of institutionalising urban resilience and evidence-based decision-making.

3.4.1 The Disaster Risk Management Unit as coordination anchor

The Disaster Risk Management (DRM) Unit, operating at the Union level, is the territory's main coordination asset and a cross-cutting entry point for resilience governance. The DRM Unit supports preparedness, response coordination and risk-related planning across the Union, helping to bridge sectoral and municipal boundaries. The 2024 update of the DRM strategy

strengthens this role, clarifying responsibilities, improving coordination and aligning local preparedness with national and international disaster risk reduction frameworks (Municipality of Saida-Zahrani, 2024). Within the municipal organogram, the DRM Unit takes on added strategic importance as a horizontal connector capable of linking the departments responsible for planning, environment, public works and social services. That positioning makes it a critical lever for moving from reactive crisis response to anticipatory, integrated resilience planning.

The Saida Urban Observatory and the Regional Technical Office extend the institutional architecture beyond the DRM Unit, sustaining a wider set of public-private and inter-agency arrangements at the Union scale. The Saida Urban Observatory, established within the Municipality of Saida and operated by the Hariri Foundation, holds data-sharing agreements with the LRC-DRR, CNRS-L, CAS, MoSA, MoPH and partner agencies. It maintains the indicator inventory, the incident log, the hazard layers and the PPI inventory, and produces the annual diagnostic update that this report initiates. How it carries the diagnosis forward is set out in [Section 9.1](#). It is the standing observatory function that converts the diagnosis from a one-off baseline into a continuous learning system.

The Regional Technical Office is a shared technical office established through a UN-Habitat programme that supports Lebanese municipalities with the GIS, engineering, and planning capacity they cannot staff on their own, available to municipal works across the Union. Its remit covers spatial planning, building permits, road and drainage works, and the technical due diligence that municipalities with limited in-house engineering capacity cannot supply on their own. The Observatory and the Office operate as complementary pillars: the Observatory supplies the evidence base, and the Office supplies the implementation capacity. Together they widen the institutional base through which the Union can sustain urban strategies between political cycles, and they anchor the institutional architecture that [Section 9](#) carries into the Phase II pathway.

3.4.2 Spatial development planning and strategic urban frameworks

Saida's urban governance carries the imprint of two anchor planning initiatives. The Cultural Heritage and Urban Development (CHUD) Project (2001–2014, treated in [Section 3.2.2](#)) prioritised community development over tourism-driven regeneration and rehabilitated public space, heritage assets and local livelihoods in the historic core. The National Physical Master Plan of the Lebanese Territory (NPMPLT), prepared by CDR in 2004, identified Saida as a strategic productive hub, named the agricultural hinterland extending towards Naqoura, and recognised tourism and commerce as development assets. Between 2011 and 2015, the Urban Sustainable Development Strategy (USUDS) for Saida was developed under the MedCities Euro-Mediterranean initiative, implemented by Saida Municipality with the Hariri Foundation. The USUDS targeted tourism, environmental management and public-space rehabilitation, particularly within Old Saida (UN-Habitat Lebanon, 2019). Implementation has remained uneven, constrained by fiscal, institutional and political challenges.

3.4.3 Institutional coordination and partnerships

Governance in the Union runs through a dense ecosystem of actors: municipalities, national institutions, civil society organisations, humanitarian agencies and international partners. This diversity enables mobilisation during crises but also produces fragmented planning and parallel interventions, particularly in the absence of a unified resilience framework. Engagement during this diagnosis, through workshops, coordination meetings, KIIs and FGDs, showed both the willingness of local institutions to collaborate and persistent gaps in data sharing, role clarity and continuity across political cycles. The diagnosis process itself worked as a governance-strengthening exercise, opening dialogue among the municipalities, the Union, the Governorate and technical partners around shared risks and priorities.

3.4.4 Governance vulnerability and resilience implications

Municipalities in Saida-Zahrani, like many across Lebanon, face chronic constraints in financial resources, staffing and technical expertise, deepened by the 2019 economic and fiscal crisis. They are currently functioning with newly elected councils following the May 2025 municipal elections, held after years of postponement. They remain chronically underfunded and heavily dependent on transfers from the Independent Municipal Fund, which are often delayed for years and devalued by inflation. Local revenue sources are minimal and outdated, insufficient to cover basic operating costs. Structural and legal constraints, notably the 1977 Municipal Act, grant nominal autonomy under significant central-government oversight, limiting the power municipalities have over broader development needs such as water resources and regional landfills.

Read structurally, Lebanon's resilience deficit at the local scale is a fiscal-architecture problem before it is a technical one. Municipalities and unions hold broad legal responsibilities, town planning, sanitation, local infrastructure, public health and safety, yet the same 1977 framework keeps them under close central oversight and grants little genuine fiscal autonomy (Arab Reform Initiative, 2025). The result is a structural dependence on central transfers, and when that pool is delayed, devalued or politicised, local capacity to plan, maintain services and invest in risk reduction contracts sharply. This is the mainspring of local fragility, and it is visible directly in Saida's waste and readiness gaps.

Layered onto this is a distributional logic shaped by confessional and clientelist governance. Empirical work on Lebanese public finance finds that the geographic allocation of public spending tracks the sectarian composition of localities more closely than it tracks measured need, and that a locality's confessional polarisation and mix, rather than its poverty alone, predict its success in attracting development funds (Salti and Chaaban, 2010). The implication for a diagnosis is analytical rather than accusatory: resilience investment does not flow automatically to the highest-risk territory, and a territory's ability to capture resources depends partly on its political-economic position. That is one structural reason why an evidence-led, needs-based instrument such as the CRPT has value, because it makes the risk-to-resource mismatch visible.

Alongside formal institutions, the city sustains an NGO Platform of Saida, a coordination space convened by civil-society actors operating in the Union. The Platform brings together local

associations, faith-based actors, youth organisations and humanitarian partners, and acts as a single channel through which civil-society participation is mobilised into municipal planning, crisis response and the diagnosis process. It is the principal organisational counterpart for civil-society engagement in [Section 2.2](#), and the venue through which the workshop cohort named in [Section 5.7](#) (camp-resident representation, gender-specific advocacy, housing-rights actors) will be expanded in the next monitoring cycle. The Platform is not captured in the 24-organisation Inter-Agency Coordination roster, which counts service-delivery providers rather than coordination platforms, and is noted here to make the dual organisational architecture explicit.

Service provision in areas such as waste management, health and social protection therefore relies on a combination of municipal, Union-level, state and non-state actors, including UN agencies. As of December 2025, at least 24 organisations deliver 168 services across key sectors in the Saida District, with concentrations in child protection, protection, gender-based violence and health (Inter-Agency Coordination, 2025). This external support has been indispensable, but its predominantly sectoral and short-cycle character can fragment interventions and substitute for, rather than build, durable local capacity. Aid dependency thus interacts with fiscal dependence: where own-source revenue and central transfers both fail, donor projects become in effect the financing of core functions, with the volatility that implies. The fragmentation across sectors and actors reinforces the case for integrated governance mechanisms and resilience-oriented planning. [Figure 3.10](#) presents the structural distribution.



Roster sizes are indicative, not exhaustive; they reflect the actors visible to the Saida Urban Observatory at the close of Phase I. Tiers 1–2 are state actors; tiers 5–6 distinguish nationally registered NGOs from local civil-society platforms; tier 7 covers commercial actors. No single tier holds the complete picture of who delivers what in the Union.

Figure 3.10. Service-delivery architecture across the Union of Municipalities of Saida-Zahrani. The institutional tiers that carry service delivery across the sixteen municipalities and the Union, from national ministries and the Governorate of South Lebanon, through the Union and its member municipalities, to UN agencies, national and international NGOs, civil-society platforms and private-sector actors. The UN-led Inter-Agency Coordination roster captures formal humanitarian and development delivery; municipal departments and the NGO Platform of Saida (Section 3.4.3) are documented in the surrounding prose. Source: Inter-Agency Coordination Lebanon, 2025; Saida Urban Observatory, Hariri Foundation, 2025.

The vulnerability of Saida was also recognised in the Maps of Risks and Resources (MRR) assessment developed by MoSA and UNDP (2018), which identified environmental degradation and social stability as priority areas for intervention. The Lebanon Crisis Response Plan (LCRP) has served since 2015 as the national framework for coordinating humanitarian and stabilisation interventions in response to the Syrian crisis (Government of Lebanon and United Nations, 2024) and has mobilised substantial resources for basic service delivery, social stability and municipal capacity in Saida. Its predominantly sectoral, short-term programming cycles have nonetheless contributed to fragmented interventions at the local level, reinforcing the need for the integrated, diagnostics-led approach this assessment sets out.

The measured conclusion is that institutional fragility in Saida-Zahrani is systemic and largely exogenous to any single council's performance. It is produced by the fiscal architecture, the distributional logic, the aid model and the post-2019 macro-financial collapse acting together. This is consistent with, and supplies the structural explanation for, the report's Anchor Finding 3 in [Section 10.1](#): institutional weakness is the cross-cutting driver, analytically central but politically displaced.

3.4.5 Municipal finance: how the Union is funded

Municipal finance is not a background variable in this diagnosis. It is the proximate cause of the service-reliability and readiness gaps documented elsewhere in the report, and the clearest lever for the Phase II pathway. Lebanese municipal finance rests on four legally defined streams (UN-Habitat, 2022; LCPS; TIMEP, 2023).

First, directly collected taxes and fees. Municipalities are legally entitled to a long list, commonly cited as around 36 taxes and fees, but in practice the great majority of own-source revenue comes from three: the rental-value fee, the sewerage and sanitation fee, and the building-permit fee, together roughly 85% of directly collected revenue (TIMEP, 2023). Collection rates are low because of weak tax administration, outdated rates and registers, and limited enforcement (LCPS; UN-Habitat, 2022). Second, fees the State collects on municipalities' behalf and pools in the Independent Municipal Fund. The central government collects around 13 surtaxes and fees and deposits them in the Fund for redistribution, governed by Decree 1917/1979 on criteria based on resident population and locally collected revenue (UN-Habitat, 2022; Atallah). Third, financial aid, loans and advances. Municipalities generally cannot borrow from commercial banks; they may take advances against their expected share of the Fund, issued via the central bank at high interest and requiring ministry approval, which severely limits counter-cyclical or investment financing (Atallah; TIMEP, 2023). Fourth, revenues from municipal property, fines and donations, a minor share for most units (UN-Habitat, 2022).

Unions of municipalities are funded differently again. A union receives a small fixed share of the Independent Municipal Fund, historically cited at around 10 to 12%, plus contributions from its member municipalities (Arab Reform Initiative, 2025; Atallah). One capacity study found that Fund transfers make up roughly 70% of union revenues, of which about 61% goes to administrative and routine-maintenance costs and about 30% to cleanliness and waste, leaving around 9% for everything else, including the wider development role that is a union's

core purpose (VNG International). This is the structural reason the Saida-Zahrani Union can coordinate collection and run the treatment plant but struggles to finance resilience investment on top.

Even before 2019, the system carried three well-documented flaws (LCPS; UN-Habitat, 2022; Atallah; MoIM, 2025). Distribution is inequitable: the Decree-1917 formula tends to reward larger, wealthier and more urban municipalities and to disadvantage poorer, smaller and rural ones, giving no incentive to raise local tax effort. Transfers are delayed and unpredictable: distribution decrees legally due within months have historically been issued a year or more late, and the criteria have changed repeatedly since the 1990s. And central discretion is high: the Ministry of Finance's control over how much is placed in and released from the Fund means transfers function as an instrument of central control rather than a rules-based entitlement, with revenues sometimes deducted at source (Atallah; Arab Reform Initiative, 2025).

The post-2019 collapse operated through three compounding channels (Arab Reform Initiative, 2025; NIRAS; LCPS). The transfer itself was devalued: the lira lost roughly 98% of its value, but arrears were paid at the old official rate. In August 2023 the government disbursed municipalities' 2019 to 2021 shares of the Fund at LBP 1,500 to the dollar, so payments arrived worth a fraction of their intended value, and by mid-2025 the 2022-onward shares were still unpaid. For FY2022, half of all municipalities were allocated less than LBP 250 million, about USD 2,800 at the time, insufficient to cover a single living-wage salary (Information International, in Arab Reform Initiative, 2025). Own-source revenue collapsed as fees fixed in nominal lira became negligible and the tourism and construction bases contracted. And administrative capacity eroded as wage collapse and emigration hollowed out already thin administrations; even before the crisis, around 22% of unions lacked an administrative or financial department and around 37% lacked an engineering department (DRI 2017, in Arab Reform Initiative, 2025).

These mechanics are visible on the ground in the waste file. The state owed the street-collection contractor around LL 30 billion since 2019 (L'Orient Today, 2022); Decree No. 13's provision to pay treatment plants about 60 to 65% of invoice value in fresh dollars is a direct workaround for devaluation (Lina News, 2024); and the municipal solidarity fund used to cover collection during the 2024 contract gap (L'Orient Today, 2024) is exactly the kind of ad hoc, own-resource bridging that a functioning Fund should make unnecessary.

3.5 Mayor-reported readiness: the readiness paradox

A structured Key Informant Interview was conducted with the mayors of the Union in November 2025 (Saida-Zahrani Diagnosis Team, 2025). Nine responses were received from eight of the sixteen mayors, one municipality having submitted two responses within the active window (17 to 22 November 2025). Preparedness averages and response-rate figures below are computed across the nine responses; the card consensus signals in Sections 5 and 6 are computed across the eight unique mayors. The survey addressed emergency-planning

status, readiness self-assessment, the spatial framing of top-priority risks and preferred investment dimensions. Four findings emerged.

Finding 1: emergency planning is absent in most responding municipalities. 78% of responding mayors reported that their municipality has no emergency response plan. The remaining 22% reported that a plan exists at Governorate level but has not been complemented with the enabling tools it needs, namely financing, localisation per municipality and governance mechanisms. No respondent reported an active, tested plan.

Finding 2: mayors frame most crises as Union-wide. 90% of the crises mayors named as top priorities were framed as Union-wide in spatial scope; 10% were framed as specific to a single municipality. The pattern is consistent across mayors of large and small municipalities.

3.5.1 The readiness paradox

Mayors rated readiness on a 5-point scale for their own municipality and for the Union as a whole. The average was 2.56 out of 5 for their own municipality and 2.44 out of 5 for the Union. Both indicate weak readiness. The ordering is notable: mayors rate the Union lower than their own institution while framing 90% of priority crises as Union-wide. This is the readiness paradox. Mayors understand risk as collective but trust the collective mechanism, including its funding, tools and technical capacity, less than their own institutions. The finding recurs in [Section 9](#), where it motivates the coordination pillar of the Phase II pathway.

3.5.2 Investment-priority mismatch

Asked to rank dimensions for investment, no respondent placed institutional strengthening as their top choice. This sits alongside the self-reported rating of institutional capacity as the weakest of the four CRPT dimensions elsewhere in the instrument. The disconnect suggests that institutional strengthening must be presented to mayors through its enabling effect on environmental, social and economic outcomes rather than as a standalone investment category, a design principle taken up in [Section 9.5](#).

3.5.3 Data reliability and a second evidence line

Three caveats qualify the KII-only findings. First, the response rate reflects the active survey window, and smaller peri-urban municipalities were under-represented. Second, the instrument captures perception rather than measured readiness. Third, the direction of the findings is consistent with the expert-led indicator baseline, which strengthens confidence in the core patterns.

An independent second evidence line corroborates the KII pattern. The territory-wide institutional readiness scan in [Figure 3.11](#) measures five operational indicators, the presence of an emergency response plan, a dedicated DRR budget line, dedicated staff, documented inter-municipal coordination protocols, and early-warning system coverage, across all sixteen municipalities, through documentary review and direct enquiry to municipal secretariats during October 2025. Of 80 cells (16 municipalities by 5 indicators), 53% return values of 0 (absent) or 1 (nominal); only 6% reach a value of 3 (operational), and none reach 4 (mature). The Saida cadastres carry the highest readiness density; the eastern peri-urban municipalities (Bramiyeh, Darb es-Sim, Tanbourit, Aanqoun) carry the lowest. Anchor Finding 3 in [Section 10.1](#) therefore

rests on two independent evidence lines: mayoral self-report and territorial documentary scan.

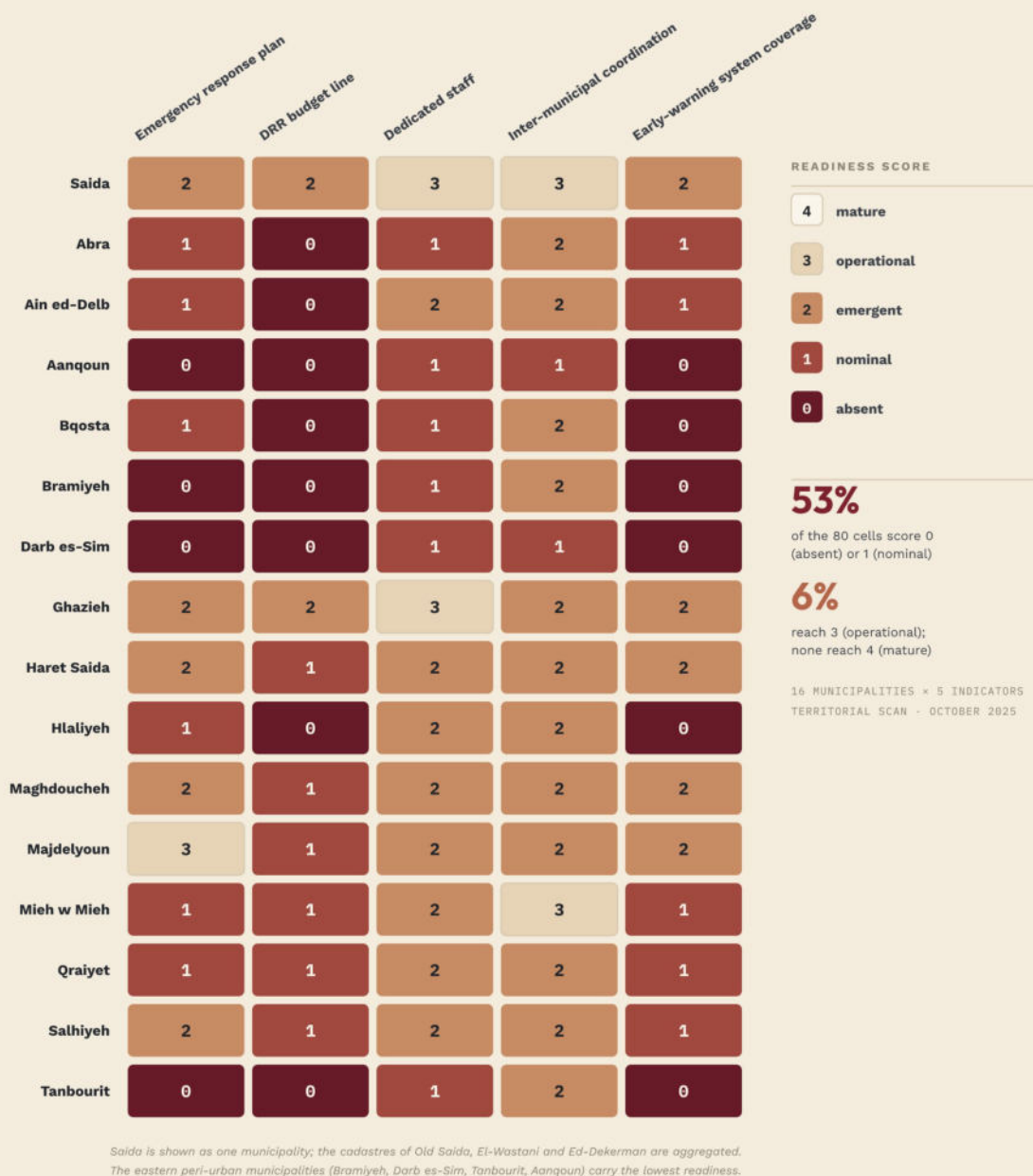


Figure 3.11. Institutional readiness across the sixteen municipalities. Heat-map score by municipality and indicator, 0 (absent) to 4 (mature). The pattern documents the territorial extent of the institutional gap that the KII finding in Section 3.5.1 identifies as the readiness paradox. Source: Saida-Zahrani Diagnosis Team KII Mayors Survey (8 mayors, 9 responses, November 2025); territorial scan (October 2025). Saida Urban Observatory, Hariri Foundation, 2025.

3.6 Camps as parallel governance geography

Eighteen per cent of the Union's residents, 69,049 people, live in two Palestinian refugee camps: Ain El-Helweh (approximately 63,000) within the municipality of Saida, and Mieh w Mieh (approximately 6,049) on its eastern boundary (UNRWA, 2022). Treating the camps as an undifferentiated part of Saida's population would obscure the most distinctive governance feature of the Union: two parallel governance geographies that overlap territorially but operate under different jurisdictions, service-delivery architectures and constraints. This sub-section

names the parallel geography explicitly so that the findings in [Sections 5 to 9](#) can be read with it in mind.

3.6.1 Jurisdictional architecture

Within camp boundaries, public services, water, sanitation, primary health, schooling and solid-waste collection, are delivered by UNRWA under its 1949 mandate, with secondary referral to Lebanese public hospitals and ministries. Outside camp boundaries, the same services are delivered by the Municipality of Saida, the Union's sectoral committees, the South Lebanon Water Establishment and the relevant national line ministries. Camp residents access the Lebanese system for tertiary services, legal, economic and regulatory, but operate primarily within the UNRWA system for daily life.

Security and internal governance follow a different order again. They are the responsibility of Popular Committees and Palestinian factions; UNRWA delivers services but does not administer or police the camps; and, by the long-standing convention of the 1969 Cairo Agreement, the Lebanese Armed Forces control access at the perimeter but generally do not enter (UNRWA camp profiles; UN News, 2023; Al Jazeera, 2023). The two systems share physical networks, the Saida water network feeds both, the solid-waste plant processes both streams, and the EDL medium-voltage grid serves both, but answer to different chains of accountability, different levels of resource and different budget cycles.

3.6.2 Ain El-Helweh and Mieh w Mieh

Ain El-Helweh is the largest of Lebanon's Palestinian camps. The report uses approximately 63,000 residents (UNRWA, 2022); UNRWA's December 2023 camp profile records 64,143 registered persons, with the standard caveat that actual residence exceeds registration, since the camp also hosts refugees displaced from Nahr el-Bared in 2007 and Palestine Refugees from Syria since 2011. Its services, on the 2023 profile, include around eight elementary and preparatory schools plus one secondary school serving over 6,000 students, and two primary health-care centres handling on average around 649 consultations a day, with secondary and tertiary care by referral to contracted hospitals in Saida (UNRWA, 2023).

The 2023 clashes are the reference security event. Fighting between Fatah and Islamist factions ran from late July into September 2023. UN reporting records at least around 30 people killed and hundreds injured, some 2,000 displaced in the initial wave and around 4,000 secondary displacements by mid-September; more than eight UNRWA schools were occupied by armed actors, delaying the school year for over 11,000 children, and UNRWA appealed for USD 15.5 million to repair damage (UN Secretary-General, S/2023/879, 2023; USAID and ReliefWeb, 2023; UNRWA and UN News, 2023). Displaced families sheltered in UNRWA schools, mosques and warehouses in Saida town, so the shock spilled directly into the host municipality's space and services.

Mieh w Mieh is smaller and hill-sited on the Union's eastern boundary. The report uses approximately 6,049 residents (UNRWA, 2022); older UNRWA and UNICEF figures are lower, in the range of 4,700 to 5,000. The camp was established in 1954 about 4 kilometres east of Saida on roughly 54,000 m², was heavily damaged in the 1982 invasion and again in the July

1991 clashes, and has a thin service base: a single UNRWA school with over 470 students, one health centre handling around 63 patients a day, and social-safety-net support to around 262 families, roughly 848 individuals (UNRWA profile, 2023). During the 2023 clashes it was named among the neighbourhoods where displaced families sheltered. Its thin service base means little internal buffering capacity, so any host-system disruption in water, waste or electricity, or any security spillover from the larger camp, is felt with minimal absorptive margin.

Both camps sit partly within the footprint of the first (Saida-edge) industrial and waste-hazard cluster described in [Section 3.2.3](#), which places their constrained evacuation geography inside the diagnosis's highest-exposure spatial concentration.

3.6.3 Implications for resilience

Three resilience implications follow. First, any infrastructure-failure shock (**Sh-Tech-1**) cascades through both governance systems at once but on different recovery trajectories: UNRWA budget cycles run on different timelines from Lebanese state budget cycles, and the post-2019 contraction of UNRWA funding (UNRWA, 2022) reduced camp service-delivery capacity at the same moment the Lebanese state was contracting, a synchronised rather than offsetting failure. Second, security shocks (**Sh-S-7** war and aggression; intra-camp factional conflict, notably the 2023 Ain El-Helweh clashes) produce differential displacement patterns within the same territorial envelope, loading municipal shelter and health capacity precisely when the camp's own UNRWA services are suspended. Third, the workshop cohort that informed the synergy network in [Section 7](#) had weak representation from camp residents, a documented under-representation noted in [Section 5.7](#) that future monitoring cycles must close. The Phase II pathway in [Section 10](#) identifies a specific Urban Observatory mandate for camp-host coordination.

Framing: one territory, two governance systems. Resilience interventions in the Union of Saida-Zahrani must operate across the camp-host boundary, not within it. Strategies that strengthen the Lebanese governance system without parallel, UNRWA-coordinated investment in the camp service-delivery architecture leave 18% of the territorial population outside the resilience envelope. The Phase II pathway in [Section 10](#) makes this an explicit design principle.

04

Urban Performance Snapshot

Where the four dimensions stand, and where the data
still runs thin.

4. Urban Performance Snapshot

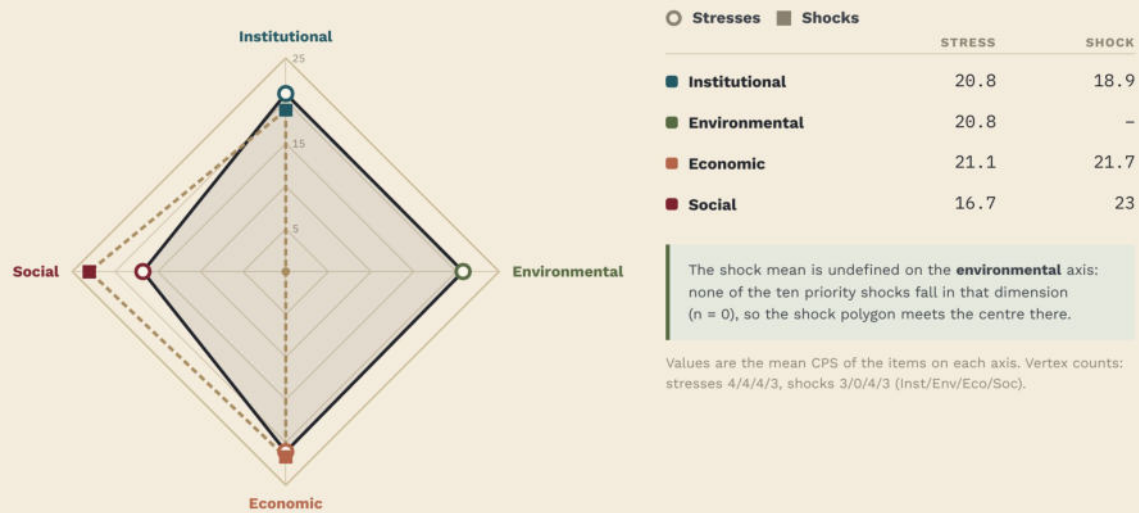


Figure 4.1. The Union’s priority load by CRPT dimension, stresses against shocks, from the composite scores in Sections 5 and 6. Source: Saida Urban Observatory, Hariri Foundation, 2026.

“Indicators are how a territory comes to see itself, learn from itself, and act upon itself.”
Reflection on city resilience monitoring (Sengupta and Verma, 2022)

What the Union can measure about itself is part of the diagnosis. The four CRPT dimensions arrive with very different evidence depths, from 79% indicator completion on the economic side to 32% on the institutional side, and that asymmetry is read here as a finding, not a footnote. This section translates the inventory of 233 indicators into a dimension-by-dimension baseline grounded in spatial evidence. Each dimension is summarised in a panel that reports key indicators, spatial anchor, data completion and primary data gap, setting the indicators alongside the underlying GIS evidence (Hariri Foundation, 2025).

4.1 Data completeness by dimension

Indicator completion varies substantially across dimensions and reflects both data availability and the historical focus of resilience assessment in Lebanon. Economic completion is the highest at 79%, reported against available national aggregates. Social completion is close

behind at 78%, reflecting sustained data collection by humanitarian actors and CAS (CAS and CBS, 2019; UNHCR, 2024). Environmental completion is 56%, concentrated on hazard exposure rather than ecological condition. Institutional completion is the lowest at 32%.

Anchor finding: data poverty is diagnostic. The institutional gap is itself a finding of this diagnosis. The Union knows its people better than it knows its own institutions. This pattern shapes several recommendations in [Section 9](#) and is the reason the Urban Observatory is sequenced first in the Phase II pathway.

DIMENSION	INDICATORS	COMPLETION	PRIMARY DATA GAP
Social	69	78%	Camp-resident disaggregation; gender-specific labour data
Economic	38	79%	Municipal-level fiscal data; SME indicators
Environmental	73	56%	Air-quality monitoring; ecosystem services
Institutional	53	32%	Emergency-planning status; municipal staffing data; local enforcement records
Total	233	61%	

Table 4.1. Indicator completeness by CRPT thematic dimension. Source: Saida-Zahrani Diagnosis Team, 2026; per UN-Habitat (2018).

4.2 Environmental dimension

Environmental performance indicators address hydrology, hazard exposure, solid waste, energy supply and agricultural land. Three findings anchor the dimension. First, hazard exposure is territory-wide: no part of the Union scores below 0.41 on the normalised composite hazard index (CNRS-L, 2025; Hariri Foundation, 2025). Second, water-network coverage reaches most urban areas but is subject to major service disruptions caused by leakage, illegal connections and chronic energy shortages (LCPS, 2025). Third, electricity supply reaches 91% of the population in terms of any-source access, but Électricité du Liban service is heavily interrupted (World Bank, 2025); household reliance on private diesel generators is widespread and drives air and noise pollution. The Union's largest generation asset, the Zahrani combined-cycle plant (around 435 to 465 MW, EDL), sits on the southern coast within the industrial geography described in [Section 3.2.3](#).

CODE	INDICATOR	VALUE	SOURCE
BI-04	EDL medium-voltage network coverage †	91% of population (any-source access)	World Bank, 2025
BI-07	Solid-waste plant operational capacity	~250 t/day processed (below full capacity)	Hariri Foundation, 2025
BI-09	Recycling share of total solid waste	~20% (~129,927 m ³ recycled)	Hariri Foundation and UNEP, 2025

BE-04	Recent urban expansion (km ²)	0.9 km ² (concentrated Qraiyet, Darb es-Sim)	Hariri Foundation, 2025
BE-03	Built-up area	21.89 km ² (~37% of Union area)	CNRS-L, 2021
5.4	PM2.5 daily-limit exceedances (Beirut/coastal) †	~40 days/year average	AUB, 2019
5.13	Areas under composite hazard exposure	100% of Union above 0.41 (0–1 scale)	CNRS-L, 2025
5.15	Coastal fabric below 10 m elevation	~4 km ² within tsunami envelope	CNRS-L, 2025

Table 4.1a. Selected raw indicators, environmental dimension. Values are drawn from the cited references and from the Saida Urban Observatory data layer. Indicators marked † reflect national or governorate-scope figures used as Union proxies where Union-disaggregated data is not yet collected. The full 233-indicator catalogue with definitions and completion notes is held by the Observatory and summarised in Annex C.

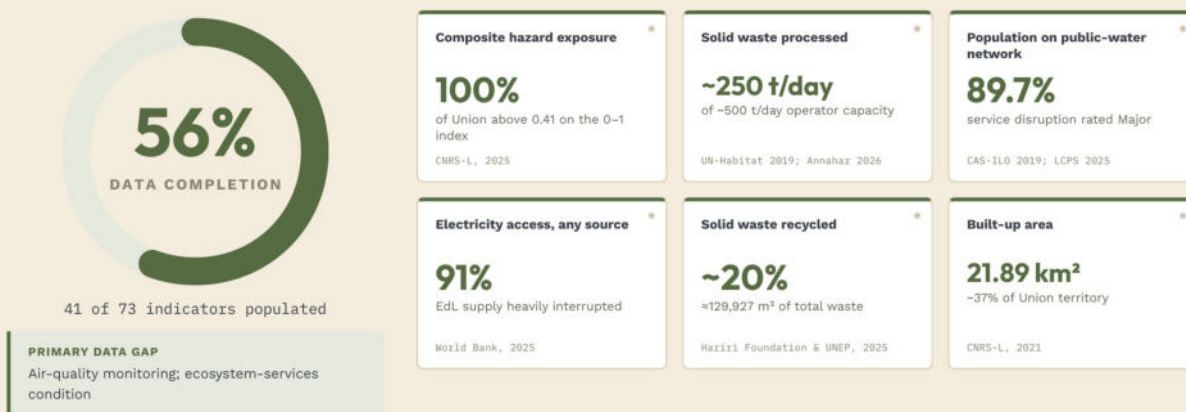


Figure 4.2. Environmental dimension panel. Key indicators, spatial grounding on the composite hazard exposure map, data completion and primary gaps. Data completion: 56%. Source: Saida Urban Observatory, Hariri Foundation, 2025.

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

EdL medium-voltage network

Union of Municipalities of Saida-Zahrani

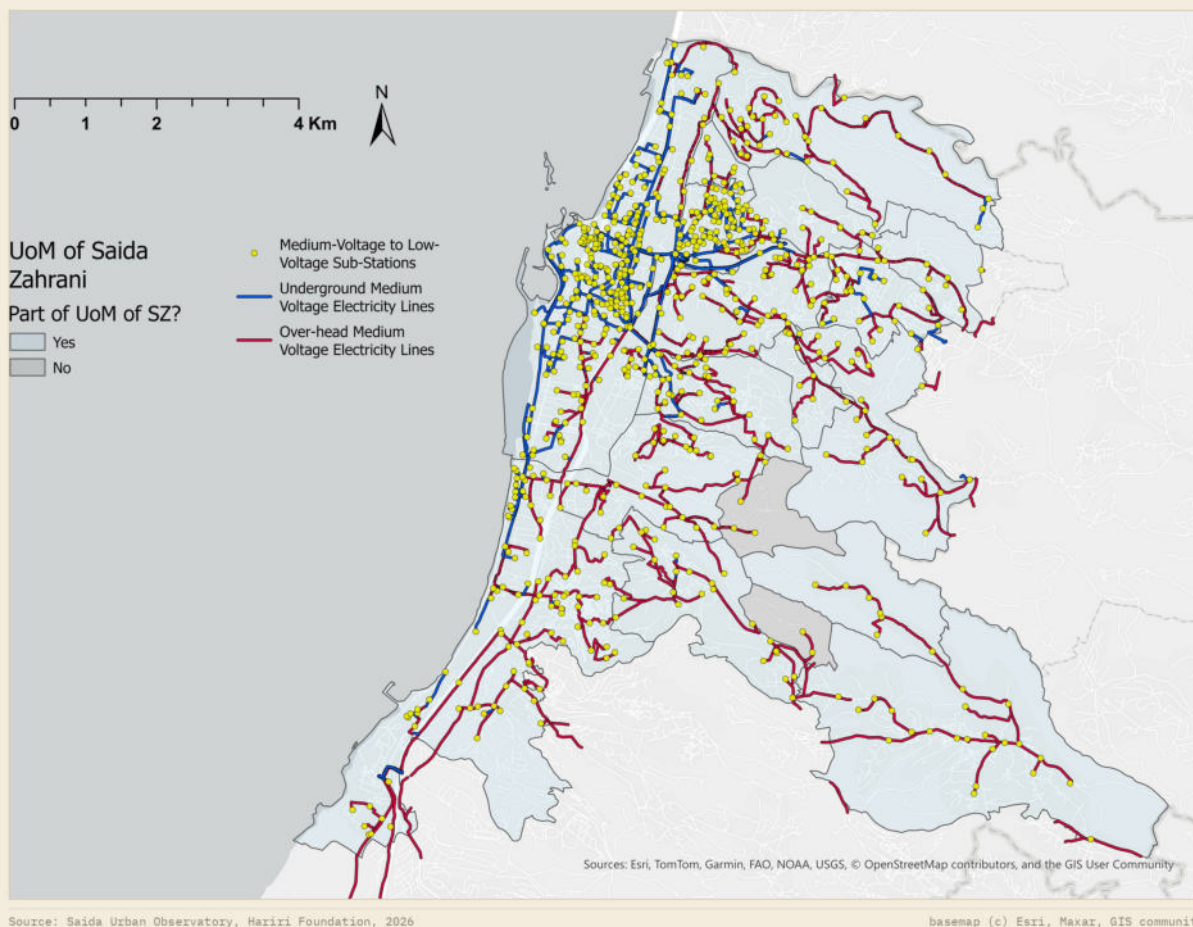


Figure 4.3. *Électricité du Liban medium-voltage network across the Union. Coverage is concentrated along the coastal strip and in Saida city. Source: Hariri Foundation, 2025.*

Agricultural land in the Union supports olive, citrus and mixed horticulture, concentrated in the eastern peri-urban zone (CNRS-L, 2025), and faces pressure from residential expansion, drought and wildfire exposure (see [Section 6](#)). The Union's solid-waste system, though organised at Union scale, is currently operating below capacity because of political and budgetary constraints (see [Section 3.3.2](#)).

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Agricultural plantations

Union of Municipalities of Saida-Zahrani



Figure 4.4. Distribution of agricultural plantations across the Union. Olive and citrus are the dominant crops, concentrated in the eastern peri-urban zone. Source: CNRS-L, 2025; Hariri Foundation, 2025.

4.3 Social dimension

Social indicators address basic services, social protection and mobility across the Union's 378,039 residents. Two sub-elements are central. Health-service distribution is spatially uneven: hospitals, PHCCs, pharmacies and civil-defence posts cluster in Saida city and the northern coastal municipalities, with Ghazieh and the southern peri-urban zone underserved (Hariri Foundation, 2025). Education infrastructure is also concentrated in Saida city, which hosts the majority of public schools, private schools and the Union's UNRWA schools serving the camps.

CODE	INDICATOR	VALUE	SOURCE
SI-01	Total population	~378,039 residents	CAS, 2019; LRC-DRR, 2025
SI-05	Camp population (Ain El-Helweh + Mieh w Mieh)	~69,049 (~18% of Union)	UNRWA, 2022
SI-06	School enrolment, age 6–11	89.9%	UN-Habitat and UNICEF, 2019
SI-07	School attendance,	60.1%	UN-Habitat and

	age 12–17		UNICEF, 2019
SI-08	Dropout rate range across Union schools	2–50%	UN-Habitat and ESCWA, 2021
TR-01	Transport fatalities, ISF reported count (2025) †	44	ISF Statistical Bulletin 407, 2025
TR-02	Transport injuries, ISF reported count (2025) †	323	ISF Statistical Bulletin 407, 2025
SI-09	Female labour-force participation (Lebanon) †	29%	CAS / ILO, 2022
SI-04	Palestinian refugee population (PRL + PRS)	~59,200 in Union; 25% of national PRL	UN-Habitat Lebanon and ESCWA, 2021

Table 4.1b. Selected raw indicators, social dimension. Values are drawn from the cited references and from the Saida Urban Observatory data layer. Indicators marked † reflect national or governorate-scope figures used as Union proxies where Union-disaggregated data is not yet collected. The full 233-indicator catalogue with definitions and completion notes is held by the Observatory and summarised in Annex C.

