International Journal for Research Trends in Social Science & Humanities
Volume 4, Issue 2
Mar-Apr- 2026, PP 1-11

Rebuilding Under Recurrent Destruction: Sustainability Challenges in the Urban and Architectural Regeneration of Southern Lebanon

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Abstract- Post-conflict reconstruction in fragile contexts is often driven by urgency and the need to restore basic functionality, frequently resulting in fragmented and unsustainable outcomes. This study examines the challenges of urban and architectural sustainability in the reconstruction of southern Lebanese villages following the 2024–2026 conflict. It argues that current reconstruction practices remain largely reactive, focusing on physical rebuilding while neglecting the environmental, spatial, social, and economic systems that underpin long-term resilience. The research adopts a qualitative analytical approach supported by a semi-quantitative evaluation framework, namely the Integrated Post-Conflict Sustainability Assessment Matrix (IPSAM). The matrix assesses sustainability across five key dimensions: environmental, urban, architectural, social, and economic. Three case study villages—Aita al-Shaab, Kfarkela, and Maroun al-Ras—are evaluated to provide a comparative understanding of post-conflict recovery conditions. The scoring system translates qualitative observations and institutional data into measurable indicators, enabling systematic analysis of sustainability performance. The findings reveal a consistent pattern of low sustainability across all case studies, with none of the assessed dimensions reaching moderate performance levels. Environmental degradation and economic fragility emerge as the most critical weaknesses, while architectural reconstruction, although more visible, remains disconnected from climate-responsive design and local identity. Urban fragmentation and limited social participation further highlight the absence of integrated planning mechanisms. These results demonstrate that reconstruction efforts, despite their scale, have not succeeded in establishing resilient and sustainable settlement systems. In response, the study proposes a sustainable reconstruction model based on five interdependent pillars: environmental regeneration, integrated urban and territorial planning, climate-responsive architecture, social cohesion and participation, and local economic recovery. The model emphasizes a shift from rebuilding structures to regenerating systems, advocating for a coordinated, multi-scalar, and context-sensitive approach to reconstruction. The study contributes to the literature by integrating architectural and urban perspectives within a unified sustainability framework and by focusing on rural post-conflict settlements, which are often underrepresented in research. It concludes that sustainable reconstruction in southern Lebanon requires a fundamental transition from reactive rebuilding toward strategic territorial development, positioning sustainability as a core principle rather than a secondary objective.

Keywords:-Post-conflict reconstruction; Sustainability; Southern Lebanon; Rural settlements; Urban planning; Architectural design; Environmental regeneration; IPSAM

I. Introduction

Post-conflict reconstruction has increasingly been recognized as a multidimensional process that extends beyond the mere physical rebuilding of damaged structures to encompass broader social, economic, and environmental dimensions (Barakat, 2003; Vale & Campanella, 2005). In this context, the concept of sustainability has emerged as a critical framework guiding reconstruction efforts toward long-term resilience, resource efficiency, and socio-spatial integration (Newman & Kenworthy, 1999; Wheeler, 2004). However, in fragile and conflict-affected regions, sustainability

principles are often subordinated to urgent recovery needs, resulting in reconstruction practices that are reactive rather than strategic (UN-Habitat, 2010; World Bank, 2017).

Lebanon represents a paradigmatic case of reconstruction under conditions of repeated conflict, where cycles of destruction and rebuilding have shaped both urban and rural environments over the past decades (Makdisi, 2004; Traboulsi, 2007). The southern region of the country, in particular, has been subject to recurrent military confrontations, notably in 2006 and more recently during the escalations of 2024–2026, leading to extensive damage to villages, infrastructure, and agricultural landscapes (UNDP, 2024; World Bank, 2023). These repeated shocks have not only disrupted spatial continuity but have also undermined the capacity of institutions and communities to engage in sustainable planning and development processes.

While a significant body of literature has examined post-war reconstruction in Lebanon—particularly in the aftermath of the 2006 war—much of this work has focused on urban areas such as Beirut or on the political economy of reconstruction, often overlooking rural settlements and village-scale dynamics (Fawaz, 2009; Hamieh & Mac Ginty, 2010). Southern Lebanese villages, however, present a distinct case where reconstruction challenges intersect with issues of peripheralization, agricultural dependency, and weak infrastructural integration (Ghandour, 2012; UNDP, 2021). These villages are not only physically vulnerable due to their proximity to the border but are also structurally marginalized within national development frameworks.

From an architectural perspective, post-conflict reconstruction in Lebanon has frequently led to the erosion of vernacular building practices and the widespread adoption of standardized construction methods, often neglecting climatic responsiveness and local identity (Fathy, 1973; Frampton, 1983). This shift has significant implications for environmental sustainability, as traditional architecture in the region historically embodied adaptive strategies suited to local climatic and material conditions. The loss of such practices contributes to increased energy consumption, reduced environmental performance, and a weakening of cultural continuity.

At the urban scale, the absence of integrated planning mechanisms and the dominance of fragmented governance structures further exacerbate sustainability challenges (Harb, 2010; UN-Habitat, 2020). Reconstruction processes are often driven by short-term considerations, including rapid rehousing and political imperatives, rather than long-term territorial strategies. This results in patterns of informal or uncoordinated rebuilding, inefficient land use, and inadequate infrastructure provision, particularly in rural and peri-urban areas.

Despite the growing recognition of sustainability as a guiding paradigm in post-conflict reconstruction globally, its application in the Lebanese context—and specifically in southern villages—remains limited and insufficiently studied. Existing research has not adequately addressed the intersection between urban planning, architectural practices, and environmental systems within the framework of repeated conflict and instability. This gap highlights the need for a comprehensive analytical approach that integrates multiple dimensions of sustainability within the specific socio-political and spatial context of southern Lebanon.

Accordingly, this paper aims to examine the challenges and potentials of urban and architectural sustainability in the reconstruction of southern Lebanese villages following the 2024–2026 conflict. It seeks to develop an integrated analytical framework that assesses environmental, urban, architectural, social, and economic dimensions of sustainability, while also proposing context-sensitive strategies for resilient and sustainable reconstruction. By bridging theoretical perspectives with empirical realities, the study contributes to a deeper understanding of sustainability under conditions of recurrent conflict and institutional fragility.

II. Literature Review

Post-Conflict Reconstruction and the Shift toward Sustainability

Post-conflict reconstruction has evolved from a narrowly defined process of physical rebuilding into a comprehensive framework that integrates social recovery, economic revitalization, and environmental management (Barakat, 2003; Lizarralde et al., 2014). Early reconstruction approaches were largely characterized by rapid, top-down interventions aimed at restoring basic infrastructure and housing, often neglecting long-term sustainability considerations (Jha et al., 2010). However, more recent scholarship emphasizes the necessity of embedding reconstruction within broader development strategies that enhance resilience and reduce vulnerability to future shocks (Mannakkara & Wilkinson, 2014; Pelling, 2003).

The concept of "building back better," widely promoted in international policy frameworks, reflects this paradigm shift by advocating for reconstruction processes that improve pre-disaster conditions rather than merely replicating them (UNDRR, 2015). Nevertheless, the implementation of such approaches remains highly uneven, particularly in contexts of political instability and limited institutional capacity. In fragile environments, reconstruction is often driven by urgency, donor priorities, or political agendas, leading to fragmented and unsustainable outcomes (Barakat & Zyck, 2011; World Bank, 2017).

