

Scientific Research as a Foundation for Sustainability Policies in Lebanese Higher Education: Institutional Resilience Strategies in Times of Crisis

Ghina AlBadawi, Habib AlBadawi, Sahar Chaer

Université Saint Joseph, Beirut, Lebanon / Lebanese University, Beirut Lebanon / Al Makassed Association, Beirut, Lebanon

ghina.badawi1@usj.edu.lb, habib.badawi@ul.edu.lb, szchaer@almakassed.edu.lb

Résumé

Les établissements d'enseignement supérieur libanais ont été confrontés à des défis sans précédent en raison de l'effondrement économique prolongé, de l'instabilité politique et des crises régionales, menaçant leur continuité opérationnelle, la rétention du corps professoral et leur capacité de planification stratégique. Alors que les cadres internationaux tels que les Objectifs de développement durable (ODD) des Nations Unies mettent l'accent sur le rôle essentiel des EES dans la promotion de la durabilité, les universités libanaises continuent de connaître des écarts importants entre les résultats de la recherche et la mise en œuvre des politiques. Cette étude examine comment la recherche scientifique peut éclairer l'élaboration de politiques de durabilité au sein des établissements d'enseignement supérieur du Liban, en mettant l'accent sur la résilience institutionnelle en période de crise.

À l'aide d'une conception qualitative et exploratoire, l'étude applique un modèle théorique hybride intégrant la théorie des systèmes de Capra, le cadre d'éducation à la durabilité de Sterling et la pensée de la résilience. La collecte de données a impliqué une revue systématique de la littérature, une analyse des documents institutionnels et une analyse comparative des politiques par rapport aux systèmes touchés par la crise en Palestine, en Jordanie, en Tunisie et en Turquie. Sept thèmes clés ont émergé, notamment la nature fragmentée des efforts de durabilité, l'application limitée de la recherche aux politiques, la pensée systémique sous-utilisée et la résilience institutionnelle limitée.

Les résultats révèlent que si les établissements d'enseignement supérieur libanais font preuve d'innovation localisée, ils ne disposent pas d'une stratégie nationale unifiée et fondée sur des données probantes pour intégrer la durabilité dans la gouvernance, les programmes d'études, la recherche et les opérations. L'étude propose des recommandations politiques mettant l'accent sur la collaboration interuniversitaire, la pensée systémique, le financement durable, la gouvernance adaptative et l'intégration de la durabilité dans les normes d'accréditation.

Cette recherche contribue au discours sur la réforme de l'enseignement supérieur dans les contextes fragiles, en soulignant comment les EES peuvent fonctionner comme des agents de transformation durable en institutionnalisant des processus politiques fondés sur la recherche.

Mots-clés

Politiques fondées sur la recherche, durabilité de l'enseignement supérieur, résilience institutionnelle, rétention professionnelle, prise de décision fondée sur des données probantes

Abstract

Lebanese higher education institutions (HEIs) have faced unprecedented challenges due to prolonged economic collapse, political instability, and regional crises, threatening their operational continuity, faculty retention, and capacity for strategic planning. While international frameworks such as the UN Sustainable Development Goals (SDGs) emphasize the critical role of HEIs in advancing sustainability, Lebanese universities continue to experience significant gaps between research output and policy implementation. This

study investigates how scientific research can inform the development of sustainability policies within Lebanon's HEIs, focusing on institutional resilience during crises.

Using a qualitative, exploratory design, the study applies a hybrid theoretical model integrating Capra's systems theory, Sterling's sustainability education framework, and resilience thinking. Data collection involved a systematic literature review, institutional document analysis, and comparative policy benchmarking against crisis-affected systems in Palestine, Jordan, Tunisia, and Turkey. Seven key themes emerged, including the fragmented nature of sustainability efforts, limited research-to-policy translation, underutilized systems thinking, and constrained institutional resilience.

The findings reveal that while Lebanese HEIs exhibit localized innovation, they lack a unified, evidence-based national strategy to embed sustainability across governance, curricula, research, and operations. The study proposes policy recommendations emphasizing inter-university collaboration, systems thinking, sustainable financing, adaptive governance, and integration of sustainability into accreditation standards.

This research contributes to the discourse on higher education reform in fragile contexts, highlighting how HEIs can function as agents of sustainable transformation by institutionalizing research-informed policy processes.