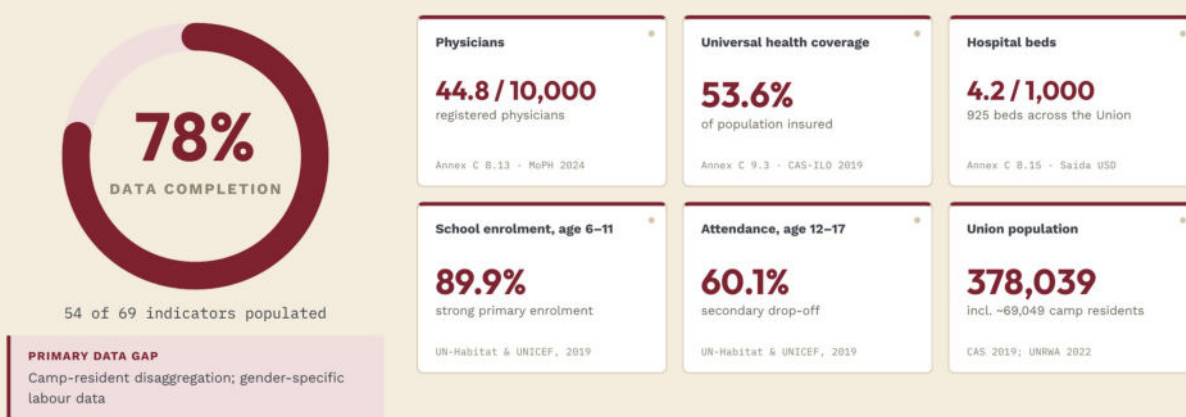


Figure 4.5. Social dimension panel. Key indicators, spatial grounding on the health-facility distribution map, data completion and primary gaps. Data completion: 78%. Source: Saida Urban Observatory, Hariri Foundation, 2025.

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Health facilities

Union of Municipalities of Saida-Zahrani



Source: Saida Urban Observatory, Hariri Foundation, 2026

basemap (c) Esri, Maxar, GIS community

Figure 4.6. Spatial distribution of health facilities in the Union: hospitals, pharmacies, PHCCs, clinics, and civil-defence and Red Cross posts. Source: Hariri Foundation, 2025.

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Schools and universities

Union of Municipalities of Saida-Zahrani



Figure 4.7. Distribution of public schools, private schools, UNRWA schools and universities across the Union. Source: Hariri Foundation, 2025.

Mobility infrastructure is marked by major disruptions to public transport (Azmat, Ghalayini and Hadeed, 2025). Shared taxis and buses account for 20% of transport modal share, though that share may have shifted under the concurrent crisis (Aoun et al., 2016). ISF Statistical Bulletin 407 recorded 44 transport fatalities and 323 injuries in its 2025 reporting period (ISF Statistics Issue 407, 2025); these are reported incident counts used as a South Lebanon proxy, not per-capita rates, pending Union-disaggregated road-safety data. School enrolment among children aged 6 to 11 was high at 89.9%, but secondary attendance among those aged 12 to 17 falls to 60.1% (UN-Habitat and UNICEF, 2019). Dropout rates range from 2% to 50% across schools (UN-Habitat Lebanon and ESCWA, 2021), with the Saida Social Observatory citing financial difficulty, marriage and post-conflict learning gaps as the primary drivers.

Public lighting is a strong indicator of social-dimension service coverage and night-time safety. The Hariri Foundation 2025 GIS inventory documents lighting-pole distribution across road types within Saida Municipality and the immediately surrounding cadastres. Coverage concentrates on primary and secondary roads, with substantially weaker coverage on residential streets and connector roads in the peri-urban municipalities, consistent with the broader infrastructure asymmetry documented in [Section 3.2](#).

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Public lighting poles by road type

Union of Municipalities of Saida-Zahrani



Figure 4.8. Public lighting-pole distribution in Saida by road type. Primary and secondary roads are densely lit; residential and connector roads less so; unclassified and dirt roads are largely unlit. The pattern conditions night-time safety, walkability and emergency-response performance. Source: Hariri Foundation, 2025 GIS inventory.

4.4 Economic dimension

The macro-economic envelope is the post-2019 transmission documented in [Figure 3.2](#). The local manifestation is sharper than the national average. Unemployment in the South Lebanon Governorate reached 36.5% in 2022, a 24-percentage-point increase on the pre-crisis baseline, against a national rate of 29.6% in the same 2022 labour-force survey (CAS and ILO, 2022); the Mahdi et al. (2023) Saida city study found comparable patterns within the Union. The historical economic base of trade, agriculture and small-scale manufacturing was under chronic stress before 2019, and the collapse amplified that stress through household purchasing-power loss, municipal revenue decline and service-delivery constraints (World Bank, 2023; IMF, 2023). Inflation reached 221.3% in 2023 before easing to 14.8% in 2025 (CAS, 2025), a trajectory that reshaped household coping strategies and municipal fiscal space alike.

CODE	INDICATOR	VALUE	SOURCE
EC-01	Annual inflation rate, Lebanon (2023) †	221.3%	CAS, 2025; Banque du Liban, 2025
EC-01b	Annual inflation rate, Lebanon (Q4 2025) †	14.8%	CAS, 2025

SI-10	Unemployment rate, South Lebanon (2022)	36.5% (+24 ppt vs. pre-crisis)	CAS / ILO, 2022
SI-11	Saida city unemployment (2018 baseline)	9.6%; youth 23%	Mahdi et al., 2023
EC-03	Multidimensional poverty rate, Lebanon †	82% (up from 28% pre-crisis)	ESCWA, 2023
EC-04	Saida port import share (2020–2025)	1–3% of Lebanese imports	Lebanese Customs, 2025
EC-05	Saida port export share (2020–2025)	2–3% of Lebanese exports	Lebanese Customs, 2025
EC-07	Market Functionality Index, assortment	10 / 10	WFP, 2025
EC-08	Market Functionality Index, price	3.30 / 10	WFP, 2025

Table 4.1c. Selected raw indicators, economic dimension. Values are drawn from the cited references and from the Saida Urban Observatory data layer. Indicators marked † reflect national or governorate-scope figures used as Union proxies where Union-disaggregated data is not yet collected. The full 233-indicator catalogue with definitions and completion notes is held by the Observatory and summarised in Annex C.

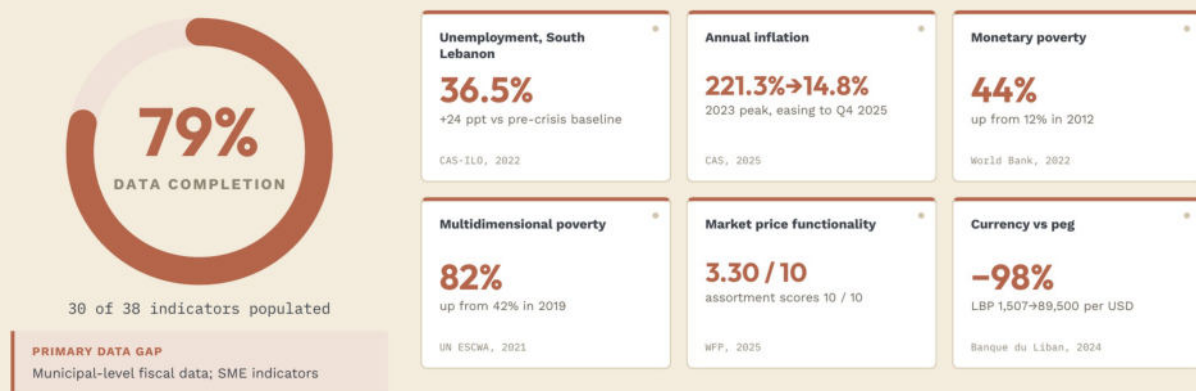


Figure 4.9. Economic dimension panel. Key indicators, spatial grounding on the banking distribution map, data completion and primary gaps. Data completion: 79%, the highest of the four dimensions, against available national aggregates. Source: Saida Urban Observatory, Hariri Foundation, 2025.

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Banking access and population density

Union of Municipalities of Saida-Zahrani

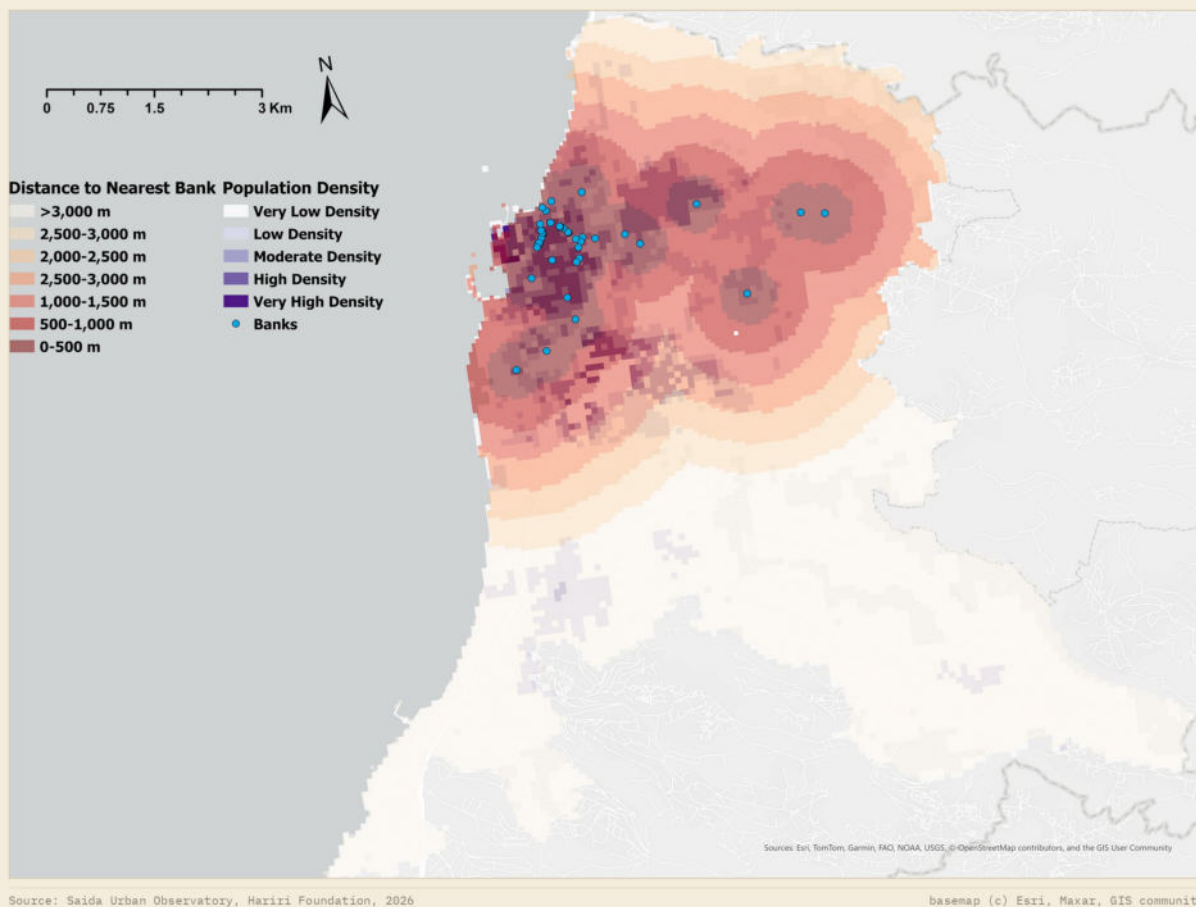


Figure 4.10. Banking infrastructure relative to population density. Access concentrates in Saida city; peri-urban zones have limited formal financial infrastructure. Source: Hariri Foundation, 2025.

Saida's port carries a modest share of national trade compared with Beirut's, accounting for 1 to 3% of Lebanese imports and 2 to 3% of exports across 2020 to 2025 (Lebanese Customs, 2025). Its top trading partners are Egypt, Türkiye, Saudi Arabia and Libya, reflecting Mediterranean and regional commerce rather than North-Atlantic supply chains. The Market Functionality Index for Saida scores assortment and availability at 10 out of 10 but price at 3.30 out of 10 (WFP, 2025), locating the structural problem in affordability rather than supply, a pattern that maps directly to the inflation and purchasing-power stress (St-Eco-3) treated in [Section 5](#).

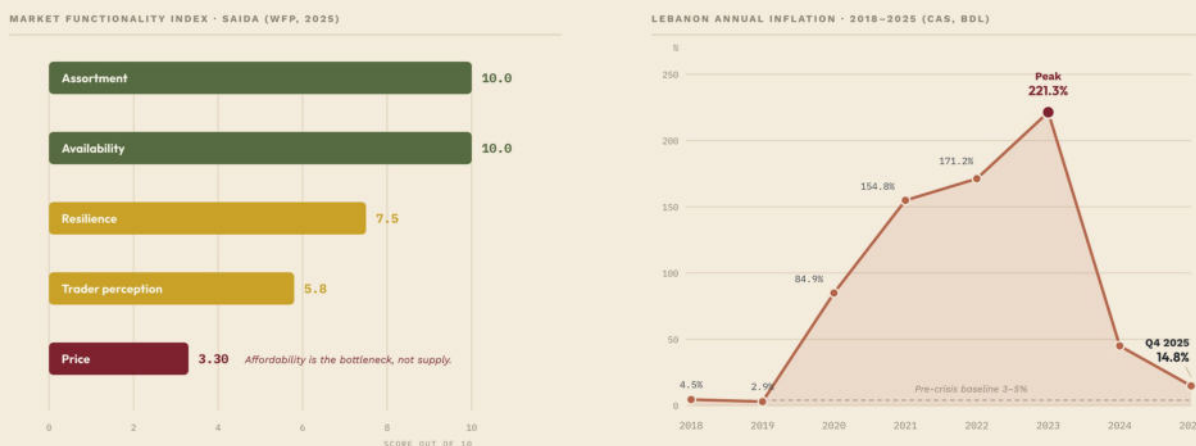


Figure 4.11. Market Functionality Index (left) and Lebanon annual inflation 2018–2025 (right). The left panel shows assortment and availability at the ceiling (10/10) while price scores 3.30/10, locating the structural problem in affordability rather than supply. The right panel traces the post-2019 inflation trajectory, from around 3% pre-crisis through a peak of 221.3% in 2023, easing to 14.8% by Q4 2025. Together the panels establish the household purchasing-power envelope that conditions every priority economic stress in Section 5. Source: WFP (2025) Market Functionality Index, Lebanon Q3 2025; CAS (2025) Consumer Price Index; Banque du Liban (2025). Compiled by Saida Urban Observatory, Hariri Foundation, 2025.

4.5 Institutional dimension

Institutional indicators are the least complete at 32% (Hariri Foundation, 2025). The data gap is itself diagnostic: institutional performance is under-measured across the Union, which is one of the most actionable findings in this report.

CODE	INDICATOR	VALUE	SOURCE
IN-01	Municipalities in the Union	16 (+ 2 non-Union towns in envelope)	Hariri Foundation, 2025
IN-02	Union established	1978 (Lebanon's earliest UoM)	Samaha, 2022
IN-03	Mayors with no emergency response plan	78% of responding mayors	Saida-Zahrani Diagnosis Team, KII 2025
IN-04	Mayors framing top crises as Union-wide	90%	Saida-Zahrani Diagnosis Team, KII 2025
IN-05	Mayor readiness rating, own municipality	2.56 / 5 (mean)	Saida-Zahrani Diagnosis Team, KII 2025
IN-06	Mayor readiness rating, the Union	2.44 / 5 (mean)	Saida-Zahrani Diagnosis Team, KII 2025
IN-07	Institutional readiness cells scoring 0–1	53% of 80 cells (16 munis × 5)	Saida Urban Observatory territorial scan, Oct 2025

IN-08	Indicator completion, institutional dimension	32%	Hariri Foundation, 2025
IN-09	Service-delivery providers (Saida District)	24 organisations / 168 services	Inter-Agency Coordination Lebanon, 2025
IN-10	Stakeholder participation records (Phase I)	88 records / 48 organisations	Hariri Foundation, 2025

Table 4.1d. Selected raw indicators, institutional dimension. Values are drawn from the cited references and from the Saida Urban Observatory data layer. Indicators marked † reflect national or governorate-scope figures used as Union proxies where Union-disaggregated data is not yet collected. The full 233-indicator catalogue with definitions and completion notes is held by the Observatory and summarised in Annex C.



Figure 4.12. Institutional dimension panel. Key indicators anchored on KII self-reported readiness (Section 3.5). Data completion: 32%, the lowest of the four dimensions. Source: Saida Urban Observatory, Hariri Foundation, 2025.

Three findings can be stated with confidence. First, municipal fiscal capacity is severely constrained: transfers from the Independent Municipal Fund have declined in real value since 2019 (World Bank, 2023), and locally raised revenue is insufficient for basic operations, let alone resilience investment (see [Section 3.4.5](#)). Second, coordination capacity is structured but under-resourced: the Union’s Disaster Risk Management Unit is the main platform for territorial response (UN-Habitat Lebanon, 2019), and the 2024 DRM Strategy Update sets out objectives but has not been matched with implementation funding (Municipality of Saida-Zahrani, 2024). Third, emergency planning at municipal level is largely absent: 78% of responding mayors confirm that no emergency response plan is in place in their municipality (Saida-Zahrani Diagnosis Team, 2025). This is the single most actionable institutional gap identified by the diagnosis and is taken up as a Phase II priority in [Section 9](#).

05

Stresses

Fifteen chronic pressures, led by the water network (24.5) and solid waste (24.0).

5. Stresses

Stresses are long-term pressures on the urban system that erode resilience incrementally rather than through acute disruption. Their cumulative effect shapes the Union's capacity to absorb every shock that follows. (UN-Habitat, 2018, City Resilience Profiling Tool: Guide)

The Union's chronic-pressure catalogue is led not by the post-2019 economic collapse but by two basic services: the water network and the waste system. This section reports the fifteen stresses that make the priority cut (UN-Habitat, 2018). Together they do the slow work of erosion, wearing down the buffers that decide how hard the shocks in [Section 6](#) land, and their cumulative effect conditions every cluster in [Section 8](#).

5.1 Overview of the catalogue

Reading note: how to read the cards. Every value on the cards in this section carries a source. Values come from three evidence tiers: primary Union-level data collected by the Saida Urban Observatory, the Hariri Foundation, the LRC-DRR field cohort, the CNRS-L hazard layers, and the mayor Key Informant Interviews (Annex E); institutional partner data (among others CAS, ESCWA, UNHCR, UNRWA, World Bank, ILO, WHO, Banque du Liban, ISF, Lebanese Customs, EDL); and published academic and policy literature in the reference list. Indicators collected at national or governorate scope and used as Union proxies are flagged in the [Section 4](#) tables. Where workshop expert scoring departs from desk-review evidence, the divergence is named and reasoned in the data-reliability disclosures ([Section 2.5.2](#)). No card introduces a value that cannot be traced to the indicators workbook (Annex C) or a cited source.

The CRPT catalogue applied to the Union contains 25 stresses across the four thematic dimensions. Composite priority scores were computed for all 25 using the method in [Section 2.5](#). The fifteen highest make the priority cut and are treated below. Cluster assignments are introduced in [Section 8](#).

5.1.1 Priority ranking at a glance

[Figure 5.1](#) carries the ranking, and each of the fifteen items is then documented on a full card in [Sections 5.3](#) to 5.6. The complete 25-stress scoring, including the ten items below the cut, is tabulated in Annex A.

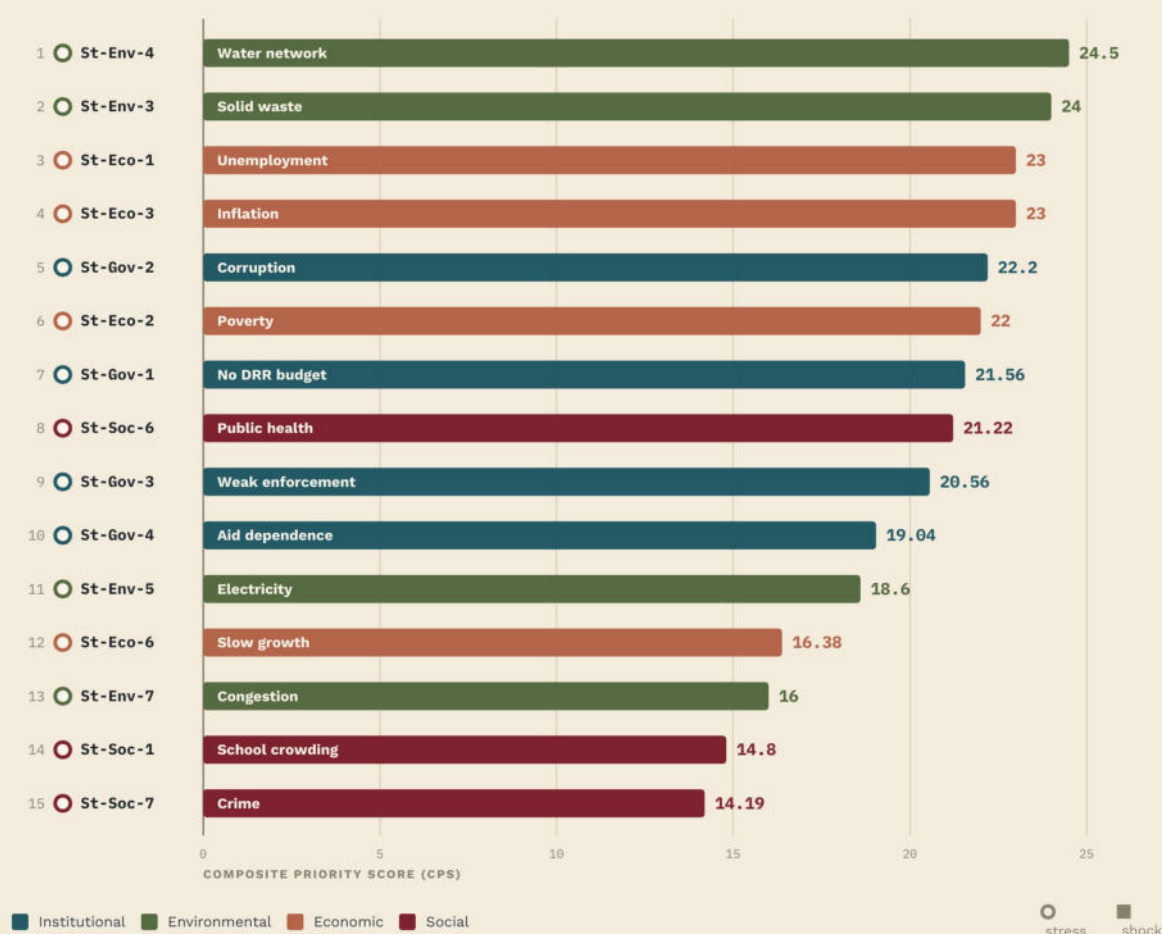


Figure 5.1. Top fifteen stresses ranked by composite priority score on the 0 to 25 scale. Bar colour shows primary thematic dimension. The lowest-scoring priority stress is increasing crime (St-Soc-7) at CPS 14.19; priority membership is preserved from the expert baseline rather than set by a strict composite cut, so two higher-scoring stresses, absence of green and public spaces (St-Env-2, CPS 17.2) and weak public schooling (St-Soc-2, CPS 15.7), sit above this boundary but outside the priority set. That retention is disclosed as ADJ-5 in Section 2.5.2. Source: Saida Urban Observatory, Hariri Foundation, 2025.

5.2 Four concentrations, and the cross-cutting institutional driver

The ranking shows four concentrations, evenly weighted across the dimensions but not across the order. Environmental basic-service degradation leads: the aging water network (rank 1) and poor solid-waste management (rank 2) hold the top two positions, with unreliable electricity (rank 11) and congestion (rank 13) below. Economic stress occupies four positions clustered high in the ranking (unemployment rank 3, inflation rank 4, poverty rank 6, slow growth rank 12), reflecting the transmission of the post-2019 national crisis. Institutional stress occupies four positions concentrated in the middle band (corruption rank 5, absence of DRR budget rank 7, weak enforcement rank 9, aid dependence rank 10). Two of the remaining three are

social (weak public-health systems rank 8, increasing crime rank 15), with overcrowded schools at rank 14.

Anchor framing: institutional weakness is the cross-cutting driver. No single institutional item tops the stress catalogue. Environmental basic-service degradation leads it, because the water and waste systems are where decades of under-investment and the post-2019 fiscal collapse are most visible to residents. Institutional weakness is nonetheless the condition that determines whether the other stresses become losses: four institutional items saturate the middle band of the ranking (ranks 5, 7, 9, 10), and weak enforcement, absent DRR budgets, and aid-dependent finance are the common reasons an aging asset is not renewed and a price shock is not cushioned. This reading is consistent with the mayor survey, in which mayors rate institutional capacity weakest while declining to invest in it ([Section 3.5](#)). The result is a basic-service deficit at the top of the ranking and an institutional deficit beneath all of it. [Section 9](#) addresses the paradox directly.

5.3 Institutional stresses

Four of the top fifteen stresses are primarily institutional. Together they describe a coordination deficit at territorial scale: corruption erodes trust in inter-municipal mechanisms; the absence of dedicated DRR resources limits operational capacity; weak enforcement produces implementation gaps; and aid dependence creates fiscal volatility. They sit in the middle of the ranking, but they condition the items above and below them.

STRESS · LONG-TERM PRESSURE

STRESS 0

PRIORITY STRESS · RANK #5 OF 15

ST-GOV-2

Corruption and absence of transparency

INSTITUT

CRPT DIMENSION

Institutional → Economic

CLUSTER

Institutional Capacity

WHAT DRIVES IT & WHY IT MATTERS

Lebanon's score on the Corruption Perceptions Index is among the lowest in the world, and at municipal level opaque procurement, irregular permits, and discretionary spending erode public trust and divert reform resources. Even where rules exist, municipalities can rarely enforce them, having lost personnel and resources to the economic crisis.

22.20

/ 25

COMPOSITE PRIORITY

0–25 · higher = more urgent

CHRONIC IMPACT (0–5 severity)

People

5

Assets

4

Processes

4

KEY-INFORMANT (MAYOR) SIGNAL

↑

Flagged by 3 of 8 mayors

WORKSHOP CONSENSUS

4/5

of 5 groups mapped it

SYSTEM ROLE

6

downstream shocks it feeds

CONSENSUS DEPTH

4/5

workshop groups agreed

WHERE IT HITS HARDEST

Cuts across all 16 municipalities; most visible in public-works procurement, building permits in Saida, and customs operations at Saida port.

KEY INDICATORS

CORRUPTION PERCEPTIONS INDEX

22/100

Annex C 9.8 · Transparency International 2024

GLOBAL CORRUPTION RANK

154/180

Annex C 9.8 · Transparency International 2024

POLICIES & PROGRAMMES IN PLACE

Law 175/2020 — National Anti-Corruption Commission

IMF Staff-Level Agreement governance pillar

UNDP Lebanon anti-corruption project

Law 28/2017 — Right to Access to Information

RECENT EVIDENCE

2019

October Revolution protests over corruption blocked Saida entrance and Karameh Roundabout (Annex B #18).

2023

Saida waste-treatment plant crisis amid contracting/management failures; municipality head resigned (Annex B #31).

IN PLAIN TERMS

This is the second most connected pressure in the whole system, which is why fixing other problems so often fails to stick. The workshop treated it as the underlying condition every other reform has to work within.

ST-GOV-2 · STRESS · SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

PHASE I · 2026 · SAIDA URBAN OBSERVATORY · HARIRI FOUNDATION

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

77

STRESS · LONG-TERM PRESSURE

STRESS

PRIORITY STRESS · RANK #7 OF 15

ST-GOV-1

Absence of DRR equipment and budget

INSTITUT

CRPT DIMENSION

Institutional → Environmental

CLUSTER

Institutional Capacity

WHAT DRIVES IT & WHY IT MATTERS

Municipalities have no standing disaster-risk budgets, equipment stocks, or trained crisis teams; when disaster strikes, the response is largely NGO- and volunteer-led while municipalities self-fund what little they can. The 2024 conflict laid bare the absence of municipal shelter, evacuation, and communication systems.

21.56

/ 25

COMPOSITE PRIORITY

0–25 · higher = more urgent

CHRONIC IMPACT (0–5 severity)

People

Assets

Processes

5

4

4

KEY-INFORMANT (MAYOR) SIGNAL

Not directly named by mayors — its priority rests on the workshop scoring and the indicator evidence

WORKSHOP CONSENSUS

2/5

of 5 groups mapped it

SYSTEM ROLE

2

downstream shocks it feeds

CONSENSUS DEPTH

2/5

workshop groups agreed

WHERE IT HITS HARDEST

All 16 municipalities, but the gap is starkest against earthquake, wildfire, and armed-conflict exposure, especially in the southern municipalities nearest the front.

KEY INDICATORS

FIRE & RESCUE SERVICES IN FEDERATION

4

Annex C 22.1 · Lebanese Civil Defense

HAZARDOUS AREAS PHYSICALLY MARKED

No

Annex C 1.11 · Hariri Foundation 2025

POLICIES & PROGRAMMES IN PLACE

National DRR Strategy 2022 (NCSR)

UNDP Lebanon DRR project

EU Civil Protection Mechanism support

LRC-DRR municipal-capacity programme

RECENT EVIDENCE

2024–2025

War / armed escalation and displacement exposed absence of municipal shelter and evacuation capacity (Annex B #32).

2024

Winter-storm flooding blocked roads and corniche with no standing DRR response (Annex B #33).

IN PLAIN TERMS

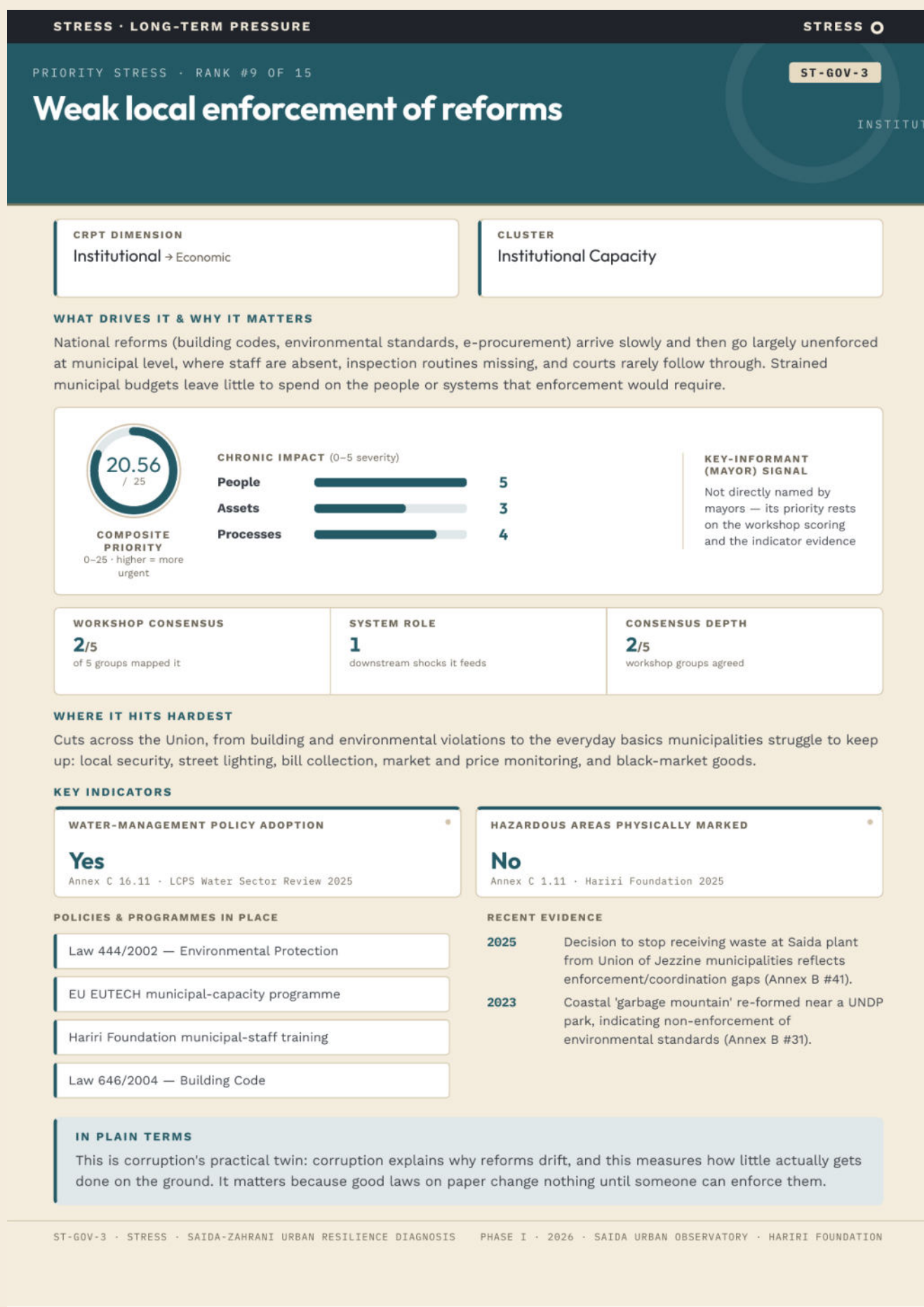
This is the gap that turns any shock into a full crisis, because nothing is in place to soften the first blow. Every workshop group agreed on it, and mayors know exactly what is missing; they have simply never had the money to put it in place.

ST-GOV-1 · STRESS · SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

PHASE I · 2026 · SAIDA URBAN OBSERVATORY · HARIRI FOUNDATION

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

78



CRPT DIMENSION

Institutional → Economic

CLUSTER

Institutional Capacity

20.56 / 25

COMPOSITE PRIORITY

0-25 · higher = more urgent

CHRONIC IMPACT (0-5 severity)

People		5
Assets		3
Processes		4

KEY-INFORMANT (MAYOR) SIGNAL

Not directly named by mayors — its priority rests on the workshop scoring and the indicator evidence

WORKSHOP CONSENSUS

2/5

of 5 groups mapped it

SYSTEM ROLE

1

downstream shocks it feeds

CONSENSUS DEPTH

2/5

workshop groups agreed

WATER-MANAGEMENT POLICY ADOPTION

Yes

Annex C 16.11 · LCPS Water Sector Review 2025

HAZARDOUS AREAS PHYSICALLY MARKED

No

Annex C 1.11 · Hariri Foundation 2025

POLICIES & PROGRAMMES IN PLACE

Law 444/2002 — Environmental Protection

EU EUTECH municipal-capacity programme

Hariri Foundation municipal-staff training

Law 646/2004 — Building Code

RECENT EVIDENCE

2025

Decision to stop receiving waste at Saida plant from Union of Jezzine municipalities reflects enforcement/coordination gaps (Annex B #41).

2023

Coastal 'garbage mountain' re-formed near a UNDP park, indicating non-enforcement of environmental standards (Annex B #31).

IN PLAIN TERMS

This is corruption's practical twin: corruption explains why reforms drift, and this measures how little actually gets done on the ground. It matters because good laws on paper change nothing until someone can enforce them.

ST-GOV-3 · STRESS · SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS · PHASE I · 2026 · SAIDA URBAN OBSERVATORY · HARIRI FOUNDATION

STRESS · LONG-TERM PRESSURE

STRESS ○

PRIORITY STRESS · RANK #10 OF 15

ST-GOV-4

High dependence on external aid

INSTITUT

CRPT DIMENSION

Institutional → Economic

CLUSTER

Institutional Capacity

WHAT DRIVES IT & WHY IT MATTERS

Public services in Saida-Zahrani (water, sanitation, health, social protection) depend structurally on donor funding, with no domestic budget able to take their place. The 2024 war and the subsequent crumbling of aid support are the clearest sign of that dependence: as flows plateaued and contracted in 2024-25, there was nothing to fall back on.

19.04

/ 25

COMPOSITE PRIORITY

0-25 · higher = more urgent

CHRONIC IMPACT (0-5 severity)

People

Assets

Processes

5

3

3

KEY-INFORMANT (MAYOR) SIGNAL

Not directly named by mayors — its priority rests on the workshop scoring and the indicator evidence

WORKSHOP CONSENSUS

1/5

of 5 groups mapped it

SYSTEM ROLE

0

downstream shocks it feeds

CONSENSUS DEPTH

1/5

workshop groups agreed

WHERE IT HITS HARDEST

Territory-wide, but heaviest in the camps, where aid is the main way services reach people, and in peri-urban municipalities that rely on donor-funded waste, water, and clinic operations.

KEY INDICATORS

HUMANITARIAN FLASH-APPEAL (LEBANON)

\$425.7M (94.9% funded)

Annex C 9.9 · UN OCHA FTS 2024

NOMINAL GDP

\$28bn

Annex C 3.5 · Banque du Liban 2025

GDP PER CAPITA

\$4,473

Annex C 3.6 · World Bank 2024

POLICIES & PROGRAMMES IN PLACE

Hariri Foundation — resilience & business-model training for local NGOs

OCHA Lebanon humanitarian coordination / flash appeals

Municipal own-source revenue mobilisation efforts

RECENT EVIDENCE

2025

USAID officially closed and Rescissions Act clawed back ~\$9B humanitarian funds; Lebanon OneAid cuts ~\$10.1M (Annex B recent #11).

2024-2025

Halt of external (UN) aid exposed absence of fiscal substitution capacity (Annex B #37).

IN PLAIN TERMS

This is less a problem that starts crises than one that makes every crisis worse. Aid is the cushion; when it thins, there is nothing left to absorb the next shock.

ST-GOV-4 · STRESS · SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

PHASE I · 2026 · SAIDA URBAN OBSERVATORY · HARIRI FOUNDATION

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

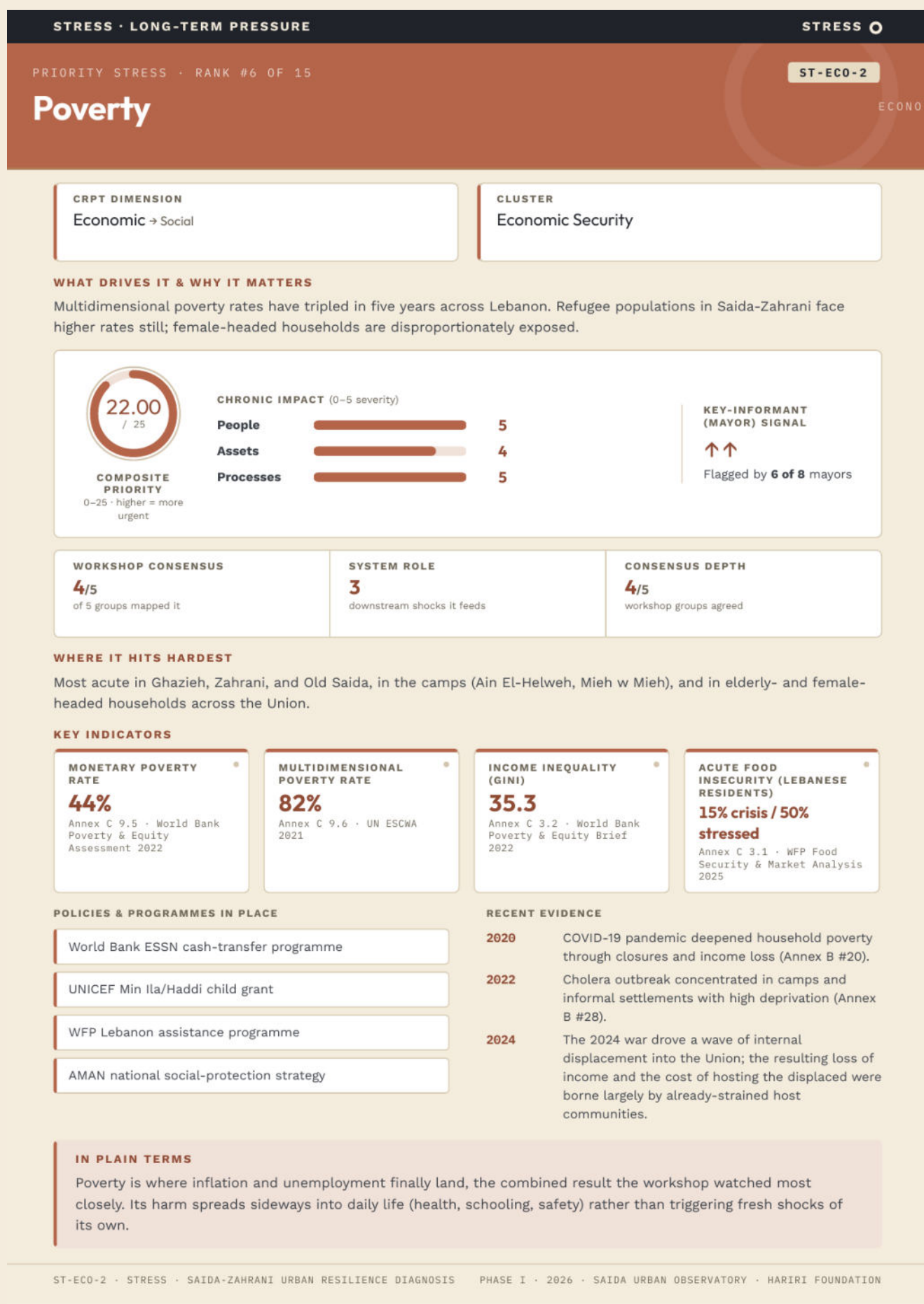
80

5.4 Economic stresses

Four of the top fifteen stresses are primarily economic. Unemployment, inflation, and poverty interact through shared drivers in the post-2019 crisis; slow growth captures the structural underperformance that predates the crisis and constrains recovery capacity.