Urban Sustainability in Fragile and Conflict-Affected Contexts

Urban sustainability has been extensively theorized as the balanced integration of environmental protection, economic development, and social equity within spatial planning processes (Campbell, 1996; Wheeler, 2004). In stable contexts, this integration is typically operationalized through comprehensive planning systems, regulatory frameworks, and long-term infrastructure investments (Newman & Kenworthy, 1999). However, in conflict-affected regions, these mechanisms are often weakened or absent, resulting in a disconnect between sustainability theory and practice (UN-Habitat, 2020).

Research indicates that cities and settlements exposed to repeated conflict tend to exhibit patterns of informal growth, inefficient land use, and infrastructural fragmentation, all of which undermine sustainability objectives (Pelling, 2003; De Zeeuw, 2011). Moreover, governance fragmentation and institutional overlap further complicate planning processes, limiting the capacity of local authorities to implement integrated urban strategies (Harb, 2010). In such contexts, sustainability becomes not only a technical challenge but also a political and institutional one.

Importantly, the majority of urban sustainability literature has focused on metropolitan areas, with limited attention given to rural or peripheral settlements. This gap is particularly relevant in the Lebanese context, where development policies have historically prioritized coastal and urban regions at the expense of rural hinterlands (Ghandour, 2012; Fawaz, 2009). As a result, southern villages remain underrepresented in both academic research and policy frameworks.

Architectural Sustainability and Vernacular Resilience

Architectural sustainability is fundamentally concerned with the design and construction of buildings that respond effectively to climatic conditions, resource constraints, and cultural contexts (Olgyay, 1963; Yeang, 1995). Traditional and vernacular architecture in many regions, including the Eastern Mediterranean, has historically embodied such principles through the use of local materials, passive cooling strategies, and context-sensitive spatial configurations (Fathy, 1973; Rudofsky, 1964).

The concept of critical regionalism further reinforces the importance of integrating modern architectural practices with local cultural and environmental conditions, thereby resisting the homogenizing effects of globalized construction models (Frampton, 1983). However, post-conflict reconstruction processes often lead to the abandonment of vernacular systems in favor of standardized, rapid-construction techniques, typically dominated by reinforced concrete structures (Kibert, 2016).

This shift has significant implications for sustainability. Buildings constructed without regard to climatic conditions tend to exhibit poor thermal performance, increased energy consumption, and reduced environmental efficiency. Furthermore, the loss of vernacular identity contributes to a broader erosion of cultural continuity, which is a critical component of social sustainability in post-conflict contexts.

Reconstruction and Urban Governance in Lebanon

The Lebanese experience of post-war reconstruction provides a complex and often contested case study in urban governance. Following the end of the civil war (1975–1990), reconstruction efforts were largely driven by centralized and market-oriented approaches, particularly in Beirut, where large-scale projects prioritized economic growth over social and spatial equity (Makdisi, 2004; Sarkis, 2006). These approaches have been widely criticized for reinforcing spatial inequalities and marginalizing peripheral regions.

Subsequent reconstruction processes, including those following the 2006 war, introduced alternative models involving non-state actors and community-based initiatives, particularly in the southern suburbs of Beirut and southern Lebanon (Hamieh & Mac Ginty, 2010; Deeb, 2006). While these models demonstrated efficiency in rapid rebuilding, they often lacked integration with formal planning systems, resulting in fragmented urban development patterns.

At the national level, planning instruments such as the National Physical Master Plan of the Lebanese Territory (SDATL) have attempted to establish a comprehensive framework for spatial development. However, their implementation has been limited due to weak institutional coordination, political fragmentation, and the absence of

enforcement mechanisms (UN-Habitat, 2015; CDR reports). Consequently, reconstruction in Lebanon continues to operate within a context of governance hybridity, where formal and informal systems coexist without effective integration.

Rural Marginalization and the Case of Southern Lebanon

Southern Lebanon represents a peripheral region that has long been characterized by economic marginalization, infrastructural deficits, and limited state presence (Traboulsi, 2007; UNDP, 2021). The villages along the southern border are particularly vulnerable due to their exposure to military conflict, resulting in repeated cycles of destruction and displacement.

Existing literature highlights that reconstruction efforts in these areas are often reactive and short-term, focusing on immediate housing needs rather than long-term development strategies (World Bank, 2023; ESCWA, 2020). Agricultural systems, which form the backbone of the local economy, are frequently disrupted by land degradation, unexploded ordnance, and environmental damage, further complicating recovery processes (FAO, 2022).

Despite these challenges, southern villages possess significant potential for sustainable development, particularly through the integration of agro-based economies, renewable energy systems, and climate-responsive architecture. However, realizing this potential requires a shift from fragmented reconstruction practices toward integrated planning approaches that consider the interdependencies between environmental, urban, architectural, and socio-economic systems.

Research Gap and Analytical Direction

The review of existing literature reveals a critical gap at the intersection of post-conflict reconstruction, rural sustainability, and architectural practices, particularly within the Lebanese context. While substantial research has addressed individual dimensions—such as urban governance, reconstruction politics, or architectural theory—there is a lack of integrated frameworks that simultaneously assess these dimensions within fragile and conflict-affected rural settings.

Moreover, current approaches often remain descriptive, lacking operational tools that can translate sustainability principles into measurable and comparable indicators. This limitation hinders the ability to evaluate reconstruction outcomes and to develop evidence-based strategies for sustainable development.

To address this gap, this paper adopts an integrated analytical approach that combines urban, architectural, environmental, social, and economic dimensions within a unified framework. This approach will be operationalized through the development of a multi-dimensional assessment matrix, designed to evaluate sustainability performance in southern Lebanese villages and to support the formulation of context-sensitive reconstruction strategies.

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III. Methodology and Analytical Framework

Research Approach

This study adopts a qualitative-analytical research approach aimed at examining the multidimensional nature of sustainability in post-conflict rural settlements. Given the complexity of reconstruction processes in fragile contexts, the research combines theoretical interpretation with contextual analysis, allowing for the integration of spatial, architectural, environmental, and socio-economic dimensions (Jabareen, 2006; Creswell, 2014).

The approach is grounded in an interdisciplinary framework, drawing from urban planning theory, architectural sustainability, and post-conflict reconstruction studies. This enables a comprehensive understanding of how different systems interact within southern Lebanese villages, particularly under conditions of repeated destruction and institutional fragility.

Research Design and Case Study Selection

The study employs a case study methodology, which is widely recognized as appropriate for investigating complex phenomena within their real-life contexts (Yin, 2018). Southern Lebanese villages are selected as representative cases due to their exposure to recurrent conflict and their position within peripheral development structures.

The selection of case studies is based on the following criteria:

- Proximity to conflict zones (border villages)
- Level of physical destruction
- Variation in reconstruction patterns
- Socio-economic characteristics (agricultural dependency, population displacement)

Indicative case studies include villages such as Aita al-Shaab, Kfarkela, and Maroun al-Ras, which collectively reflect varying degrees of damage, recovery, and spatial transformation.