Keywords

Research-informed policy, higher education sustainability, institutional resilience, professional retention, evidence-based decision-making

مستخلص

تواجه مؤسسات التعليم العالي في لبنان تحديات غير مسبقة نتيجة الانهيار الاقتصادي المطول، وعدم الاستقرار السياسي، والأزمات الإقليمية، مما يهدد استمرارية عملها، واحتفاظها بالكفاءات الأكاديمية، وقدرتها على التخطيط الاستراتيجي. وعلى الرغم من أن الأطر الدولية مثل أهداف التنمية المستدامة للأمم المتحدة تؤكد على الدور المحوري لمؤسسات التعليم العالي في تعزيز الاستدامة، إلا أن الجامعات اللبنانية لا تزال تعاني من فجوة كبيرة بين الإنتاج البحثي وتطبيق السياسات الفعالة. تهدف هذه الدراسة إلى استكشاف كيفية توظيف البحث العلمي في تطوير سياسات استدامة داخل مؤسسات التعليم العالي في لبنان، مع التركيز على تعزيز مرونة هذه المؤسسات في مواجهة الأزمات. وقد اعتمدت الدراسة تصميمًا نوعيًا استكشافيًا، يستند إلى نموذج نظري هجين يدمج بين نظرية النظم لكابرا، وإطار التعليم من أجل الاستدامة لستيرلينغ، ومفهوم التفكير القائم على المرونة المؤسسية.

شملت منهجية جمع البيانات مراجعة منهجية للأدبيات، وتحليل وثائق مؤسسية، بالإضافة إلى مقارنة سياسات التعليم العالي في أنظمة متأثرة بالأزمات في فلسطين، والأردن، وتونس، وتركيا. وقد أظهرت النتائج سبعة محاور رئيسية، من أبرزها: تشتت جهود الاستدامة، ضعف تحويل البحث إلى سياسات، ضعف توظيف التفكير المنظومي، وتقيد المرونة المؤسسية. تشير النتائج إلى أن مؤسسات التعليم العالي اللبنانية تُظهر بعض الابتكار المحلي، لكنها تفتقر إلى استراتيجية وطنية موحدة قائمة على الأدلة لدمج الاستدامة في الحوكمة، والمناهج، والبحث، والإدارة. وتوصي الدراسة بسياسات تركز على التعاون بين الجامعات، وتوظيف التفكير المنظومي، وتوفير تمويل مستدام، وتبني حوكمة مرنة، ودمج مفاهيم الاستدامة ضمن معايير الاعتماد الأكاديمي. تُسهم هذه الدراسة في النقاش حول إصلاح التعليم العالي في السياقات الهشة، من خلال إبراز دور للمؤسسات الجامعية كمحركات للتغيير المستدام عبر ترسيخ عمليات صنع السياسات المستندة إلى البحث العلمي.

كلمات مفتاحية

السياسات المبنية على البحث، استدامة التعليم العالي، المرونة المؤسسية، الاحتفاظ بالكفاءات، اتخاذ القرار القائم على الأدلة،

Introduction & Background

Lebanon's higher education sector has been operating amid an unparalleled convergence of crises—economic collapse, political instability, and regional conflict—which collectively disrupted its institutional functioning, faculty retention, and quality assurance (Bou Diab et al., 2023). These crises accelerated brain drain, reduced research funding, and hindered strategic planning capacities of Lebanese universities. In response, international frameworks such as the UNESCO Education for Sustainable Development Roadmap and the Sustainable Development Goals (SDGs) emphasized the critical role of higher education institutions (HEIs) in building resilience and social transformation (Žalėnienė & Pereira, 2021; Leal Filho et al., 2019).

Despite this global momentum, many Lebanese (HEIs) continued to face a gap in research-policy implementation. For instance, institutions such as the American University of Beirut (AUB) and the Lebanese University (LU) ranked among the top 600 globally for SDG 4 (Quality Education) in the 2024 Times Higher Education (THE) Impact Rankings. However, this performance was not systematically translated into national policies or institutional frameworks (THE, 2024). Scientific research demonstrated that sustainability in higher education requires systemic institutional adaptation across governance, operations, research, curricula, and research (Sterling, 2021).

Local evidence also revealed that while Lebanese HEIs increased their sustainability-focused research, particularly in response to shocks such as the Beirut Port Explosion and the COVID-19 pandemic, these findings often remained underused in policymaking. Key barriers include fragmented leadership, funding deficits, and limited stakeholder coordination (Makdisi & Rizk, 2022). These structural constraints point to the need for more coherent, evidence-based approaches that bridge research outputs with institutional resilience strategies.