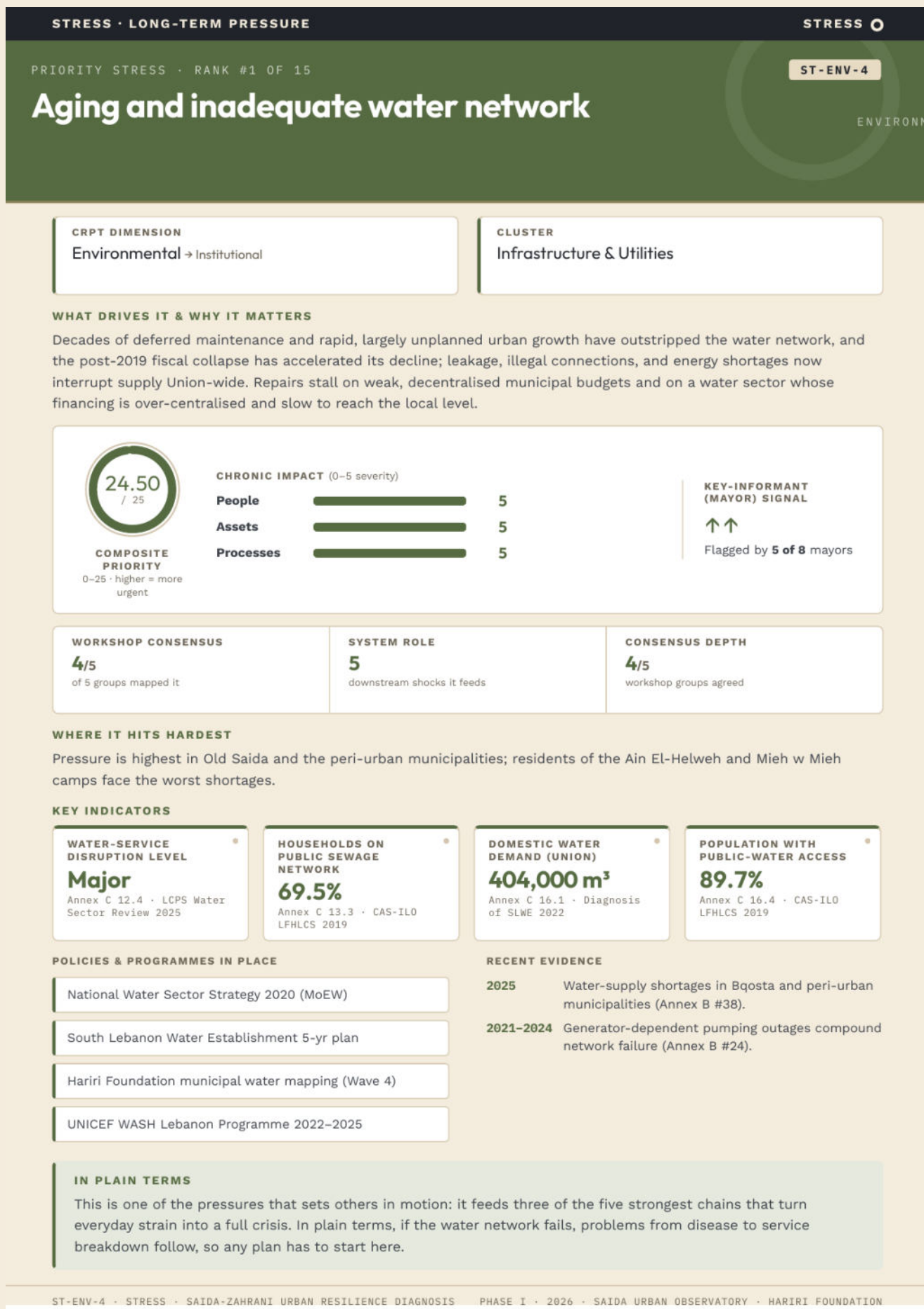






5.5 Environmental stresses

Four of the top fifteen stresses are primarily environmental, and two of them lead the whole catalogue. They share a structural character: legacy infrastructure eroded by decades of under-investment, then compounded by the post-2019 fiscal crisis. Each also acts as an exposure pathway for the shocks in [Section 6](#), the water network lowering the threshold at which an epidemic becomes systemic, the waste system feeding fire and contamination risk.



CRPT DIMENSION

Environmental → Institutional

CLUSTER

Infrastructure & Utilities

WHAT DRIVES IT & WHY IT MATTERS

Decades of deferred maintenance and rapid, largely unplanned urban growth have outstripped the water network, and the post-2019 fiscal collapse has accelerated its decline; leakage, illegal connections, and energy shortages now interrupt supply Union-wide. Repairs stall on weak, decentralised municipal budgets and on a water sector whose financing is over-centralised and slow to reach the local level.

24.50

/ 25

COMPOSITE PRIORITY

0–25 • higher = more urgent

CHRONIC IMPACT (0–5 severity)

People		5
Assets		5
Processes		5

KEY-INFORMANT (MAYOR) SIGNAL

↑↑

Flagged by 5 of 8 mayors

WORKSHOP CONSENSUS

4/5

of 5 groups mapped it

SYSTEM ROLE

5

downstream shocks it feeds

CONSENSUS DEPTH

4/5

workshop groups agreed

WHERE IT HITS HARDEST

Pressure is highest in Old Saida and the peri-urban municipalities; residents of the Ain El-Helweh and Mieh w Mieh camps face the worst shortages.

KEY INDICATORS

WATER-SERVICE DISRUPTION LEVEL

Major

Annex C 12.4 • LCPS Water Sector Review 2025

HOUSEHOLDS ON PUBLIC SEWAGE NETWORK

69.5%

Annex C 13.3 • CAS-ILO LFHLCs 2019

DOMESTIC WATER DEMAND (UNION)

404,000 m³

Annex C 16.1 • Diagnosis of SLWE 2022

POPULATION WITH PUBLIC-WATER ACCESS

89.7%

Annex C 16.4 • CAS-ILO LFHLCs 2019

POLICIES & PROGRAMMES IN PLACE

National Water Sector Strategy 2020 (MoEW)

South Lebanon Water Establishment 5-yr plan

Hariri Foundation municipal water mapping (Wave 4)

UNICEF WASH Lebanon Programme 2022–2025

RECENT EVIDENCE

2025

Water-supply shortages in Bqosta and peri-urban municipalities (Annex B #38).

2021–2024

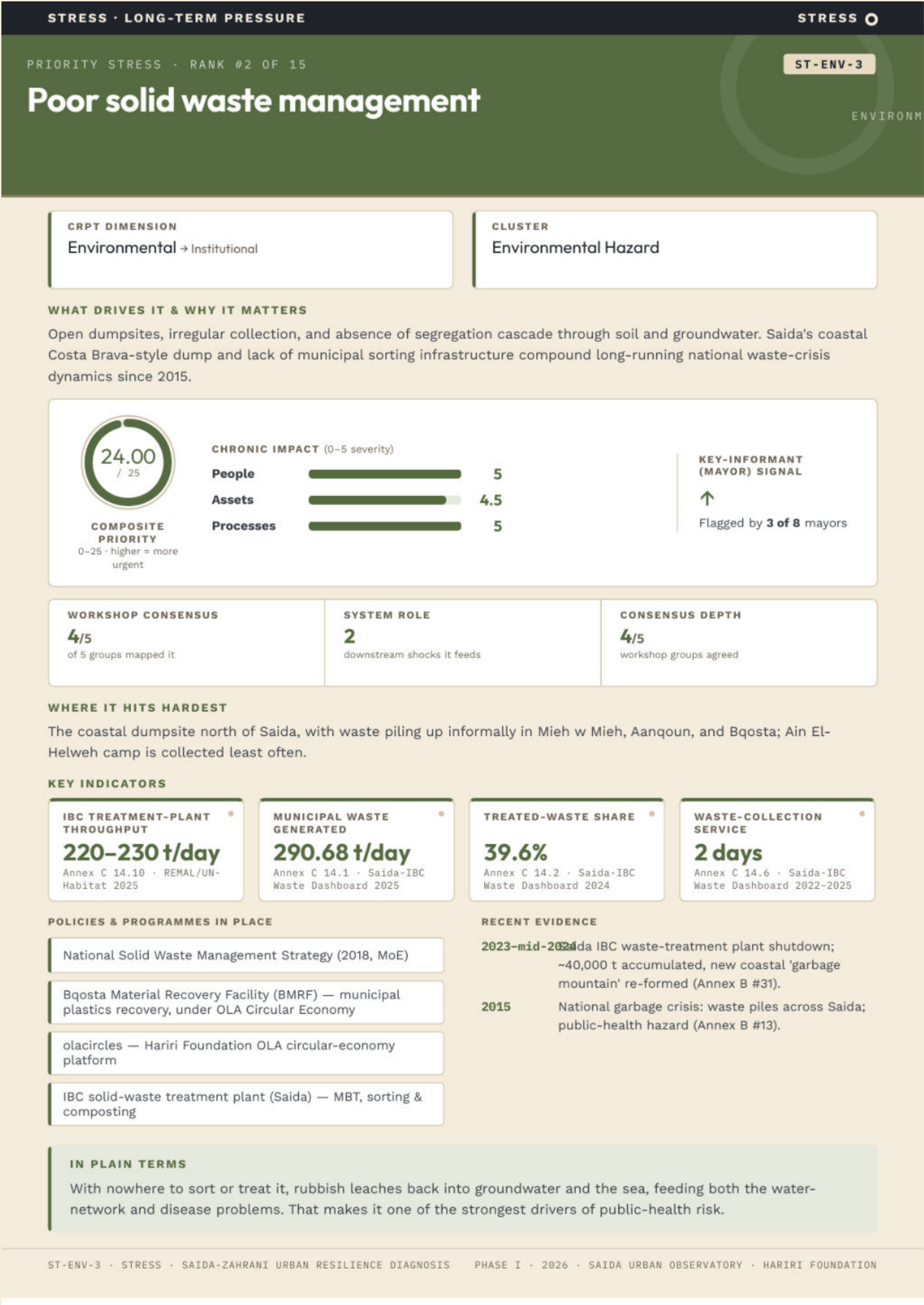
Generator-dependent pumping outages compound network failure (Annex B #24).

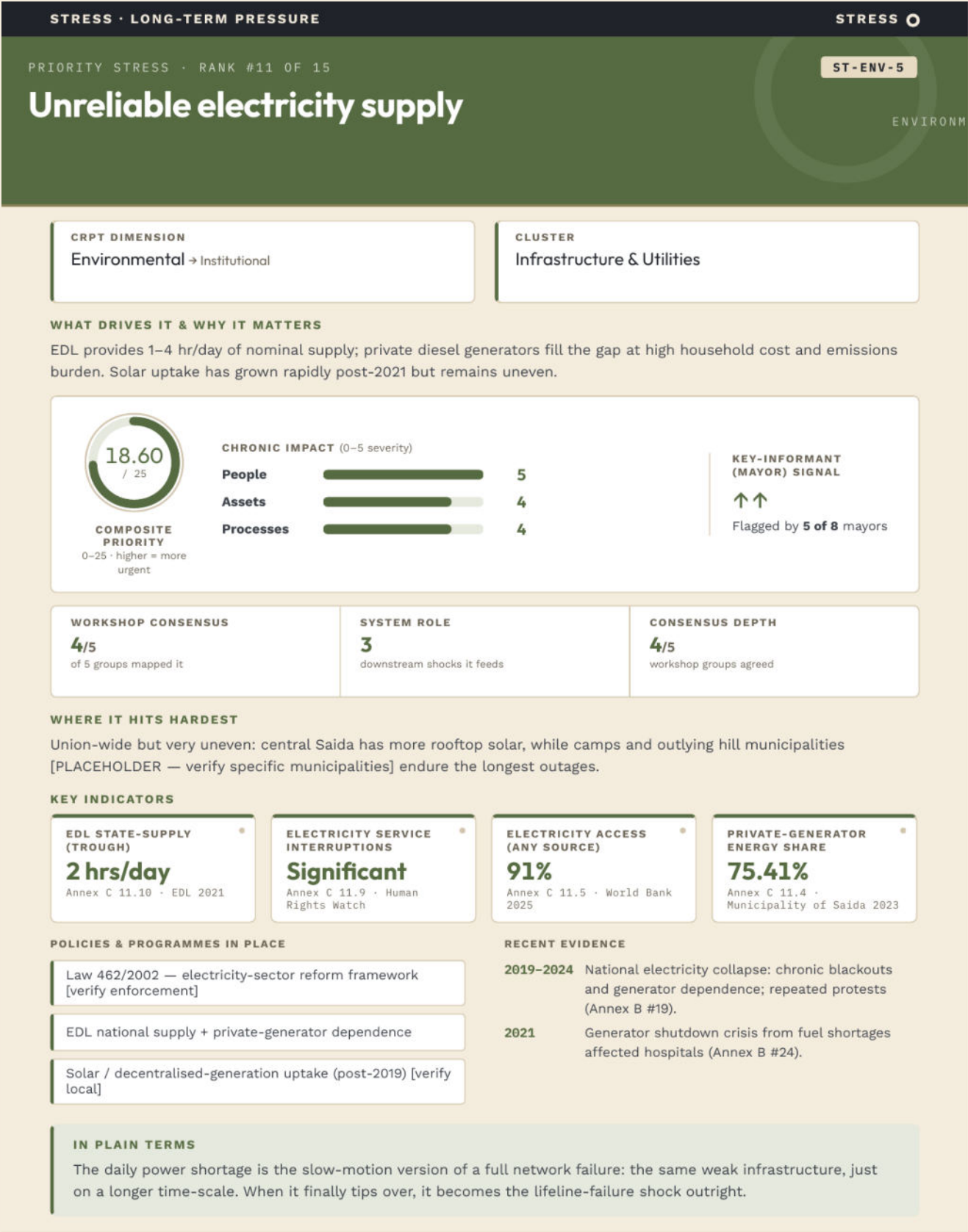
IN PLAIN TERMS

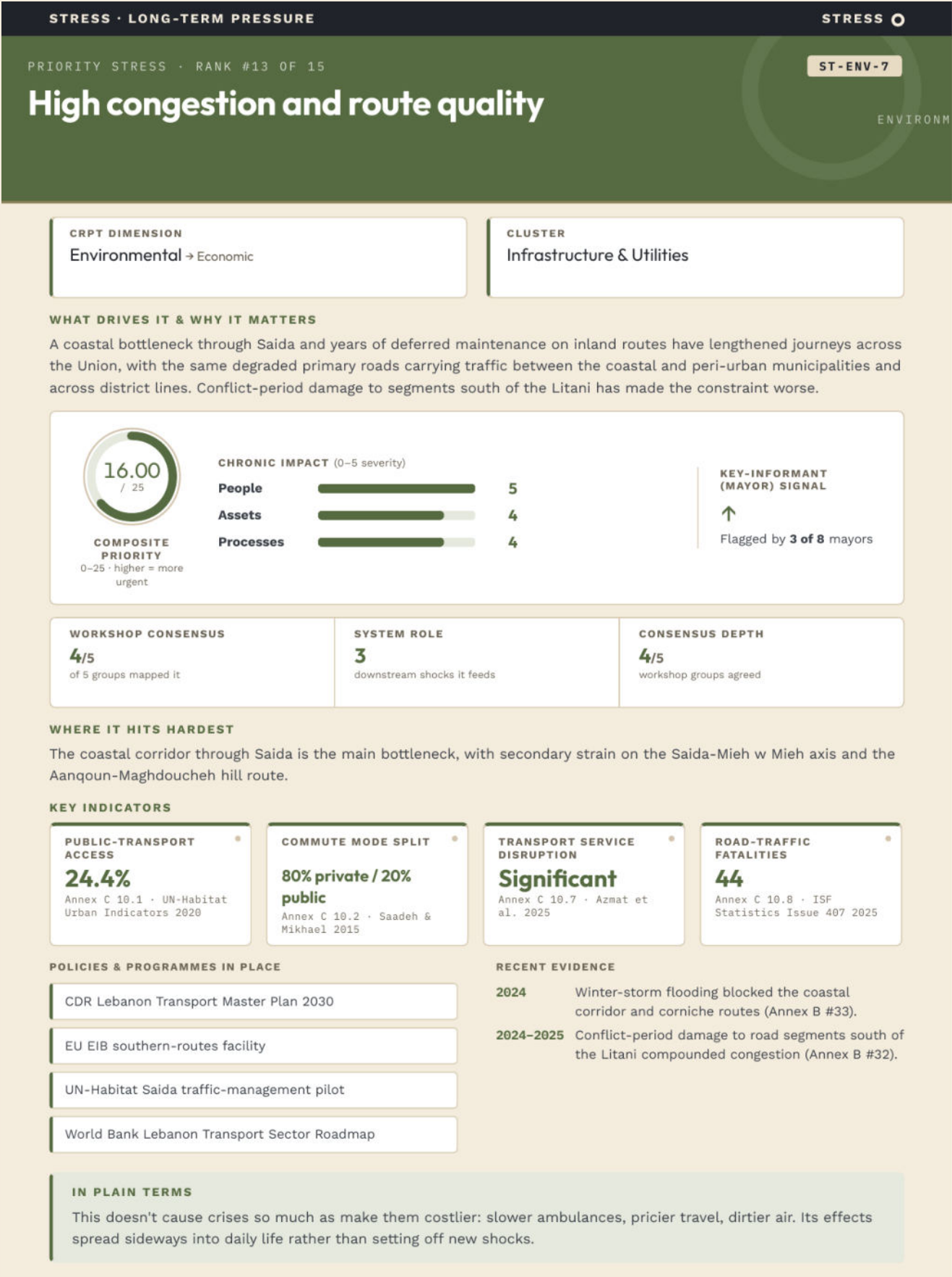
This is one of the pressures that sets others in motion: it feeds three of the five strongest chains that turn everyday strain into a full crisis. In plain terms, if the water network fails, problems from disease to service breakdown follow, so any plan has to start here.

ST-ENV-4 • STRESS • SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

PHASE I • 2026 • SAIDA URBAN OBSERVATORY • HARIRI FOUNDATION

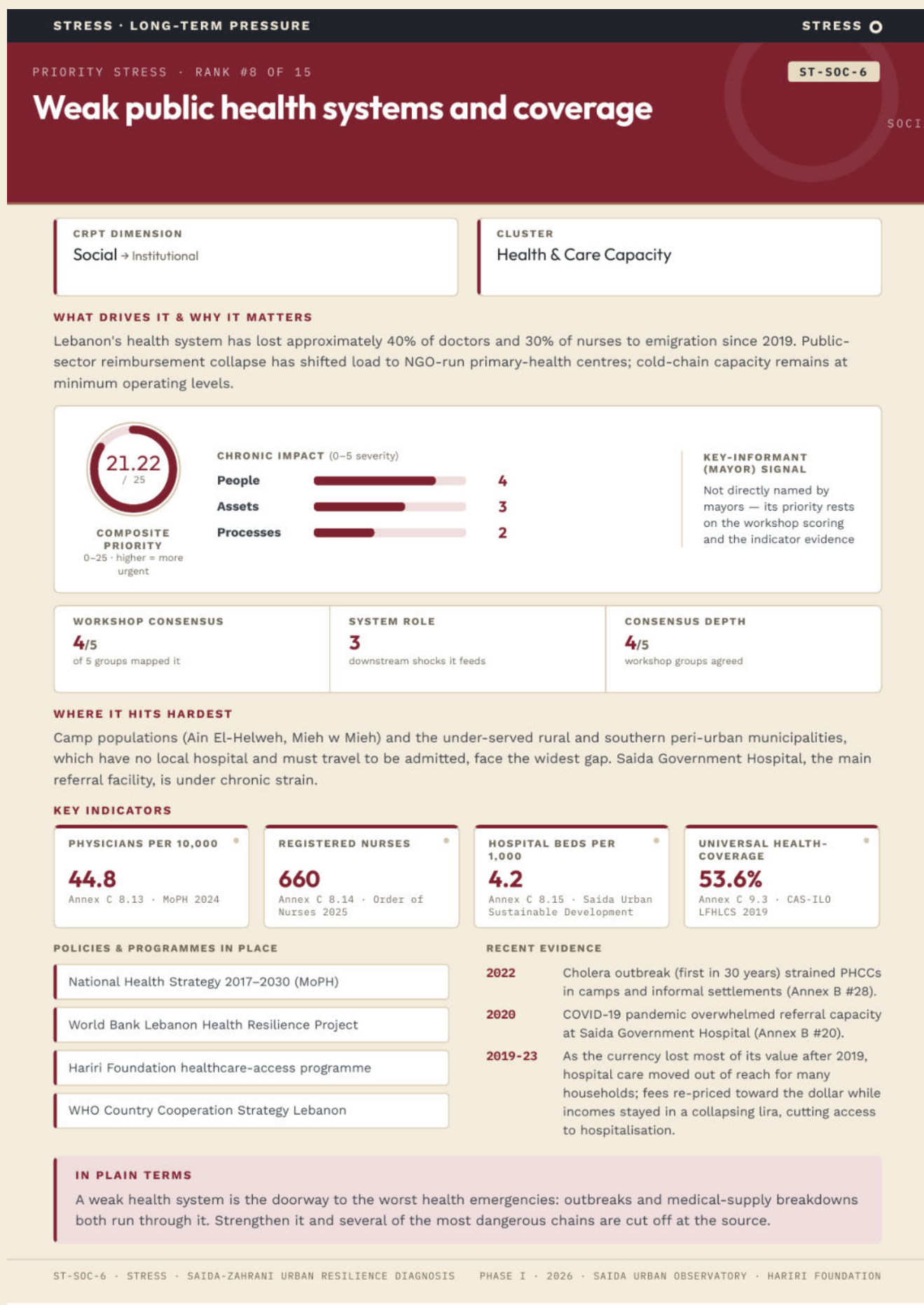


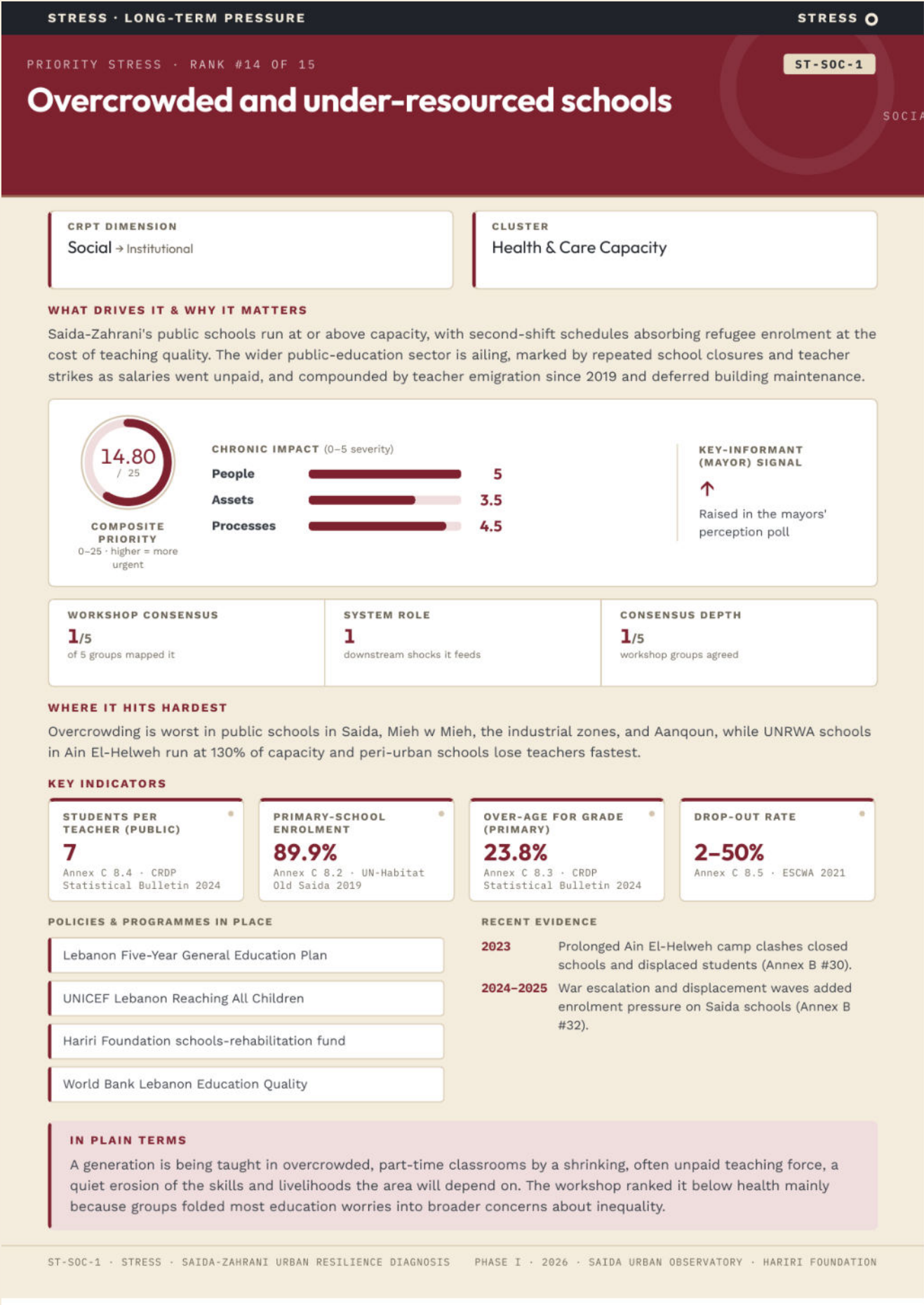




5.6 Social stresses

Three of the top fifteen stresses are primarily social. Weak public-health systems and coverage (rank 8) is the highest-ranked social stress. Increasing crime (rank 15 within the priority set) captures the documented post-2019 rise in property crime alongside contracting public-security capacity; it is retained in the top-fifteen stresses under ADJ-5 despite a raw composite score (14.19) that sits just below two held-out stresses, on the strength of recent property-crime and policing-capacity evidence ([Section 2.5.2](#)). Overcrowded schools (rank 14) is narrowed under ADJ-4 to the schooling system, with health-facility capacity treated under St-Soc-6.





STRESS · LONG-TERM PRESSURE

STRESS 0

PRIORITY STRESS · RANK #15 OF 15

ST-SOC-7

Increasing crime rates

SOCIAL

CRPT DIMENSION

Social → Economic

CLUSTER

Safety & Social Cohesion

WHAT DRIVES IT & WHY IT MATTERS

Recorded property and violent-crime rates have risen since 2019 in tandem with unemployment and currency collapse. Municipal security forces operate on degraded equipment and depleted personnel rosters; informal-settlement disputes increasingly involve weapons.

14.19

/ 25

COMPOSITE PRIORITY

0–25 · higher = more urgent

CHRONIC IMPACT (0–5 severity)

People

Assets

Processes

4

4

4

KEY-INFORMANT (MAYOR) SIGNAL

Not directly named by mayors — its priority rests on the workshop scoring and the indicator evidence

WORKSHOP CONSENSUS

2/5

of 5 groups mapped it

SYSTEM ROLE

0

downstream shocks it feeds

CONSENSUS DEPTH

2/5

workshop groups agreed

WHERE IT HITS HARDEST

Concentrated in dense urban Saida and along the port and industrial-zone perimeters, where numbers of unemployed young people are highest.

KEY INDICATORS

SIGNIFICANT CRIMES (NATIONAL)

5,363

Annex C 21.7 · ISF Directorate-General 2023

HOMICIDES (NATIONAL)

158

Annex C 21.6 · ISF Directorate-General 2023

HOMICIDE RATE

3.1 per 100,000

Annex C 21.8 · UNODC 2019

LOCAL CRIME RATE (SAIDA)

2,487 per 100,000

Annex C 21.1 · ISF Statistics Issue 407 2025

POLICIES & PROGRAMMES IN PLACE

National Strategy for Crime Prevention 2024 (Mol)

EU EUROMED Police capacity-support

Hariri Foundation youth-engagement programme

UN-Habitat Lebanon Safer Cities programme

RECENT EVIDENCE

May 2024

ISF strength fell to ~24,500 officers (from ~30,000 in 2019); 1,000+ departures Oct 2019–May 2024 amid wage collapse (Annex B recent #6).

27 Aug 2025

Crisis Group documents policing collapse; Army Intelligence absorbs routine investigations (burglary, street fights, drug dealing) (Annex B recent #12).

2025

Recent-evidence add-on (card image56): independent published evidence corroborates St-Soc-7 through 2025. Sources: International Crisis Group, Report 251 (Aug 2025); EUAA Country Focus Lebanon, Section 4.2 ISF (2025); ISF public bulletins through Q4 2025.

IN PLAIN TERMS

Rising theft and violence are the social face of the economic collapse, following directly from unemployment and inflation. The most recent hard evidence runs through the Internal Security Forces (ISF) statistical bulletins published through 2025.

5.7 Stresses under-represented by the workshop channel

Three stresses scored above the expert baseline threshold but received limited workshop endorsement: housing access and affordability (**St-Env-6**), inter-community tensions (**St-Soc-3**), and gender-specific vulnerability (**St-Soc-4**). Their composite scores fall below the top-fifteen cut, but the suppression reflects workshop composition rather than absence of risk: the cohort did not include dedicated representation from camp residents, gender-specific advocacy organisations, or housing-rights actors. ESCWA estimates that over 60% of Lebanese households face overcrowding or inadequate shelter conditions (ESCWA, 2023). Lebanon's low female labour-force participation rate of 29% (CAS / ILO, 2022) concentrates women's economic exposure during income shocks. Future monitoring cycles must integrate targeted consultations with these groups, sequenced through the Urban Observatory in [Section 9](#).

None of the fifteen catalogued pressures breaks the Union outright. Each lowers the threshold at which something else will. [Section 6](#) turns to the acute events that do the breaking.

06

Shocks

Ten acute events that test the system, led by essential-infrastructure failure (25.0).

6. Shocks

A shock is what tests the system. Whether it becomes a disaster depends on the stresses that preceded it. (UN-Habitat, 2018, City Resilience Profiling Tool: Guide)

Where [Section 5](#) catalogued the pressures that erode the Union, this section reports the ten acute events that test it. Shocks are time-bounded disruptions with cascading consequences (UN-Habitat, 2018), and in the Union their severity is set in advance by the stresses already at work: the aging water network lowers the threshold at which an epidemic becomes systemic; weak public-sector capacity converts an aid disruption into a service collapse; the absence of dedicated DRR resources turns a localised technological event into a territory-wide emergency.

6.1 Overview of the catalogue

Reading note: how to read the cards. The sourcing protocol in [Section 5.1](#) applies here. Every card value is traceable to the indicators workbook (Annex C), the incident log (Annex B), or a cited source. The shock cards additionally carry an incident timeline: dated events from the log that establish recurrence.

The CRPT catalogue applied to the Union contains 34 shocks across the four thematic dimensions. The ten highest by composite priority score are treated below. Two data-reliability adjustments shape the priority sub-set: ADJ-2 (**Sh-Tech-4** retained at rank 9 despite no workshop signal) and ADJ-3 (**Sh-Tech-5** expert score revised from 16 to 25). A third membership decision folds refugee influx (**Sh-S-3**, raw **CPS 18.1**) into the war-and-displacement shock (**Sh-S-7**) and the camps geography ([Section 3.6](#)) to avoid double-counting, so it is not listed as a separate priority shock. All three are documented in [Section 2.5.2](#) and Annex A.

6.1.1 Priority ranking at a glance

[Figure 6.1](#) carries the ranking, and each of the ten items is then documented on a full card in [Section 6.2](#). The complete 34-shock scoring, including the 24 items below the threshold, is tabulated in Annex A.

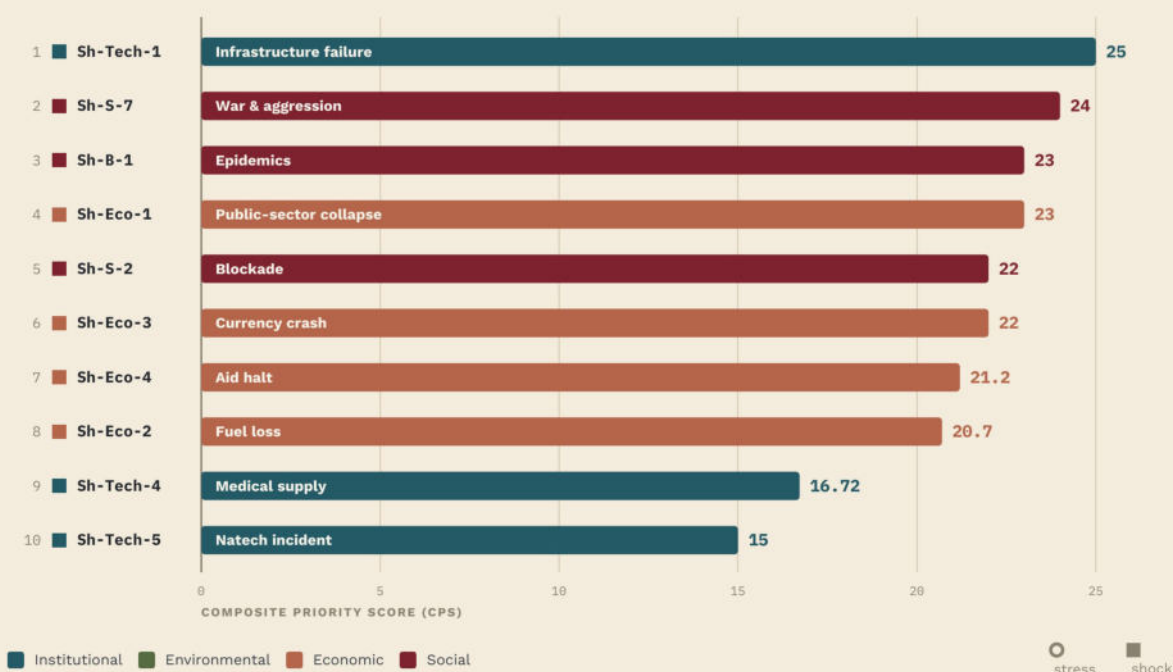
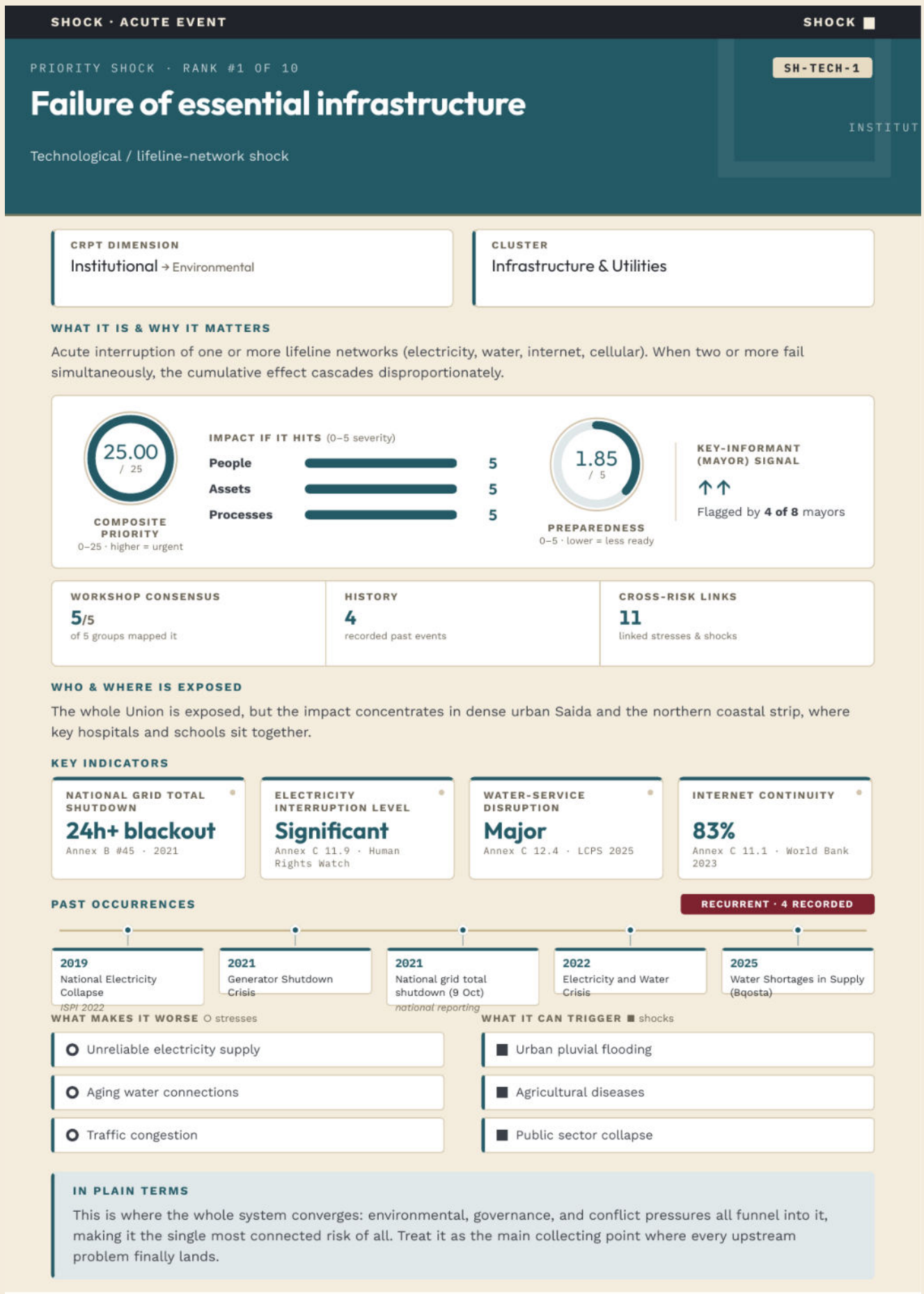


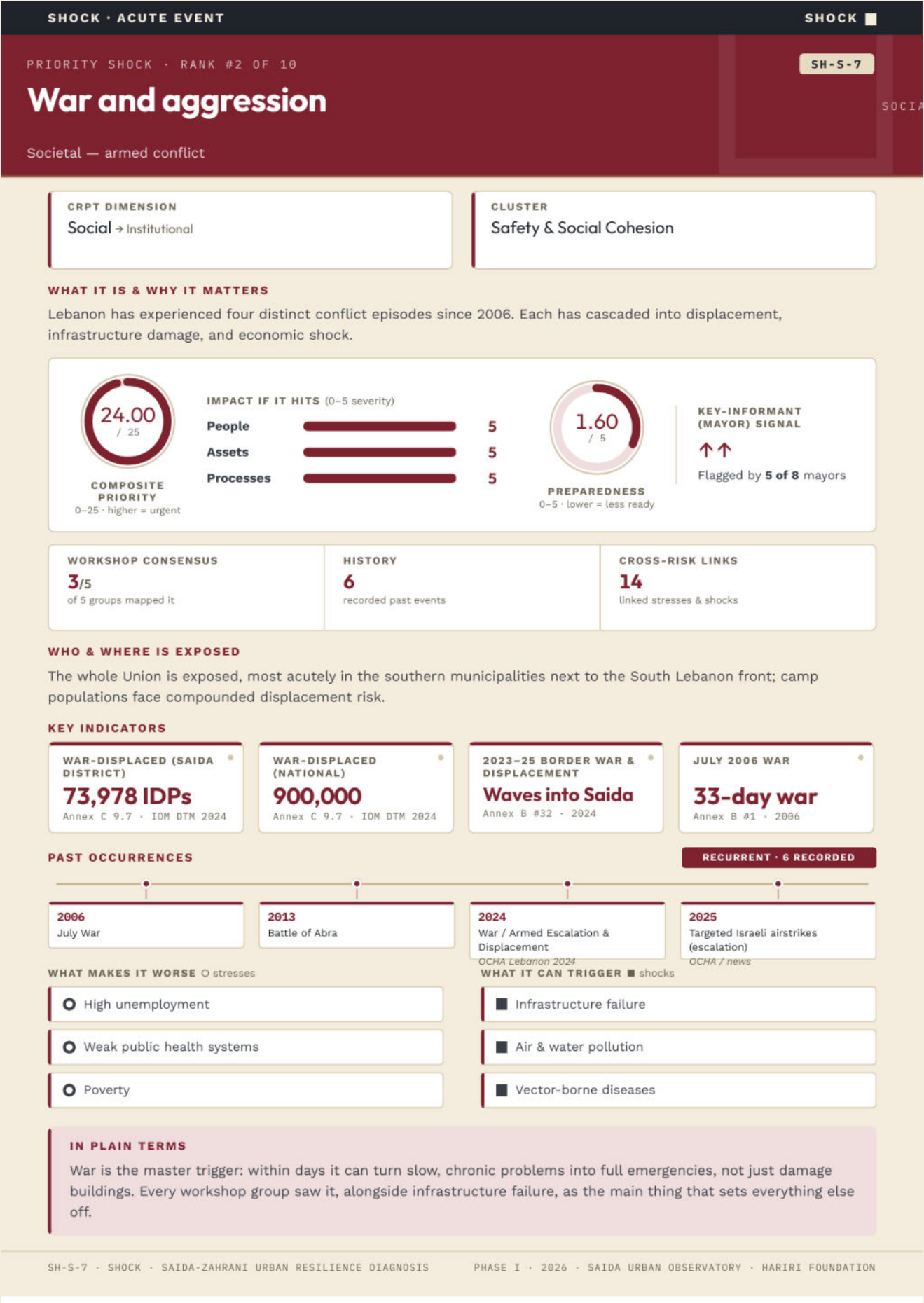
Figure 6.1. Top ten shocks ranked by composite priority score on the 0 to 25 scale. Bar colour shows primary thematic dimension. The inclusion threshold for the priority sub-set is **CPS 15.0**. Source: Saida Urban Observatory, Hariri Foundation, 2025.