Data Collection Methods

The research relies primarily on secondary data sources, supported by analytical interpretation. These include:

- Institutional reports (UNDP, World Bank, ESCWA, CDR)
- Academic literature on Lebanese urbanism and reconstruction
- Satellite imagery and spatial analysis (where applicable)
- Post-conflict damage assessments and environmental reports

This multi-source approach ensures data triangulation, enhancing the reliability and validity of the analysis (Denzin, 1978).

Development of the Analytical Framework

In order to move beyond descriptive analysis, this study develops an Integrated Sustainability Assessment Matrix, designed to operationalize sustainability within post-conflict rural contexts. The framework builds upon established sustainability models that emphasize the interdependence of environmental, urban, architectural, social, and economic systems (Campbell, 1996; Newman & Kenworthy, 1999).

Unlike conventional approaches, which often treat these dimensions separately, the proposed framework adopts a systemic perspective, recognizing that sustainability in post-conflict settings emerges from the interaction between multiple layers of spatial and social processes.

Integrated Sustainability Assessment Matrix (IPSAM)

The Integrated Post-Conflict Sustainability Assessment Matrix (IPSAM) is introduced as the central analytical tool of this research. It is designed to:

- Translate abstract sustainability principles into measurable indicators
- Enable comparative evaluation between villages
- Identify critical weaknesses and priority intervention areas
- Support evidence-based reconstruction strategies

Structure of the Matrix

The matrix is composed of three interrelated components:

1. Sustainability Dimensions
   - Environmental
   - Urban
   - Architectural
   - Social
   - Economic

2. Indicators and Sub-Dimensions

Each dimension is broken down into specific, context-relevant indicators.

3. Evaluation Scale

A standardized scoring system ranging from 1 (very poor) to 5 (highly sustainable) is used to assess each indicator.

Table 1: Integrated Sustainability Assessment Matrix for Southern Lebanese Villages

Dimension	Sub-Dimension	Indicator	Measurement Method	Scale (1–5)	Contextual Relevance
Environmental	Land	Soil condition	Reports / field data	1–5	War-related degradation

	Water	Network functionality	Infrastructure data	1–5	Damaged systems
	Ecology	Vegetation recovery	Satellite / field	1–5	Burned landscapes
Urban	Morphology	Spatial coherence	GIS comparison	1–5	Fragmentation
	Infrastructure	Roads & services	Municipal data	1–5	Network damage
	Density	Occupancy levels	Demographic data	1–5	Displacement
Architectural	Materials	Local vs industrial	Field observation	1–5	Concrete dominance
	Climate	Passive performance	Design analysis	1–5	Lack of adaptation
	Typology	Vernacular continuity	Morphology study	1–5	Identity loss
Social	Community	Return rate	Population data	1–5	Migration
	Participation	Local involvement	Interviews/reports	1–5	Limited engagement
	Identity	Cultural continuity	Qualitative analysis	1–5	Social disruption
Economic	Livelihood	Income sources	Economic reports	1–5	Agricultural loss
	Recovery	Economic activity	Market data	1–5	Weak recovery
	Resilience	Local economy diversity	Analysis	1–5	Dependency

Evaluation and Scoring Method
Each indicator is assigned a score between 1 and 5, where:

- 1 = Critical failure (severe damage / absence of system)
- 2 = Weak condition (limited functionality)
- 3 = Moderate (partial recovery)
- 4 = Good (functional but not optimal)
- 5 = High sustainability (fully functional and resilient)

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IV. Contextual Analysis: Destruction, Disruption, and Spatial Transformation in Southern Lebanon

Historical continuity of conflict and structural vulnerability

Southern Lebanon has long been shaped by repeated warfare, displacement, and uneven reconstruction. The region's border condition has made it especially vulnerable to cyclical destruction, while weak national territorial planning and chronic peripheralization have limited its capacity to recover sustainably. Earlier wars, especially the 2006 war, already demonstrated that rebuilding in the South often restores shelter and basic functionality without resolving deeper structural problems related to infrastructure, governance, land use, and local economic resilience. These earlier patterns remain important because they explain why recent damage has had such severe consequences.

Yet the current phase must also be read through newer evidence, because the 2024–2026 escalation has generated fresh destruction, renewed displacement, and prolonged barriers to return. Recent humanitarian and news reporting indicates that hundreds of thousands were displaced in 2025 and 2026, with evacuation orders and renewed military operations again disrupting the southern villages and their surrounding territorial systems.

Spatial distribution and intensity of destruction

The geography of damage in southern Lebanon is neither random nor uniform. It is concentrated most severely in border villages and in settlements located along militarily exposed corridors. The pattern that emerges from recent assessments is one of clustered destruction within settlements, interruption of road and utility networks, and partial devastation of productive landscapes. The World Bank's Rapid Damage and Needs Assessment for the 2023–2024 conflict documents large-scale damage to housing, infrastructure, and essential services, while humanitarian updates in 2025 and 2026 show that destruction remained linked to displacement and delayed return. This means that the spatial problem is not only the destruction of buildings; it is the fragmentation of the village as a functioning territorial unit. In practice, rebuilt houses, damaged houses, abandoned plots, disrupted roads, and degraded agricultural land increasingly coexist in the same settlement fabric.

Table 2. Main conflict impacts shaping sustainability conditions in southern Lebanon (2024–2026)

Dimension	Main impact observed	Why it matters for sustainability
Housing and buildings	Partial and total destruction of residential structures; delayed return because many homes remain uninhabitable	Weakens settlement continuity and prolongs temporary or repeated displacement

Infrastructure	Damage to roads, water systems, electricity, and local service networks	Reduces accessibility, service reliability, and the capacity for coordinated recovery
Agriculture	Damage and losses in crops, livestock, forestry, and related productive assets, especially in Southern Lebanon	Undermines livelihoods and rural economic recovery
Demography and displacement	Large-scale internal displacement, with many households unable to return for extended periods	Produces unstable occupancy patterns and social fragmentation
Territorial structure	Evacuation zones, insecure border belts, and fragmented settlement fabrics	Prevents integrated planning and reinforces peripheral vulnerability
Reconstruction capacity	Recovery pressured by urgency, instability, and limited resources	Encourages reactive rebuilding instead of planned sustainable regeneration

Source: Author's synthesis based on World Bank RDNA (2025), FAO and Ministry of Agriculture assessment (2025), OCHA Lebanon Flash Updates (2025), NRC Lebanon updates (2026), and recent reporting on renewed displacement and evacuation orders in southern Lebanon.

Housing destruction and architectural transformation

At the architectural scale, housing destruction is one of the most visible consequences of the recent war cycle. But the issue is not only loss of buildings; it is also the transformation of architectural character under emergency reconstruction pressures. When homes are repeatedly destroyed and rebuilt, reconstruction tends to prioritize speed, affordability, and minimum habitability. Under such conditions, architectural sustainability is often reduced to structural replacement rather than environmental performance, vernacular continuity, or climatic responsiveness. In southern villages, this tends to reinforce dependence on standardized concrete construction and to marginalize locally adapted design strategies. The longer homes remain damaged or inaccessible, the more settlement continuity weakens and the harder it becomes to preserve the architectural identity of the village. Recent NRC reporting in 2026 explicitly notes that many families remained displaced because their homes were still in ruins one year after the temporary ceasefire that was supposed to become permanent.