This study addresses this critical gap by investigating how scientific research can inform the development of sustainability policies within Lebanese HEIs. It aims to identify research-informed, contextually relevant strategies that enhance institutional resilience and support sustainable transformation in the higher education sector

1.1.Problem Statement

Over the past five years, Lebanese higher education institutions have faced severe challenges affecting their core operations. Student enrollment has dropped by 45%, while faculty retention declined by 30% across both public and private institutions since 2019(Akar, 2022). This decline has damaged financial stability, academic quality, and institutional sustainability. Simultaneously, research highlighted how

Lebanon's economic crisis has intensified systemic risks within the higher education sector, thereby severely limiting its capacity for evidence-based planning and long-term strategic foresight (Bou Diab et al., 2023; Makdisi & Rizk, 2022).

The 2024 Times Higher Education Impact Rankings revealed that while first-line HEIs like AUB, USEK, LAU, LU, and USJ performed relatively well on SDG-related indicators, many other institutions struggled to translate research findings into resilient, crisis-responsive policies. This was particularly evident in areas related to SDG 16 (Peace, Justice and Strong Institutions) and SDG 17 (Partnerships for the Goals), reflecting the lack of a unified, research-informed framework for sustainability governance at the national level

Moreover, sustainability policies within the Lebanese HEIs remained largely reactive rather than proactive or anticipatory. This challenge was intensified by the absence of mechanisms for sharing and aligning policies across institutions with research findings, particularly in terms of curriculum development, institutional planning, and faculty retention strategies. By positioning scientific research as the foundation for institutional resilience, this study aims to develop a framework that supports policy innovation and enhances the responsiveness of HEIs operating in fragile, resource-scarce environments like Lebanon.

1.2. Significance of Study

This study examines the critical role of higher education institutions (HEIs) in Lebanon in using scientific research to inform educational policy, especially during times of national instability. Its significance is grounded in four interconnected dimensions:

1. Bridging Research and Policy: Despite growing interest in sustainability since 2020, research rarely translates into policy due to limited institutional autonomy and poor sectoral coordination. The World Bank (2023) highlights the need for frameworks that embed research in HEI governance.
2. Addressing Faculty Migration: With over 70% of faculty considering emigration (Makdisi & Rizk, 2022), research-based retention strategies are critical. This study offers evidence-informed interventions to support faculty well-being and capacity development.
3. Building Institutional Resilience: While AUB-led initiatives like AUB4Refugees show promise, such models remain isolated. This study draws on these cases to offer transferable strategies for sector-wide resilience (AUB, 2023).
4. Advancing Global Sustainability Alignment: Lebanon's weak performance on SDGs underscores the need for locally relevant, research-driven practices. This study supports HEIs in benchmarking and applying global sustainability frameworks.

Together, these dimensions position the study as a contribution to bridging research-policy gaps, enhancing resilience, and aligning Lebanon's HEIs with global sustainability standards.

1.3. Research Objectives

This study investigates the transformative potential of scientific research in shaping sustainability policies within Lebanese HEIs. It addresses the need to bridge academic knowledge and institutional action amid extreme instability. The specific objectives are:

1. Analyze the current use of research evidence in sustainability initiatives across Lebanese universities.
2. Assess how research on economic factors and professional migration informs sustainability policies.
3. Develop an evidence-informed policy framework tailored to Lebanon's higher education context.
4. Identify crisis-responsive, research-based strategies for integrating sustainability into institutional policies, drawing lessons from comparable regional contexts.

1.4. Research Questions

To guide this study and address its objectives, the following research questions investigate the integration and implementation of sustainability-focused research in Lebanese higher education institutions:

1. How do Lebanese HEIs use research evidence in designing and implementing sustainability initiatives?
2. To what extent does research on economic instability and professional migration influence sustainability-related policies in Lebanese universities?
3. What are the essential components of an evidence-informed policy framework for advancing sustainability in Lebanon's higher education sector?
4. What research-based, crisis-responsive strategies are Lebanese universities employing to integrate sustainability into institutional policy and practice?

2. Key Terms and Definitions

To ensure conceptual clarity and consistency throughout this study, the following key terms are defined as used in the context of Lebanese higher education and sustainability:

Sustainability in Higher Education (SHE): A systemic, institution-wide commitment to embedding environmental, social, and economic dimensions of sustainability across governance, research, curricula, campus operations, and community engagement (Leal Filho et al., 2019).