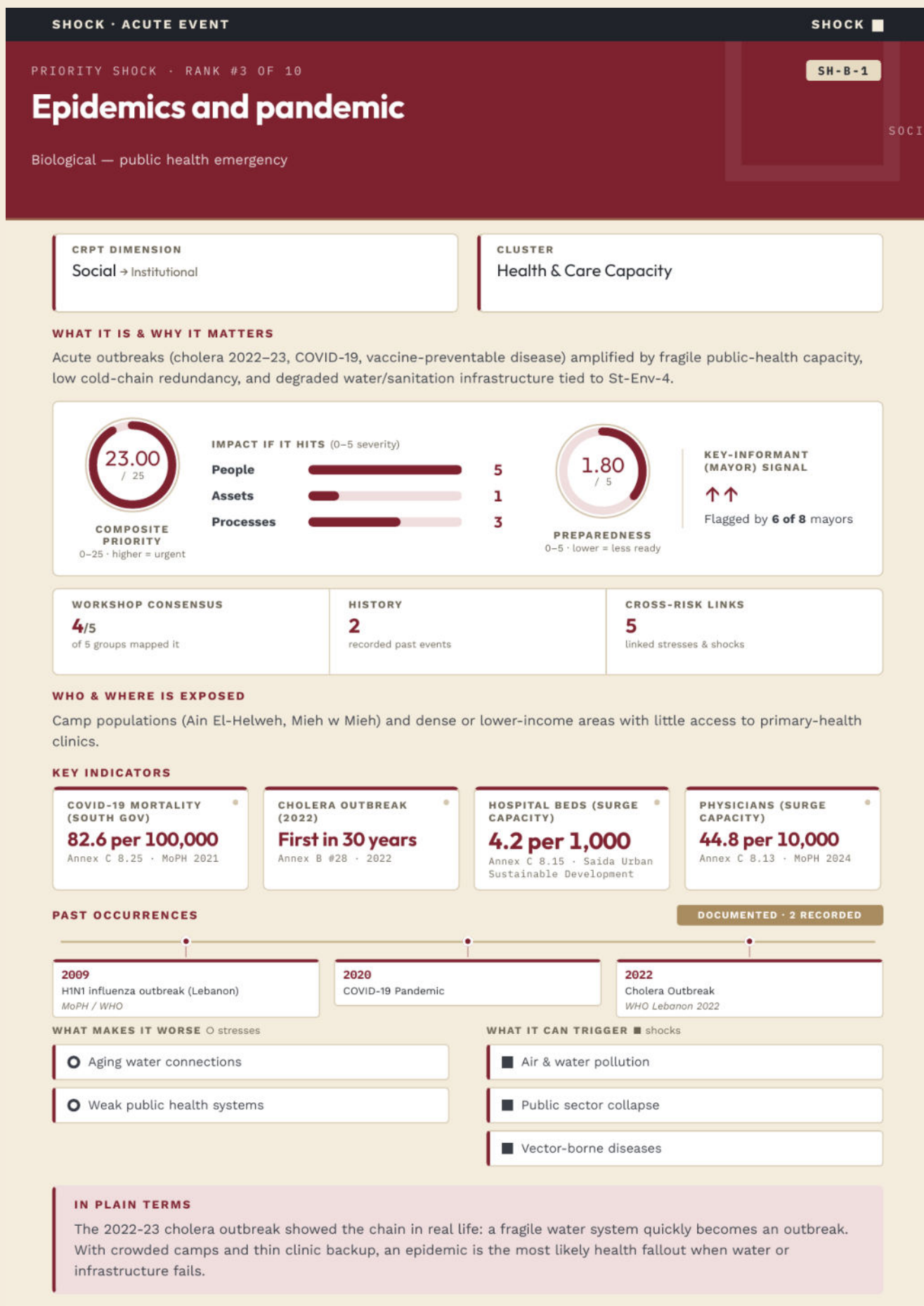
Anchor finding: the infrastructure-failure shock is the structural hub. Failure of essential infrastructure (Sh-Tech-1) sits at the top of the shock catalogue with the maximum composite score of 25.0. It is also the central node in the synergy network in [Section 7](#), with direct links to nine other priority items, six stresses and three priority shocks ([Section 7.1](#)). A resilience strategy that protects a single infrastructure system without addressing its position in the cascade network will under-perform.

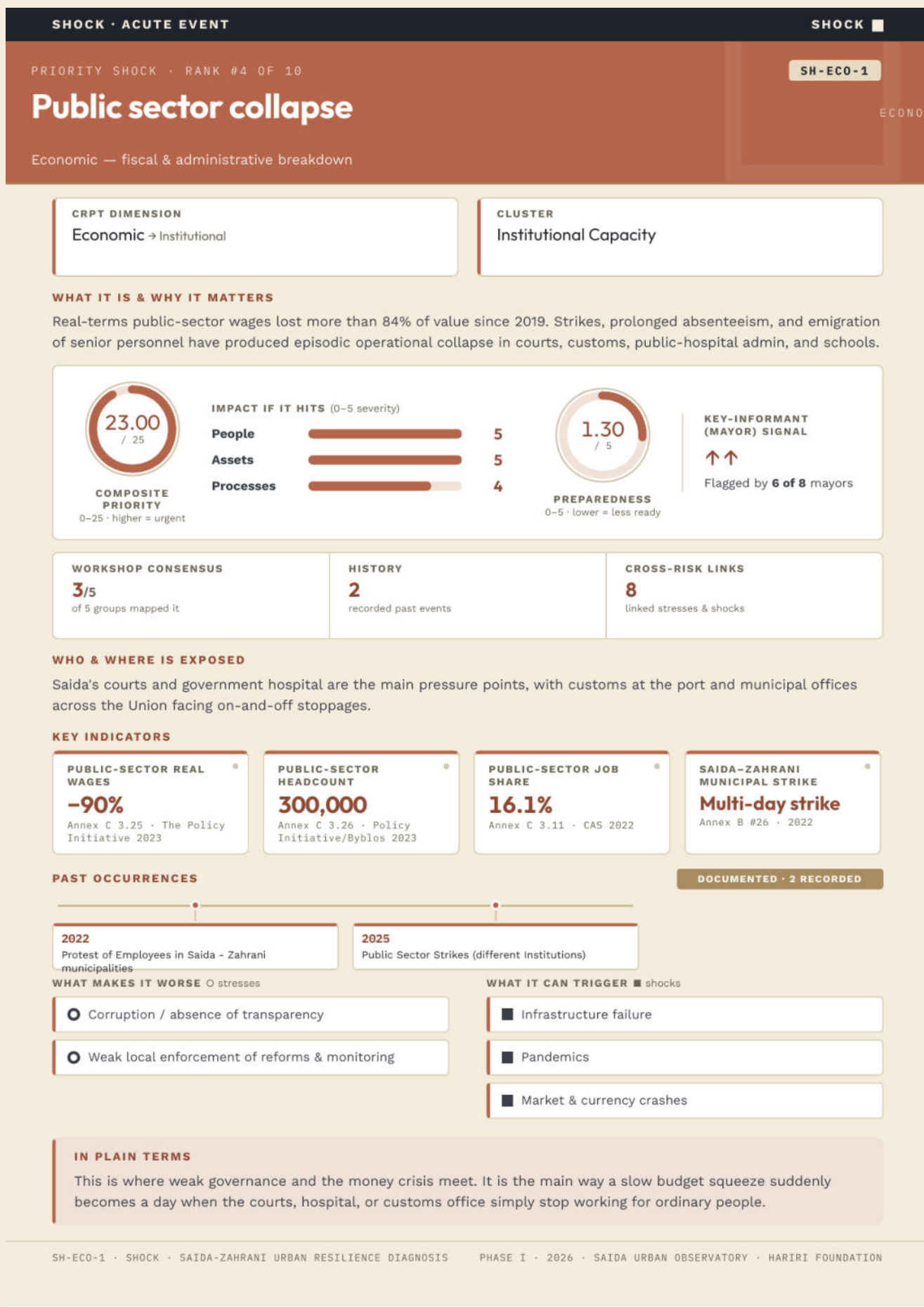
6.2 Priority shock cards

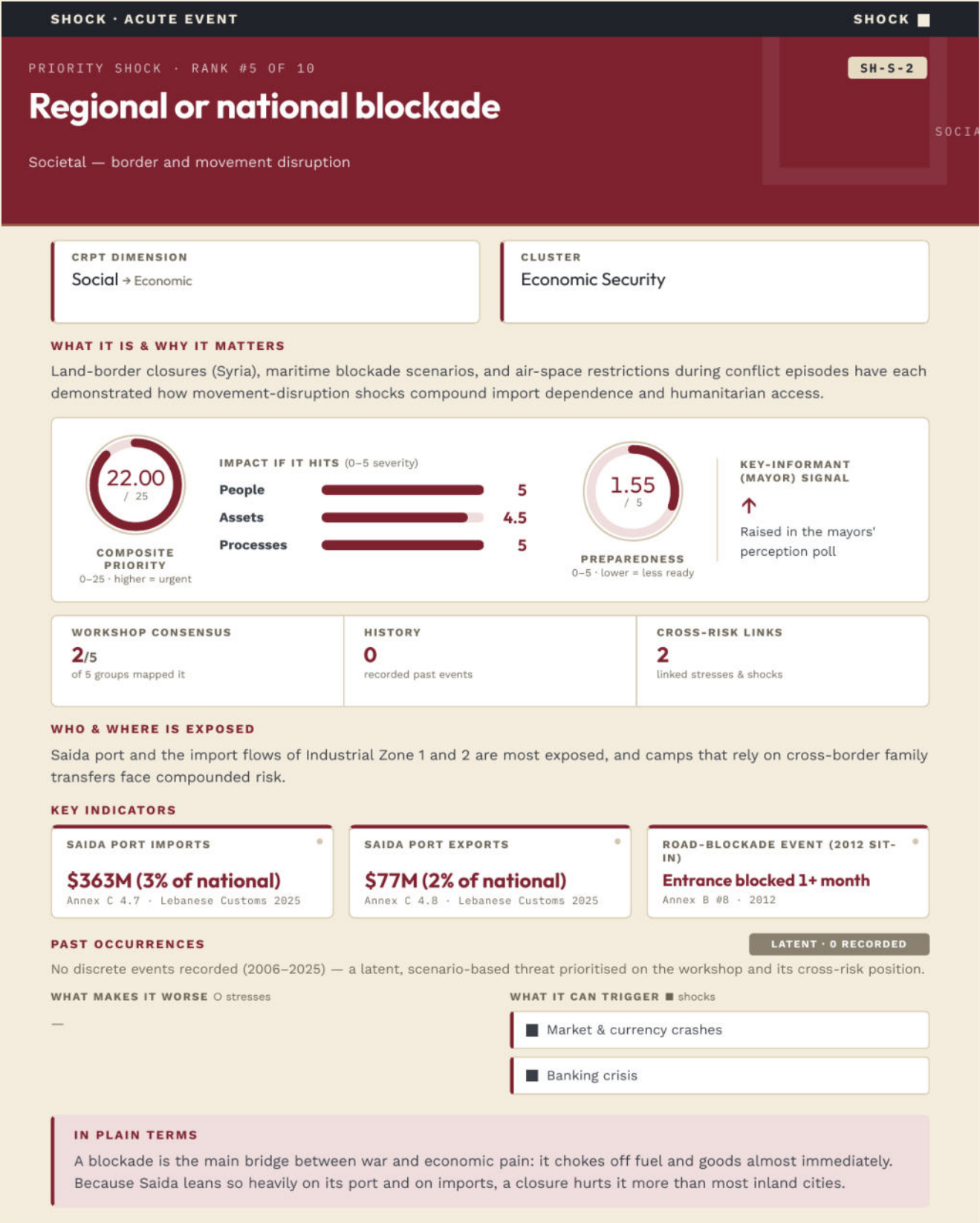
The ten priority shocks are documented on full-page cards. Each reports the rank and composite score, a one-line definition, the local manifestation in the Union, the dominant cascade pathway, the relevant policies and initiatives, an incident timeline drawn from the log, and the data-reliability notes (including ADJ-2 and ADJ-3 where they apply).











SH-S-2 · SHOCK · SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

PHASE I · 2026 · SAIDA URBAN OBSERVATORY · HARIRI FOUNDATION

SHOCK · ACUTE EVENT

SHOCK ■

PRIORITY SHOCK · RANK #6 OF 10

SH-ECO-3

Market and currency crashes

Economic — financial-system shock

CRPT DIMENSION

Economic → Institutional

CLUSTER

Economic Security

WHAT IT IS & WHY IT MATTERS

External-transfer disruption and parallel-rate volatility produce sudden price discontinuities. The 2019 banking lockdown and the 2024 conflict each demonstrated how external-account shocks compress household and firm liquidity within days.

22.00 / 25

COMPOSITE PRIORITY

0–25 · higher = urgent

IMPACT IF IT HITS (0–5 severity)

People

Assets

Processes

5

5

4

1.50 / 5

PREPAREDNESS

0–5 · lower = less ready

KEY-INFORMANT (MAYOR) SIGNAL

↑↑

Flagged by 5 of 8 mayors

WORKSHOP CONSENSUS

3/5

of 5 groups mapped it

HISTORY

0

recorded past events

CROSS-RISK LINKS

8

linked stresses & shocks

WHO & WHERE IS EXPOSED

Cuts across the Union; importer firms at the port and remittance-dependent households in camps and lower-income districts are most exposed.

KEY INDICATORS

USD/LBP EXCHANGE RATE

1,507.5 → 89,500

Annex C 4.14 · Banque du Liban 2024

BANKING / DEPOSITOR LOSSES

\$50bn depositors / \$70–83bn sector

Annex C 4.15 · ABL/World Bank 2023

CPI INFLATION (ANNUAL)

171.2% / 221.3% / 45.2%

Annex C 4.13 · World Bank/CAS 2024

BANK-ACCOUNT ACCESS

44.75% → 20.7%

Annex C 4.3 · World Bank 2021

PAST OCCURRENCES

2019

Banking crisis onset & capital controls

World Bank

LATENT · 0 RECORDED

WHAT MAKES IT WORSE ○ stresses

Inflation / devaluation

Poverty

High unemployment

WHAT IT CAN TRIGGER ■ shocks

Banking crisis

Public sector collapse

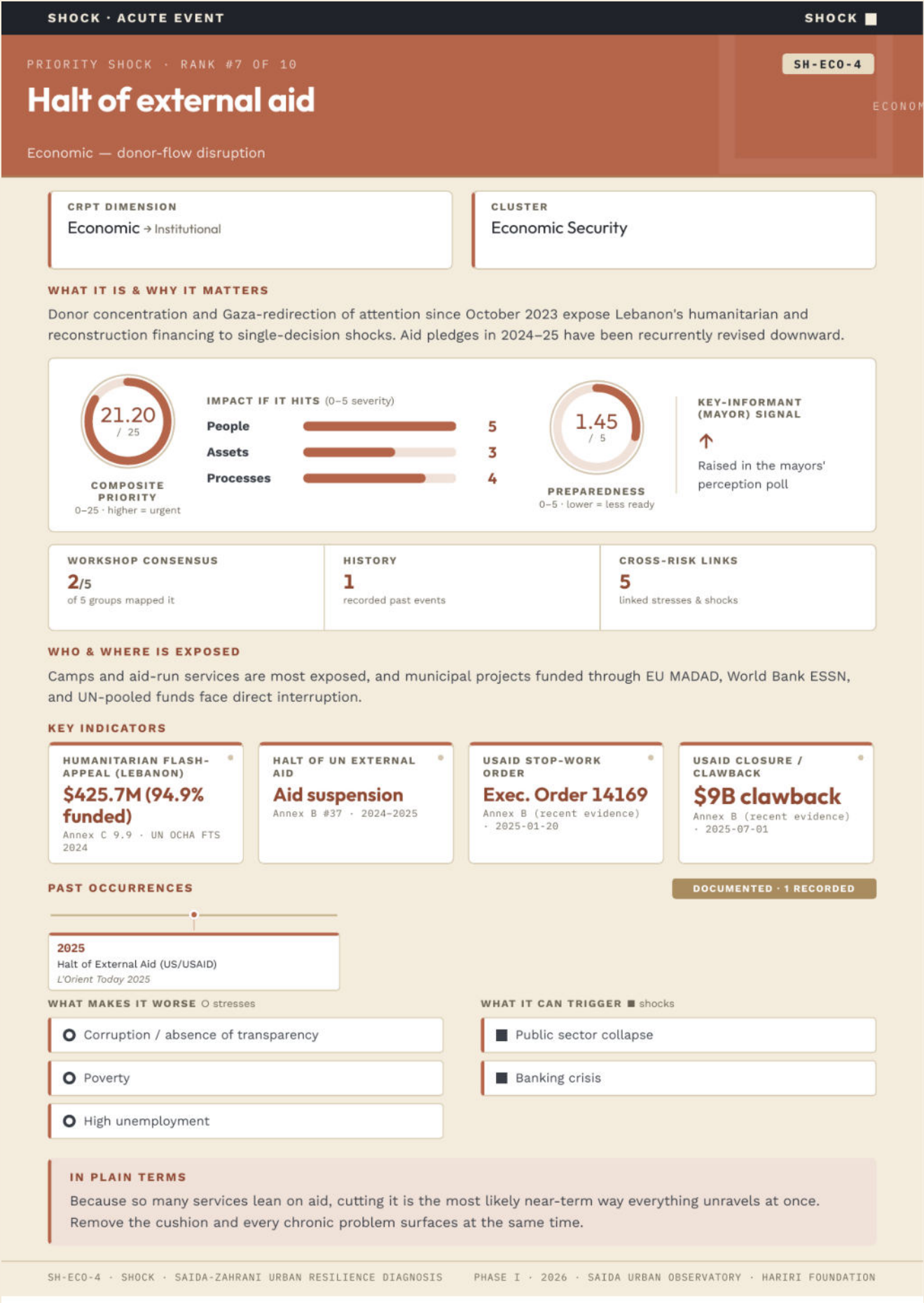
Blockade

IN PLAIN TERMS

This is the moment a steady loss of value turns into a sudden cash crunch. It has happened so often since 2019 that people now rely on informal exchange channels, so each new shock hits an economy already braced for it.

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

104





SHOCK · ACUTE EVENT

SHOCK ■

PRIORITY SHOCK · RANK #9 OF 10

SH-TECH-4

Health and medical supply disruption

INSTITUT

Technological — medical-logistics shock

CRPT DIMENSION

Institutional → Social

CLUSTER

Health & Care Capacity

WHAT IT IS & WHY IT MATTERS

Pharmaceutical supply chains rely on imports financed in dollars; cold-chain capacity has degraded with electricity unreliability. Subsidy-removal episodes (2021), customs-rate adjustments (2023), and conflict-era logistics disruption (2024) have each produced episodic supply gaps.

16.72

/ 25

COMPOSITE PRIORITY

0–25 · higher = urgent

IMPACT IF IT HITS (0–5 severity)

People

Assets

Processes

5

4

5

1.75

/ 5

PREPAREDNESS

0–5 · lower = less ready

KEY-INFORMANT (MAYOR) SIGNAL

Not directly named by mayors — its priority rests on the workshop scoring and the indicator evidence

WORKSHOP CONSENSUS

—/5

of 5 groups mapped it

HISTORY

2

recorded past events

CROSS-RISK LINKS

4

linked stresses & shocks

WHO & WHERE IS EXPOSED

Saida Government Hospital and the Union's four main NGO-run clinics, plus UNRWA camp clinics that depend on supply chains running from Beirut warehouses.

HEALTH-SUPPLY DISRUPTION CAUSES

Conflict + supply-chain breaks

Annex C 8.24 · Banque du Liban 2025

CHEMOTHERAPY STOCKOUTS

32% of cancer patients

Annex B (recent evidence) · 2024

PHARMA SUBSIDY REMOVAL & DRUG SHORTAGES

Nationwide stockouts

Annex B (recent evidence) · 2021

HOSPITAL-BED CAPACITY

4.2 per 1,000

Annex C 8.15 · Saida Urban Sustainable Development

PAST OCCURRENCES

DOCUMENTED · 2 RECORDED

2023

Pharmaceutical subsidy removal & nationwide drug shortages

PLOS 2023

2024

Chemotherapy stock-outs (~32% of cancer patients affected)

World Journal of Clinical Oncology 2024

WHAT MAKES IT WORSE ○ stresses

WHAT IT CAN TRIGGER ■ shocks

○ Weak public health systems

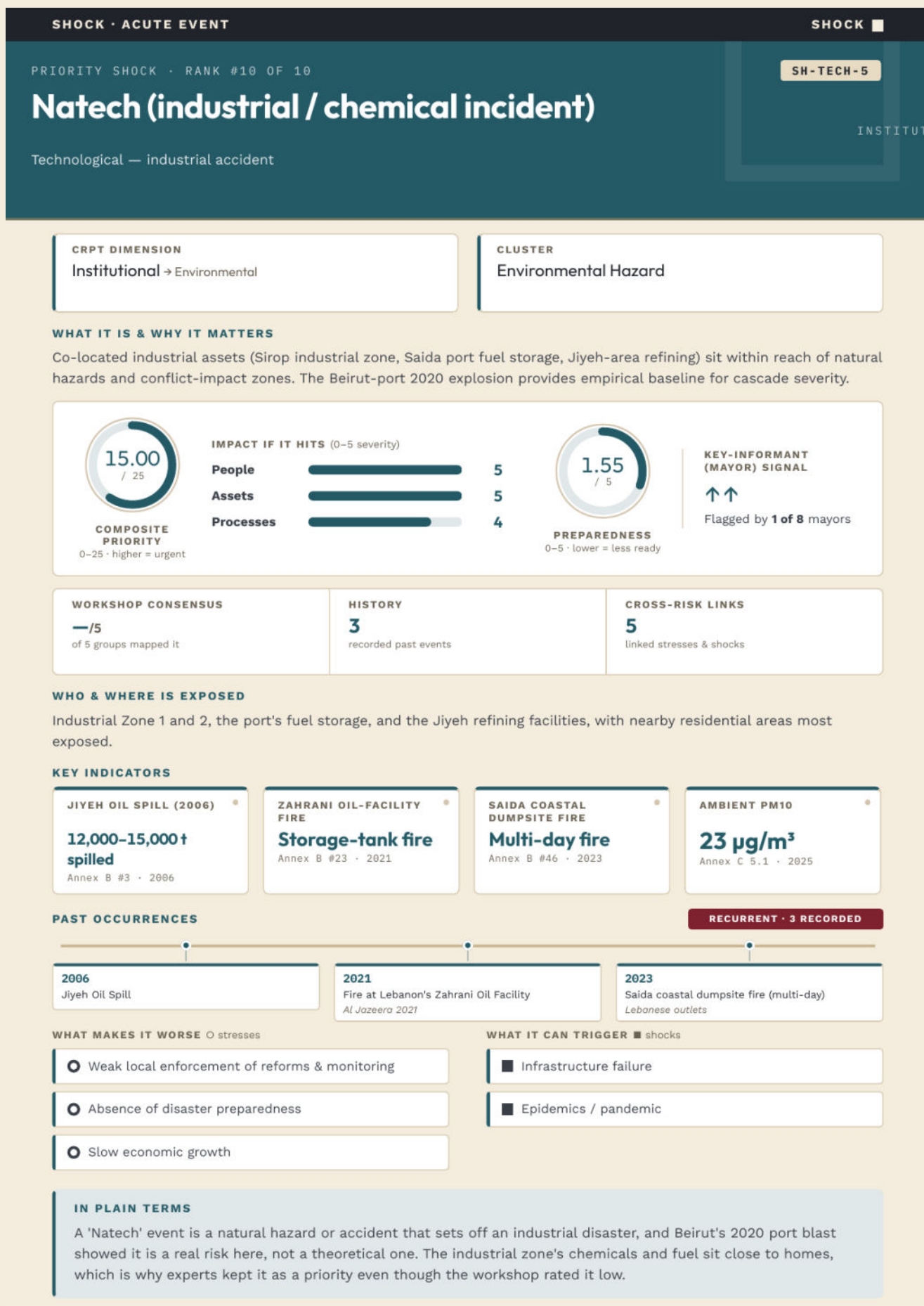
○ Unreliable electricity supply

○ Dependence on external aid

■ Epidemics / pandemic

IN PLAIN TERMS

This rarely starts a crisis by itself, but it is where other failures (power, fuel, aid) turn into a hospital emergency within a week or two. In short, it is the point where system problems become patient problems.



6.3 Shocks below the composite threshold

Several environmental and natural-hazard shocks fall below the priority threshold under the composite formula, yet their spatial footprint within the Union is documented and their cascade pathways are intact. They are reported here so the territorial picture stays complete. ADJ-1, which reclassified air and water pollution from shock to chronic stress, is documented in [Section 2.5.2](#).

6.3.1 Coastal flooding and tsunami exposure

Approximately 4 km² of the Union's urban fabric sits below 10 metres elevation, placing this strip within the modelled tsunami inundation envelope (CNRS-L, 2025). The exposure includes Saida's old port, the historic core, and the immediate coastal residential strip. The recurrence interval for damaging tsunami events in the Eastern Mediterranean is long, but consequence severity for a major event would be high given the density and heritage value of the exposed fabric.

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Coastal flooding and tsunami exposure

Union of Municipalities of Saida-Zahrani

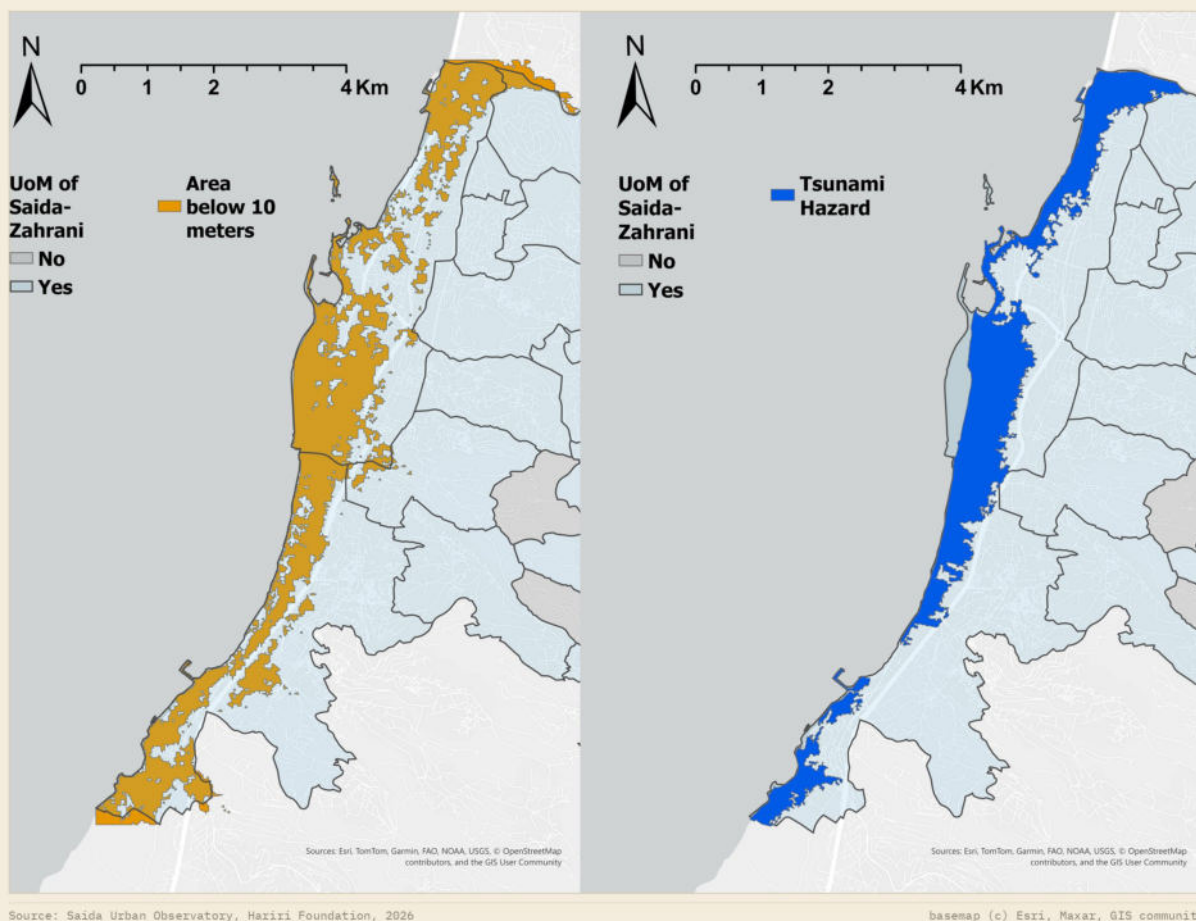


Figure 6.2. Coastal flooding: areas below 10 m elevation and modelled tsunami inundation. Affected fabric concentrates in the old port and adjacent coastal cadastre. Source: CNRS-L, 2025; Hariri Foundation, 2025.

6.3.2 Wildfire exposure

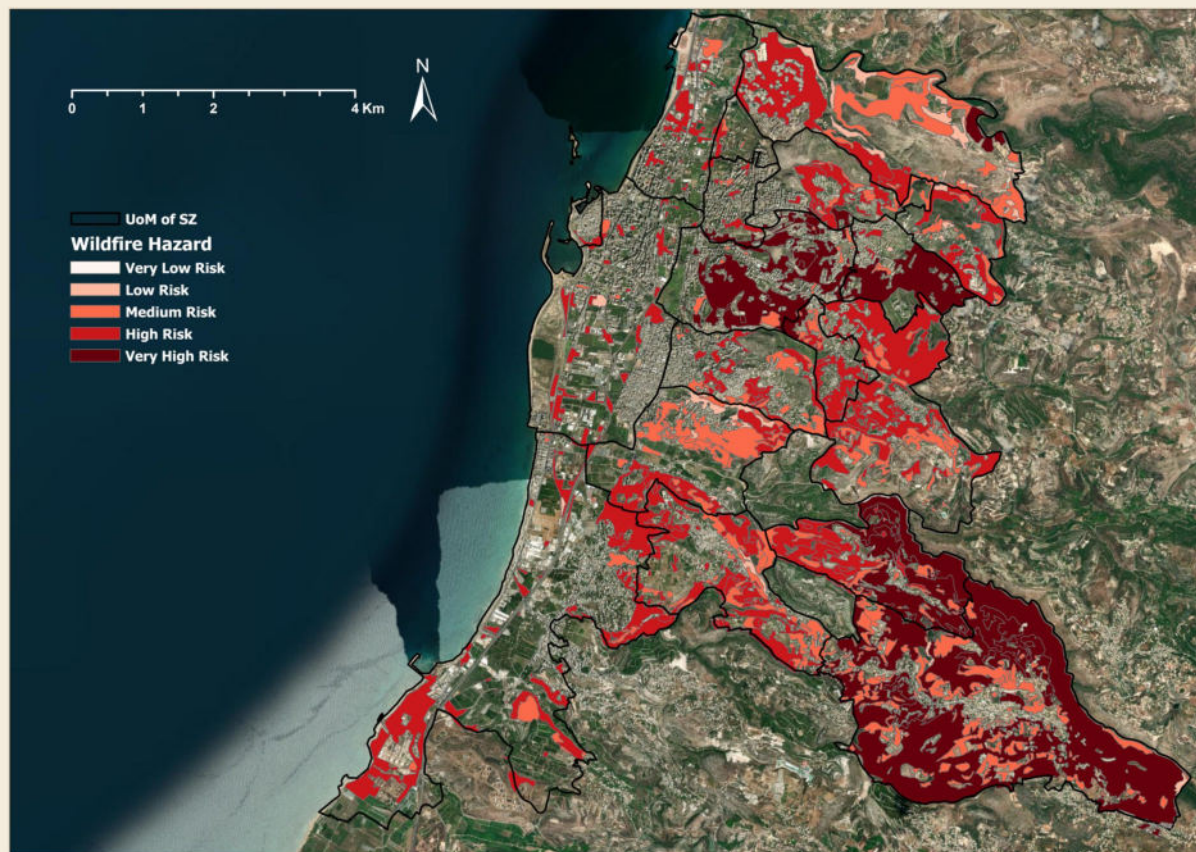
The peri-urban and hill zones of the Union show extensive wildfire hazard exposure (CNRS-L, 2025). Very High and Severe categories cover land in the eastern and southern portions of the

territory, including agricultural plantations and informal settlements at the urban-rural interface.

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Wildfire hazard

Union of Municipalities of Saïda-Zahrani



Source: Saïda Urban Observatory, Haziri Foundation, 2026

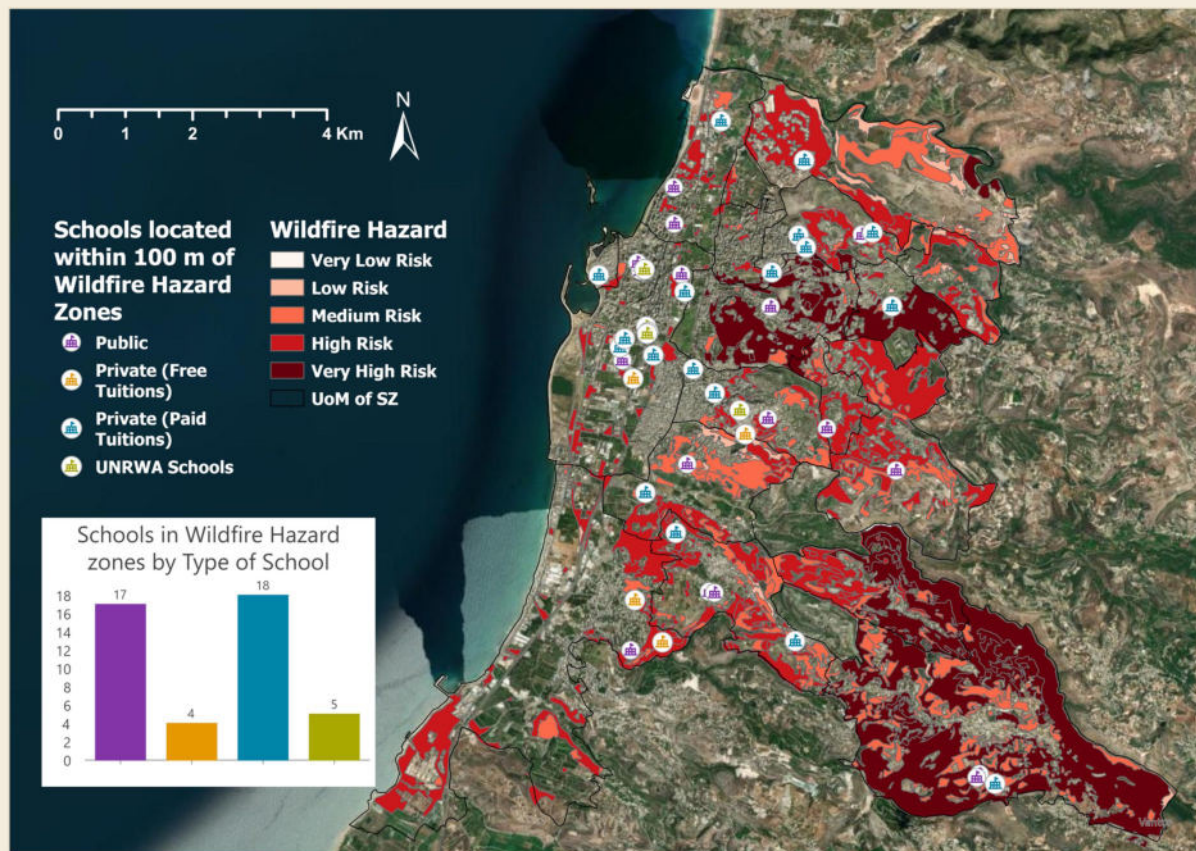
basemap (c) Esri, Maxar, GIS community

Figure 6.3. Wildfire hazard across the Union. Very High and Severe categories concentrate in the eastern peri-urban and hill zones. Source: CNRS-L, 2025.