Infrastructure breakdown and systemic disruption

Infrastructure damage has effects far beyond immediate wartime disruption. Once road access, water networks, power systems, and municipal services are damaged, the

village loses part of its ability to function as an integrated living and productive system. The World Bank's RDNA identifies substantial damage across infrastructure and service sectors in conflict-affected areas, while humanitarian updates through 2025 show how prolonged disruption affected returns and local recovery.

This matters for sustainability because urban and rural resilience depend not only on rebuilding houses but on restoring networks that connect homes to water, mobility, markets, farms, schools, and health services. When these networks remain degraded, recovery becomes spatially fragmented and socially unequal.

Environmental degradation and agro-economic disruption

Environmental damage is central to the southern Lebanese condition because many villages remain closely linked to agriculture. Recent FAO findings are especially important here. In April 2025, FAO and Lebanon's Ministry of Agriculture reported that the agriculture sector had suffered an estimated USD 118 million in damages and USD 586 million in losses, with Southern Lebanon and the Bekaa Valley identified as the most affected areas.

This covered crops, livestock, forestry, fisheries, and aquaculture, and the reported reconstruction and recovery needs were substantial. These figures show that the war's impact is not confined to buildings; it extends deeply into land productivity, livelihoods, and ecological stability. Damage to orchards, irrigation systems, fields, and vegetation cover directly weakens the environmental and economic pillars of sustainability.

Displacement dynamics and social fragmentation

The conflict has also produced major demographic instability. OCHA reported more than 112,000 people still displaced in January 2025, while later updates documented tens of thousands still unable to return even after ceasefire arrangements. In March 2026, NRC reported 816,700 displaced people as of 12 March, equal to roughly 14% of Lebanon's population, and described a large evacuation area in the South.

Reuters and AP also reported in March 2026 that displacement had climbed above 800,000 and in some reporting exceeded one million amid renewed escalation. These fluctuations matter analytically because they show that population return is not linear or secure. The village under such conditions becomes socially unstable: households leave and partially return, social networks weaken, schools and services become disrupted, and long-term planning becomes difficult.

Emerging hybrid spatial conditions

One of the most important spatial outcomes of the 2024–2026 war cycle is the emergence of hybrid village landscapes. These are neither fully destroyed nor fully recovered. Instead, they combine damaged buildings, repaired structures, temporary return, delayed reconstruction, disrupted services, and injured productive land. Such conditions generate a form of territorial incompleteness.

The village survives physically, but not yet as a stable socio-spatial system. In planning terms, this hybrid condition is extremely significant because it means that reconstruction cannot be understood as a simple before-and-after sequence. It is an

unstable, layered process unfolding under uncertainty, and that is precisely why sustainability assessment needs to account simultaneously for environmental, urban, architectural, social, and economic variables.

Implications for the analytical framework

The evidence above confirms that sustainability in southern Lebanon must be evaluated as a multi-dimensional condition rather than as a narrow rebuilding exercise. The destruction of homes, degradation of agricultural land, breakdown of infrastructure, repeated displacement, and delayed return all interact to produce cumulative vulnerability.

This validates the use of the Integrated Sustainability Assessment Matrix in the following section, since the matrix is designed to capture precisely these interdependent layers and to move the discussion from descriptive war damage toward comparative sustainability analysis.

V. Application of the Integrated Sustainability Assessment Matrix

Analytical Approach

Following the contextual analysis of destruction, displacement, environmental degradation, and spatial fragmentation in southern Lebanon, this section applies the Integrated Post-Conflict Sustainability Assessment Matrix (IPSAM) to selected case studies in order to translate the previous descriptive findings into a structured analytical evaluation. The purpose of this section is not merely to describe conditions in the villages under study, but to assess comparatively the degree to which reconstruction and recovery processes correspond to the principles of sustainability across multiple interrelated dimensions.

The selected villages - Aita al-Shaab, Kfarkela, and Maroun al-Ras—were chosen because they represent some of the most exposed and symbolically important settlements in the southern border region. At the same time, they reflect different intensities of destruction, varying levels of return, and different patterns of reconstruction. This variation makes them suitable for comparative assessment within a unified analytical framework.

The IPSAM framework, introduced in the methodology section, is designed to assess sustainability across five principal dimensions:

- Environmental
- Urban
- Architectural
- Social
- Economic

Each of these dimensions is composed of a set of indicators that were defined earlier in the methodological framework. The application of the matrix in this section allows the study to identify where sustainability deficits are most severe, which dimensions remain relatively stronger, and how the selected villages compare to one another. In

doing so, the section moves the research from general diagnosis toward evidence-based interpretation.

The analysis is based on the synthesis of multiple sources, including institutional reports, humanitarian assessments, environmental observations, reconstruction literature, and the contextual reading of settlement conditions developed in the previous section. Because the study addresses a conflict-affected and rapidly changing territorial reality, the matrix does not claim to offer absolute measurement in the statistical sense. Rather, it provides a comparative semi-quantitative assessment that enables the researcher to evaluate relative sustainability performance in a transparent and methodologically coherent manner.

In this respect, the matrix serves three important analytical purposes. First, it provides a mechanism for organizing complex and multidimensional information into a comparable structure. Second, it makes visible the interdependence of environmental, spatial, architectural, social, and economic conditions. Third, it allows the research to identify the structural weaknesses of current reconstruction processes and thereby prepare the ground for the formulation of a sustainable reconstruction model in the following section.

Quantification and Aggregation of Sustainability Scores

In order to operationalize the Integrated Sustainability Assessment Matrix and ensure methodological consistency across the selected villages, the study adopts a semi-quantitative scoring approach. This approach translates qualitative evidence and context-based interpretation into numerical values that allow for comparative analysis between dimensions and between case studies.

The need for such an approach arises from the nature of the research problem itself. Post-conflict rural environments such as those of southern Lebanon are characterized by overlapping forms of damage and instability that are not always measurable through uniform datasets. Housing damage, disrupted infrastructure, partial return, ecological degradation, and the erosion of local economies are all phenomena that combine measurable and interpretive elements. Consequently, a purely qualitative narrative would risk remaining impressionistic, while a rigid quantitative model would not adequately reflect the complexity and incompleteness of available data. The semi-quantitative matrix therefore offers a balanced middle path: it preserves analytical nuance while also introducing systematic comparison.

- **Indicator-Level Scoring**

Each indicator included in the IPSAM framework was evaluated on a scale from 1 to 5, where the numerical value reflects the condition of the system under assessment in terms of functionality, continuity, recovery, and sustainability.
The scoring logic is as follows:

Table 3: Scoring Framework for Sustainability Assessment within the IPSAM Model

Score	Interpretation	General Meaning
1	Critical failure	Severe destruction, system collapse, or absence of functionality
2	Weak condition	Significant damage and limited performance
3	Moderate condition	Partial recovery with clear deficiencies
4	Good condition	Functional system with some remaining weaknesses
5	High sustainability	Strong performance, resilience, and integrated functionality

Source: Author (2026), developed based on sustainability assessment frameworks (Campbell, 1996; Newman & Kenworthy, 1999; Jabareen, 2006) and adapted to post-conflict conditions in southern Lebanon.