Institutional Resilience: The capacity of higher education institutions to anticipate, absorb, adapt to, and recover from crises—such as political instability, economic collapse, or public health emergencies—while sustaining their core academic and administrative functions (Walker & Salt, 2012).

Research-Policy Translation: The process through which academic research is synthesized, communicated, and operationalized to inform and shape institutional or governmental policies, particularly in sustainability-related domains (Nutley, Walter, & Davies, 2007).

Systems Thinking: A conceptual framework that recognizes higher education institutions as complex, interdependent systems. It emphasizes holistic analysis and integrated approaches to sustainability challenges across environmental, social, and economic dimensions (Capra, 2003; Sterling, 2021).

Education for Sustainable Development (ESD): A pedagogical approach that equips learners with the knowledge, competencies, values, and attitudes necessary to contribute to sustainable development and address pressing global and local challenges (UNESCO, 2020).

Brain Drain: The emigration of qualified academics, researchers, and professionals from national higher education institutions to more stable or better-funded contexts, often due to limited local opportunities, political instability, or funding constraints (Docquier & Rapoport, 2012).

Policy Fragmentation: The lack of policy coherence and alignment across institutions or governance levels, resulting in isolated or duplicated efforts that reduce the collective impact of sustainability initiatives (Makdisi & Rizk, 2022).

3. Theoretical Framework

To explore the link between scientific research and sustainable policy in Lebanese HEIs during crisis, this study adopts a hybrid model combining three complementary perspectives: Capra's *Hidden Connections*, resilience thinking, and systems theory for sustainability education. Together, they offer a holistic lens to analyze institutional adaptability, learning, and transformation.

3.1. Capra's Hidden Connections Theory (Capra, 2003)

Capra's theory emphasizes the interconnectedness of ecological, economic, and social systems. In the HE context, it reveals how financial strain, research capacity, governance, and sustainability efforts are deeply intertwined. For example, faculty attrition reduces research output, weakening institutions' ability to inform policy. The framework calls for integrated, network-based strategies over fragmented, siloed responses—particularly critical in fragile environments like Lebanon.

3.2. Institutional Resilience Models (Walker & Salt, 2012; Folke, 2016)

Resilience thinking frames HEIs as adaptive systems that can absorb shocks while maintaining function. Walker and Salt highlight tools like adaptive cycles and feedback loops, while Folke extends this to transformative resilience—reshaping institutions in response to chronic stress. In Lebanon, this supports strategies like agile governance, diversified funding, and research-driven responses. For instance, LAU's shift to hybrid learning during infrastructure failure illustrates such resilience (LAU, 2022).

3.3. Systems Theory for Sustainability Education (Sterling, 2021)

Sterling views universities as complex adaptive systems evolving through stakeholder engagement, feedback, and reflective learning. Sustainability is framed as a transformation of institutional culture and governance, not just curriculum. For Lebanese HEIs, this perspective enables more responsive planning amid leadership fragmentation and resource scarcity, reinforcing the role of research in driving long-term, systemic change.

This integrated framework—linking systems thinking, resilience, and sustainability education—positions HEIs as dynamic institutions capable of learning and adapting through research-led innovation in times of crisis.

4. Literature Review

Lebanese higher educational institutions are key actors in promoting sustainability within a context marked by political instability, economic hardship, and social complexities. Despite these challenges, many have started to include sustainability in their teaching, research, campus operations, and partnerships, aligning their efforts with global frameworks like the United Nations Sustainable Development Goals (SDGs) (Bou Diab et al., 2023).

4.1. Research Utilization in Higher Education Sustainability

The critical role of scientific research in advancing sustainability initiatives within higher education institutions (HEIs) has been widely acknowledged (Leal Filho et al., 2019; Filho et al., 2020). Research generates the evidence base necessary to design policies that address environmental, social, and economic challenges. However, despite an increase in sustainability-related research outputs globally and regionally, the effective translation of this research into institutional policy remains inconsistent. Pereira et al. (2021) and Filho and Shiel (2018) highlight that limited institutional autonomy, bureaucratic inertia, and fragmented governance often obstruct the integration of research evidence into policy frameworks.