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Schools within 100 m of wildfire

Union of Municipalities of Saida-Zahrani



Source: Saida Urban Observatory, Haziri Foundation, 2026

basemap: (c) Esri, Maxar, GIS community

Figure 6.4. Schools within 100 m of wildfire hazard zones. Multiple public and private schools sit at the wildfire-schools interface. Source: CNRS-L, 2025; Hariri Foundation, 2025.

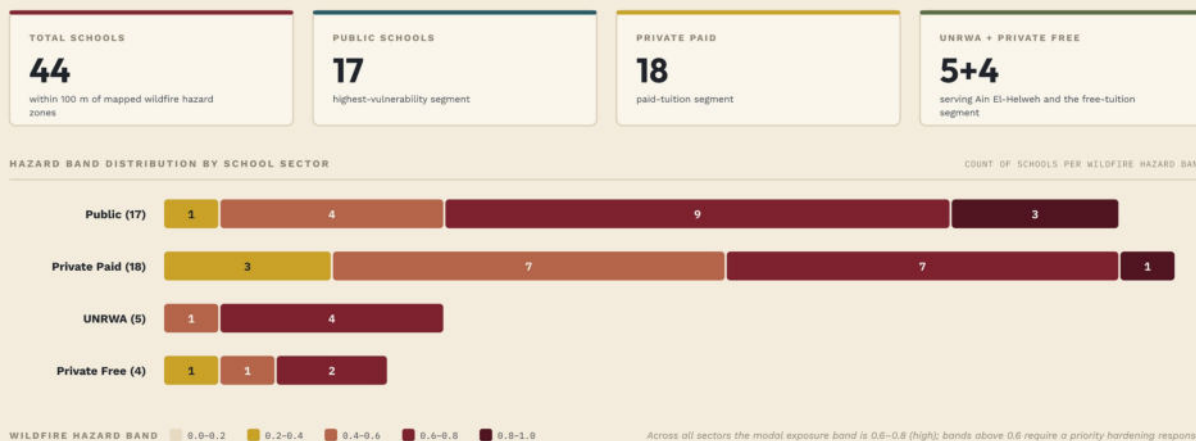


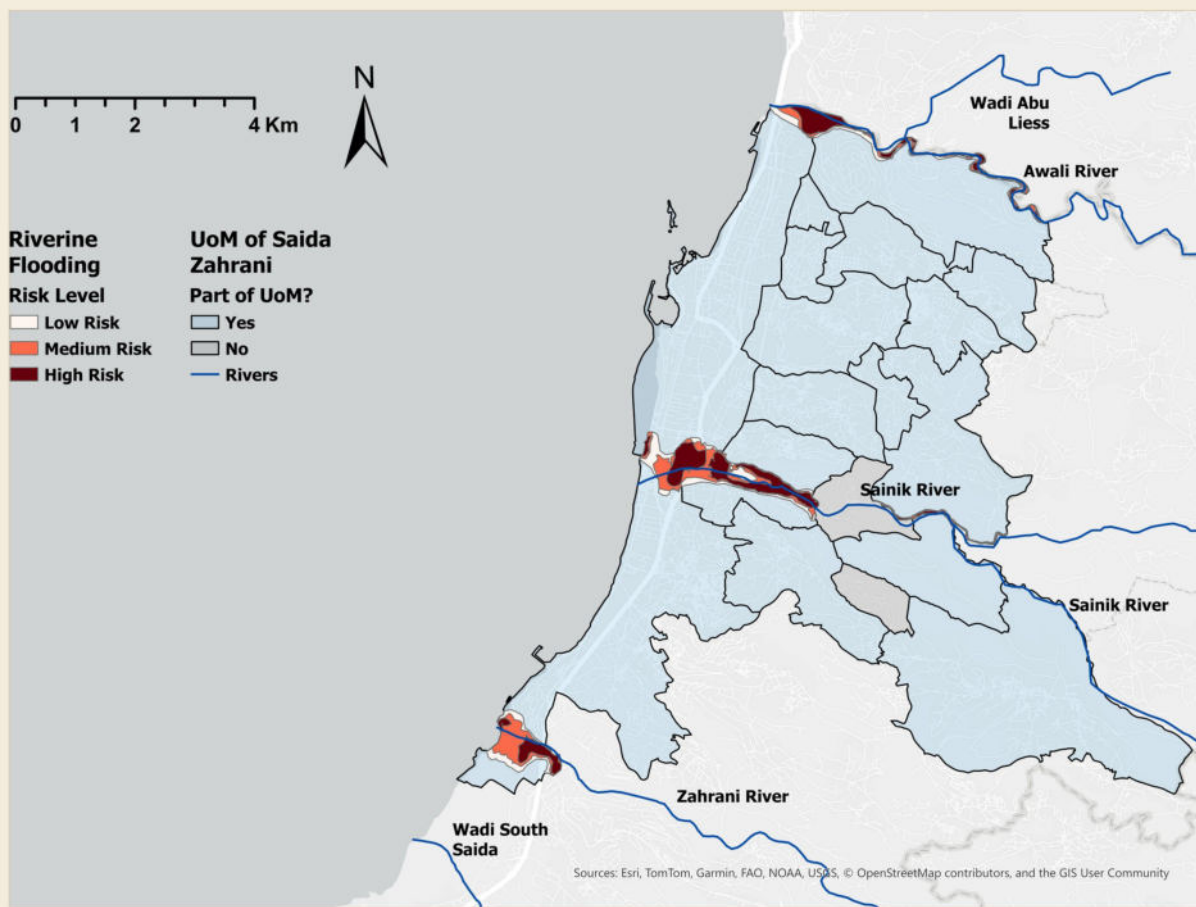
Figure 6.5. School exposure structure. The forty-four schools within 100 m of mapped wildfire hazard zones, broken down by sector (Public 17, Private Paid 18, UNRWA 5, Private Free 4) and hazard band. Across all sectors the modal exposure band is 0.6 to 0.8 (high). The sector-by-sector distribution is the operational input for prioritising school-hardening investment in the Phase II Health and Care Capacity cluster. Source: Hariri Foundation, 2025 GIS inventory; CNRS-L, 2025.

6.3.3 Riverine flooding

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Riverine flood hazard

Union of Municipalities of Saida-Zahrani



Source: Saida Urban Observatory, Haziri Foundation, 2026

basemap (c) Esri, Maxar, GIS community

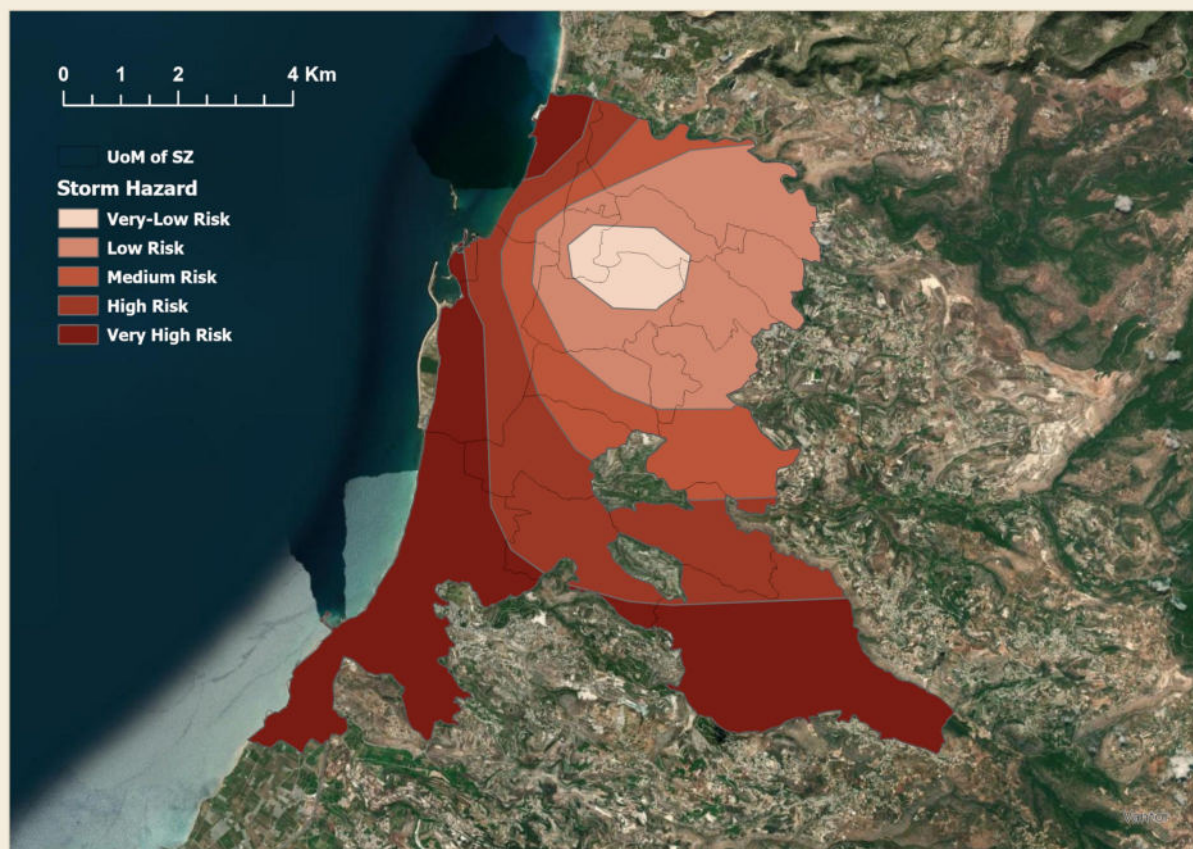
Figure 6.6. Riverine flood hazard along the Awwali, Sinniq, and Zahrani corridors. Source: CNRS-L, 2025.

6.3.4 Storm hazard

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Storm hazard

Union of Municipalities of Saida-Zahrani



Source: Saida Urban Observatory, Hariri Foundation, 2026

basemap (c) Esri, Maxar, GIS community

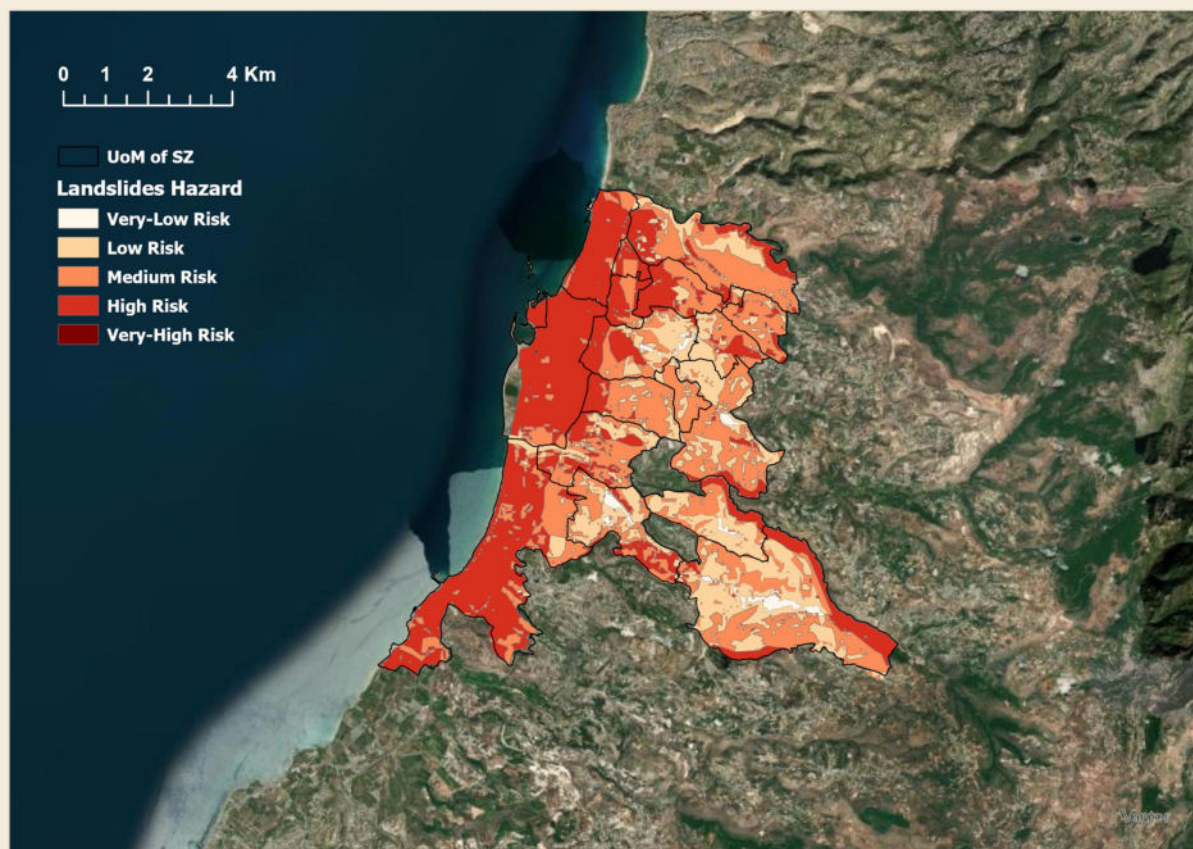
Figure 6.7. Storm hazard across the Union, concentrated along the coastal strip. Source: CNRS-L, 2025.

6.3.5 Landslide hazard

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Landslide hazard

Union of Municipalities of Saida-Zahrani



Source: Saida Urban Observatory, Hariri Foundation, 2026

basemap (c) Esri, Maxar, GIS community

Figure 6.8. Landslide hazard in the eastern hill zone, coincident with the wildfire envelope. Source: CNRS-L, 2025.

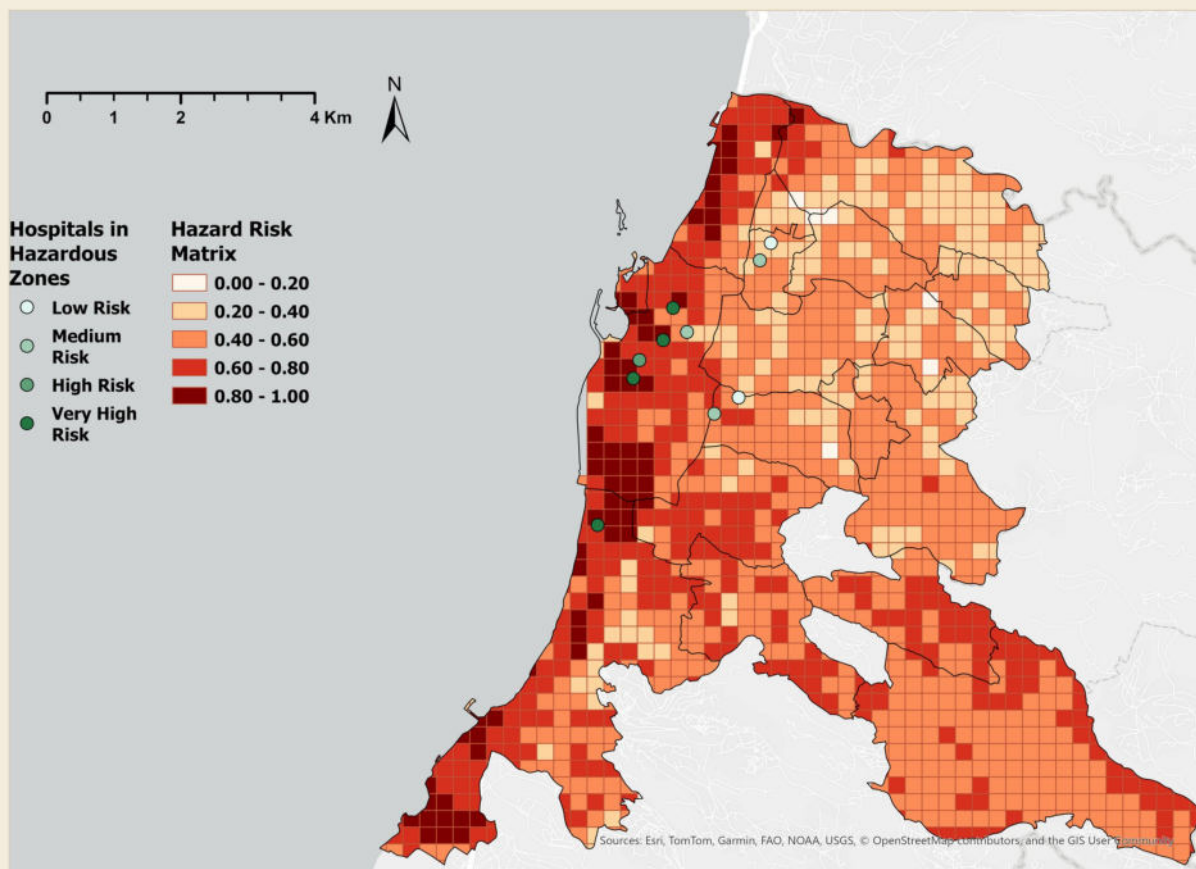
6.4 Cascading shock concentrations

The Union's hospitals, primary health-care centres, clinics, and pharmacies concentrate in zones that overlap with multiple hazard layers (Hariri Foundation, 2025). The overlay maps below document the spatial co-occurrence of health infrastructure with hazard exposure on a gridded hazard-risk matrix. Each cell carries a 0.00 to 1.00 score that aggregates all hazard layers (landslide, wildfire, storm, riverine flooding, coastal flooding, tsunami, earthquake), and each facility is rendered at the cell where it sits. The result is a cell-resolution view of how the infrastructure-failure shock (**Sh-Tech-1**) and the medical-supply-disruption shock (**Sh-Tech-4**) interact through shared spatial vulnerability.

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Hospitals in hazardous zones

Union of Municipalities of Saida-Zahrani



Source: Saida Urban Observatory, Hariri Foundation, 2026

basemap (c) Esri, Maxar, GIS community

Figure 6.9. Hospitals in hazardous zones, gridded hazard-risk matrix. Most hospitals sit in cells scoring 0.40 to 0.80; one northern coastal hospital sits in the 0.80 to 1.00 band. Source: Hariri Foundation, 2025; CNRS-L, 2025.

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

PHCCs and clinics in hazardous zones

Union of Municipalities of Saida-Zahrani

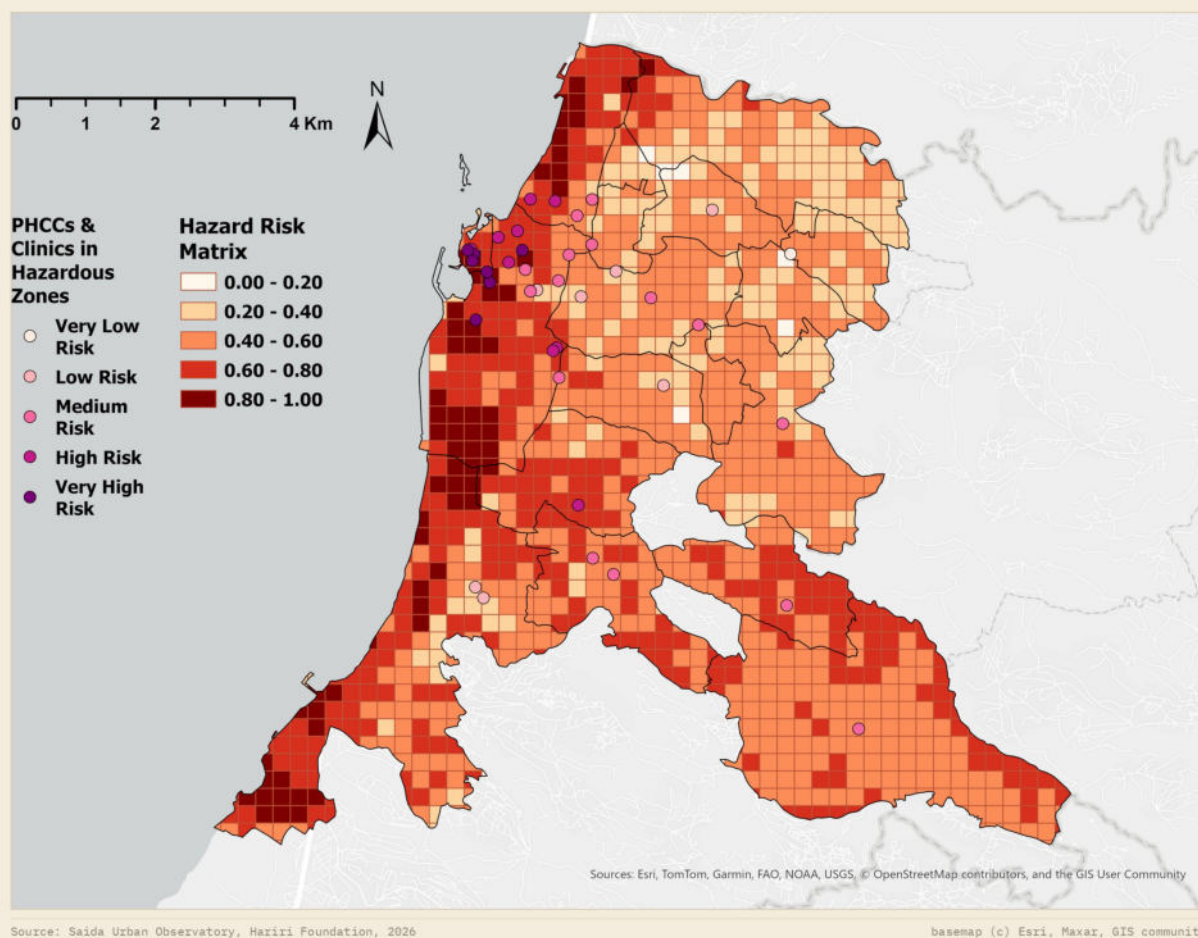


Figure 6.10. Primary health-care centres and clinics in hazardous zones. Facilities concentrate in the northern coastal corridor, where multiple cells score 0.60 or higher; the eastern peri-urban centres sit in moderate-risk cells. Source: Hariri Foundation, 2025; CNRS-L, 2025.

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Pharmacies in hazardous zones

Union of Municipalities of Saida-Zahrani

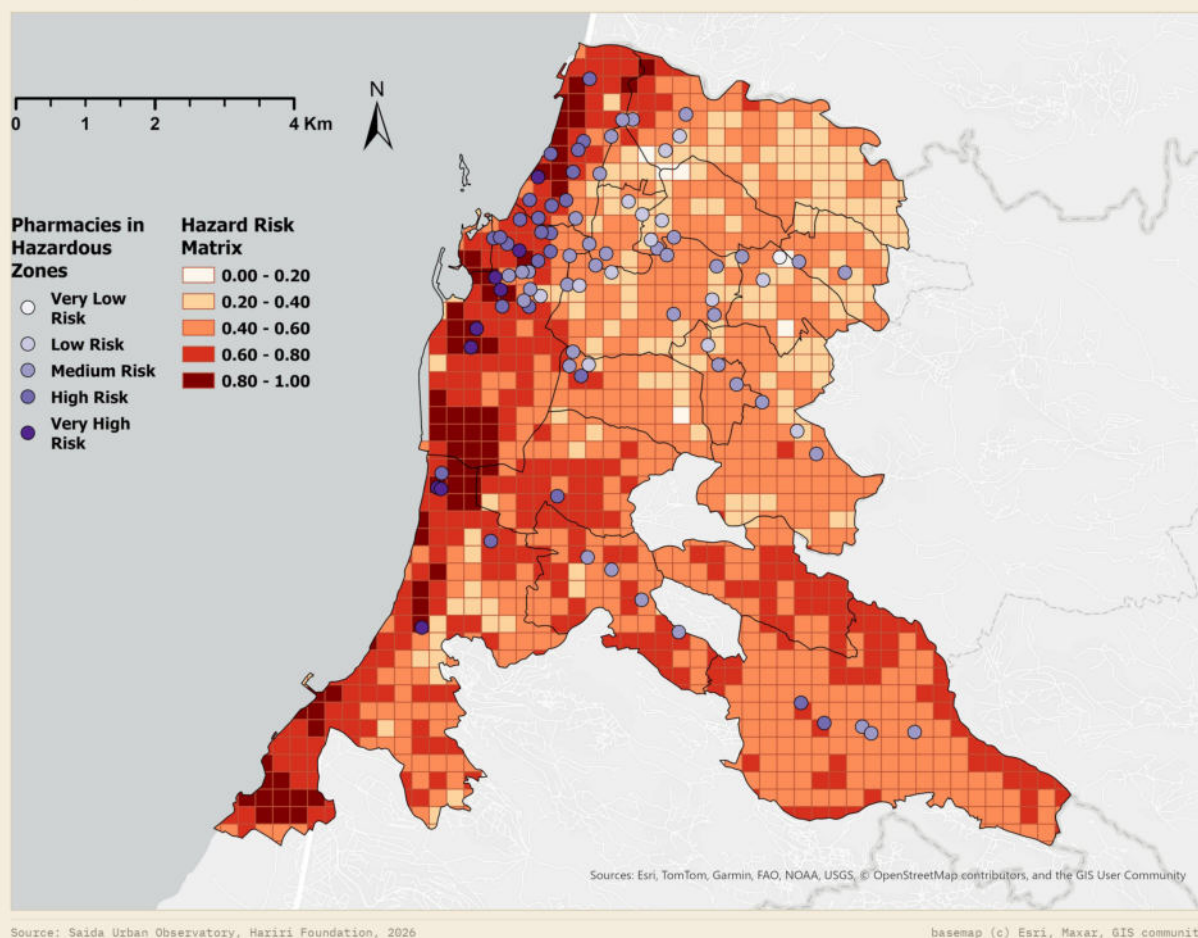


Figure 6.11. Pharmacies in hazardous zones. The pharmacy network is the densest health-supply node at cell level. Coastal pharmacies sit in 0.60 to 1.00 cells; the eastern network sits in 0.40 to 0.60 cells. Source: Hariri Foundation, 2025; CNRS-L, 2025.

6.4.1 Agriculture in wildfire zones

SAIDA-ZAHRANI URBAN RESILIENCE DIAGNOSIS

Agriculture within wildfire zones

Union of Municipalities of Saida-Zahrani



Source: Saida Urban Observatory, Hariri Foundation, 2026

basemap (c) Esri, Maxar, GIS community

Figure 6.12. Agricultural plantations within wildfire hazard zones. Olive and citrus dominate exposed area in the eastern peri-urban zone. Source: CNRS-L, 2025; Hariri Foundation, 2025.

CROP TYPE	TOTAL AREA (KM ²)	IN WILDFIRE HAZARD (KM ²)	SHARE EXPOSED
Olive plantations	12.4	5.8	47%
Citrus plantations	6.1	1.7	28%
Mixed horticulture	4.8	1.5	31%
Other	2.3	0.6	26%
Total	25.6	9.6	38%

Table 6.2. Agricultural land at wildfire risk by plantation type. Source: CNRS-L, 2025; Hariri Foundation, 2025.

6.5 The Zahrani industrial corridor: a Natech case study (ADJ-3)

The Union's heavy and hazardous industry does not form a single southern corridor around a cement works, as earlier framings assumed. The facility inventory records two distinct coastal clusters roughly four kilometres apart, with different hazard signatures (Hariri Foundation facility inventory, 2025). No cement or clinker plant appears among the recorded facilities. The Natech scenario, a natural hazard that triggers a technological accident, anchors on the Zahrani corridor, where the territory's largest flammable inventory sits beside a national

electricity asset and a publicly used, ecologically sensitive coastline. This is the analytical basis for the ADJ-3 expert-score revision (16 to 25) on **Sh-Tech-5**, disclosed in [Section 2.5.2](#) and traced end to end here.

6.5.1 Site geography

The two clusters, their facility inventories, and their industrial history are described in full in [Section 3.2.3](#). What matters for the Natech scenario is their hazard signature, summarised here.

The first cluster, on Saida's southern edge in the Sinniq-Dakerman area, is the dense-residential, mixed-industrial, camp-adjacent concentration: the IBC solid-waste and wastewater treatment plants, butane and LPG refill stations, an oxygen-bottling facility, and chemical and manufacturing units, with roughly one kilometre between the IBC facility and the nearest edge of the Ain El-Helweh camp. Its defining hazard is the proximity of multiple flammable and toxic point sources, where LPG refill and oxygen bottling are credible ignition and explosion hazards, to a camp population of roughly 63,000 with constrained evacuation routes.

The second cluster, on the Zahrani coast about four kilometres further south, is the large-fuel-storage and lifeline-generation concentration. The Zahrani Oil Installations' tank farm holds on the order of 4.5 to 4.9 million barrels of petroleum products across some 22 to 25 coastal tanks, the largest concentrated flammable inventory in the territory (Directorate General of Oil, Lebanon; GlobalData / Offshore-Technology, 2021). Immediately south sits the Zahrani combined-cycle power plant, an Électricité du Liban generation asset of roughly 435 to 465 MW, supplied from the adjacent terminal (Power-Technology, 2022; Global Energy Monitor, 2026). Plastics, paints, and metal-construction units and public beaches are interleaved between the two installations.

SECTION 6 • SH-TECH-5 • NATECH INCIDENT

The Natech corridor: two clusters, five kilometres of coast.

Every point below is a surveyed coordinate. Two coastal clusters emerge: butane, oxygen, fuel and chemical stores pressed against Ein el-Helweh camp at Saida's southern edge, and the refinery–power-plant complex on the Zahrani coast five kilometres south — the anchor of the Natech scenario.

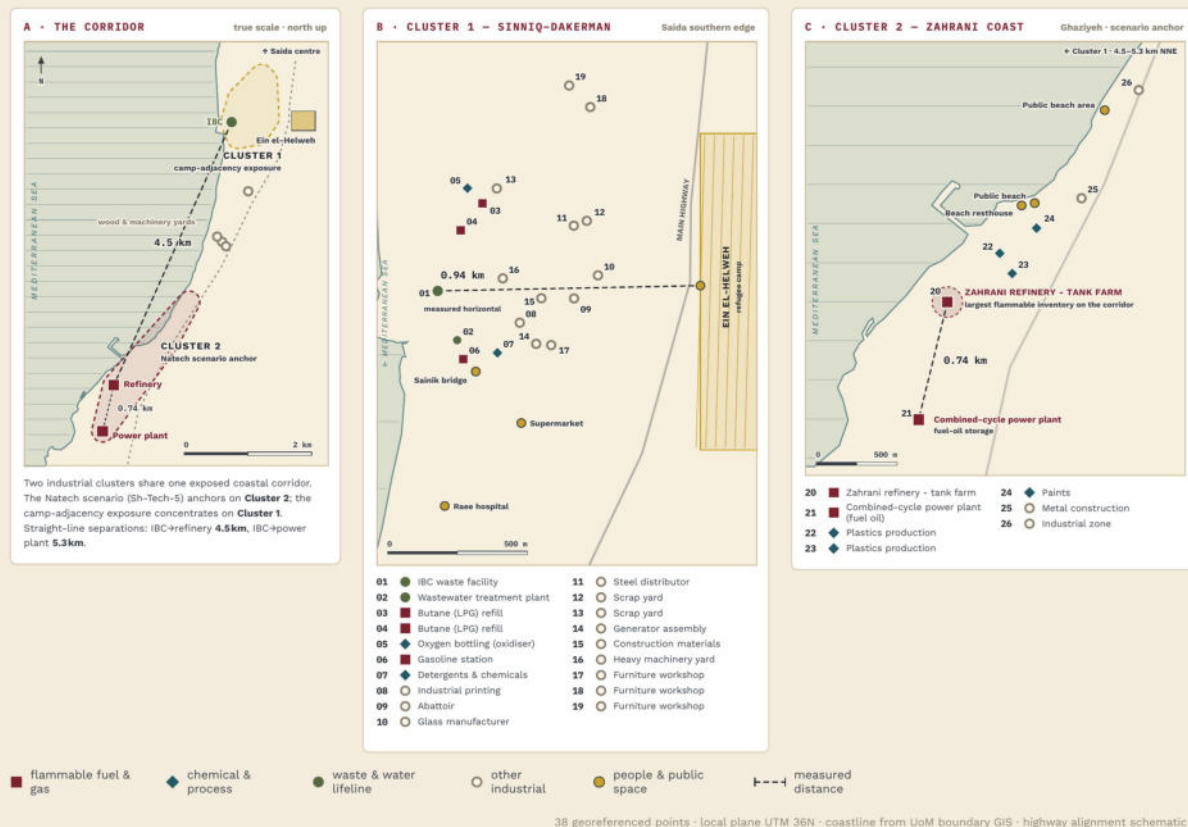


Figure 6.12. The Natech corridor: two industrial clusters on five kilometres of coast. All 38 georeferenced points of the facility inventory, plotted to scale (north up, no basemap; coastline from the UoM boundary GIS). Cluster 1 (Sinniq-Dakerman, panel B) mixes butane refill, oxygen bottling, gasoline and chemical stores with the IBC waste facility and the WWTP, **0.94km** measured from the first edge of Ein el-Helweh camp. Cluster 2 (Zahrani coast, panel C) holds the refinery tank farm — the corridor's largest flammable inventory — and the combined-cycle power plant **0.74km** apart, with public beaches between them; it anchors the Natech scenario, **4.5–5.3km** from Cluster 1 in a straight line. Source: Hariri Foundation facility inventory (South Industrial Facilities), 2025; distances computed from surveyed coordinates.

Figure 6.13. The two coastal industrial clusters. Cluster one (Sinniq-Dakerman, Saida edge): IBC solid-waste and wastewater plants with LPG, oxygen, and chemical point sources, roughly one kilometre from the Ain El-Helweh camp. Cluster two (Zahrani coast, about four kilometres south): the Zahrani state oil terminal and tank farm (4.5 to 4.9 million barrels across 22 to 25 tanks), the mothballed MEDRECO refinery, and the Zahrani combined-cycle power plant (435 to 465 MW). The Natech scenario anchors on cluster two; camp-adjacency exposure is carried by cluster one. Source: Hariri Foundation facility inventory, 2025; Directorate General of Oil, Lebanon; MoE Lebanon (industrial register).

6.5.2 Why the score was raised to 25

The CRPT methodology supports maximum severity for low-probability, high-consequence events where local-context evidence justifies it. Three conditions support the maximum-severity classification for the Zahrani corridor. First, the flammable inventory: 4.5 to 4.9 million barrels of petroleum products in coastal tankage, co-located with a 435 to 465 MW national generation asset, is the largest concentrated hazardous inventory in the territory, and the Beirut port ammonium-nitrate explosion of August 2020 is the regional precedent for how a large stored inventory converts into a mass-casualty event (Human Rights Watch, 2021; World Bank RDNA, 2020). Second, the regulatory regime governing fuel storage in Lebanon contracted between 2019 and 2024 as Ministry of Environment field capacity fell with the broader fiscal crisis (MoE Lebanon, 2020). Third, differential population exposure: the Saida-

edge cluster sits roughly one kilometre from the Ain El-Helweh camp, whose residents face constrained evacuation routes, UNRWA-Lebanese jurisdictional overlap, and information-access limits during emergencies, which compounds the consequence severity of any incident in the wider corridor.

6.5.3 Data-reliability adjustment trail

ADJ-3 is the only adjustment in this diagnosis that revises an expert score upward. The decision was made by the Saida Urban Observatory team during the inception scoring phase, documented in the indicators workbook with cell-level commentary, and is offered as a lesson-learned to the CRPT community: where a maximum-severity classification is supported by named local-context evidence and a regional precedent, the diagnosis should disclose the reasoning rather than defer to the expert default. The correction of the earlier cement-plant identification to the two-cluster, Zahrani-anchored description strengthens rather than weakens the adjustment, because it locates the maximum-severity hazard on the state fuel terminal, the single largest flammable inventory in the Union.

Reading note: below-threshold does not mean below concern. Several natural-hazard shocks score below the composite threshold yet have substantial spatial footprints. Their placement reflects relative ranking, not absence of risk. The maps in [Section 6.3](#) and the overlays in [Section 6.4](#) document a territory where compound hazard is the rule, not the exception. The cluster treatment in [Section 8](#) retains these items as conditioning factors for the Infrastructure and Utilities and Environmental Hazard clusters.

The catalogue treats each shock singly. In practice they arrive connected, one disruption opening the way for the next, and it is the connections that decide whether the Union faces an incident or a crisis. [Section 7](#) maps them.

07

Risk Synergies

How stresses and shocks connect, and where the cascades concentrate.

7 Risk Synergies

“Compound risks rarely declare themselves through a single hazard. They emerge through the interactions between chronic stresses and acute shocks. The network is the diagnostic object.”
Source: Saida Urban Observatory, Hariri Foundation, 2025, Risk Synergies methodology workbook.

A ranked catalogue says which risks weigh most. It says nothing about how they travel, and in the Union they travel together. To capture that, workshop participants were asked to identify pairs of items that interact, through reinforcement, threshold-lowering, cascade, or compounding, and to characterise the type and frequency of each interaction. The result is a 96-edge synergy network across the 25 stresses and 34 shocks of the full catalogue, processed in four stages from raw worksheets to a ranked hub atlas (see [Section 2.4](#); full edge dataset in Annex F).

The network’s defining property is concentration. Its 96 edges do not spread evenly across the 59 catalogued items: a small set of hubs, led by failure of essential infrastructure (**Sh-Tech-1**), carries a disproportionate share of the pathways, and the strongest interactions repeat across independent workshop groups on a handful of pairs. For a fiscally constrained territory, concentration is the operative fact. A diffuse network would demand fifty-nine separate answers; a concentrated one can be weakened at its hubs and managed at its interfaces.

This section reports five products of the synergy analysis: the hub atlas, the stress-to-stress chord, the shock-to-shock cascade chord, the cross-typology Sankey, and the consensus edges. A sixth product, the full interaction matrix, closes the section for analysts who need to look up specific pairs. Read in sequence, the products build one argument: where the network concentrates, how stresses reinforce one another and shocks cascade, where chronic pressure converts into acute events, and which interactions carry enough cross-group agreement to anchor the cluster architecture in [Section 8](#). The reading guide in [Figure 7.1](#) names the question each visualisation answers before the visualisations themselves.



Figure 7.1. Reading the synergy section. Five visualisations, five questions about one network. Each panel names the analytical question the corresponding figure answers and the reading mode that delivers the most insight. Source: Saida Urban Observatory, Hariri Foundation, 2025.

7.0 The risk landscape: challenges, stresses, shocks

Before the synergy network is opened, the risk landscape positions the priority items relative to the upstream challenges that condition them. Following the CRPT framework (UN-Habitat, 2018), challenges are long-term contextual pressures that originate outside the urban system and amplify chronic stresses, which in turn reduce the Union’s capacity to absorb acute shocks. Seven challenges shape the Union’s baseline: five enduring (national fiscal collapse, protracted displacement, economic underperformance, weak institutions, climate change) and two emerging (regional instability, digital dependence). The risk landscape diagram makes the upstream-to-downstream logic explicit and re-anchors the synergy analysis that follows.

7.1 Synergy hub atlas

Hub intensity ranks each item by the sum of the weighted links it carries in the synergy network. High hub intensity means an item participates in many compounding pathways and therefore acts as an analytical control point: addressing it can weaken several risk pathways at once. The atlas separates stresses (open rings, sand background) from shocks (filled squares, crimson background).