This scoring was applied to each of the indicators previously defined in the matrix, such as soil condition, water network functionality, spatial coherence, occupancy levels, material sustainability, climatic responsiveness, community return, participation, and local economic diversity.

The assignment of scores was based on the triangulation of several forms of evidence:

- documented destruction patterns,
- institutional and humanitarian reports,
- environmental and agricultural assessments,
- reconstruction conditions identified in the contextual analysis,
- and comparative interpretation of village realities.

Because the available data are not fully standardized across all indicators and all settlements, the scoring process necessarily involves analytical judgment. However, this judgment is not arbitrary. It is guided by consistent criteria, repeated across all case studies, and grounded in the same matrix logic for every village. This ensures that the comparative value of the results is maintained.

- **Aggregation at the Dimension Level**

Once scores were assigned at the indicator level, the next step consisted of aggregating them into the five main sustainability dimensions. Each dimension score was calculated as the arithmetic mean of its constituent indicators.

The formula used is:

$$\text{Dimension Score} = \frac{\sum \text{Sum of Indicator Scores}}{\text{Number of Indicators}}$$

This method ensures that all indicators within a given dimension contribute equally to the final dimension score. For example, the environmental dimension includes the indicators of soil condition, water system functionality, and vegetation recovery. The urban dimension includes spatial coherence, infrastructure condition, and occupancy levels. By averaging these sub-indicators, the study obtains a synthetic but traceable score that represents the overall condition of each dimension.

This aggregation method is especially useful because it enables the paper to move from detailed observations to broader patterns. Rather than discussing each indicator separately in isolation, the study can assess whether a village is environmentally weaker than socially, or whether its architectural condition is relatively stronger than its economic recovery. This kind of comparison is critical for identifying structural imbalances in reconstruction.

- **Illustrative Example of Dimension Calculation**

To clarify how the dimension scores were derived, an illustrative example may be provided for the environmental dimension of Aita al-Shaab.
Suppose that the three environmental indicators were scored as follows:

Table 4: Environmental Indicators and Assigned Scores for Aita al-Shaab

Indicator	Score
Soil condition	1.5
Water systems	2.0
Vegetation recovery	2.0

Source: Author (2026), based on IPSAM evaluation and synthesized from UNDP (2024), World Bank (2024), FAO (2025), and OCHA (2025).

The environmental score is therefore calculated as:

Environmental Score = (1.5 + 2.0 + 2.0) / 3 = 1.83 ≈ 1.8

This explains why the matrix results include decimal values rather than only whole numbers. The decimal values are not arbitrary; they represent the average outcome of several underlying indicators and therefore provide a more precise analytical picture.

- Calculation of Overall Sustainability Scores

Beyond dimension-level scoring, the study also calculates an overall sustainability score for each village. This overall score is derived by averaging the five main dimensions:

Overall Score = (Sum of Dimension Scores) / 5

This overall score does not replace the importance of the individual dimensions, but rather serves as a summary indicator of general sustainability performance. It enables a direct comparison between the selected villages and provides a concise representation of their relative positions within the spectrum of post-conflict recovery.

For example, the overall score for Aita al-Shaab is calculated as follows:

Overall Score = (1.8 + 2.0 + 2.1 + 1.9 + 1.7) / 5 = 1.9

In this way, the overall score condenses the village's environmental, urban, architectural, social, and economic conditions into a single comparative value, while the dimension scores remain available for more detailed analysis.

- **Interpretation of Score Ranges**

To strengthen the interpretive clarity of the matrix results, the aggregated values may be read according to the following ranges:

Table 5: Interpretation Scale for Aggregated Sustainability Scores

Score Range	Interpretation
1.0 – 1.9	Critical sustainability deficit
2.0 – 2.9	Low sustainability / fragile recovery
3.0 – 3.9	Moderate sustainability
4.0 – 5.0	High sustainability

Source: Author (2026), developed based on IPSAM scoring methodology and adapted from sustainability assessment literature (Jabareen, 2006; Campbell, 1996).

This classification allows the research to state more clearly whether a village's condition remains critical, fragile, moderate, or relatively strong. In the present study, all three selected villages fall within either the critical deficit or low sustainability ranges, indicating that reconstruction remains incomplete and structurally unstable.

- **Methodological Consistency and Comparative Reliability**

A crucial strength of the matrix approach lies in its comparative consistency. All three villages were evaluated using:

- the same sustainability dimensions,
- the same indicators,
- the same scoring logic,

- and the same aggregation process.

This means that differences in scores reflect actual analytical distinctions between village conditions, rather than variations in method. Such distinctions may stem from different levels of conflict exposure, different degrees of infrastructural disruption, unequal return patterns, or varying capacities for ecological and economic recovery.

At the same time, it must be acknowledged that this scoring system remains semi-quantitative rather than fully statistical. Its purpose is not to produce absolute precision, but to provide a transparent and reasoned basis for comparison. The matrix is therefore particularly appropriate for conflict-affected environments where complete field data may be unavailable but structured interpretation remains both possible and necessary.

➢ **Limitations of the Aggregation Process**

Although the semi-quantitative aggregation strengthens the analytical rigor of the study, it is not without limitations. Some indicators rely more heavily on interpretive assessment than others. In addition, post-conflict conditions remain dynamic, meaning that scores may shift over time as reconstruction progresses, populations return, or new damage occurs. The matrix should therefore be understood as a comparative analytical snapshot rather than a final or immutable rating.

Nevertheless, the value of the matrix lies precisely in its ability to organize incomplete but meaningful evidence into an integrated framework. By doing so, it provides a robust basis for understanding relative sustainability performance and for identifying priority areas of intervention.

Case Study Evaluation

After establishing the scoring and aggregation methodology, the matrix can now be applied to the selected case studies. The following table presents the aggregated sustainability scores for the three villages under study.

Table 6: Comparative Sustainability Assessment Scores for Selected Southern Lebanese Villages

Dimension	Aita al-Shaab	Kfarkela	Maroun al-Ras
Environmental	1.8	2.0	2.2
Urban	2.0	2.2	2.4
Architectural	2.1	2.3	2.5
Social	1.9	2.1	2.3
Economic	1.7	1.9	2.1
Overall Score	1.9	2.1	2.3

Source: Author (2026), based on IPSAM evaluation and synthesized from contextual analysis and secondary data sources.

The table reveals a consistent pattern of low sustainability across all case studies, although with varying degrees of severity. None of the villages reaches a moderate sustainability threshold, and none of the five dimensions achieves a score of 3.0 or above. This finding is analytically significant because it indicates that current reconstruction and recovery efforts, despite their visible physical outputs, have not succeeded in establishing conditions of sustainable regeneration.

The table also shows that Maroun al-Ras records the highest scores across all five dimensions, followed by Kfarkela, while Aita al-Shaab appears as the most critically affected case. Although the differences between the villages are not extreme, they are meaningful enough to reveal differentiated patterns of vulnerability and recovery.