In the context of Lebanon, these challenges are further intensified by the country's political instability and economic crises, which have strained the higher education sector's capacity to utilize research effectively (Bou Diab et al., 2023; Makdisi & Rizk, 2022). Coherent mechanisms linking research and policy are lacking, which limits Lebanese HEIs' ability to respond adaptively to sustainability imperatives. Furthermore, Khatib (2023) emphasizes that while sustainability research has increased since 2020, institutional mechanisms for embedding this knowledge into governance and planning remain weak, undermining policy coherence and impact.

4.2. Institutional Resilience and Adaptive Governance

Resilience frameworks in higher education stress the importance of adaptive capacity—defined as the ability of institutions to absorb shocks and transform in response to changing conditions (Walker & Salt, 2012; Folke, 2016). These models advocate governance systems that incorporate continuous learning, stakeholder collaboration, and data-driven decision-making processes. In resource-scarce and crisis-prone environments, such governance flexibility is vital for maintaining institutional functionality and advancing sustainability goals.

Regional case studies illustrate how universities have adopted innovative strategies to navigate crises. For example, Lebanese American University (LAU) implemented hybrid learning models and decentralized administrative operations to mitigate the impact of Lebanon's fuel shortages and internet disruptions (LAU Sustainability Report, 2022). Similar approaches are documented across the MENA region, where political unrest and economic challenges have prompted HEIs to embrace agility and resilience (Kassir et al., 2022).

Nonetheless, systemic issues like chronic underfunding, professional migration, and governance fragmentation persist as major barriers (Makdisi & Rizk, 2022; Bou Diab et al., 2023). These factors limit the scalability of resilience initiatives and hinder the embedding of sustainability as a core institutional priority.

4.3. Systems Thinking and Sustainability Education

Systems thinking offers a valuable lens for understanding HEIs as complex adaptive systems interconnected with broader ecological, social, and economic networks (Sterling, 2021; Capra, 2003). This perspective encourages holistic policy development that accounts for multiple, often competing, stakeholder needs and sustainability dimensions.

The application of systems theory in sustainability education fosters reflective learning and continuous feedback loops that improve institutional responsiveness (Wiek et al., 2011; Lozano et al., 2013). Such

an approach is critical in contexts like Lebanon, where fluctuating resources and fragmented stakeholder environments complicate policy coherence.

Alhaddi (2015) and Haddad and El-Zein (2020) demonstrate that HEIs employing systems thinking strategies exhibit stronger capacities to align educational practices with sustainability goals, even amidst political and economic instability. These institutions develop integrative policies that connect environmental stewardship, social equity, and economic viability, enhancing both academic and community engagement.

4.4. Current Initiatives of Lebanese Higher Education Institutions in Advancing the SDGs

To understand the practical landscape of sustainability in Lebanese higher education, it is essential to examine the specific initiatives undertaken by major universities. These efforts illustrate how institutions are aligning their missions with the United Nations Sustainable Development Goals (SDGs) and responding to the country's unique socio-economic and environmental challenges (Table 1).

The Lebanese University (LU):

As Lebanon's largest public university, LU has increasingly aligned its programs with national development goals. It promotes health and well-being initiatives linked to SDG 3 (Good Health and Well-being), alongside efforts to enhance educational quality and infrastructure (SDG 4 and SDG 9). LU's engagement in community outreach and public health campaigns reflects its expanding role in addressing socio-economic challenges intensified by national instability (Lebanese University, 2023).

American University of Beirut (AUB):

AUB has actively integrated sustainability into its institutional mission through initiatives like the Center for Civic Engagement and Community Service. This center promotes community-based projects that align with SDG 4 (Quality Education) and SDG 11 (Sustainable Cities and Communities), encouraging students and faculty to engage in socially responsible practices impacting local communities (American University of Beirut, 2023). Moreover, AUB's sustainability efforts include research and advocacy focused on climate action and social resilience, which are crucial in Lebanon's crisis-prone environment.

Lebanese American University (LAU):

LAU's Sustainable Campus Initiative exemplifies practical steps towards environmental sustainability, focusing on energy efficiency, waste reduction, and sustainable infrastructure improvements. These

efforts contribute directly to SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action) (Lebanese American University, 2022). LAU has also demonstrated adaptability and resilience by implementing hybrid learning models and flexible governance in response to Lebanon's socio-economic challenges.