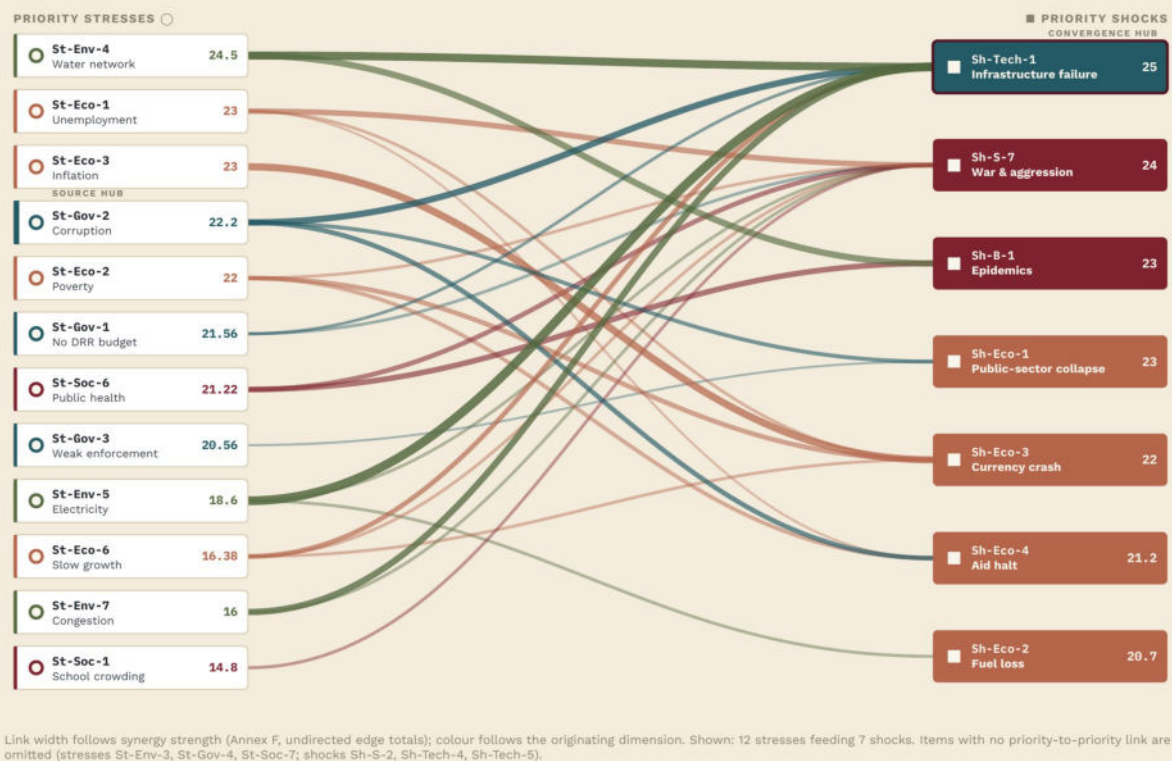


Figure 7.2. Synergy hub atlas. Items ranked by total weighted connections in the workshop synergy network. **Sh-Tech-1** dominates with cascading links to nine other priority items; corruption (**St-Gov-2**) and slow economic growth (**St-Eco-6**) lead the stress hubs, with the aging water network (**St-Env-4**) third. Source: Saida Urban Observatory, Hariri Foundation, 2025.

Three observations follow. First, failure of essential infrastructure (**Sh-Tech-1**) is the dominant hub across the full network, consistent with its position at rank 1 in the shock catalogue. Second, the leading stress hubs are corruption (**St-Gov-2**, hub intensity 39), slow economic growth (**St-Eco-6**, 34), and the aging water network (**St-Env-4**, 28), with unemployment (**St-Eco-1**, 23) fourth. The overlap with the composite ranking is only partial: the water network is the one item that sits in the top three of both the stress-hub ranking and the severity ranking, corruption is a top-five severity stress, and slow economic growth is far more connected than it is severe (severity rank 12). Hub intensity measures how connected an item is, not how severe it is, so a highly connected item need not be the highest-scoring one. Third, two economically driven items, slow economic growth (**St-Eco-6**) and market and currency crashes (**Sh-Eco-3**, hub intensity 24, severity rank 6), carry hub intensity well above their composite-rank position, which marks them as latent control points: more connected than they are severe, and therefore easy to underweight on a severity reading alone.

The atlas, not the severity ranking alone, is therefore the sequencing input for Phase II: severity says what hurts most, hub intensity says where one intervention weakens many pathways at once. Two features of the atlas point past the ranking. The latent control points

are economic-structural, slow growth and currency instability, which the composite ranking underweights but the network shows carrying disproportionate connective load, foreshadowing the structural weight the Economic Security cluster carries in [Section 8.5.2](#). And the leading stress hub is corruption (St-Gov-2), an institutional item, the network's first independent sign of the institutional driver that Finding 3 names.

7.2 Stress-to-stress synergies

The chord-arc diagram in [Figure 7.3](#) shows reinforcement and threshold-lowering interactions among the top fifteen stresses. The thickness of each chord encodes the workshop frequency of the interaction; the colour encodes the dominant interaction type.

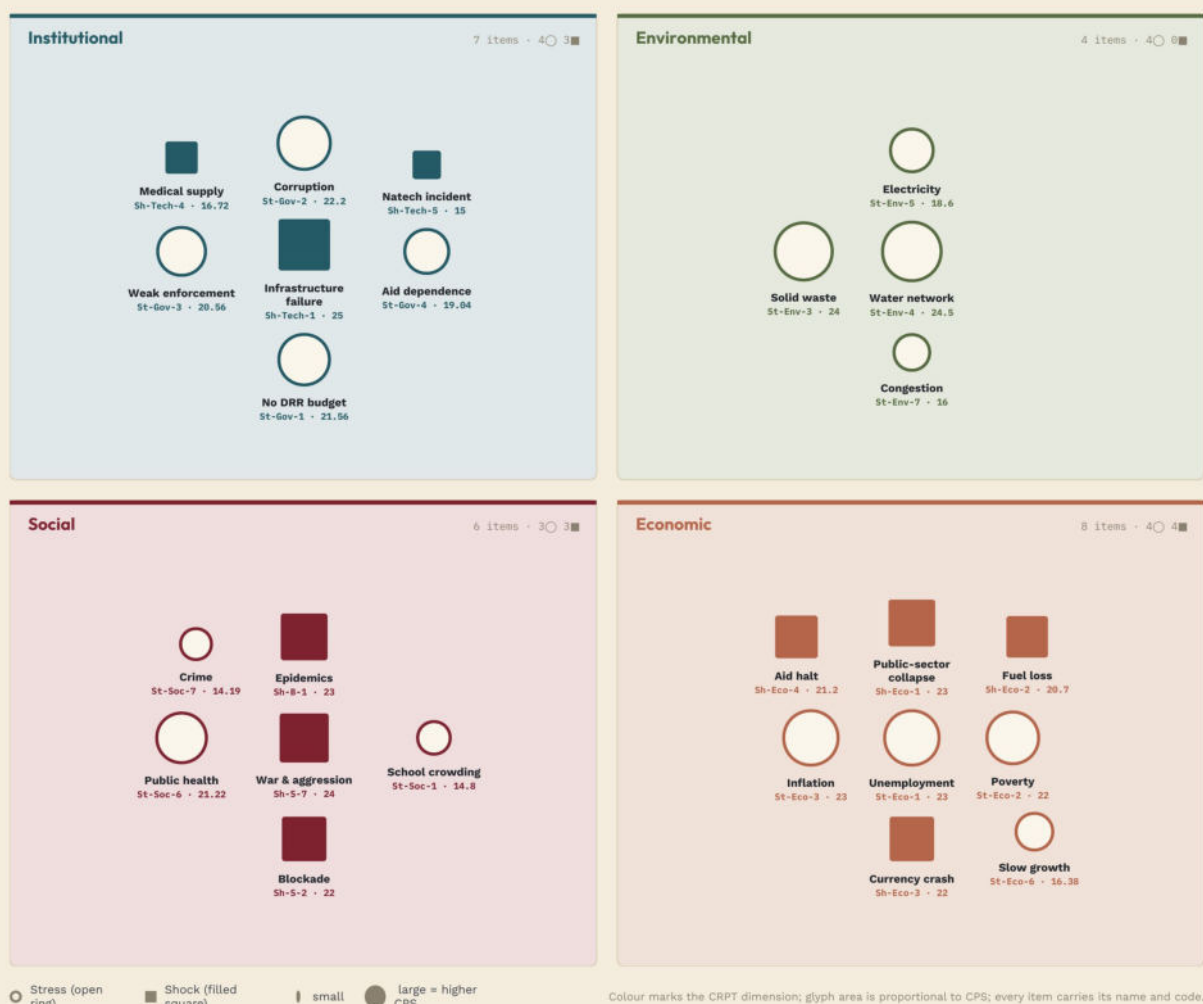


Figure 7.3. Stress-to-stress synergy chord diagram. Workshop-validated reinforcement and threshold-lowering interactions among priority stresses. Source: Saida Urban Observatory, Hariri Foundation, 2025.

The diagram exposes three reinforcement groups. The institutional-economic group links corruption, weak enforcement, and aid dependence to unemployment, poverty, and inflation.

The basic-services group links the aging water network, poor solid-waste management, and unreliable electricity through shared infrastructure dependence. The social-economic group links weak public-health systems and rising crime to unemployment and poverty through household coping strategies. Together they confirm the cross-cutting interaction pathways introduced in [Section 5.2](#).

The practical content of the three groups is that no priority stress erodes alone. A water programme that ignores waste and electricity, or a livelihoods programme that ignores corruption and enforcement, works against the grain of the network: the untreated members of the group keep regenerating the pressure the treated one sheds. Stress-level interventions therefore need to be designed at group level, which is the logic the cluster architecture in [Section 8](#) formalises.

7.3 Shock-to-shock cascades

Shock-to-shock cascades centre on **Sh-Tech-1**. Failure of essential infrastructure links directly to three priority shocks, public-sector collapse (**Sh-Eco-1**), war and aggression (**Sh-S-7**), and loss of petroleum products (**Sh-Eco-2**), and reaches up to four more along multi-step shock-to-shock pathways, so that as many as seven of the nine other priority shocks are reachable from the hub. Public-sector collapse, for instance, in turn propagates to market and currency crashes (**Sh-Tech-1** to **Sh-Eco-1** to **Sh-Eco-3**), which carries the aid-halt and blockade shocks into the same economic channel. The pattern is radial, spreading outward from one node rather than running as a chain of equal links, and a radial network can be defended at its centre in a way a chain cannot. [Figure 7.4](#) sets out the structure.

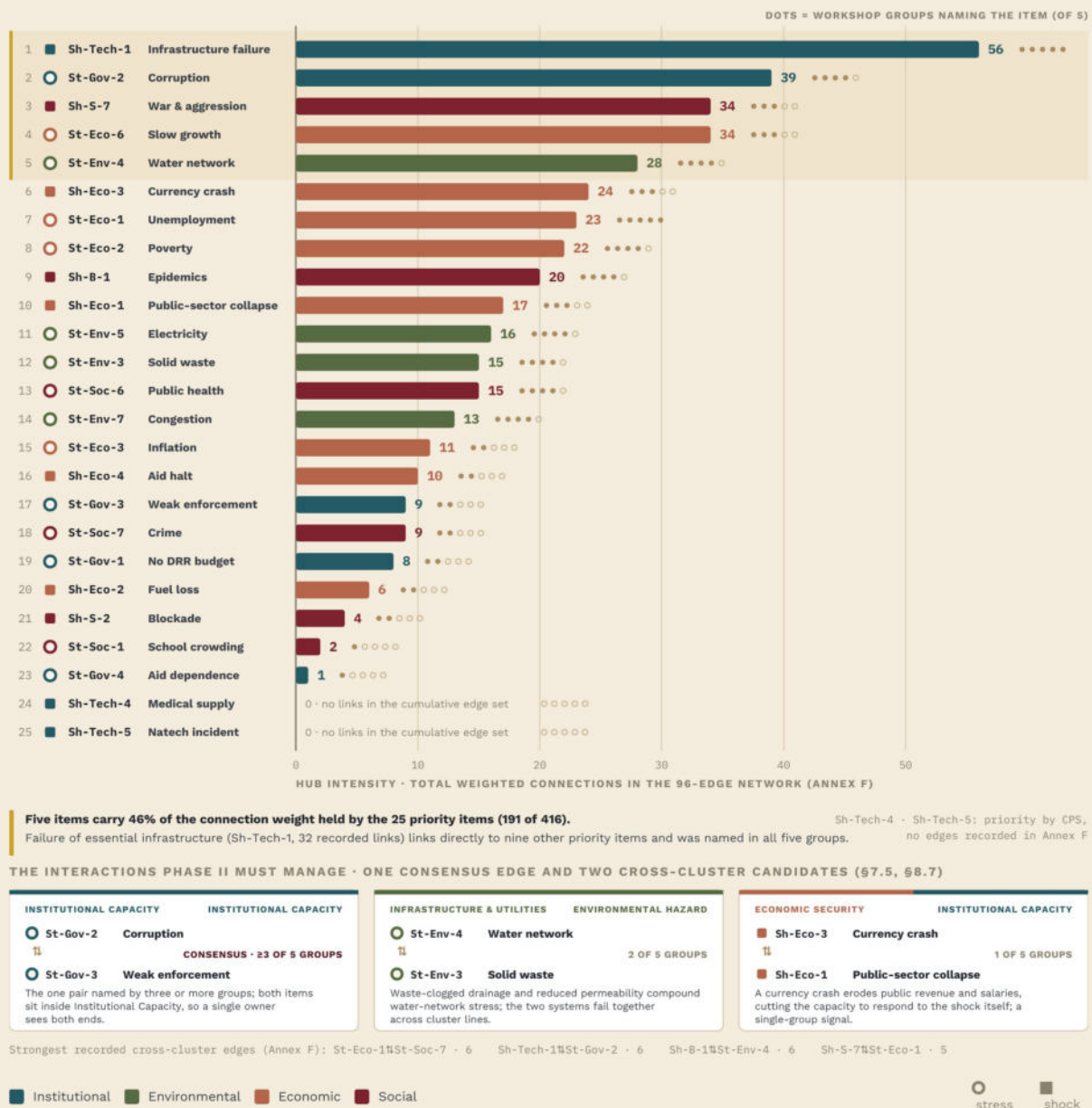


Figure 7.4. Shock-to-shock cascade chord diagram. Failure of essential infrastructure (Sh-Tech-1) is the shock-cascade hub: it links directly to three priority shocks and reaches up to seven of the nine others through multi-step pathways. Source: Saida Urban Observatory, Hariri Foundation, 2025.

Structural finding: infrastructure is the shock spine. The shock catalogue is organised structurally around infrastructure dependence. Strategies that protect infrastructure systems both prevent the lead shock and weaken the cascade pathways that carry as many as seven other priority shocks back to it. No other single investment in the catalogue carries that multiplier, which is why lifeline protection anchors the lifelines direction of the Phase II signals (Section 10.3). Section 10.1 carries this cascade structure as anchor Finding 2.

7.4 Cross-typology bridges (stress to shock)

The Sankey diagram shows how stress-to-shock interactions connect long-term pressures to acute events. Stresses on the left are the workshop-named drivers; shocks on the right are the workshop-named outcomes. The width of each flow encodes the frequency of the named pathway.

Three pathways dominate. The institutional-to-public-sector pathway connects corruption (St-Gov-2) and weak enforcement (St-Gov-3) directly to public-sector collapse (Sh-Eco-1). The infrastructure-aging-to-failure pathway connects the aging water network (St-Env-4) and unreliable electricity (St-Env-5) to failure of essential infrastructure (Sh-Tech-1). The economic-fragility-to-currency pathway connects unemployment, poverty, and inflation to market and currency crashes (Sh-Eco-3). Each pathway is short, usually a single step from chronic pressure to acute event, and the brevity matters: there is no long causal chain in which an intervention could dissipate.

The three differ in what the Union can do with them. The institutional and infrastructure pathways start in conditions the Union can act on directly, governance practice and utility assets, so for them upstream stress treatment is shock prevention. The economic-fragility pathway starts in macro conditions set nationally (Section 8.5.2); there the Sankey marks an early-warning route rather than a prevention option, because deterioration in the driver stresses signals the shock before it arrives. The Observatory's monitoring mandate (Section 9.1) and the livelihoods signals in Section 10.3 are built on that distinction.

7.5 Consensus edges and clusters

Among the pairs that earlier framings of this analysis grouped as consensus candidates, one clears the consensus bar of three or more of the five groups: corruption and weak enforcement (St-Gov-2 with St-Gov-3), carried by four group-links. Three further pairs that earlier framings grouped alongside it are real but weaker in cross-group agreement: unemployment and poverty, and the aging water network with poor solid-waste management, were each named by two groups; market and currency crashes with public-sector collapse by a single group. A fifth pair previously listed here, infrastructure failure with medical-supply disruption, does not appear in the workshop edge record at all and is dropped. These interactions anchor the cluster architecture in Section 8, but of the pairs listed here, only the corruption–enforcement pair carries consensus-grade agreement; the rest sit among the single-group and two-group interactions that make up most of the 96-edge network, weaker or more context-specific.

These interactions emerged from the workshop record rather than being pre-specified by the diagnosis team, which is what makes the corruption–enforcement pair, named independently by three or more groups, consensus-grade evidence for how the priority items connect. Once the functional taxonomy in Section 8 is applied, two of the four surviving pairs sit inside a single cluster: corruption and weak enforcement both fall in Institutional Capacity, and unemployment and poverty both fall in Economic Security. The other two cross cluster boundaries: the aging water network and poor solid-waste management bridge Infrastructure and Utilities and Environmental Hazard; market and currency crashes and public-sector collapse bridge Economic Security and Institutional Capacity. These two cross-cluster interactions are carried forward in Section 8.7 as candidate synergy interfaces for Phase II, with the caveat that neither reaches the three-group consensus bar the corruption–enforcement pair meets: water–waste rests on two-group agreement and currency–public-

sector on one, so both are flagged for confirmation. Crossing a boundary is what makes an interaction a potential leverage point, and also what makes it fragile: inside a cluster, one programme owner sees both ends; across clusters, each owner sees one end, and the interaction belongs to nobody unless it is assigned. Water with waste, and currency with the public sector, are the two places where Phase II programmes would need to be designed jointly rather than merely aligned.

7.6 The full stress-to-shock interaction matrix

The chord diagrams in Sections 7.2 and 7.3 are readable at a glance but harder to query for a specific pair. The interaction matrix in Figure 7.6 reports the same 96-edge network as a grid in which cell intensity encodes the number of workshop groups that identified each pair. The matrix supports analysts who need to look up a specific interaction, audit cell-level evidence, or extract a subnetwork for a targeted strategy. Items are sorted by composite priority score; the matrix is symmetric for the stress-to-stress and shock-to-shock blocks and reads directionally for the cross-typology block, where stresses tend to be drivers and shocks the cascading outcomes.

7.7 Priority load by CRPT dimension: a scorecard

Table 7.7 reads the 25 priority items back through the four CRPT thematic dimensions before Section 8 regroups them by function. “Priority load” counts each dimension’s items inside the priority sets: the top-15 stresses (Section 5.1) and the top-10 shocks (Section 6.1). The scorecard is a compact synthesis of the catalogue, not a new measurement; every value is drawn from the reconciled ranking.

DIMENSION	PRIORITY LOAD (STRESSES / SHOCKS)	PEAK ITEM AND CPS	KEY GAPS (REPORT EVIDENCE)
Institutional	Stresses: 4 of 15 (St-Gov-2, St-Gov-1, St-Gov-3, St-Gov-4). Shocks: 3 of 10 (Sh-Tech-1, Sh-Tech-4, Sh-Tech-5).	Sh-Tech-1 failure of essential infrastructure, CPS 25.0 (rank 1 shock; cascade hub); St-Gov-2 corruption, CPS 22.2, is the peak institutional stress	78% of responding mayors have no emergency plan (§3.5.1); 53% of readiness cells score 0 to 1, none score “mature” (§3.5.3); mayors place zero investment in institutional strengthening (§3.5.2); institutional indicator completion 32% (§4.1).
Environmental	Stresses: 4 of 15 (St-Env-4, St-Env-3, St-Env-5, St-Env-7). Shocks: 0 of 10 (the technological shocks are tagged	St-Env-4 aging water network, CPS 24.5 (rank 1 stress)	Aging water network (St-Env-4, CPS 24.5); about 50% of solid waste mishandled and the plant runs below capacity (§3.3.2);

	institutional by dimension).		territory-wide composite hazard at or above 0.41 (Finding 1); the Natech corridor sits in the Environmental Hazard cluster (§6.5; §8.5.5).
Economic	Stresses: 4 of 15 (St-Eco-1, St-Eco-3, St-Eco-2, St-Eco-6). Shocks: 4 of 10 (Sh-Eco-1, Sh-Eco-3, Sh-Eco-4, Sh-Eco-2).	St-Eco-1 high unemployment and Sh-Eco-1 public-sector collapse, both CPS 23.0	Post-2019 macro-financial collapse drives unemployment, poverty, inflation, and currency volatility; the Union has least direct control over these drivers (§8.5.2); multidimensional poverty 82%, up from 28% pre-crisis (ESCWA, 2023; §4.4).
Social	Stresses: 3 of 15 (St-Soc-6, St-Soc-1, St-Soc-7). Shocks: 3 of 10 (Sh-S-7 war, Sh-B-1 epidemic, Sh-S-2 blockade).	Sh-S-7 war and aggression, CPS 24.0 (rank 2 shock)	Weak public-health coverage (St-Soc-6, CPS 21.22); 44 schools within 100 m of a wildfire interface (§6.3.2); 18% of residents in camps under a parallel governance geography (§3.6); post-2024 conflict displacement (§3.3).

Table 7.7. Priority load by CRPT dimension. Counts are the number of each dimension's items inside the top-15 stress and top-10 shock sets. Source: reconciled catalogue (§5.1, §6.1); Annex A (CPS computation); Annex C (indicators).

Two readings follow. On the card dimension tagging applied across this diagnosis, the highest-scoring single item is Institutional: failure of essential infrastructure (Sh-Tech-1) at 25.0, the cascade hub, is tagged institutional, which places the top shock and the institutional driver on the same dimension (Findings 2 and 3). Environmental carries the highest-scoring chronic stresses (the aging water network at 24.5 and poor solid-waste management at 24.0), while the dimensions that carry the broadest household and human load are Economic and Social. Section 8 regroups the same 25 items by function so that this split can be acted on; the Phase II signals in Section 10.3 then weigh the two sides of it, cascade-prevention leverage against welfare-protection urgency.

The scorecard also closes this section's argument. The synergy analysis began with a ranked catalogue and ends with a structured one: a network with a dominant hub (Sh-Tech-1), a cross-cutting driver visible behind the hubs (the institutional stresses), short conversion pathways from chronic pressure to acute event, and three interfaces where the strongest

interactions cross programming lines. That structure, not the ranking alone, is what [Section 8](#) organises into clusters, what [Section 9](#) seats in the Union's standing institutions, and what [Section 10](#) carries forward as Phase II signals.

08

Risk Clusters

Twenty-five priorities organised into six functional clusters.

8 Risk Clusters

“Risk does not respect sectoral boundaries. Neither should resilience programming.” Source: CRPT framing principle (UN-Habitat, 2020b).

Twenty-five priority items and 96 edges are more than any programme can hold in view at once; this section organises them. The 15 stresses and 10 shocks reported in Sections 5 and 6 group into six risk clusters, an interpretive product of this diagnosis calibrated to the Union’s context through the strongest workshop-validated interactions in Section 7.5 and the cross-cutting interactions in Section 5.2. The clusters translate the diagnostic ranking into groupings that the Phase II signals in Section 10 can build on. Their names are functional: each names what the cluster does to the urban system, not the thematic dimension it sits in.

Two questions organise the treatment of each cluster: what leverage the Union holds over it, and of which kind. The network in Section 7 supplies the distinction. Cascade-prevention leverage weakens propagation before it starts and concentrates where hub intensity is highest; welfare-protection leverage cushions households against what cannot be prevented and concentrates where human-impact weight is highest. Each profile in Section 8.5 closes on that judgement, because the judgement, more than the membership list, is what the Phase II signals in Section 10.3 draw on.

8.1 The six clusters at a glance

Table 8.1 sets out the six clusters with their member items and lead drivers. The lead drivers name the upstream structural conditions that produce each cluster’s behaviour.

CLUSTER	MEMBER ITEMS	LEAD DRIVERS
Infrastructure and Utilities	Sh-Tech-1 (infrastructure failure), Sh-Eco-2 (loss of petroleum), St-Env-4 (water), St-Env-5 (electricity), St-Env-7 (congestion)	Aging legacy infrastructure; chronic under-investment; energy and fuel crisis
Economic Security	St-Eco-1 (unemployment), St-Eco-2 (poverty), St-Eco-3 (inflation), St-Eco-6 (slow growth), Sh-Eco-3 (currency crash), Sh-Eco-4 (aid halt), Sh-S-2 (blockade)	Post-2019 economic collapse; structural underperformance; currency volatility; supply exposure
Institutional Capacity	St-Gov-1 (DRR budget), St-Gov-2 (corruption), St-Gov-3 (enforcement), St-Gov-4 (aid dependence), Sh-Eco-1 (public-sector collapse)	Fiscal austerity; institutional fragmentation; transparency deficit

Health and Care Capacity	St-Soc-6 (health), St-Soc-1 (schools, ADJ-4), Sh-B-1 (epidemics), Sh-Tech-4 (medical supply)	Service contraction; demand pressure; chronic under-funding; supply-chain fragility
Environmental Hazard	St-Env-3 (solid waste), Sh-Tech-5 (Natech)	Waste mismanagement; concentration of industrial hazard; contamination pathways
Safety and Social Cohesion	St-Soc-7 (crime), Sh-S-7 (war and aggression)	Regional instability; economic distress; reduced policing capacity

Table 8.1. Six analytical clusters and their member items. Cluster names describe the function each group performs in the urban system. The six-cluster grouping is an interpretive product of this diagnosis and matches both the card cluster tags and the Annex F cluster-summary sheet. Source: Saida Urban Observatory, Hariri Foundation, 2025.

Anchor finding: two kinds of diagnostic weight. Two clusters carry the diagnostic weight in different ways. Infrastructure and Utilities carries the cascade structure: failure of essential infrastructure (Sh-Tech-1) is the hub through which most other shocks propagate (Finding 2). Institutional Capacity carries the cross-cutting driver: it holds four of the top-ten stresses (St-Gov-1 to St-Gov-4) and the pivotal public-sector-collapse shock (Sh-Eco-1), and it amplifies the environmental and economic items by converting hazards into losses (Finding 3). The political tension inside the second, and how Sections 9 and 10 resolve it, is treated in the cluster profile in [Section 8.5.3](#).

8.2 Clustering method

Clusters were built by combining four signals. First, the functional role of each item, what it does to the urban system, is the primary organising axis and gives each cluster its name. Second, the strongest workshop-validated interactions in [Section 7.5](#) identify which priority items co-occur across groups; where such an interaction joins two items of the same function they sit in one cluster, and where it crosses functions it is carried forward as a candidate synergy interface ([Section 8.7](#)). Third, the dimension tags assigned in Sections 5 and 6 distinguish primary-driver items from cross-cutting ones. Fourth, the synergy hub atlas in [Section 7.1](#) confirms which items act as cluster hubs and which sit on cluster peripheries, and the spatial overlays in [Section 6.4](#) confirm the Infrastructure and Utilities cluster's territory-wide footprint. The resulting six clusters each carry both stress and shock items, which reflects the cross-typology bridges in [Section 7.4](#).

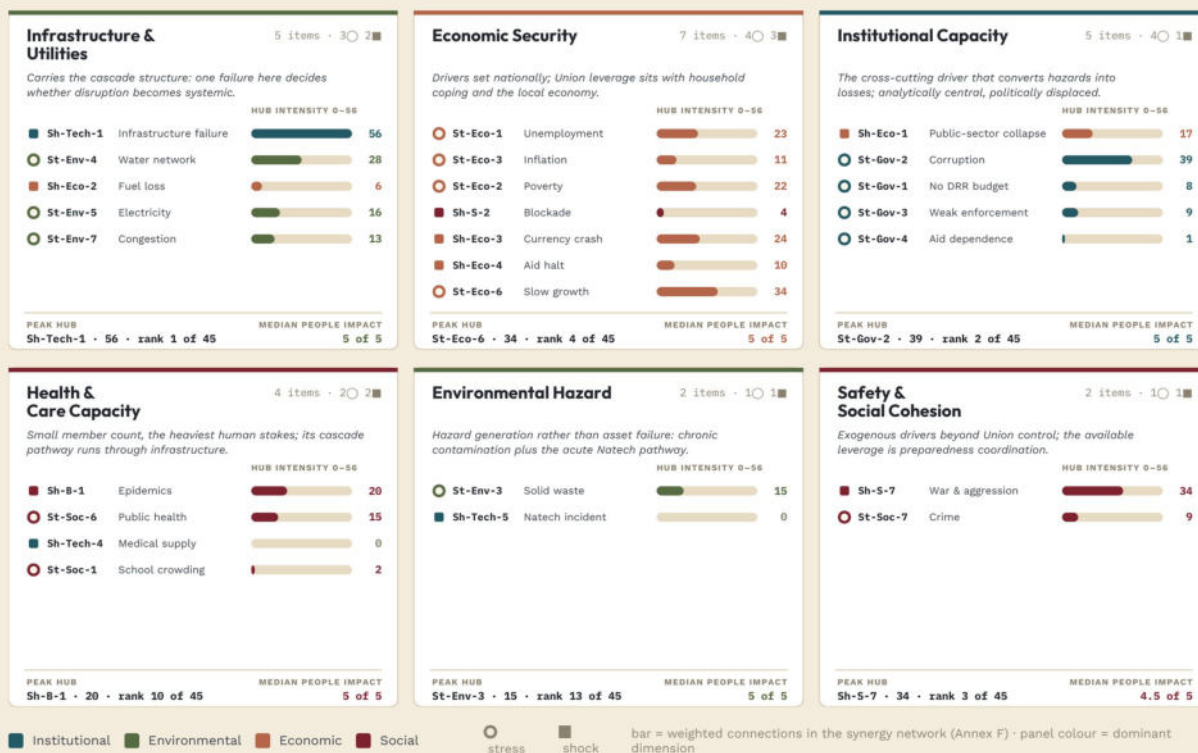


Figure 8.1. Risk cluster architecture. Twenty-five priority items grouped into six analytical clusters, with cluster size proportional to total weighted hub intensity. Stress items are open rings; shock items are filled squares. Source: Saida Urban Observatory, Hariri Foundation, 2025.

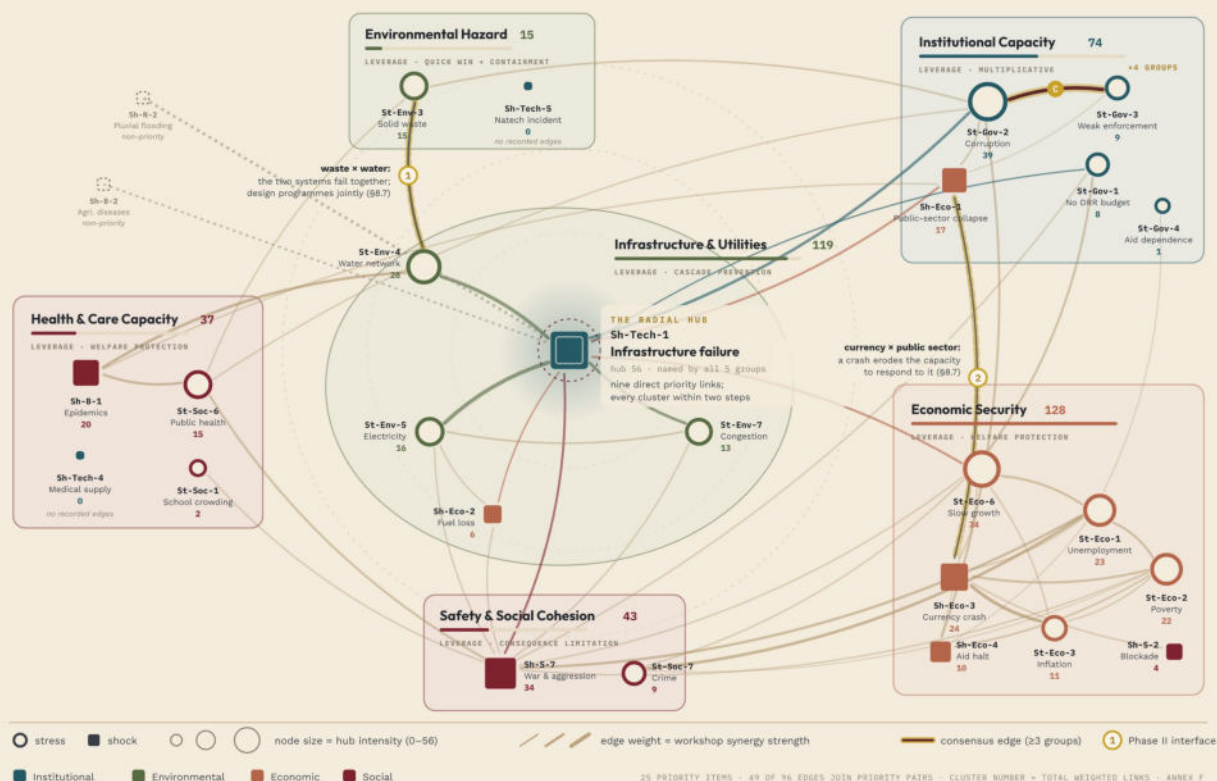


Figure 8.2. The synergy network as a node-link model: the twenty-five priority items sized by their weighted workshop connections, coloured by CRPT dimension and marked by type, with failure of essential infrastructure (Sh-Tech-1) as the central hub. Source: Saida Urban Observatory, Hariri Foundation, 2026.

8.3 Cluster diagnostic logic

Each cluster is bound by a shared driver, produces a constituent item set, and converges on a shared consequence. [Figure 8.2](#) makes the logic explicit panel by panel, showing why items are grouped as they are beyond simple thematic similarity. This view is the analytical bridge between the synergy network in [Section 7](#) and the Phase II signals in [Section 10](#).

8.4 Cluster composition and PAP impact profiles

[Figure 8.3](#) presents each cluster in three panels: the dimension-composition bar (share of items per primary thematic dimension, with secondary tags weighted 0.5); the median PAP impact bars (workshop-rated impact on People, Assets, and Processes, normalised 0 to 1); and the member-item list with composite scores. Read together, the profiles show which thematic lens is most central to each cluster and where cross-cutting exposure concentrates. Three patterns hold across the reconciled clustering. Infrastructure and Utilities shows the most balanced PAP impact, consistent with its role as the cascade-structure cluster. Health and Care Capacity carries the highest People impact at a small member count, consistent with its concentration on welfare protection. Safety and Social Cohesion shows a high and even impact across People, Assets, and Processes. The per-cluster medians in [Figure 8.3](#) are indicative workshop-rated profiles read against the reconciled six-cluster membership, and are presented as relative impact bands rather than precise measured values.



Figure 8.3. Cluster composition and PAP impact profiles. Six panels, each with a dimension-composition bar at top, median PAP impact bars in the middle, and the member-item list with composite scores at the bottom. Cluster colour reflects the dominant primary dimension. Source: Saida Urban Observatory, Hariri Foundation, 2025.

8.5 Individual cluster profiles

8.5.1 Infrastructure and Utilities

Infrastructure and Utilities carries the network's single dominant hub and is the most spatially distributed cluster. (Economic Security has the higher total hub intensity, 128 to 119; Infrastructure and Utilities leads only on single-hub dominance, through *Sh-Tech-1*, as [Section 8.6](#) sets out.) It groups the essential-infrastructure failure shock (*Sh-Tech-1*) with the utility systems that carry the Union's daily functions: the aging water network (*St-Env-4*), unreliable electricity (*St-Env-5*), and road congestion and mobility (*St-Env-7*), together with the fuel-supply shock, loss of petroleum products (*Sh-Eco-2*). The cluster's defining feature is that infrastructure failure acts as the cascade hub for almost every other shock in the catalogue, while the utility stresses form the threshold-lowering substrate that determines whether a given disruption becomes systemic. The cluster's territory-wide footprint is documented in [Section 6.4](#). The cluster's leverage is cascade prevention, and it is the highest in the portfolio: hardening these systems is simultaneously mitigation for the rank-1 shock and threshold-raising for the nine other priority items (six stresses and three shocks) linked directly to it. No other cluster's investment carries that double effect. The asset-protection and redundancy work this implies, across water, electricity, fuel, and mobility, is carried as lifeline signals in [Section 10.3](#).

8.5.2 Economic Security

Economic Security groups four economic stresses (unemployment, poverty, inflation, slow growth) with two economic shocks (currency crash, aid halt) and the regional or national blockade shock (*Sh-S-2*), which transmits into the local economy through supply interruption and price effects. It is the cluster most directly attributable to the post-2019 financial crisis (World Bank, 2023; IMF, 2023) and the one on which the Union has the least direct control: the macroeconomic drivers of unemployment, poverty, inflation, and currency volatility are set at national and global level, and the blockade risk is exogenous. The Union's leverage sits at the household-coping and local-economy levels; the corresponding signals are set out in [Section 10.3](#). The cluster's impact concentrates on people and households rather than on assets, which calls for social-protection-led design rather than infrastructure-led design. The cluster's leverage is welfare protection: the Union cannot prevent a currency crash, but it can decide how far a crash travels into households, and that distance, not the crash itself, is what the cluster's actions control.

8.5.3 Institutional Capacity

Institutional Capacity groups four institutional stresses (absence of DRR budget, corruption, weak enforcement, aid dependence) with the public-sector-collapse shock (*Sh-Eco-1*). The diagnosis identifies it as the cross-cutting structural driver of overall fragility ([Section 5.2](#); Finding 3), the common amplifier that turns hazards into losses across the other clusters. The cluster's defining tension is that institutional strengthening is analytically central to the diagnosis but politically displaced in the investment dialogue, as the KII and territorial readiness evidence in [Section 3.5](#) documents. The cluster's leverage is multiplicative rather

than direct: institutional investment produces few visible outcomes of its own, but it changes the return on every other cluster's investment, because enforcement, budgeting, and coordination are what convert funded assets into functioning services. That is why the diagnosis holds the cluster analytically central even though it owns no top-ranked item, and why the Phase II signals answer the mayors' reluctance by embedding institutional strengthening inside the investments they do want rather than arguing for it as a category of its own (Principle 1, [Section 10.3](#)). The Urban Observatory is the standing form of that answer ([Section 9.1](#)).

8.5.4 Health and Care Capacity

Health and Care Capacity is small in member count but high in human-impact weight. It groups two social stresses (weak public-health systems and schools-only crowding under ADJ-4) with the epidemic shock (**Sh-B-1**) and the disruption of health and medical supplies (**Sh-Tech-4**). The cluster's cascade pathway runs through Infrastructure and Utilities: an infrastructure failure lowers health-service threshold capacity, and a medical-supply disruption compounds it, which lowers the threshold for an epidemic to become systemic. The strategic implication is that investment in care-capacity resilience needs concurrent investment in infrastructure resilience to be effective. The cluster's leverage is welfare protection with a dependency: it protects lives directly, but only while the lifeline systems beneath it hold, which is why medical-supply continuity sits with the lifelines direction alongside the infrastructure work rather than in a later phase ([Section 10.3](#)).