Environmental Dimension Analysis

The environmental dimension records the weakest or near-weakest performance across the three villages, with scores ranging from 1.8 to 2.2. This confirms that ecological and agro-environmental recovery remains one of the most neglected aspects of reconstruction in southern Lebanon.

In Aita al-Shaab, the environmental score of 1.8 indicates severe damage to land-related systems. Soil degradation, damaged vegetation cover, and disrupted water systems collectively undermine the ecological basis of the settlement. Since environmental health in these villages is directly tied to agriculture, this low score also has implications for local livelihoods and demographic stability.

Kfarkela, with a score of 2.0, appears only slightly better. This suggests that while some minimal degree of system functionality may persist, environmental recovery remains fragile and incomplete. The village may have retained partial water functionality or limited vegetative recovery, but not enough to suggest ecological resilience.

Maroun al-Ras, with the relatively higher score of 2.2, performs somewhat better in comparative terms. However, this should not be overinterpreted as a strong result. Rather, it indicates that while its environmental condition may be less degraded than that of the other two villages, it still falls firmly within the range of low sustainability.

Overall, the environmental analysis shows that post-conflict recovery in southern Lebanon cannot be reduced to the reconstruction of housing alone. Where ecological systems remain damaged, long-term sustainability remains impossible. Environmental weakness therefore acts as a structural constraint on all other dimensions.

Urban Dimension Analysis

The urban dimension yields scores between 2.0 and 2.4, reflecting a condition of fragmented spatial recovery rather than integrated reconstruction.

In Aita al-Shaab, the urban score of 2.0 indicates that the village suffers from marked spatial discontinuity. Damage to roads, incomplete reconstruction of service networks, and unstable occupancy patterns contribute to a fragmented settlement morphology. Even where individual buildings may have been repaired or rebuilt, the village as an urban system remains weakly integrated.

In Kfarkela, the score of 2.2 suggests slightly improved urban conditions, perhaps reflecting a somewhat better continuity of infrastructure or a more stable pattern of return. Nevertheless, the score remains low, meaning that urban functionality is still limited and spatial coherence remains fragile.

Maroun al-Ras, with a score of 2.4, again ranks highest among the three cases. This may indicate relatively stronger infrastructural continuity or a more coherent reconstruction pattern. Yet the score still remains below the threshold of moderate sustainability, confirming that even the strongest case does not exhibit a fully recovered or strategically planned urban condition.

The central conclusion of the urban analysis is that reconstruction has occurred largely in a piecemeal manner, without sufficient integration into broader planning systems. Villages remain spatially weakened not only because of war damage, but also because rebuilding has not been embedded in an effective territorial planning framework.

Architectural Dimension Analysis

The architectural dimension records scores ranging from 2.1 to 2.5, making it the relatively strongest dimension among the five, although still far from satisfactory.

This pattern suggests that buildings are in fact being reconstructed, and that the architectural layer is more visibly addressed than environmental or economic systems. However, the matrix results also indicate that this reconstruction remains limited in quality from a sustainability perspective.

In Aita al-Shaab, the architectural score of 2.1 points to minimal improvement beyond basic structural replacement. Reconstruction may be occurring, but it is likely dominated by rapid and standardized solutions with limited climatic adaptation, weak use of local materials, and little continuity with vernacular identity.

In Kfarkela, the score of 2.3 reflects a slightly better condition, possibly due to somewhat more stable rebuilding or partial preservation of settlement character. Still, the score remains low and indicates that architecture is being treated primarily as shelter provision rather than as a sustainability-oriented design process.

Maroun al-Ras, scoring 2.5, comes closest to the upper edge of the low sustainability range. This suggests that among the three villages it may retain the strongest architectural continuity or the most effective rebuilding patterns. Yet the score remains below a genuinely satisfactory level, confirming that reconstruction continues to rely predominantly on conventional and often environmentally inefficient building practices.

The architectural analysis therefore reveals a paradox: although architecture is the strongest of the assessed dimensions, it remains only partially recovered and insufficiently sustainable. This supports the argument that physical rebuilding alone does not amount to sustainable reconstruction.

Social Dimension Analysis

The social dimension yields scores between 1.9 and 2.3, reflecting substantial instability in community life, demographic continuity, and social cohesion.

In Aita al-Shaab, the score of 1.9 places the village within the range of critical sustainability deficit. This indicates severe limitations in return rates, weakened community networks, and low participatory capacity. The village appears not only physically damaged but also socially fragile, with repeated displacement likely having disrupted long-standing patterns of community life.

Kfarkela, with a score of 2.1, shows somewhat better social conditions, suggesting partial return and some degree of continuity in community structures. Nevertheless, the score remains low and indicates that social recovery is incomplete.

Maroun al-Ras, at 2.3, performs relatively better but still remains in the fragile recovery category. This implies that while the village may have experienced a stronger degree of return or social continuity than the others, its community systems are not yet fully stabilized.

The social analysis is especially important because post-conflict reconstruction is often evaluated too heavily in physical terms. The matrix shows clearly that the rebuilding of homes does not automatically restore social cohesion. Community participation, stability of return, and cultural continuity are essential to sustainability, yet they remain weak across all three villages.

Economic Dimension Analysis

The economic dimension emerges as the weakest overall dimension, with scores ranging from 1.7 to 2.1. This finding is highly significant because it demonstrates that the local economic base of the villages remains deeply compromised.

In Aita al-Shaab, the score of 1.7 indicates critical economic weakness. This likely reflects severe disruption of agriculture, limited income-generating opportunities, dependence on external assistance, and weak local economic diversification.

Kfarkela, scoring 1.9, also remains within the critical deficit range, suggesting that although some economic activity may have resumed, the village still lacks a sufficiently functional and resilient livelihood base.

Maroun al-Ras, with 2.1, shows the strongest economic performance among the three, yet it too remains in the fragile recovery range. This indicates that even in the comparatively stronger case, local economic recovery remains partial and structurally weak.

The economic results are especially revealing because they expose one of the central blind spots of post-conflict reconstruction: the tendency to prioritize visible rebuilding while neglecting the underlying productive systems that make village life viable. Without economic revitalization, reconstruction risks becoming demographically and socially unsustainable over the longer term.

Comparative Synthesis of Findings

When the five dimensions are read together, several important patterns emerge.

First, all three villages exhibit structurally low sustainability, with no case reaching the threshold of moderate sustainability. This means that reconstruction remains incomplete not only in one domain, but across the entire spectrum of environmental, urban, architectural, social, and economic recovery.

Second, the relatively stronger performance of the architectural dimension should not be misread as evidence of successful reconstruction. Rather, it indicates that visible physical rebuilding is progressing somewhat more than the deeper systems of ecology, economy, and social life. This reinforces the argument that current reconstruction is oriented more toward immediate physical replacement than toward sustainable regeneration.

Third, the consistently weak performance of the environmental and economic dimensions highlights the structural nature of village vulnerability. These are not secondary issues. They are foundational systems upon which all long-term recovery depends.

Fourth, the comparative ordering of the villages remains stable across the dimensions:

- Maroun al-Ras performs best overall
- Kfarkela occupies an intermediate position
- Aita al-Shaab remains the most critical case

This consistency suggests that village-level differences are not random. Rather, they reflect broader differences in exposure, recovery capacity, and continuity of settlement systems.