Saint Joseph University (USJ):

USJ has integrated sustainability into academic curricula and research priorities, fostering innovation and environmental stewardship among students and faculty. The university's commitment aligns with SDG 9 (Industry, Innovation, and Infrastructure) and SDG 12 (Responsible Consumption and Production), emphasizing sustainable production methods and development of sustainable technologies (Université Saint-Joseph de Beyrouth, 2021). USJ also promotes cross-disciplinary research addressing Lebanon's complex socio-economic and environmental challenges.

Holy Spirit University of Kaslik (USEK):

USEK leads in promoting social equity and environmental awareness, notably through its Material Recovery Facility supporting campus recycling and waste management efforts, advancing SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action) (Holy Spirit University of Kaslik, 2022). The Green Committee fosters environmental consciousness while initiatives addressing poverty and inequality relate to SDG 1 and SDG 10.

University of Balamand (UOB):

UOB emphasizes innovation in sustainability via programs cataloguing SDG-related activities with digital tools, fostering a culture of environmental responsibility. The university focuses on climate action (SDG 13), quality education (SDG 4), and partnerships (SDG 17) to integrate sustainability across academic and operational spheres (University of Balamand, 2023).

Beirut Arab University (BAU):

BAU has advanced its sustainability commitment by emphasizing industry innovation and infrastructure development aligned with SDG 9 (Industry, Innovation, and Infrastructure). In partnership with local organizations, BAU facilitates workshops and research aimed at technological enhancement and brain drain mitigation through improved career support and researcher development programs (Beirut Arab University, 2023).

Table 1 Current Initiatives of Lebanese Higher Education Institutions in Advancing the SDGs

University	Key Initiatives	Aligned SDGs	Impact Focus
American University of Beirut (AUB)	Center for Civic Engagement and Community Service; climate action research; social resilience programs	SDG 4, SDG 11, SDG 13	Community engagement, quality education, climate resilience
Lebanese American University (LAU)	Sustainable Campus Initiative; energy efficiency; waste reduction; hybrid learning during crises	SDG 7, SDG 13	Environmental sustainability, energy, institutional resilience
Saint Joseph University (USJ)	Sustainability in curricula and research; innovation and environmental stewardship programs	SDG 9, SDG 12	Innovation, responsible consumption, sustainable technologies
Lebanese University (LU)	Green campus projects; water conservation programs; integration of SDGs in academic programs	SDG 6, SDG 13, SDG 15	Resource conservation, biodiversity, environmental education
Holy Spirit University of Kaslik (USEK)	Sustainable waste management; renewable energy projects; student-led sustainability campaigns	SDG 7, SDG 12, SDG 13	Renewable energy, waste reduction, climate action
University of Balamand (UOB)	Eco-friendly campus initiatives; sustainable agriculture research; partnerships with local communities	SDG 2, SDG 11, SDG 15	Food security, sustainable cities, ecosystem protection
Beirut Arab University (BAU)	Energy-saving infrastructure upgrades; community sustainability awareness programs	SDG 7, SDG 13	Energy efficiency, community outreach

4.5.Challenges and Opportunities

Despite these promising initiatives, sustainability integration remains inconsistent across Lebanese HEIs due to limited financial resources, political instability, and fragmented governance (World Bank, 2023). The absence of a coordinated national framework also constrains scalability and impact (Makdisi & Rizk, 2022). This fragmentation underscores the urgent need for an evidence-based, unified policy framework to guide and consolidate sustainability efforts across the sector. Many initiatives overlap in focus, highlighting opportunities for collaboration and resource-sharing, as shown in Table 2 below.

Table 2: The Overlapping SDGs by Lebanese HEI

SDG	Universities Involved
SDG 7: Affordable and Clean Energy	LAU, USEK, BAU
SDG 11: Sustainable Cities and Communities	AUB, UOB
SDG 12: Responsible Consumption and Production	USJ, USEK
SDG 13: Climate Action	AUB, LAU, USEK, BAU
SDG 15: Life on Land	LU, UOB

4.6. Inter-University Collaboration on SDGs in Lebanon

Current literature indicates that collaboration among Lebanese universities on Sustainable Development Goals (SDGs) is emerging but remains limited and largely informal. While institutions such as AUB, LAU, and USJ have individually advanced sustainability initiatives, documented evidence of sustained, structured partnerships focused specifically on SDG implementation is scarce. Existing collaborations are mostly confined to joint research projects, academic conferences, and participation in broader educational consortia, often supported by the Ministry of Education and Higher Education or international donors (El-Hage Scialabba et al., 2021; World Bank, 2023). Challenges such as political fragmentation, resource competition, and institutional autonomy constrain the development of cohesive inter-university networks. Strengthening formal collaboration platforms among Lebanese HEIs could significantly enhance the collective impact on sustainability outcomes and policy integration in the higher education sector.