8.5.5 Environmental Hazard

Environmental Hazard groups the chronic and acute forms of environmental-hazard exposure: poor solid-waste management (**St-Env-3**) and the Natech, or industrial-chemical, incident shock (**Sh-Tech-5**). Waste mismanagement is a chronic contamination hazard, with about half of solid waste mishandled, the treatment plant running below capacity, and clogged drainage that turns manageable rainfall into localised flooding. The Natech pathway is the acute hazard concentrated in the two coastal industrial clusters documented in [Section 6.5](#), anchored on the Zahrani corridor, where its severity was escalated under ADJ-3. The cluster is kept separate from Infrastructure and Utilities because it captures hazard generation and contamination rather than utility-asset failure. Its leverage is asymmetric across its two members. Waste-plant restoration is the most tractable of the high-ranked interventions: a single existing facility whose constraint is political and budgetary rather than technical ([Section 3.3.2](#)), and whose restoration doubles as flood mitigation through the drainage pathway. Natech containment is the opposite case, insurance against the event whose consequence severity the diagnosis rates at the maximum under ADJ-3. The cluster therefore needs two logics at once: a quick win on the chronic member and patient containment investment on the acute one. Below-threshold air and water pollution (ADJ-1) sits alongside this cluster in kind but falls under the priority cut and is not carried as a member item.

8.5.6 Safety and Social Cohesion

Safety and Social Cohesion groups one social stress, rising crime (**St-Soc-7**), with the war and aggression shock (**Sh-S-7**). Its defining feature is exogeneity: the major drivers, regional instability, geopolitical positioning, and national-level security capacity, sit outside the Union's direct control, while crime is bound to economic distress and reduced policing capacity. Exogeneity sets the cluster's leverage apart: it is consequence reduction only. Preparedness cannot make the shock less likely; what it determines is how much of the shock's force reaches residents unmanaged, which the displacement of about 21,000 people from Saida city during the 2024 escalations showed to be the operative question. The preparedness measures themselves, from evacuation-route maintenance to coordination with the Lebanese Civil Defence and the Lebanese Red Cross, are carried as signals in [Section 10.3](#). The cluster connects to Institutional Capacity through the under-resourcing of municipal security and DRR functions, and to Health and Care Capacity through displacement-driven surges in service demand.

8.6 Hub intensity and priority leverage

The six clusters carry uneven hub intensity. Summed across member nodes in the synergy dataset (Annex F), Economic Security leads at 128 weighted hub-intensity points, with Infrastructure and Utilities close behind at 119, then Institutional Capacity (74), Safety and Social Cohesion (43), Health and Care Capacity (37), and Environmental Hazard (15). Infrastructure and Utilities leads on single-hub dominance rather than on total intensity: it contains the network's dominant node, failure of essential infrastructure (**Sh-Tech-1**) at 56, documented in [Section 7.1](#). The point that shapes [Section 10](#) is not the exact order but the distinction it draws. Hub intensity is not the same as policy urgency: Health and Care Capacity carries high human-impact weight although its hub intensity is low, and Economic Security carries both high human-impact weight and the highest total hub intensity, so welfare urgency and cascade structure are distinct axes rather than the same ranking. Phase II sequencing therefore weighs hub intensity, which is cascade-prevention leverage, against human-impact weight, which is welfare-protection urgency. The weighing is what the clustering is for. Six clusters reduce twenty-five items and 96 edges to a handful of distinct leverage judgements: cascade prevention (Infrastructure and Utilities, and the multiplicative case of Institutional Capacity), welfare protection (Economic Security, Health and Care Capacity), and consequence limitation (Safety and Social Cohesion, and the Natech member of Environmental Hazard). A sequencing decision can weigh six judgements; it cannot weigh 96 edges.

8.7 Cross-cluster synergy interfaces

Two workshop-recorded interactions cross cluster boundaries and are carried forward as candidate interfaces Phase II should not treat in isolation. Of the pairs carried forward from [Section 7.5](#), only the intra-cluster corruption-enforcement pair reaches the three-group consensus threshold; the two cross-cluster interactions below rest on weaker agreement, two groups and one group respectively, and are flagged for confirmation.

INTERFACE	WORKSHOP-RECORDED INTERACTION (GROUP AGREEMENT)	CLUSTERS BRIDGED	WHY IT MATTERS
Water and waste	Aging water network and poor solid-waste management (two groups)	Infrastructure and Utilities / Environmental Hazard	Waste-clogged drainage and reduced permeability compound water-network stress and localised flooding; the two systems fail together.
Currency and public sector	Market and currency crashes and public-sector collapse (one group)	Economic Security / Institutional Capacity	A currency crash erodes public-sector revenue and salaries, which accelerates institutional collapse and removes the capacity to respond to the economic shock.

Table 8.7. Cross-cluster synergy interfaces. The two workshop-recorded interactions that cross the functional cluster boundaries, carried forward as candidate interfaces for Phase II coordination with their group-agreement counts shown; neither reaches the three-group consensus threshold that the intra-cluster corruption–enforcement pair meets. Source: Risk Synergies workshop (Annex F); Saida Urban Observatory, Hariri Foundation, 2025.

The corruption-with-weak-enforcement pair, the one pair in this set that reaches consensus, and the unemployment-with-poverty pair sit inside single clusters (Institutional Capacity and Economic Security) and are addressed within those clusters' signals in [Section 10.3](#). The design consequence for Phase II is that each of the two cross-cluster interfaces needs joint treatment across its two clusters, with the Urban Action Profile register ([Section 9.2](#)) as the single inventory in which that joint treatment is recorded and monitored.

09

Systemisation

From diagnosis to a sequenced Phase II response,
anchored by the Observatory.

9 Systemisation

“Ninety per cent of the crises mayors named as top priorities were framed as Union-wide. The Union scale is what mayors expect their resilience institutions to operate at.” Source: Saida-Zahrani Diagnosis Team, KII mayors survey, 8 mayors and 9 responses, 2025 (Annex E).

Diagnosis ends here. What this section settles is lighter than a plan and more durable than a recommendation: how the findings stay useful once the report is closed. Systemisation, as used here, does not mean building new structures. The Union already holds the standing systems that can carry this work forward, and the sensible course is to read the diagnosis through them rather than invent an institution to hold it. Three bodies matter, all documented in [Section 3.4.1](#). The Saida Urban Observatory, established within the Municipality of Saida and operated by the Hariri Foundation, is where the evidence is kept and kept current. The Union’s Disaster Risk Management (DRM) Unit is the standing point for preparedness and coordination. The Regional Technical Office (RTO), set up through a UN-Habitat programme that places shared technical offices across Lebanese municipalities, is the point of GIS and engineering support that most municipalities cannot staff on their own. None of the three is new; naming them here is a matter of foresight, not of design.

Seating the diagnosis in bodies that already exist is itself an evidence-led choice. Mayors frame 90% of their priority crises as Union-wide ([Section 3.5](#)), and the field is already crowded with parallel, short-cycle interventions ([Section 3.4.4](#)); the coordination gap is answered by using the mechanisms the Union already holds, not by adding another layer to a fragmented landscape. This section names the three systems and the common-sense way they hold the findings between them, then closes with the two forward reads the standing system watches against: the resilience trajectory to 2050 ([Section 9.5](#)) and the resilience-qualities profile ([Section 9.6](#)). It proposes no projects, budgets, or measures. The directions the evidence supports are set out as Phase II signals in [Section 10.3](#), and turning them into defined programmes is the work of the forthcoming Saida-Zahrani Resilience Action Plan.

9.1 The Urban Observatory

The Saida Urban Observatory, established within the Municipality of Saida and operated by the Hariri Foundation as the implementing body of this diagnosis, is where the findings stay alive. It is the natural home for the evidence this report assembles: the 233-indicator inventory, the incident log, the hazard layers, and the data-sharing relationships with national providers. Its value is plain. Without a standing point to hold and refresh them, the findings close with this report and Phase II inherits a fixed baseline; with one, the Union holds a record it can update as conditions change, consult before it acts, and use to convene the inter-municipal coordination that the [Section 3.5](#) readiness paradox calls for. This is where the foresight of the section begins: an Observatory that keeps the diagnosis current is the difference between a one-off study and a learning system, and it is the standing answer to the finding that 90% of

priority crises are framed at the Union scale. It also carries the two forward reads below, the 2050 trajectory and the qualities profile, as the horizon it monitors against.

9.2 Urban Action Profiles

One activity the Observatory can carry over time, without new machinery, is a simple record of the resilience initiatives under way across the Union. Documented in a common format, an Urban Action Profile (UAP) is no more than a short, comparable note on a single initiative: what it is, who leads it, and which priority items and cluster it touches. Kept as a light and growing set, prospective for initiatives as they begin and retrospective for those already under way, such a record lets the Union see what has been attempted before it designs or funds the next thing, which is the most direct answer to the intervention duplication that a fragmented landscape produces ([Section 3.4.4](#)). This is offered as a sensible direction, not a system to be stood up now: the diagnosis names the modality; whether and how to use it is a Phase II choice.

9.3 The DRM Unit

The Union's Disaster Risk Management Unit is the territory's standing point for preparedness and response coordination across the sixteen municipalities ([Section 3.4.1](#)), with its responsibilities clarified in the 2024 update of the DRM strategy (Municipality of Saida-Zahrani, 2024). It is where the compound-event thinking in this diagnosis finds an operational home: the scenarios an Observatory would watch are exercised through the Unit, and the emergency-planning gap the diagnosis records, with 78% of responding mayors holding no plan ([Section 3.5.1](#)), is work that runs through it. The constraint is resourcing rather than mandate, so strengthening the Unit sits inside the foundations direction of the Phase II signals ([Section 10.3](#)).

9.4 The Regional Technical Office

The Regional Technical Office (RTO) is a shared technical office established through a UN-Habitat programme that supports Lebanese municipalities with the GIS, engineering, and planning capacity they cannot staff on their own; even before the 2019 crisis around 37% of Lebanese unions had no engineering department (DRI 2017, in Arab Reform Initiative, 2025), and the wage collapse since has thinned municipal administrations further ([Section 3.4.5](#)). For the Union it is the practical complement to the Observatory: the Observatory holds the evidence, and the RTO carries the technical work the evidence points to, from mapping to the appraisal and supervision of water, drainage, waste, and road assets. Naming it here is again a matter of foresight; the diagnosis assigns it no tasks, which is Phase II's work.

9.5 Resilience trajectory to 2050 (CRPT Step 4)

The CRPT is not only a snapshot. Step 4 asks the city to read today's diagnosed stresses and shocks against the trajectory of the drivers that will intensify them. This subsection operationalises the climate projections the report already cites and links each projected change to a specific diagnosed priority. It is deliberately conservative and introduces no

climate models beyond the three sources already in the report's reference list (ESCWA, 2022; Zittis et al., 2022; IPCC, 2022; see §3.3.1).

The climate signal the Union is on

The Eastern Mediterranean and Middle East, in which the Union sits, is one of the most pronounced climate-change hotspots on Earth.

DRIVER	PROJECTED TRAJECTORY	SOURCE
Baseline warming rate	The region is warming at roughly twice the global average; the observed recent trend is about 0.45 °C per decade and is projected to continue.	Zittis et al., 2022
Regional amplification	For every 1 °C of global warming, the region warms about 1.4 °C to 1.8 °C.	Zittis et al., 2022
Mid-century mean temperature	Substantial combined warming and drying across the southern and eastern Mediterranean under RCP4.5 and RCP8.5, with the mid-century panel (2041 to 2060) as the reference horizon for a 2050 outlook.	Zittis et al., 2022
Regional framing	Arab-region temperature rose about 0.8 °C over the last two decades; an end-century increase of up to about 4.8 °C is projected; the region is the world's most water-scarce.	ESCWA, 2022
Extremes	Strongly increasing severity and duration of heatwaves, droughts, and dust storms, with more intense torrential rain and flash-flood events.	Zittis et al., 2022; IPCC, 2022

Table 9.5a. The regional climate signal. Figures are regional (Eastern Mediterranean and Middle East, and Arab-region) applied to the Union as the best available proxy; the report does not add Union- or country-scale downscaled projections, consistent with its practice of flagging regional proxies. Source: as cited (ESCWA, 2022; Zittis et al., 2022; IPCC, 2022).

Trajectory linked to the diagnosed priorities

Each projected change is mapped to the priority item it will intensify, using the reconciled catalogue codes and the clusters in Section 8. This is the analytic bridge from Finding 1, that compound exposure is territory-wide, to a dated outlook.

CLIMATE DRIVER TO 2050	DIAGNOSED PRIORITY MOST EXPOSED	MECHANISM
Higher heat extremes and longer heatwaves	Weak public-health systems (St-Soc-6, rank 8 stress); epidemics (Sh-B-1, rank 3	Heat load raises health-service demand while the aging grid is least reliable at

	shock); unreliable electricity (St-Env-5, rank 11 stress)	peak cooling load; the cascade runs Infrastructure and Utilities to Health and Care Capacity.
Drought and declining, more variable precipitation	Aging water network (St-Env-4, rank 1 stress, CPS 24.5); slow local economy and agriculture (St-Eco-6, rank 12 stress)	Less reliable supply into an already-failing network widens the service gap; wildfire-zone agriculture (§6.4.1) loses water security.
More intense torrential rain and flash floods	Poor solid-waste management (St-Env-3, rank 2 stress); failure of essential infrastructure (Sh-Tech-1, rank 1 shock, CPS 25.0); riverine flooding (below threshold, §6.3.3)	Waste-clogged drainage and reduced permeability from post-war expansion turn manageable rain into localised flooding; the report already names waste a multiplier of climate risk.
Sea-level rise and storm surge (coastal)	Coastal flooding and tsunami exposure (§6.3.1); failure of essential infrastructure (Sh-Tech-1)	About 4 km ² of urban fabric below 10 m elevation (old port, historic core, coastal strip) faces rising baseline water levels and compounding storm hazard (§6.3.4).
Increased wildfire severity and season length	Wildfire exposure (§6.3.2); overcrowded schools (St-Soc-1, rank 14 stress, with 44 schools within 100 m of the hazard); agriculture (§6.4.1)	Hotter, drier, longer fire seasons expand the very-high and severe envelope in eastern peri-urban and hill zones where schools and plantations sit.
Compounding of the above (Natech pathway)	Natech or industrial-chemical incident (Sh-Tech-5, escalated under ADJ-3)	Heat, storm, and flood stress on the coastal industrial clusters raises the probability of a climate-triggered technological event beside dense cadastres and Ain El-Helweh.

Table 9.5b. Resilience trajectory linked to diagnosed priorities. Each climate driver is mapped to the priority item it intensifies, with the report code and reconciled rank. Source: M5 CRGP draft synthesis of ESCWA (2022), Zittis et al. (2022), and IPCC (2022) against the reconciled catalogue; see ledger.

On the region's current trajectory, the compound exposure the diagnosis documents today does not hold steady to 2050; it intensifies along the axes the Union is least equipped to absorb. Warming at roughly twice the global rate (Zittis et al., 2022) drives heat, drought, and fire pressure onto the three systems the diagnosis already ranks highest: the water network (St-Env-4, rank 1 stress), solid waste and drainage (St-Env-3, rank 2 stress), and the essential-infrastructure cascade hub (Sh-Tech-1, rank 1 shock). Because these are the same items that carry the cascade structure in Sections 8.5.1 and 8.5.5, climate change is best read not as a new, separate hazard but as an accelerant of the cascade structure the diagnosis has already mapped. This is the analytic justification for the Observatory's foresight role (§9.1). The report's climate citations do not include a Union-scale downscaled projection; all figures

above are regional proxies, consistent with the report's own practice of flagging regional proxies. A future Observatory monitoring cycle should commission a Saida-specific downscaling; this is a stated limitation of the present baseline rather than a gap in the diagnosis.

9.6 Resilience-qualities profile (CRGP)

The seven resilience qualities used across CRGP practice (Reflective, Robust, Redundant, Flexible, Resourceful, Inclusive, and Integrated) give a compact read of the Union's whole-system resilience. The qualities originate in the City Resilience Framework and Index and are applied here as an overlay on the diagnosis evidence, which is standard in CRGP practice alongside the CRPT's four dimensions and eight urban elements. The scores in [Table 9.6](#) are a proposed analytical judgement reasoned from specific report evidence, on a 0 to 5 scale (0 absent, 5 mature). They are offered for confirmation by the CRPT lead and the CRGP reviewer, not asserted as measured fact.

QUALITY	PROPOSED SCORE (0 TO 5)	EVIDENCE ANCHOR
Reflective (learns from evidence)	3, developing	The diagnosis, the 233-indicator inventory, the incident log, and the Observatory's annual-update mandate (§9.1) are strong reflective infrastructure, but newly built; institutional data completion is only 32% (§4.1), so the learning system exists but is data-thin and unproven over cycles.
Robust (withstands shocks)	2, weak	Failure of essential infrastructure (Sh-Tech-1) scores the maximum 25.0 and is the cascade hub linked to nine other priority items (§6.1 ; Finding 2); the water network is aging (St-Env-4 , CPS 24.5) and the waste plant runs below capacity (§3.3.2). Single-system failures propagate territory-wide.
Redundant (spare capacity, backups)	2, weak	The report repeatedly prescribes redundancy that does not yet exist: back-up generation, alternative supply chains, mutual-aid with neighbouring Unions (§8.5.1). The Union scale itself pools resources across sixteen municipalities (§3.4), and the shared waste plant is a system-level asset, which

		keeps the score above 1.
Flexible (adapts, reorganises)	2, weak to developing	The CRPT retrofit and the concurrent three-direction Phase II design (§10.3) show planning flexibility, but operational flexibility is constrained: 78% of responding mayors have no emergency plan (§3.5.1), so the system cannot readily reconfigure under shock. Lowest-confidence score.
Resourceful (mobilises finance, people, assets)	2, weak	Independent Municipal Fund transfers have fallen in real value since 2019 (§3.5; World Bank, 2023); locally raised revenue is insufficient for basic operations; dependence on external aid is high (St-Gov-4). Delivering a rigorous diagnosis under 32% institutional data completion is itself resourceful, but the resource base is depleted.
Inclusive (broad participation, protects the vulnerable)	3, developing	Strong design intent: 88 participation records across 48 organisations, with deliberate inclusion measures (§2.2). But camp-resident and housing-rights engagement is weak (§2.2; §5.7), and 18% of residents live in camps under a parallel governance geography the diagnosis reaches only in part (§3.6).
Integrated (aligned across systems, scales, actors)	3, developing	Genuine integration strengths: the Union scale as the analytic unit (§1.3), the synergy network and six-cluster architecture (§7 to §8), the UAP modality (§9.2), and the Observatory as the cross-cutting spine (§9.1). Held below 4 by the readiness paradox: mayors place zero investment in institutional strengthening (§3.5.1 to §3.5.2; Finding 3).

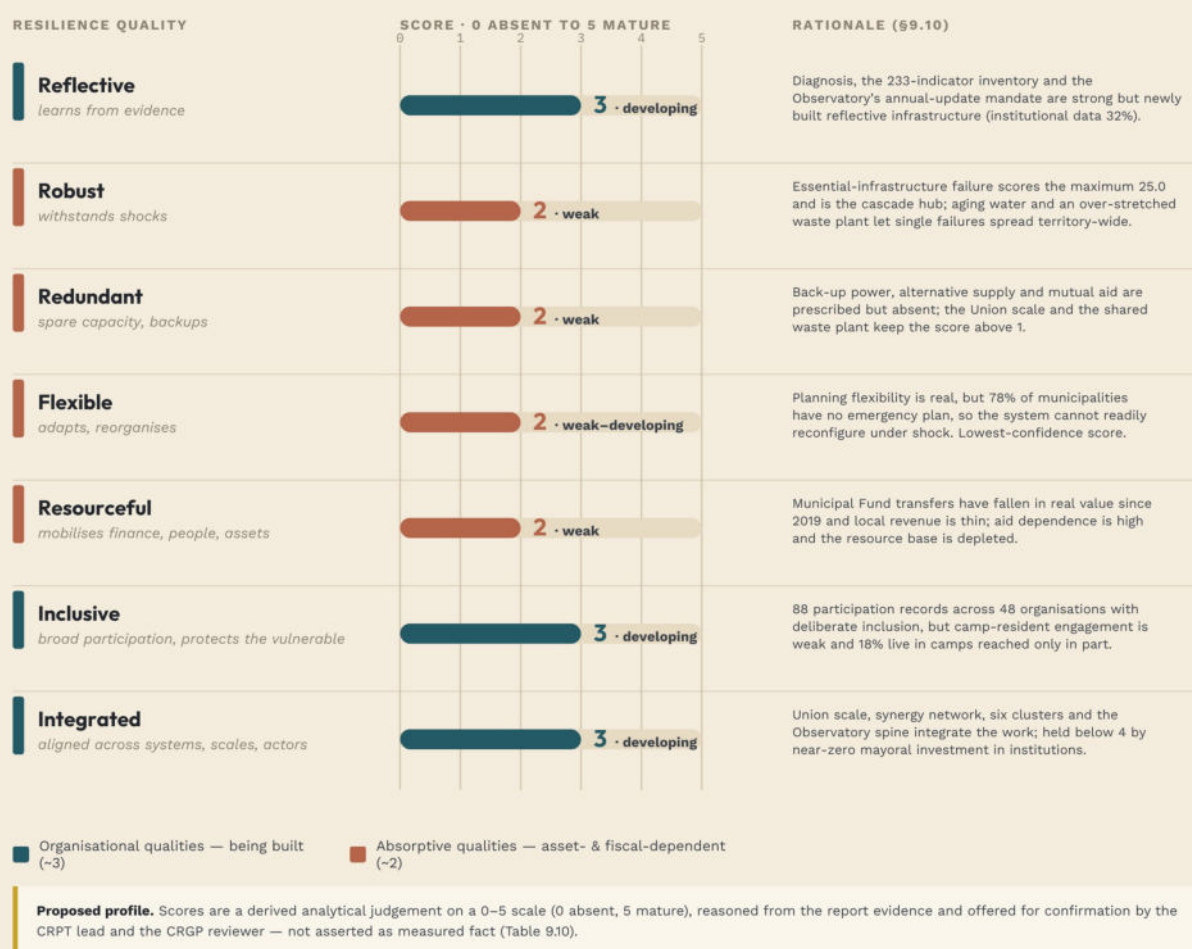


Figure 9.1. The Union against the seven CRGP resilience qualities, a derived analytical profile offered for confirmation. Source: Saida Urban Observatory, Hariri Foundation, 2026.

Table 9.6. Proposed resilience-qualities profile. Scores are a derived analytical judgement pending confirmation, not measured values. Source: M5 CRGP draft, reasoned from the report evidence cited; see ledger.

The signature is consistent across the profile: the Union is stronger in the organisational qualities this diagnosis is actively building (Reflective, Inclusive, and Integrated, around 3) and weaker in the absorptive qualities that depend on functioning assets and fiscal space (Robust, Redundant, Resourceful, and operational Flexibility, around 2). This mirrors the report's central finding. The binding constraint is institutional, fiscal, and infrastructural, and the Observatory is the mechanism intended to lift the organisational qualities first so they can pull the harder ones up (§9.1; Finding 3).

10

Conclusion and Phase II Signals

Three anchor findings, and the signals that carry the diagnosis into Phase II.

SAIDA-ZAHRANI • URBAN RESILIENCE DIAGNOSIS

10 Conclusion and Phase II Signals

“A diagnosis is a beginning, not an end. The Union of Saida-Zahrani now holds the evidence base it needs to act, and the institutional architecture to keep learning.” Source: Saida-Zahrani Diagnosis Team, 2026.

The argument of this diagnosis has been cumulative. Chronic stresses erode the Union’s buffers (Section 5); acute shocks test what remains (Section 6); synergies compound single risks into a network (Section 7); six clusters organise that network for action (Section 8); and the systemisation in Section 9 seats the evidence in the Union’s standing institutions, the Urban Observatory, the DRM Unit, and the Regional Technical Office, so that it runs as a continuous instrument rather than a one-off baseline. Applying UN-Habitat’s City Resilience Profiling Tool at the Union scale has produced a defensible, multi-dimensional baseline: fifteen priority stresses and ten priority shocks ranked, their synergy network exposed, six analytical clusters, and a standing system to carry them. Three anchor findings consolidate it, and the Phase II signals in Section 10.3 point the direction of travel.

10.1 Three anchor findings



Figure 10.1. The three anchor findings of the Saida-Zahrani Urban Resilience Diagnosis: compound exposure is territory-wide; a single infrastructure-failure hub structures the shock cascade; institutional weakness is the cross-cutting driver, analytically central but politically displaced. Source: Saida Urban Observatory, Hariri Foundation, 2025.

Finding 1: Compound exposure is territory-wide

No part of the Union's territory falls below a composite hazard score of 0.41 on the normalised 0-to-1 scale (Figure 3.7; CNRS-L, 2025; Hariri Foundation, 2025). The coastal strip and western urban edge score between 0.61 and 1.00. Hospitals, primary health centres, pharmacies, schools, and agricultural plantations concentrate in zones that overlap several hazard layers (Section 6.4). The consequence is a scale rule. Interventions designed around a single municipality or a single hazard will not meet this exposure; Phase II must operate at Union scale on cross-boundary risk while differentiating spatially within the Union for the compound-hazard concentration zones. The finding does the work of a mandate: it is the evidential basis for holding the response at Union scale through the Observatory rather than distributing it across sixteen separate municipal programmes.

Finding 2: A single infrastructure-failure hub structures the shock cascade

Severity and structure converge on one node. Failure of essential infrastructure (Sh-Tech-1) leads the shock catalogue at the maximum composite score of 25.0, and it is also the dominant hub of the 96-edge synergy network, carrying a hub intensity of 56, the highest of any item (Sections 6.1, 7.1, and 8.6). Nine other priority items, six stresses and three shocks, link to it directly, and as many as seven of the nine other priority shocks are reachable from it along multi-step pathways (Section 7.3). The cascade is radial, spreading outward from one node rather than running as a chain of equal links, and a radial network can be defended at its centre in a way a chain cannot. The chronic catalogue points at the same node: the aging water network (St-Env-4, CPS 24.5), the rank-1 stress, sits with unreliable electricity (St-Env-5) on the workshop-named infrastructure-aging-to-failure pathway that feeds the hub, while the basic-service stresses led by water and poor solid-waste management (St-Env-3, CPS 24.0) form the substrate that lowers the threshold at which any disruption becomes systemic (Sections 7.4 and 8.5.1). The consequence is an investment rule. Hardening the lifeline systems prevents the rank-1 shock and weakens the pathways that carry the other priority shocks back to the hub at the same time; no other single investment in the catalogue carries that multiplier, and that is why lifeline protection anchors the lifelines direction of the Phase II signals (Section 10.3).

Finding 3: Institutional weakness is the cross-cutting driver, analytically central but politically displaced

No single institutional item tops either ranking, and none needs to. Four of the top-ten stresses are institutional: absence of DRR equipment and budget (St-Gov-1, rank 7), corruption and absence of transparency (St-Gov-2, rank 5), weak local enforcement (St-Gov-3, rank 9), and high dependence on external aid (St-Gov-4, rank 10). The pivotal public-sector-collapse shock (Sh-Eco-1, rank 4) is also institutional, and the cascade pathway from infrastructure failure runs through it. Across the environmental and economic items, institutional weakness is the common amplifier: it is what converts an aging asset into a failed service and a price shock into a household crisis, and the Institutional Capacity cluster connects to every other cluster through cross-cutting interactions. The political signal runs

the other way. The [Section 3.5](#) KII programme found that mayors rated institutional capacity as the weakest of the four CRPT dimensions while placing zero institutional strengthening in their top investment choice. The territorial readiness scan in [Figure 3.11](#) corroborates the perception with documentary evidence: 53% of cells, across sixteen municipalities and five readiness indicators, score 0 to 1 (absent or nominal), and none reach “mature.” This pairing of self-reported and independent evidence is what gives the finding its weight. The consequence is a double design rule. Because the amplifier sits beneath every dimension, no sectoral investment is protected from it, and every Phase II programme must carry its institutional component inside it (Principle 1, [Section 10.3](#)). And because the displacement reproduces itself if left alone, with investment flowing to the visible deficits while the capacity to operate them keeps eroding, the Phase II signals embed institutional strengthening inside environmental, social, and economic directions and anchor it in the standing institutions of [Section 9](#).

10.2 From evidence to signals

The diagnosis carries its evidence forward through three structural products: the cluster architecture in [Section 8](#), which reduces the 25 priority items and their 96-edge network to six functional clusters with distinct kinds of leverage; the standing institutional architecture in [Section 9](#), which seats monitoring, coordination, and technical delivery in the Urban Observatory, the DRM Unit, and the Regional Technical Office, with the Urban Action Profile register as the recording instrument; and the Phase II signals in [Section 10.3](#), which convert the cluster leverage into directions of travel for the Resilience Action Plan. Each is workshop-validated, audit-traceable through the CPS computation (Annex A) and the risk-synergies workbook (Annex F), and aligned with the Sendai Framework, the New Urban Agenda, and SDG 11 ([Section 2.8](#)). Together they form the analytical bridge from this baseline to the forthcoming Saida-Zahrani Resilience Action Plan.

10.3 Phase II signals

What follows is a signal chapter, not an action plan. A signal, as used here, is a direction of travel the diagnostic evidence supports: it names the cluster, the leverage the Union holds over it, the indicators that say whether conditions are improving or deteriorating, and the kind of work Phase II should examine first. It deliberately stops short of defined measures, budgets, logframes, and owners; defining those is Phase II’s own work, done with the municipalities and partners who will carry them. The signals are organised on the leverage distinction established in [Section 8.6](#): cascade prevention where the network concentrates, welfare protection where the human load concentrates, and consequence limitation where the drivers are exogenous.

10.3.1 Three concurrent directions

Phase II sequencing weighs three considerations: cascade-prevention leverage, which favours Infrastructure and Utilities and Institutional Capacity, where hub intensity is highest; welfare-protection urgency, which favours Economic Security and Health and Care Capacity, where human-impact weight is highest; and political feasibility, which favours early work that is

visible, deliverable within municipal capacity, and compatible with the May 2025 mayoral cycle and the November 2024 ceasefire reconstruction window.

The direction of travel is concurrent rather than serial, because the three deficits the diagnosis documents do not wait for one another. Three directions run in parallel from the start of Phase II, each motivated by a distinct body of evidence.

The foundations direction answers the coordination deficit: operationalise the standing system in [Section 9](#), roll emergency planning out to all sixteen municipalities, resource the DRM Unit, and consolidate the territorial PPI inventory. The motivation is Finding 3 and the readiness evidence beneath it: 78% of responding mayors report no emergency plan and 53% of readiness cells score 0 to 1 ([Section 3.5](#)). Until that changes, the territory lacks the organisational floor on which the other two directions stand.

The lifelines direction answers the cascade structure: water-network rehabilitation, solid-waste plant restoration, medical-supply continuity, and Natech containment in the Zahrani industrial corridor. The motivation is the network evidence in [Section 7](#): the rank-1 shock is the cascade hub linked to nine other priority items, the rank-1 and rank-2 stresses feed it, and two of the four candidates, the water network and the waste plant, sit on the water–waste cross-cluster interface named in [Section 8.7](#), exactly where single-cluster programming would miss the interaction.

The livelihoods direction answers the household load: livelihood support, SME credit, and social-protection-floor expansion targeted at the documented highest-exposure groups. The motivation is the welfare evidence in [Section 4](#): multidimensional poverty at 82% and South Lebanon unemployment at 36.5% mean household coping capacity is already heavily drawn down, and lifeline or institutional work that proceeds without livelihood support leaves the next shock to land on exhausted buffers.

The three directions reinforce one another forwards, foundations enable services, services enable livelihoods, and livelihood stabilisation reduces the demand pressure on services, and they cover one another's exposure in reverse: foundations without lifelines coordinate a failing system, lifelines without livelihoods protect assets while households sink, and livelihoods without foundations pour support through the fragmented, duplicating channels [Section 3.4.4](#) documents. Concurrency is not a scheduling convenience; it is what the interaction structure requires.

10.3.2 Signals by cluster

[Table 10.3](#) carries the six cluster signals. Each entry names the leverage type established in [Sections 8.5](#) and [8.6](#), the leading indicators the Observatory should watch, and the direction of travel for Phase II design. The entries do not restate the cluster profiles in [Section 8.5](#); they add the monitoring and design content those profiles point to. Directions are candidates for examination, not commitments, and steps the evidence marks as low-regret are identified as such.

Infrastructure and Utilities. *Leverage: cascade prevention, the highest in the portfolio (§8.5.1).* - *Watch.* Water-network service continuity (leakage, illegal connections, energy-driven

interruptions) (§4.2); EDL medium-voltage reliability and generator dependence (91% access from any source but heavily interrupted supply) (§4.2); fuel-supply availability and pricing (Sh-Eco-2); congestion and route quality (St-Env-7) (§5.5). - *Direction of travel*. Water-network rehabilitation; medium-voltage redundancy (back-up generation, alternative supply chains, mutual aid with neighbouring Unions); fuel-supply continuity; mobility and congestion measures. A medium-voltage redundancy pilot at priority facilities is the low-regret early step; waste-plant restoration and medical-supply continuity are carried under the Environmental Hazard and Health and Care Capacity signals.

Economic Security. *Leverage: welfare protection; the macro drivers are set nationally (§8.5.2).* - *Watch*. South Lebanon unemployment (36.5% in 2022, up 24 percentage points on pre-crisis) (§4.4); inflation trajectory (221.3% in 2023 easing to 14.8% by Q4 2025) (§4.4); multidimensional poverty (national 82%, up from 28% pre-crisis) (§4.4); Market Functionality Index, with assortment and availability at ceiling (10/10) but price at 3.30/10, which locates the problem in affordability, not supply (§4.4); municipal revenue and Independent Municipal Fund transfer flows (§3.4.4). - *Direction of travel*. Livelihood support targeted at the highest-exposure groups (women, youth, displaced households); SME credit; social-protection-floor expansion; informal-sector formalisation; cash-transfer infrastructure. Market-functionality monitoring and vulnerable-group early warning are the low-regret early steps.

Institutional Capacity. *Leverage: multiplicative; it changes the return on every other cluster's investment (§8.5.3).* - *Watch*. Emergency-planning coverage (78% of responding mayors report no plan; none active or tested) (§3.5.1; §4.5); readiness self-ratings (own municipality 2.56/5, Union 2.44/5, the Union rated lower despite 90% of crises framed as Union-wide) (§3.5.1); institutional indicator completion (32%, the lowest of the four dimensions) (§4.1; §4.5); Independent Municipal Fund transfer delays and real-terms decline (§3.4.4; §4.5). - *Direction of travel*. Emergency-planning rollout to all sixteen municipalities; DRM Unit operational resourcing (§9.3); inter-municipal mutual-aid frameworks; transparency measures (open-data publication, fiscal disclosure, procurement transparency), embedded inside environmental, social, and economic work rather than presented as a standalone category (Principle 1).

Health and Care Capacity. *Leverage: welfare protection with a lifeline dependency (§8.5.4).* - *Watch*. Spatial evenness of health facilities (hospitals, PHCCs, and pharmacies cluster in Saida city; Ghazieh and the southern peri-urban zone are underserved) (§4.3); school enrolment and attendance (89.9% at ages 6 to 11, falling to 60.1% at ages 12 to 17; dropout 2% to 50% across schools) (§4.3); medical-supply continuity (Sh-Tech-4); camp service-delivery capacity under post-2019 UNRWA funding contraction (§3.6.2). - *Direction of travel*. Surge capacity in public-health facilities; education-system flexibility for displacement-driven enrolment change; mutual aid between hospital systems; medical-supply continuity protocols, held with the lifelines direction because the cluster's threshold capacity depends on infrastructure. Hospital mutual aid, a coordination-only measure, is the low-regret early step.

Environmental Hazard. *Leverage: asymmetric; a tractable quick win beside patient containment (§8.5.5).* - *Watch*. Solid-waste plant throughput against capacity (about 250 t/day processed, below full capacity; about 50% of waste mishandled; about 20% recycled) (§3.3.2;

§4.2); Natech conditions in the two coastal industrial clusters (flammable and toxic point sources about one kilometre from Ain El-Helweh on the Saida edge; the Zahrani tank farm of 4.5 to 4.9 million barrels beside the 435 to 465 MW power plant) (§6.5; §2.5.2 ADJ-3); PM2.5 daily-limit exceedances (about 40 days per year on average at coastal sites, ADJ-1, below threshold) (§4.2; §2.5.2 ADJ-1). - *Direction of travel*. Waste-plant restoration towards full operational capacity, the most tractable of the high-ranked interventions and a flood-mitigation measure through the drainage pathway (§3.3.2); Natech containment investment in the Zahrani industrial corridor as patient, insurance-type work against the ADJ-3 maximum-severity case.

Safety and Social Cohesion. *Leverage: consequence limitation; the drivers are exogenous (§8.5.6).* - *Watch*. Post-2019 rise in property crime alongside contracting public-security capacity (St-Soc-7) (§5.6); displacement patterns under security shocks (2023 Ain El-Helweh clashes; about 21,000 internally displaced in Saida city during the 2024 escalations) (§3.6.2; §3.1.1); regional escalation risk. - *Direction of travel*. Incident planning; evacuation-route maintenance; coordination and mutual aid with the Lebanese Civil Defence and the Lebanese Red Cross; compound-event scenario planning at municipal level (Principle 5). Evacuation-route maintenance and Civil Defence coordination are the low-regret early steps.

Table 10.3. Phase II signals by cluster. For each cluster: the leverage type, the leading indicators to watch, and the direction of travel for Phase II design. Signals are directions the evidence supports, not defined measures; project definition, costing, and sequencing belong to the Resilience Action Plan. Source: Saida Urban Observatory, Hariri Foundation, 2025, from §3 to §9 evidence.

10.3.3 Design principles

Five design principles apply across every Phase II programme, whatever its cluster or lead partner.

Principle 1: institutional strengthening as an enabling effect. The Section 3.5 KII evidence and the Figure 3.11 territorial scan jointly indicate that institutional strengthening must not be presented to mayors as a standalone investment category. Phase II proposals should embed it inside environmental, social, and economic actions, for example by funding water-network rehabilitation together with the institutional capacity to operate the network, rather than splitting the two into separate funding streams.

Principle 2: spatial differentiation within Union scale. The Union scale is the analytical unit, but interventions need spatial differentiation. The compound-hazard concentration zones in Section 6.4 (hospitals, agriculture, and schools within 100 m of a wildfire interface) are priority spatial entry points; the dense old-city cadastre of Saida El-Qadimeh and the two coastal industrial clusters (Section 6.5) are separate priority entry points; the camps named in Section 3.6 require concurrent UNRWA-coordinated investment.

Principle 3: inclusion of under-represented groups. The Section 5.7 finding on workshop under-representation, covering camp residents, gender-specific advocacy, and housing-rights actors, must be addressed in Phase II through targeted consultation cycles convened by the Urban Observatory.

Principle 4: continuous monitoring rather than one-off baseline. Every Phase II programme should enter the Urban Action Profile register ([Section 9.2](#)) at design stage and carry monitoring indicators that feed back into the Observatory, so that the baseline documented here is refreshed rather than archived.

Principle 5: compound-event preparedness. Phase II preparedness frameworks must plan for compound events, not single-hazard events. The synergy analysis in [Section 7](#) indicates that the most likely future disruptions involve several cascading items rather than isolated incidents. Emergency planning at municipal level should include at least one compound-event scenario per municipality.

GESI: gender, equality, and social inclusion.

Commitment. The diagnosis is designed to be people-centred and participatory, integrating vulnerability, exposure, and equity ([§1.4.2](#)). Groups at risk of exclusion (refugees, youth, persons with disabilities, elderly, and low-literacy groups) were identified early, with tailored measures: collaboration with local NGOs, plain-language and visual tools, and facilitation through trusted community channels ([§2.2](#)). The NGO Platform of Saida is the standing civil-society channel through which inclusive participation is mobilised ([§3.4.4](#)).