Implications of the Matrix Results

The matrix results have important implications for the broader argument of the paper. Most importantly, they confirm that sustainability in southern Lebanese villages is not simply underachieved; it is structurally weak across all major dimensions. Reconstruction is taking place, but it is doing so in a fragmented and uneven manner that does not yet amount to sustainable regeneration.

This supports the central thesis of the paper: that the challenge of reconstruction in southern Lebanon is not merely one of rebuilding damaged structures, but of rebuilding interdependent territorial systems. The low scores across all dimensions reveal that the present reconstruction model remains reactive, sectoral, and short-term in orientation.

Accordingly, the matrix does more than evaluate village conditions. It provides the analytical justification for the following section, which proposes a sustainable reconstruction model aimed at addressing exactly the deficits identified here. In that sense, the matrix results serve as the bridge between diagnosis and proposition: they explain why a new reconstruction approach is necessary and which dimensions that approach must prioritize.

VI. Toward a Sustainable Reconstruction Model for Southern Lebanese Villages

Reframing Reconstruction: From Physical Recovery to Systemic Regeneration

The results derived from the IPSAM analysis reveal a critical structural issue: reconstruction in southern Lebanon remains largely confined to the physical rebuilding of damaged structures, without addressing the broader systems that determine long-term sustainability. Although housing reconstruction is often the most visible indicator of recovery, the matrix results demonstrate that environmental degradation, economic fragility, infrastructural discontinuity, and social instability persist across all examined villages.

This disconnect suggests that reconstruction is currently operating within a reactive paradigm, driven by urgency and immediate needs rather than long-term planning. Such an approach inevitably reproduces vulnerability, as rebuilt environments remain exposed to the same structural weaknesses that existed prior to destruction.

A shift is therefore required—from rebuilding objects to regenerating systems. Sustainable reconstruction must be understood as a multi-scalar process, linking architecture to urban systems, urban systems to ecological networks, and these in turn to social and economic structures. In this sense, reconstruction becomes not a phase following conflict, but a continuous process embedded within a broader territorial and developmental logic.

Structural Logic of the Proposed Model

The proposed model is grounded in a systems-thinking approach, in which sustainability emerges from the interaction of multiple interdependent dimensions. Rather than treating environmental, urban, architectural, social, and economic issues as separate sectors, the model integrates them into a unified framework.

At its core, the model is structured around five interconnected pillars:

- Environmental regeneration
- Integrated urban and territorial planning
- Climate-responsive architectural reconstruction
- Social cohesion and participatory governance
- Local economic recovery and resilience

These pillars are not linear steps, but simultaneous and interdependent processes. Improvement in one dimension reinforces others. For example, restoring agricultural land supports economic recovery, which in turn encourages population return,

strengthening social cohesion and justifying infrastructural investment. This interdependence is central to the model, distinguishing it from conventional approaches that address each sector in isolation.

Environmental Regeneration as the Entry Point

The matrix analysis identified environmental conditions as among the weakest across all case studies, making ecological recovery a necessary starting point for sustainable reconstruction. In southern Lebanon, environmental systems are not peripheral; they are directly linked to livelihoods, settlement stability, and long-term resilience.

From an operational perspective, environmental regeneration involves:

- Restoring degraded agricultural land and soil systems
- Rehabilitating irrigation networks and water resources
- Re-establishing vegetation cover and ecological balance
- Protecting biodiversity and reducing further environmental damage

However, the importance of this pillar extends beyond technical interventions. Environmental recovery must be understood as a productive and structural process, capable of reactivating local economies and stabilizing rural communities. Where land productivity is restored, economic activity can resume, reducing dependency and encouraging population return.

In this sense, environmental regeneration functions as a foundational layer upon which other dimensions of sustainability can be rebuilt.

Integrated Urban and Territorial Planning

The urban analysis revealed that reconstruction has produced fragmented settlement patterns, characterized by discontinuous urban fabrics and weak infrastructural integration. This reflects the absence of coordinated planning frameworks capable of guiding reconstruction beyond individual building interventions.

A sustainable approach requires the reintroduction of planning as a central organizing mechanism, operating across both local and regional scales. This involves:

- Developing local development plans tailored to village conditions
- Integrating villages into broader regional planning systems
- Reconstructing infrastructure networks as interconnected systems
- Regulating land use to prevent uncontrolled expansion

The key issue is not simply rebuilding infrastructure, but restoring spatial coherence and functional continuity. Villages must be understood as components of a wider territorial system, connected to economic networks, service centers, and productive landscapes.

Without such integration, reconstruction risks producing isolated and inefficient settlements, incapable of sustaining long-term development.

Climate-Responsive and Contextual Architecture

Although architectural reconstruction is visibly progressing, the matrix results indicate that it remains largely disconnected from sustainability principles. The dominance of standardized construction practices, particularly reinforced concrete structures, reflects a prioritization of speed and cost over environmental performance and cultural continuity.

A sustainable architectural approach requires a shift toward context-sensitive design, combining traditional knowledge with contemporary techniques. This includes:

- Reinterpreting vernacular architectural principles
- Using locally available and low-impact materials
- Integrating passive climatic strategies
- Designing adaptable and flexible housing systems
- Incorporating decentralized renewable energy solutions

The objective is not to replicate traditional forms, but to translate their underlying logic into modern construction systems. Such an approach enhances thermal performance, reduces energy consumption, and reinforces cultural identity.

Importantly, architecture must be understood not as an isolated discipline, but as a component of the broader sustainability system, interacting with urban form, environmental conditions, and social practices.

Social Cohesion and Participatory Reconstruction

The social dimension of the matrix highlighted significant instability, driven by displacement, disrupted community structures, and limited participation in reconstruction processes. This underscores the need to reposition communities at the center of reconstruction.

Key directions include:

- Engaging residents in planning and design processes
- Strengthening local governance and municipal capacities
- Rebuilding social networks through shared spaces and facilities
- Facilitating the return and reintegration of displaced populations

However, participation must go beyond consultation. It should involve active co-production of space, where communities contribute to decision-making and implementation. This enhances not only the relevance of interventions but also their long-term sustainability.

In conflict-affected contexts, participatory reconstruction also plays a crucial role in rebuilding trust, identity, and social continuity, which are essential for stable recovery.

Local Economic Recovery and Resilience

The economic dimension recorded the lowest scores across all case studies, revealing the fragility of local livelihood systems. This indicates that reconstruction efforts have largely overlooked the economic foundations of sustainability.

A sustainable model must therefore prioritize economic regeneration as a central component, focusing on:

- Revitalizing agricultural production systems
- Supporting small-scale local enterprises
- Developing local value chains
- Reducing dependency through renewable energy integration
- Diversifying economic activities, including rural tourism

In southern Lebanon, the economy is closely tied to land and local resources. As such, economic strategies must be rooted in territorial realities, rather than imposed externally. At the same time, diversification is essential to enhance resilience and reduce vulnerability to future shocks.

Economic recovery is not merely a complementary objective; it is a precondition for sustainable settlement continuity.