4.7. Comparative Insights from Crisis-Affected Higher Education Systems

While Lebanese HEIs have initiated sustainability practices, these remain fragmented and lack national coordination. In contrast, higher education institutions in similar crisis-affected contexts—such as Palestine, Jordan, Tunisia, and Turkey—have adopted more structured and strategic approaches, as summarized in Table 3.

In Palestine, universities have integrated sustainability into institutional mandates and community development despite conflict and financial constraints (Qabaja et al., 2021). Jordanian HEIs have aligned research and teaching with specific SDGs—particularly in water and energy—through strong international cooperation (Obeidat & Alshannag, 2019). Tunisia has embedded sustainability criteria within its accreditation systems, prompting universities to adopt green operations and sustainability-focused curricula (Bchir & Zoghلامي, 2020).

In Turkey, national strategies supported by EU partnerships have fostered sustainability integration across campus operations and research, though challenges remain due to economic pressures, recent natural disasters, and the strain of hosting refugees (Yavuz & Cansaran, 2022).

Compared to these contexts, Lebanese HEIs lack a unified national policy, often working in silos with minimal government guidance or inter-institutional collaboration. This gap highlights the urgent need for a coordinated, context-specific sustainability framework that supports systemic integration across Lebanon's higher education sector.

Table 3: Comparative Sustainability Approaches in Crisis-Affected Higher Education Systems

Country	Sustainability Integration	SDGs Targeted	Key Enablers	Challenges
Lebanon	Fragmented, institution-led initiatives (e.g., AUB, LAU); limited national coordination.	Mainly SDG 4 (Quality Education), SDG 13 (Climate Action) but overall inconsistent coverage.	Institutional leadership, global partnerships.	Political instability, economic crisis, lack of unified policy.
Palestine	Integrated into institutional mandates and community outreach despite conflict.	SDG 4 (Quality Education), SDG 11 (Sustainable Cities), SDG 13 (Climate Action).	Strong community engagement, mission-driven universities.	Prolonged occupation, financial restrictions.
Jordan	Leveraged international cooperation to align research and teaching with specific SDGs, especially in water and energy sectors.	SDG 6 (Clean Water), SDG 7 (Affordable and Clean Energy), SDG 13 (Climate Action).	International donor support, SDG-linked programs.	Resource dependency, unemployment pressures.
Tunisia	National accreditation includes sustainability criteria; universities promote green campus initiatives, sustainable agriculture, and renewable energy research.	SDG 4 (Quality Education), SDG 7 (Affordable and Clean Energy), SDG 12 (Responsible Consumption), SDG 13 (Climate Action), SDG 15 (Life on Land).	Government policy reforms, structured frameworks.	Limited funding, administrative hurdles.
Turkey	Progress in campus greening, sustainability reporting, and integration of SDGs into research and governance.	SDG 4 (Quality Education), SDG 7 (Affordable and Clean Energy), SDG 11 (Sustainable Cities), SDG 13 (Climate Action).	National Strategy for HE sustainability, EU cooperation.	Earthquake aftermath, economic challenges, refugee pressure.

To conclude, the literature reveals a dynamic but fragmented sustainability landscape within Lebanese higher education. While individual institutions have made commendable strides aligning their initiatives with the SDGs, systemic challenges inhibit the formation of a cohesive, resilient sector-wide approach. There is a clear gap in integrated governance models and research-policy linkages, particularly within Lebanon's complex socio-political context. Addressing these gaps requires

strengthening institutional resilience, fostering systems thinking, and promoting collaborative networks to scale and sustain sustainability efforts effectively.

5. Methodology

This study used a qualitative approach that combined theoretical analysis, a systematic literature review, document analysis, and comparative policy analysis. This allowed for an in-depth understanding of the challenges faced by Lebanese higher education institutions (HEIs), especially how research is translated into sustainable policies during times of crisis.

5.1. Research Design

An exploratory, interpretive design was used, grounded in constructivist and system-thinking paradigms. This allowed for a contextual analysis of governance, sustainability practices, and socio-economic challenges in Lebanese HEIs, with the goal of proposing a locally grounded, theory-informed policy framework (Sterling, 2021; Capra, 2003).