Gap. Despite outreach, workshop representation from camp residents, gender-specific advocacy organisations, and housing-rights actors remained weak ([§2.2](#); [§5.7](#); [§3.6.2](#)). As a result, three stresses were suppressed in the workshop ranking relative to their expert baseline: housing access and affordability (**St-Env-6**), inter-community tensions (**St-Soc-3**), and gender-specific vulnerability (**St-Soc-4**). This is a composition effect, not an absence of risk ([§5.7](#)). Supporting evidence: more than 60% of Lebanese households face overcrowding or inadequate shelter (ESCWA, 2023), and female labour-force participation is 29% (CAS/ILO, 2022), which concentrates women's economic exposure during income shocks ([§5.7](#)). The social dimension's primary data gaps, camp-resident disaggregation and gender-specific labour data, reinforce the point ([§4.1](#)).

Remedy. Phase II must integrate targeted consultation cycles with these groups, convened by the Urban Observatory, as an explicit design principle (Principle 3). Livelihood and social-protection work is to be targeted at the most exposed groups: women, youth, and displaced households ([§10.3.2](#)). The camp-host boundary is treated as a design principle in its own right, because strategies that strengthen the Lebanese governance system without parallel UNRWA-coordinated investment leave about 18% of the population outside the resilience envelope ([§3.6.2](#)). This remedy is a Phase II undertaking, not a completed analysis: the report documents the commitment and the participation gap, not a finished gender-disaggregated study.

10.3.4 Readiness conditions

Phase II implementation requires three readiness conditions. First, institutional readiness: municipalities must have the staff, mandate, and operational continuity to implement actions. The May 2025 election cycle stabilised mayoral leadership; sustained capacity-building through the Hariri Foundation and the Urban Observatory is the operational complement. Second, fiscal readiness: Independent Municipal Fund transfers must be supplemented by partner-funded resilience finance to bridge the documented 2019 to 2025 fiscal contraction, and the post-November-2024 reconstruction window opens new bilateral and multilateral financing dialogues that the Phase II team should sequence into. Third, data readiness: the Urban Observatory must be operational and resourced before Phase II planning is finalised, so that monitoring indicators are integrated rather than retrofitted.

10.3.5 The hand-off

The pathway is iterative, not linear. The Observatory feeds monitoring back into Phase II planning continuously, which allows reprioritisation as conditions evolve, and the three sequenced scenarios in [Section 9.1](#) exercise the response framework and surface implementation gaps before they manifest as crisis-time failures. Every programme the Resilience Action Plan defines enters the Urban Action Profile register ([Section 9.2](#)) at design stage, so that projects, partners, indicators, and outcomes are monitored as a single inventory rather than as scattered initiatives.

The ask is legible even before costing. MedCities, Barcelona City Council, and reconstruction-window donors are asked to commit Phase II design-and-financing support for the three concurrent directions over an indicative first 24-month horizon, conditional on the institutional, fiscal, and data-readiness conditions in [Section 10.3.4](#), so that the Union can begin sequencing work into the open post-ceasefire reconstruction window. The specific decision requested now is a commitment to resource the Saida-Zahrani Resilience Action Plan on that basis; the definition of measures, budgets, and owners belongs to the Plan itself.

10.4 The Union's capacities: assets and gaps

The Phase II pathway lands on a specific institutional and territorial base. [Table 10.4](#) pairs the Union's assets against the gaps that constrain them, drawn from the report's evidence, so that the reconstruction window in [Section 10.5](#) is read against a clear account of what the Union has and what it lacks.

ASSETS (WHAT THE UNION HAS)	GAPS (WHAT CONSTRAINS IT)
Institutional maturity: Lebanon's earliest inter-municipal Union (established 1978), giving a functioning Union-scale coordination platform (§1.2 ; §3.4).	Severely constrained fiscal capacity: heavy dependence on Independent Municipal Fund transfers that arrive years late and are devalued by inflation; local revenue is minimal and insufficient for basic operations (§3.4.4 ; §4.5).
A Union-level Disaster Risk Management (DRM) Unit as a cross-cutting coordination anchor, strengthened by the 2024 DRM Strategy Update (§3.4.1).	The 2024 DRM Strategy Update is not matched with implementation funding; the coordination structure exists but is under-resourced (§4.5 ; §3.4.1).
The Saida Urban Observatory, established within the Municipality of Saida and operated by the Hariri Foundation, holding data-sharing agreements (LRC-DRR, CNRS-L, CAS, MoSA, MoPH) and maintaining the 233-indicator inventory, incident log, hazard layers, and PPI inventory (§3.4.1 ; §9.1).	Institutional data poverty: institutional-dimension indicator completion is 32%, the lowest of the four dimensions; the Union knows its people better than it knows its own institutions (§4.1 ; §4.5).
A Regional Technical Office, a public-private partnership within the Hariri Foundation supplying engineering and technical due-diligence that municipalities lack in-house (§3.4.1).	Emergency planning largely absent: 78% of responding mayors report no municipal emergency response plan, and none reported an active, tested plan (§3.5.1 ; §4.5).
Union-scale solid-waste infrastructure: a treatment plant operational since 2012	The waste plant runs below capacity: about 250 t/day processed, about 50% of waste

serving all sixteen municipalities (§3.3.2).	mishandled, about 20% recycled, constrained by political and budgetary factors (§3.3.2; §4.2).
Stabilised mayoral leadership after the May 2025 municipal elections seated new councils (§3.4.4; §10.5).	Weak, under-resourced readiness across the territory: 53% of readiness cells score 0 to 1, only 6% reach “operational,” and none “mature,” with eastern peri-urban municipalities lowest (§3.5.3).
A willingness to institutionalise resilience: the Municipality of Saida is re-establishing its organogram to add urban-observation, disaster-management, data-science, and urban-planning roles (§3.4).	The readiness paradox: mayors trust the collective Union mechanism (2.44/5) less than their own institution (2.56/5) while framing 90% of priority crises as Union-wide, and place zero institutional strengthening in their top investment choice (§3.5.1; §3.5.2).
A dense multi-actor ecosystem: 24 organisations deliver 168 services across the Saida District, with an active NGO Platform of Saida (§3.4.3; §3.4.4).	Fragmentation and duplication: the dense actor landscape produces parallel, short-cycle interventions, and duplication is the most common inefficiency in Lebanon’s fragmented landscape (§3.4.4; §9.2).
Sustained external support and a financing window: MedCities and Barcelona City Council backing, with the post-November-2024 reconstruction window opening new financing dialogues (§10.5; §10.3.4).	Exposure and volatility: territory-wide compound hazard (no area below 0.41) and the persistent risk of renewed escalation qualify the window (Finding 1; §10.5).

Table 10.4. The Union’s capacities. Assets and gaps paired by theme where the evidence allows. Source: report §3.4, §3.5, §4, and §10.5; compiled in the M6 funder draft.

10.5 Post-ceasefire reconstruction context

The Union of Municipalities of Saida-Zahrani occupies a distinctive position within Lebanon’s urban resilience landscape. Its institutional maturity (Lebanon’s earliest Union, 1978), its DRM Unit, the May 2025 mayoral cycle, the establishment of the Saida Urban Observatory, and the sustained support from MedCities and the Barcelona City Council provide a configuration of enabling conditions that few Lebanese territories share.

The diagnosis is delivered into a post-ceasefire reconstruction context. The October 2023 conflict and the November 2024 ceasefire have reordered the politics, the financing windows, and the operational tempo of every recommendation in [Section 9](#). South Lebanon is the front line of the reconstruction effort, and the Union of Saida-Zahrani, with its established Union structure, DRM Unit, and Observatory, is among the more institutionally prepared sub-territories entering it; the readiness gaps documented in [Section 3.5](#) qualify that position without cancelling it. Phase II implementation must be sequenced to use the reconstruction-financing window while remaining responsive to the persistent risk of renewed escalation. The Saida Urban Observatory will continue to anchor the analytical work, monitor implementation, and convene the inter-municipal dialogue that the [Section 3.5](#) KII evidence shows mayors expect.

Anchor closing: a workable pathway. The Union of Saida-Zahrani is exposed to compound risks across every part of its territory and all four CRPT dimensions. The diagnosis identifies institutional weakness as the cross-cutting analytical leverage point, the basic-services system as the cascade structure, the camps as a parallel governance geography, and the standing architecture of the Urban Observatory, the DRM Unit, and the Regional Technical Office as the institutional carrier. The Phase II signals are evidence-anchored, workshop-validated, and aligned with the Union's political cycle and the post-ceasefire reconstruction window. The work ahead is definition and implementation.

10.6 Comparability with the CRGP flagships

This diagnosis is delivered under the Risk Map of Saida and Multilevel Resilience Diagnosis (RM&MRD) project, funded by Barcelona City Council and coordinated by MedCities with UN-Habitat's CRGP (Section 1.1). Table 10.6 places the Saida-Zahrani diagnosis alongside the two CRGP references named in Section 1.1, Teresina (Brazil) and Terres de l'Ebre (Catalonia) (UN-Habitat, 2020a; UN-Habitat, n.d.), so a MedCities or UN-Habitat reviewer can see where the arc aligns with the flagship format and where it diverges by design.

CRGP FLAGSHIP STAGE	SAIDA-ZAHRANI EQUIVALENT	ALIGNMENT AND SAIDA DISTINCTIVE
Scope and unit of analysis (city, Teresina; pilot territory, Terres de l'Ebre)	Union of sixteen municipalities, 59.95 km ² , about 378,039 residents (§1.2.1; §1.3)	Aligned with the territory model rather than the single-city model; Saida argues the Union is the minimum analytical unit for compounding risk, with 90% of mayors framing crises as Union-wide (§1.3; §3.5).
Data collection and situation analysis	Four-tier evidence stack, 233 indicators, Annex C audit (§2.3 to §2.5; §4)	Strongly aligned; Saida adds a transparent data-scarcity treatment (32% institutional completion disclosed) and a CPS triangulation layer on top of the raw indicator audit (§1.4.1).
Dimension profiles (environmental, economic, social; institutional often folded in)	Four CRPT dimensions carried explicitly, including institutional (§3; §4; §7.7)	Aligned; Saida keeps institutional as a first-class dimension and makes institutional weakness the cross-cutting finding (Finding 3).
Priority identification (Teresina: three priorities with drivers and risks)	15 priority stresses and 10 priority shocks by CPS, then six clusters (§5; §6; §8)	Aligned in spirit; Saida is more granular, adding a 96-edge synergy network (§7) and six functional clusters.
Risk interaction and compounding	Synergy network and hub atlas; Sh-Tech-1 as cascade hub (§7; §8)	A Saida value-add: an explicit, quantified cascade structure not standard in the flagship summaries.
Alignment to global frameworks	Sendai, New Urban Agenda, and SDG 11 crosswalk (§2.8)	Fully aligned; pre-built for donor financing dialogue and MedCities comparability.

Recommendations to action (Teresina: “Actions for Resilience”)	Phase II signals built on the six clusters and their leverage types, with three concurrent directions (§10.3), and the UAP register as the recording instrument (§9.2)	Aligned as the hand-off stage; Saida stops at diagnosis-with-hand-off by design, holding project definition for the forthcoming Resilience Action Plan (§9 opening; §10.3).
Institutional anchoring and continuity	The Saida Urban Observatory as a standing monitoring, convening, and foresight body, with the DRM Unit and the Regional Technical Office as its operational arms (§9)	Aligned with the CRGP “roadmap owned locally” model; Saida names addressable bodies, with a 24-month target to lift institutional data completion from 32% to 60%.

Table 10.6. Comparability crosswalk. The Saida-Zahrani diagnosis against the CRGP flagship arc. Flagship references are external to the report and web-verified (see ledger). The MedCities comparator set used in this diagnosis is Tetouan, Tangier, Mahdia, and Larnaca (§2.8). Source: M5 CRGP draft.

Saida-Zahrani follows the CRGP flagship arc, from scope through data, dimension profiles, priorities, and framework alignment to actions, and adopts the territorial unit pioneered by Terres de l'Ebre rather than the single-city unit of Teresina. It diverges in three deliberate ways: it is diagnosis-first, with a structured Phase II signal stage held separate; it foregrounds institutional weakness as the cross-cutting finding; and it adds a quantified risk-synergy and cluster architecture and a CPS triangulation layer as documented, replicable extensions. The raw indicator values are retained in Annex C so a reviewer can benchmark Saida against other MedCities and CRPT cities.

10.7 Lessons-learnt contribution to the CRPT community

The Saida-Zahrani diagnosis applied the CRPT under conditions for which the framework was not originally designed: a sub-national Union of sixteen municipalities, two parallel governance geographies (the Lebanese state and UNRWA), a protracted national crisis, and a post-conflict reconstruction context. The retrofits documented across this report are offered as evidence-based contributions back to the CRPT community for refinement, refutation, or replication.

Lessons-learnt to the CRPT community: five contributions from local evidence. (1) Triangulation under data scarcity: the CPS 0-to-25 scale supplements the CRPT's default indicator scoring where institutional-dimension completion is below 35%, providing a defensible ranking when the default scoring is not yet measurable. (2) Disclosed methodological adjustments: ADJ-1 to ADJ-4 demonstrate a transparent retrofit pattern that other CRPT-applying cities can replicate, presented as data-reliability disclosures. (3) Workshop-validated synergy network: the 96-edge dataset and the consensus-edge method provide a portable participatory technique for cities under engagement constraints. (4) Camps as a parallel governance geography: the framing in Section 3.6 may be useful to other cities hosting refugee or displaced populations under separate jurisdictional regimes. (5) The Urban Observatory as a cross-cutting pillar: the four-mandate architecture (monitoring, data, convening, foresight) operationalises the CRPT principle of iteration in a sustained institutional form, with the Urban Action Profile register as its recording instrument and the DRM Unit and Regional Technical Office as its operational arms.

The report closes where it began, with the order of the argument. Stresses erode the buffers (Section 5); shocks test what the erosion leaves (Section 6); the synergy network shows the

two catalogues moving as one system ([Section 7](#)); six clusters organise that system into distinct kinds of leverage ([Section 8](#)); the systemisation seats that leverage in the Union's standing institutions ([Section 9](#)); and the conclusion converts it into signals for Phase II ([Section 10](#)). What the Union holds at the end of it is not a lower risk profile, no diagnosis lowers risk, but a shared and evidenced account of where its risks concentrate, how they travel, and where its own effort counts for most. The three findings compress that account to its working form: the exposure is everywhere, the cascade hangs on one infrastructure hub, and the institutional driver is analytically central while the politics point the other way. Phase II starts with those three sentences on the table.

11

References

The sources cited across the diagnosis, in Harvard style.

11 References

References are listed in Harvard style, ordered alphabetically by author or institution. Where a public URL is available it is shown at the end of the entry. Sources marked [details to confirm] are cited in the text (predominantly news and grey-literature items added during the §3–4 and §6 enrichment) for which the exact title, date, or URL still needs verification before publication; they are listed as cited rather than with invented bibliographic detail. Tier 1 = primary diagnostic data (HFSHD, CNRS-L, LRC-DRR, Saida-Zahrani Diagnosis Team); Tier 2 = institutional partner data (CAS, ESCWA, UNHCR, UNRWA, World Bank, IMF, ILO); Tier 3 = published academic and policy literature.

Al-Hagla, K.S. (2010) ‘Sustainable urban development in historical areas using the tourist trail approach: A case study of the Cultural Heritage and Urban Development (CHUD) project in Saida, Lebanon’, *Cities*, 27(4), pp. 234–248. <https://doi.org/10.1016/j.cities.2010.03.001>

American University of Beirut (AUB) (2019) *Air Quality Monitoring at AUB: Annual Report 2018–2019*. Beirut: AUB Nature Conservation Center. <https://website.aub.edu.lb/natureconservation/>

Annahar (2026) News reporting on the Saida–Zahrani facility receiving waste from outside the Union territory (notably Jezzine district) and the ensuing inter-union and political tensions, January 2026. Beirut: An-Nahar. (*The January 2026 landfill-closure episode and the “waste from outside the Union” dispute are corroborated by contemporaneous coverage (e.g. Al-Modon, 13 January 2026, and IMLebanon, 16 January 2026), but the specific An-Nahar article and URL remain to confirm.*)

Aoun, A., Bjornsson, H. and Helal, M. (2016) *Public transport in Lebanon: Modal share and reform options*. Beirut: World Bank. <https://www.worldbank.org/en/country/lebanon>

Arab Reform Initiative (2025) *Empowering Lebanon’s Municipalities Amid Crisis*. Paris/Beirut: Arab Reform Initiative, 11 September. <https://www.arab-reform.net/publication/empowering-lebanons-municipalities-amid-crisis/>

Arup and The Rockefeller Foundation (2014) *City Resilience Framework*. London and New York: Arup and The Rockefeller Foundation. <https://www.rockefellerfoundation.org/> (*Merges the entry previously listed as “Rockefeller Foundation (2015) City Resilience Framework”; the in-text citation is 2014.*)

Atallah, S.: Sami Atallah, founding director of The Policy Initiative and former director (2011–2020) of the Lebanese Centre for Policy Studies; work on Lebanese municipal finance, decentralisation and the Independent Municipal Fund. Cited in Arab Reform Initiative (2025) as Atallah (2022). (*Author identity confirmed; exact publication title, year and URL to confirm.*)

Azmat, M., Ghalayini, S. and Hadeed, T. (2025) *Public transport disruption in Lebanon: A coastal city study*. ESCWA working paper. <https://www.unescwa.org/>

- Banque du Liban (BdL) (2025) *Inflation indicators and consumer price statistics*. Beirut: BdL. <https://www.bdl.gov.lb/>
- Beccari, B. (2016) ‘A comparative analysis of disaster risk, vulnerability and resilience composite indicators’, *PLoS Currents Disasters*, 14 March. <https://doi.org/10.1371/currents.dis.453df025e34b682e9737f95070f9b970>
- Béné, C., Newsham, A., Davies, M., Ulrichs, M. and Godfrey-Wood, R. (2014) ‘Resilience, poverty and development’, *Journal of International Development*, 26(5), pp. 598–623. <https://doi.org/10.1002/jid.2992>
- Business News (2012) News reporting on the Saida coastal waste dump and the diversion of waste to the Sinniq facility (as cited in text). Beirut: Business News. (*The 2012 context (plans to close the seafront dump, and the Saudi-funded, UNDP-supervised clean-up and diversion to a new facility) is corroborated by other sources, but the specific Business News article could not be located online.*) [details to confirm]
- Central Administration of Statistics (CAS) and Central Bank Statistics (CBS) (2019) *Population and household estimates: Lebanon*. Beirut: CAS. <http://www.cas.gov.lb/> (Also cited in text as “CAS, 2019”.)
- Central Administration of Statistics (CAS) and International Labour Organization (ILO) (2022) *Lebanon Follow-up Labour Force Survey 2022*. Beirut: CAS. <https://www.ilo.org/beirut/> (Cited variously as “CAS and ILO”, “CAS/ILO” and “CAS / ILO”.)
- Central Administration of Statistics (CAS) (2025) *Consumer Price Index, Q4 2025 release*. Beirut: CAS. <http://www.cas.gov.lb/>
- CNRS-L, National Centre for Scientific Research, Lebanon (2025) *Hazard maps for floods, wildfires, earthquakes and landslides, Saida-Zahrani territory*. Beirut: CNRS-L. <http://www.cnrs.edu.lb/>
- Council for Development and Reconstruction (CDR) (2001) *Cultural Heritage and Urban Development Project (CHUD): Saida component design*. Beirut: CDR. <http://www.cdr.gov.lb/>
- Cutter, S.L. (2014) ‘Building disaster resilience: Steps toward sustainability’, *Challenges in Sustainability*, 1(2), pp. 72–79. <https://doi.org/10.12924/cis2013.01020072>
- Daily Star (2012) News reporting on the Saida coastal waste dump (as cited in text). Beirut: The Daily Star. (*The Daily Star ceased publication in 2020 and its 2012 archive is largely offline; the specific article could not be located.*) [details to confirm]
- Daraj (2025) ‘Sidon’s Mountain of Garbage: Legal and Environmental Violations Render Lebanese Landfill Out of Service’, by Rawan Alamin, *Daraj*, 9 June (an ARIJ investigation co-published with Daraj; Arabic and English editions). <https://daraj.media/en/sidons-mountain-of-garbage-legal-and-environmental-violations-render-lebanese-landfill-out-of-service/>
- Democracy Reporting International (DRI) (2017) National survey of Lebanese municipal unions and their administrative capacity and services (solid-waste management, security/municipal police and citizen participation). Beirut: Democracy Reporting International. (*Cited in Arab*

Reform Initiative (2025) for the finding that over 22% of municipal unions lack administrative/financial departments and 37% lack an engineering department; exact report title/URL to confirm.)

Directorate General of Oil, Lebanon (Ministry of Energy and Water) (n.d.) *Zahrani Oil Installations* (facility records and description of the Zahrani state oil terminal and tank farm). Beirut: Directorate General of Oil. <https://en.dgo.gov.lb/category/3>

Economic and Social Commission for Western Asia (ESCWA) (2022) *Climate change in the Arab region: Towards 2030 and 2050*. Beirut: ESCWA. <https://www.unescwa.org/publications/>

Economic and Social Commission for Western Asia (ESCWA) (2023) *Multidimensional Poverty in Lebanon (2019–2023)*. Beirut: ESCWA. <https://www.unescwa.org/publications/> (In-text “ESCWA, 2021” refers to the joint UN-Habitat Lebanon and ESCWA (2021) report listed below.)

European Union Agency for Asylum (EUAA) (2025) *Country Focus: Lebanon*, Section 4.2 Internal Security Forces (ISF). Valletta: EUAA. <https://www.euaa.europa.eu/lebanon-country-focus/42-internal-security-forces-isf>

Global Energy Monitor (2026) ‘Zahrani power plant’, *Global Oil and Gas Plant Tracker* (operating combined-cycle plant, c. 465 MW, Electricity of Lebanon). https://www.gem.wiki/Zahrani_power_plant

GlobalData / Offshore-Technology (2021) ‘Zahrani Liquids Storage Terminal, Lebanon’ (facility profile). London: GlobalData. <https://www.offshore-technology.com/marketdata/zahrani-liquids-storage-terminal-lebanon/>

Government of Lebanon and United Nations (2024) *Lebanon Crisis Response Plan 2025–2026*. Beirut: Office of the UN Resident and Humanitarian Coordinator. <https://lebanon.un.org/>

Hallaj, O.A., Ramadan, B. and Stuart, T. (2014) ‘Saida: City profile’, in *Cities and Refugees: The Lebanon Conundrum*. Beirut: Common Space Initiative. <https://www.commonspaceinitiative.org/> (Cited variously as “Hallaj, Ramadan and Stuart” and “Hallaj et al.”.)

Hariri Foundation for Sustainable Human Development (HFSHD) (2025) *Saida-Zahrani GIS Inventory and Indicator Catalogue* (working dataset). Saida: HFSHD. <https://www.hariri-foundation.org/> (Cited variously as “Hariri Foundation, 2025”, “Hariri Foundation facility inventory, 2025”, “Hariri Foundation site survey, 2025” and, for recycling/waste indicators, “Hariri Foundation and UNEP, 2025”.)

Human Rights Watch (2021) *‘They killed us from the inside’: An investigation into the August 4 Beirut blast*. New York: HRW. <https://www.hrw.org/report/2021/08/03/they-killed-us-inside/investigation-august-4-beirut-blast>

Information International (2025) Independent Municipal Fund allocation data for Lebanese municipalities and unions, compiled by Information International (and published via its *Monthly Magazine*); cited in Arab Reform Initiative (2025). Beirut: Information International.

<https://monthlymagazine.com/> (Source and dataset confirmed; exact 2025 item/URL to confirm.)

Inter-Agency Coordination Lebanon (2025) *Service Mapping, Saida District: October–December 2025*. Beirut: Inter-Agency Coordination. <https://data.unhcr.org/en/country/lbn>

Intergovernmental Panel on Climate Change (IPCC) (2022) *Climate change 2022: Impacts, adaptation and vulnerability*. Contribution of Working Group II to AR6. Cambridge: Cambridge University Press. <https://www.ipcc.ch/report/ar6/wg2/>

Internal Security Forces (ISF) (2025) *Statistical Bulletin Issue 407: Road traffic incidents Q3 2025*. Beirut: ISF. <https://www.isf.gov.lb/> (Also cited as “ISF Statistics Issue 407, 2025”.)

International Crisis Group (2025) *Supporting Effective Policing by Lebanon’s Embattled Security Agencies*. Report 251, Middle East & North Africa, 27 August. Brussels: International Crisis Group. <https://www.crisisgroup.org/middle-east-north-africa/east-mediterranean-mena/lebanon/251-supporting-effective-policing-lebanons-embattled-security-agencies>

International Monetary Fund (IMF) (2023) *Lebanon: 2023 Article IV Consultation, Staff Report*. Washington, DC: IMF. <https://www.imf.org/en/Countries/LBN>

IPEN (2006) *Lebanon Hotspot: Garbage Mountain (Saida)*, International POPs Elimination Project (IPEP) country situation report, prepared by the Association pour la Protection de l’Environnement et du Patrimoine (APEP). Gothenburg/Stockholm: International POPs Elimination Network. <https://ipen.org/project-reports/lebanon-hotspot-garbage-mountain>

Lebanese Centre for Policy Studies (LCPS) (2025) *Water service performance in Lebanese coastal municipalities*. Beirut: LCPS. <https://www.lcps-lebanon.org/> (Standalone in-text “LCPS” citations on municipal finance refer to LCPS studies; see also Samaha (2022) and Mahdi et al. (2023).)

Lebanese Customs (2025) *Customs trade statistics: Lebanon ports 2020–2025*. Beirut: Lebanese Customs. <http://www.customs.gov.lb/>

Legal Agenda (2016) ‘Saida’s Garbage Experience: How a Mountain Became a Landfill’, by Rami Abou Alfa, *The Legal Agenda*, 6 October. <https://english.legal-agenda.com/saidas-garbage-experience-how-a-mountain-became-a-landfill/>

Lina News (2024) News reporting on Saida waste-plant/collection payment in fresh dollars (as cited in text). Saida: Lina News. (*The 2024 arrangement (the plant operator accepting dues at a 15,000 LBP/USD rate) is corroborated by other outlets, e.g. Al-Post; the specific Lina News article/URL could not be located.*) [details to confirm]

L’Orient Today (2022) ‘Saida: Garbage is again being collected but the crisis is not far away’, *L’Orient Today*, 29 December (NTCC collection contract extended amid c. LL30 billion in arrears owed since 2019). <https://today.lorientlejour.com/article/1323006/saida-garbage-is-again-being-collected-but-the-crisis-is-not-far-away.html>

L’Orient Today (2023) ‘From shame to fame ... to shame: Saida’s resurrected garbage mountain suffocates the city’, *L’Orient Today*, 23 January (the new coastal landfill beside the seafront

park created from the former dump). <https://today.lorientlejour.com/article/1325506/from-shame-to-fame-to-shame-saidas-resurrected-garbage-mountain-suffocates-the-city.html>

L'Orient Today (2024) News reporting on Saida waste-collection re-tendering and fresh-dollar payment (as cited in text). Beirut: L'Orient Today. (*L'Orient Today covered Saida's waste crisis repeatedly in 2022–2025, but the specific 2024 article on re-tendering/fresh-dollar payment could not be uniquely identified.*) [details to confirm]

LRC-DRR, Lebanese Red Cross, Disaster Risk Reduction Unit (2025) *Incident log records 2004–2024 and territorial dataset: Saida-Zahrani territory*. Beirut: Lebanese Red Cross. <https://www.redcross.org.lb/> (Merges the earlier entry dated 2024; the enriched text cites this dataset as LRC-DRR, 2025.)

Mahdi, R., Saliba, T. and Hassan, M. (2023) 'Saida city profile: Demographics, livelihoods and the fiscal squeeze', *Lebanese Centre for Policy Studies Working Paper*. <https://www.lcps-lebanon.org/>

Makhzoumi, J. and Al-Sabbagh, S. (2014) 'Landscape and urban heritage in Lebanon: Saida and the southern coast', *Journal of Mediterranean Studies*, 23(2), pp. 233–251.

Marzi, S., Mysiak, J., Essenfelder, A.H., Amadio, M., Giove, S. and Fekete, A. (2019) 'Constructing a comprehensive disaster resilience index: The case of Italy', *PLoS ONE*, 14(9), e0221585. <https://doi.org/10.1371/journal.pone.0221585>

MedCities (2021) *MedCities Strategic Plan 2021–2030*. Barcelona: MedCities Secretariat. <https://medcities.org/>

MedCities and Barcelona City Council (2025) *Mediterranean urban resilience initiative: Phase I synthesis*. Barcelona: MedCities. <https://medcities.org/>

Meerow, S., Newell, J.P. and Stults, M. (2016) 'Defining urban resilience: A review', *Landscape and Urban Planning*, 147, pp. 38–49. <https://doi.org/10.1016/j.landurbplan.2015.11.011>

Ministry of Environment Lebanon (MoE) (2020) *State of the environment report*. Beirut: MoE. <http://www.moe.gov.lb/> (Cited in text as "MoE Lebanon, 2020".)

Ministry of Interior and Municipalities (MoIM) (2025) Independent Municipal Fund transfers and distribution formula (MoIM administrative data and annual distribution decisions, as cited in text). Beirut: MoIM. <https://www.moim.gov.lb/> (Primary administrative source; the specific dataset/decreed cited remains to confirm.)

Ministry of Public Health Lebanon (MoPH) (2024) *Annual statistical report*. Beirut: MoPH. <https://www.moph.gov.lb/>

Ministry of Social Affairs (MoSA) and UNDP (2018) *Maps of Risks and Resources (MRR): Saida and South Lebanon*. Beirut: MoSA / UNDP. <https://www.undp.org/lebanon>

Municipality of Saida, MedCities and Barcelona City Council (2025) *Saida-Zahrani Urban Resilience Diagnosis: Phase I*. Prepared by the Hariri Foundation for Sustainable Human Development. Saida, Lebanon. <https://www.hariri-foundation.org/>

- Municipality of Saida-Zahrani (2024) *DRM Strategy Update, Union of Municipalities of Saida-Zahrani*. Saida: Municipality of Saida.
- Nader, M.R., Salloum, B.A. and Karam, N. (2008) 'Environment and sustainable development indicators in Lebanon: A practical municipal level approach', *Ecological Indicators*, 8(5), pp. 771–777. <https://doi.org/10.1016/j.ecolind.2007.09.006>
- Nardo, M., Saisana, M., Saltelli, A., Tarantola, S., Hoffman, A. and Giovannini, E. (2008) *Handbook on Constructing Composite Indicators: Methodology and User Guide*. Paris: OECD Publishing, with the European Commission Joint Research Centre. <https://doi.org/10.1787/9789264043466-en> (Cited in text both as “Nardo et al., 2008” and as “OECD and JRC, 2008”; these are the same source.)
- NIRAS (n.d.) Consultancy work in Lebanon’s solid-waste and local-governance sectors (including technical assistance to the EU Delegation in Beirut); cited alongside Arab Reform Initiative (2025) and LCPS in relation to municipal/union finance and the Independent Municipal Fund. Copenhagen: NIRAS. <https://www.niras.com/projects/lebanon-waste-sector-reforms/> (NIRAS confirmed as active in Lebanon; the specific municipal/union-finance study, date and URL remain to confirm.)
- Plume Labs / AccuWeather (2025) *Daily air quality observations: Saida coastal monitoring station*. New York: AccuWeather. <https://www.plumelabs.com/> (Also cited as “AccuWeather, 2025”.)
- Power-Technology (2022) ‘Power plant profile: Zahrani Combined Cycle Power Plant, Lebanon’, *Power Technology* (GlobalData), 12 January. <https://www.power-technology.com/data-insights/power-plant-profile-zahrani-combined-cycle-power-plant-lebanon/>
- phys.org / AFP (2014) Hussein, S. ‘In Lebanon, a garden blooms on former “trash mountain”’, Agence France-Presse, published by *Phys.org*, 11 December. <https://phys.org/news/2014-12-lebanon-garden-blooms-trash-mountain.html>
- Saida-Zahrani Diagnosis Team (2025) *Key Informant Interview Survey: Mayors of the Union of Saida-Zahrani*, survey instrument and response file (8 mayors, 9 responses; one municipality submitted twice). Saida: Saida Urban Observatory, Hariri Foundation. (Cited variously as “Saida-Zahrani Diagnosis Team, KII Mayors Survey, 8 mayors and 9 responses, 2025” and “Saida Urban Observatory, KII mayor survey, November 2025”.)
- Saida-Zahrani Diagnosis Team (2026) *Risk Synergies Methodology Workbook*. Saida: Saida Urban Observatory, Hariri Foundation.
- Salti, N. and Chaaban, J. (2010) ‘The role of sectarianism in the allocation of public expenditure in postwar Lebanon’, *International Journal of Middle East Studies*, 42(4), pp. 637–655. <https://doi.org/10.1017/S0020743810000851>
- Samaha, P. (2022) ‘Inter-municipal cooperation in Lebanon: A review’, *Lebanese Centre for Policy Studies*. <https://www.lcps-lebanon.org/>
- Sengupta, R. and Verma, S. (2022) *Co-producing urban resilience: Theory and practice*. London: Routledge. (Also cited as “Sengupta & Verma”.)

- TIMEP (2023) 'Local Governance in Lebanon: The Great Mirage', *The Tahrir Institute for Middle East Policy*, 18 May. <https://timep.org/2023/05/18/local-governance-in-lebanon-the-great-mirage/>
- Tversky, A. and Kahneman, D. (1973) 'Availability: A heuristic for judging frequency and probability', *Cognitive Psychology*, 5(2), pp. 207–232. [https://doi.org/10.1016/0010-0285\(73\)90033-9](https://doi.org/10.1016/0010-0285(73)90033-9)
- UN-Habitat (2017) *New Urban Agenda*. Nairobi: UN-Habitat (adopted at Habitat III, Quito, 2016). <https://habitat3.org/the-new-urban-agenda/>
- UN-Habitat (2018) *City Resilience Profiling Tool: Guide*. Nairobi: UN-Habitat. <https://urbanresiliencehub.org/wp-content/uploads/2018/02/CRPT-Guide.pdf> (In-text "CRPT, 2018" refers to this source.)
- UN-Habitat (2019) *City Resilience Action Plan: Asunción, Paraguay*. Nairobi: UN-Habitat. <https://unhabitat.org/>
- UN-Habitat (2020a) *City Resilience Action Plan: Teresina, Brazil*. Nairobi: UN-Habitat. <https://unhabitat.org/>
- UN-Habitat (2020b) *City Resilience Action Plan: Yakutsk, Russian Federation*. Nairobi: UN-Habitat. <https://unhabitat.org/>
- UN-Habitat (2022) *Municipal Finance Assessments: Policy Advocacy Report, Lebanon* (Municipal Empowerment and Resilience Project, with UNDP; launched May 2022 under the patronage of the Ministry of Interior and Municipalities). Beirut: UN-Habitat. <https://unhabitat.org/municipal-finance-assessments-policy-advocacy-report-lebanon>
- UN-Habitat (2023) *City Resilience Global Programme: Synthesis 2018–2023*. Nairobi: UN-Habitat. <https://unhabitat.org/programme/city-resilience-global-programme>
- UN-Habitat (2024) *Multilayered Vulnerability Assessment Handbook: Resilience planning for urban, biodiversity, and climate action*. Nairobi: UN-Habitat. <https://unhabitat.org/>
- UN-Habitat (n.d.) Terres de l'Ebre resilience profile, City Resilience Global Programme territorial pilot, Catalonia (the comparability reference for Sections 1.1 and 10.6). Barcelona: UN-Habitat Urban Resilience Hub. <https://urbanresiliencehub.org/> (CRGP pilot confirmed; exact publication title, year and URL to confirm.)
- UN-Habitat and UNICEF (2019) *Common neighbourhood approaches: Saida pilot*. Beirut: UN-Habitat / UNICEF. <https://unhabitat.org/>
- UN-Habitat Lebanon (2019) *Saida City Profile*. Beirut: UN-Habitat. <https://unhabitat.org/saida-city-profile>
- UN-Habitat Lebanon and ESCWA (2021) *Urban dynamics in Lebanon: Saida and the south coast*. Beirut: UN-Habitat / ESCWA. <https://www.unescwa.org/> (In-text "ESCWA, 2021" refers to this joint report.)

- UNDP and ReliefWeb (2016) 'From Shame to Fame... Saida Trash Mountain to Green Park', United Nations Development Programme, distributed via ReliefWeb, 25 April. <https://reliefweb.int/report/lebanon/shame-fame-saida-trash-mountain-green-park>
- UNDP and UNEP Lebanon (2007) *Marine pollution baseline assessment: Lebanese coast*. Beirut: UNDP / UNEP. <https://www.undp.org/lebanon>
- UNESCO (2019) *World Heritage tentative list: Saida historic urban centre*. Paris: UNESCO. <https://whc.unesco.org/en/tentativelists/>
- UNHCR (2024) *Lebanon: Inter-Agency 2024 Annual Report*. Beirut: UNHCR. <https://data.unhcr.org/en/country/lbn>
- United Nations Secretary-General (2023) *Implementation of Security Council resolution 1701 (2006) during the period from 21 June to 20 October 2023: Report of the Secretary-General*, UN document S/2023/879, 16 November. New York: United Nations Security Council. <https://docs.un.org/en/S/2023/879>
- UNRWA (2022) *Where we work: Lebanon, camp profiles*. Amman: UNRWA. <https://www.unrwa.org/where-we-work/lebanon>
- UNRWA (2023) Situation reports and UNRWA–OCHA Joint Sit-Rep series on the Ein el-Hilweh camp crisis (July–October 2023 clashes), covering displacement, health-referral arrangements and camp updates for Ain El-Helweh and Mieh w Mieh; see also the *Flash Appeal: Ein El Hilweh Crisis* (launched 3 August 2023). Amman/Beirut: UNRWA. <https://www.unrwa.org/resources/emergency-appeals/flash-appeal-ein-el-hilweh-crisis> (Multi-part sit-rep series; individual report numbers/dates to confirm as cited.)
- USAID and ReliefWeb (2023) *Lebanon: Complex Emergency Fact Sheet #4, Fiscal Year 2023*, USAID Bureau for Humanitarian Assistance (USAID/BHA), 30 September (documenting the 13 September Ein el-Hilweh displacement of c. 4,000 residents), distributed via ReliefWeb. Washington, DC: USAID. <https://reliefweb.int/report/lebanon/lebanon-complex-emergency-fact-sheet-4-fiscal-year-fy-2023-september-30-2023>
- Wilkinson, S. (2012) 'Risk perception and group decision-making', *Risk Analysis*, 32(1), pp. 95–113. <https://doi.org/10.1111/j.1539-6924.2011.01657.x>
- World Bank (2020) *Beirut Rapid Damage and Needs Assessment (RDNA)*. Washington, DC: World Bank (with the European Union and the United Nations). <https://www.worldbank.org/en/country/lebanon> (Cited in text as "World Bank RDNA, 2020".)
- World Bank (2021) *Lebanon Economic Monitor: The Great Denial*. Washington, DC: World Bank. <https://www.worldbank.org/en/country/lebanon/publication/lebanon-economic-monitor-fall-2021>
- World Bank (2023) *Lebanon Economic Monitor: The Normalization of Crisis is No Road to Stabilization*. Washington, DC: World Bank. <https://www.worldbank.org/en/country/lebanon/publication/lebanon-economic-monitor>

World Bank (2025) *Lebanon Power Sector Update*. Washington, DC: World Bank. <https://www.worldbank.org/en/country/lebanon>

World Food Programme (WFP) (2025) *Market Functionality Index: Lebanon Q3 2025*. Rome: WFP. <https://www.wfp.org/countries/lebanon>

Zittis, G., Hadjinicolaou, P., Klangidou, M., Proestos, Y. and Lelieveld, J. (2022) 'A multi-model, multi-scenario, and multi-domain analysis of regional climate projections for the Mediterranean', *Regional Environmental Change*, 22, article 121. <https://doi.org/10.1007/s10113-022-01952-w>