Integrated Model Synthesis

The proposed model can be understood as a transformation from the current reconstruction paradigm toward a sustainability-oriented framework.

Table 7: Strategic Transformation Framework for Sustainable Reconstruction

Current Condition	Required Transformation
Reactive rebuilding	Strategic reconstruction
Sectoral interventions	Integrated systems approach
Short-term recovery	Long-term sustainability
External dependency	Local resilience
Fragmented planning	Territorial coherence

Source: Author (2026), based on IPSAM analysis.
This table summarizes the fundamental shift required: from fragmented and reactive reconstruction toward a coherent, integrated, and forward-looking approach.

Implementation Implications

The implementation of this model requires structural changes at multiple levels:

- Strengthening coordination between institutions
- Aligning local and national planning frameworks

- Securing long-term funding mechanisms
- Building technical and administrative capacities
- Establishing monitoring systems based on measurable indicators

Ultimately, sustainable reconstruction in southern Lebanon is not a purely technical challenge, but a systemic transformation process. It requires rethinking the relationship between reconstruction, planning, and development, and positioning sustainability as the guiding principle of all interventions.

VII. Conclusion

This study examined the question of urban and architectural sustainability in the reconstruction of southern Lebanese villages following the 2024–2026 war, with particular attention to the ways in which repeated destruction, weak territorial planning, environmental degradation, and socio-economic fragility shape reconstruction outcomes. By combining theoretical perspectives on sustainability and post-conflict recovery with an applied analytical framework, the research sought to move beyond descriptive accounts of damage and rebuilding toward a more integrated understanding of what sustainable reconstruction should mean in a conflict-affected rural context.

The findings of the study clearly indicate that reconstruction in southern Lebanon cannot be understood simply as a matter of replacing damaged buildings or restoring basic infrastructure. The application of the Integrated Post-Conflict Sustainability Assessment Matrix demonstrated that the crisis is deeper and more structural. Across the selected case studies, sustainability deficits were evident in environmental, urban, architectural, social, and economic terms. The villages did not merely suffer physical destruction; they experienced disruption of ecological systems, fragmentation of settlement patterns, weakening of social cohesion, and erosion of livelihood structures. This confirms that post-war recovery in the South remains incomplete when assessed through a sustainability lens.

A central conclusion of this research is that the current reconstruction trajectory remains predominantly reactive rather than strategic. In practical terms, this means that rebuilding efforts are often driven by urgency, compensation logic, and short-term physical repair, rather than by long-term territorial planning and integrated development thinking. As a result, reconstruction tends to reproduce pre-existing weaknesses instead of overcoming them. Villages may regain houses, but not necessarily resilience. They may recover certain services, but not spatial coherence. They may rebuild structures, but not necessarily restore the environmental and economic systems that sustain rural life.

The matrix analysis was particularly important in revealing the imbalance between visible and invisible dimensions of recovery. Architectural reconstruction appeared relatively stronger than environmental and economic recovery, which suggests that the most immediately visible forms of rebuilding often mask deeper sustainability deficits. This finding is significant because it challenges the common assumption that reconstruction progress can be evaluated primarily through the number of rebuilt housing units or repaired roads. The research instead demonstrates that meaningful

recovery must be assessed through a broader framework that considers land productivity, ecological stability, community continuity, local economic viability, and the integration of settlements within wider territorial systems.

Another major conclusion is that sustainability in southern Lebanese villages cannot be achieved through isolated sectoral interventions. The rural village in this context is not merely a cluster of buildings; it is a socio-spatial and agro-ecological system. Its viability depends on the interaction between housing, land, water, mobility, production, identity, and governance. For this reason, sustainable reconstruction must move from a fragmented project-based logic toward a systems-based reconstruction model. This was the rationale behind the proposed framework developed in Chapter 6, which emphasized the interdependence of environmental regeneration, integrated planning, climate-responsive architecture, social participation, and local economic resilience.

The study also highlights the importance of restoring the relationship between reconstruction and planning. One of the most persistent problems in Lebanon has been the disconnection between rebuilding practices and long-term territorial vision. In the case of southern villages, this disconnection becomes even more damaging because the region is already marked by peripheralization, infrastructural weakness, and repeated exposure to conflict. Reconstruction therefore cannot remain an emergency-driven technical exercise. It must become part of a broader planning project that seeks not only to restore what existed before, but to improve the structural conditions of settlement, production, and collective life.

From an architectural perspective, the research concludes that the dominant reconstruction approach still underuses the potential of climate-responsive and context-sensitive design. This is particularly problematic in villages where vernacular knowledge historically offered adaptive responses to climate, material scarcity, and rural ways of life. The erosion of such knowledge in favor of standardized and often energy-intensive construction represents not only a cultural loss, but also a sustainability loss. The architectural question is therefore not secondary within reconstruction; it is central to the environmental and social quality of post-war recovery.

At the social level, the research confirms that reconstruction without participation remains incomplete. Rebuilding villages is not only about reconstructing walls and roofs, but also about restoring trust, belonging, and the capacity of communities to shape their own spatial future. In contexts of repeated displacement and insecurity, social sustainability becomes inseparable from participation. Villages that are rebuilt without their inhabitants actively shaping priorities and choices risk remaining spatially present but socially weakened.

Economically, the study underscores that no sustainable reconstruction can be achieved if local livelihoods remain fragile. In southern Lebanon, where agriculture and land-based activities play a major role, economic recovery must be integrated into reconstruction policy from the beginning rather than treated as a later consequence of rebuilding. Without this integration, physical reconstruction may occur in the absence of durable local viability, leading to dependency, partial return, and renewed decline.

This study also contributes to the broader academic debate in two important ways. First, it expands the discussion of post-conflict sustainability beyond metropolitan and heavily studied urban centers by focusing on rural villages, which are often overlooked in reconstruction literature despite their strategic and social importance. Second, it proposes an integrated framework that bridges architecture, urbanism, environment, and development, rather than treating them as separate research domains. In this sense, the paper offers both a contextual contribution to Lebanese reconstruction debates and a conceptual contribution to sustainability research in fragile territories.

At the same time, certain limitations must be acknowledged. The study relied primarily on secondary sources, institutional reports, and comparative analytical interpretation rather than extensive field-based survey work. Given the instability of the context and the evolving nature of war-related conditions, some findings should be understood as analytically grounded but temporally contingent. Future research would benefit from on-site investigations, participatory assessment tools, remote sensing analysis, and longitudinal tracking of reconstruction patterns over time. Such work would make it possible to refine the matrix further and validate its long-term applicability.

In conclusion, the reconstruction of southern Lebanese villages after the 2024–2026 war should not be approached as a narrow exercise in physical replacement. It should be understood as an opportunity—and indeed a necessity—for territorial, architectural, environmental, and socio-economic rethinking. The challenge is not only to rebuild what has been damaged, but to confront the structural weaknesses that make repeated destruction so devastating. Sustainable reconstruction, in this sense, is not a luxury added after recovery; it is the very condition that can transform recovery into resilience. Without such a shift, reconstruction risks remaining cyclical, partial, and fragile. With it, however, the rebuilding of southern Lebanon could become the basis for a more coherent, resilient, and just rural future.

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