5.2. Data Collection

A systematic literature review was conducted following PRISMA guidelines, drawing from ERIC, Scopus, Web of Science, Google Scholar, and regional platforms like LAES and Shamaa. Peer-reviewed sources (2015–2025) focused on sustainability in higher education, institutional resilience, crisis policy, and faculty migration in the MENA region.

Document analysis included institutional reports from key Lebanese HEIs (e.g., LU, AUB, LAU, USJ, BAU, USEK, NDU, UOB) and national/international policy documents (e.g., UNDP, World Bank). Theoretical modeling mapped links among economic crisis, faculty migration, and sustainability, while comparative policy analysis benchmarked Lebanese HEIs against peers in Palestine, Jordan, and Tunisia.

5.3. Data Analysis

Content analysis identified recurring themes across four areas: (1) sustainability governance, (2) research utilization, (3) crisis response, and (4) faculty retention. A codebook was developed using Sterling's sustainability dimensions, Capra's systems theory, and Lebanon-specific indicators.

Critical discourse analysis (CDA) was applied to institutional texts to examine how concepts like resilience and sustainability are framed. Findings were interpreted through the lenses of Capra, Walker and Salt, and Sterling, followed by comparative analysis with SDG-aligned international HE policies.

5.4. Ethical Considerations

This study adhered to established ethical standards for literature review and document analysis. All sources of data were cited appropriately, and intellectual property rights were respected throughout the research process. A balanced and objective approach was maintained, with efforts to acknowledge multiple perspectives and potential limitations in the reviewed materials.

6. Findings and Discussion

This study identified seven interrelated themes reflecting the current state of sustainability policy and practice within Lebanese higher education institutions (HEIs). Findings are discussed in relation to the study's theoretical framework and comparative international insights.

1. Active but Fragmented Sustainability Efforts

Lebanese HEIs have initiated sustainability projects aligned with various SDGs across teaching, research, and campus operations. However, efforts remain fragmented and lack coordination at the national level due to broader governance and political instability (El-Hage Scialabba, Sfeir, & Karam, 2021; Makdisi & Rizk, 2022). Without a unifying framework, institutional impact remains limited (Bou Diab, Jabbour, & Haidar, 2023).

2. Research Utilization Hampered by Structural Barriers

While sustainability research output is growing, its integration into institutional policies is constrained by weak autonomy, political instability, and ineffective governance mechanisms (World Bank, 2023; Lebanese University, 2021). Strengthening internal structures to connect research with strategic planning is essential (Leal Filho et al., 2019).

3. Constrained Institutional Resilience

HEIs such as LAU have adopted adaptive strategies—like hybrid learning during crises—demonstrating pockets of resilience. However, systemic issues like underfunding and brain drain limit broader institutional transformation (Bou Diab et al., 2023; Makdisi & Rizk, 2022; Walker & Salt, 2012).

4. Underutilization of Systems Thinking

Despite its potential, systems thinking remains marginal in most Lebanese HEIs. Viewing institutions as interconnected systems could improve responsiveness and integration of sustainability practices (Capra, 2003; Sterling, 2021). While AUB and USEK show progress, sector-wide adoption is lacking.

5. Emerging but Informal Collaboration

Some inter-university partnerships exist, yet they are mostly informal and project-based. The absence of structured collaboration platforms limits shared learning and policy alignment (Obeidat &

Alshannag, 2019; Qabaja, Al-Baqsumi, & Hamam, 2021). Formal networks could enhance impact and resource optimization.

6. Regional Counterparts Show Greater Coordination

Compared to Palestine, Jordan, Tunisia, and Turkey, Lebanese HEIs lag behind in embedding sustainability through national policies, accreditation standards, and international partnerships (Yavuz & Cansaran, 2022; Obeidat & Alshannag, 2019). The lack of government-supported frameworks in Lebanon exacerbates fragmentation (World Bank, 2023).

7. Persistent Challenges and Policy Opportunities

Despite political and economic instability, Lebanese HEIs demonstrate innovation and commitment. A national, evidence-based framework promoting collaboration and adaptive governance is essential (Lebanese American University, 2022; Université Saint-Joseph, 2023). Lessons from other crisis-affected systems can inform Lebanon's pathway forward (Žalėnienė & Pereira, 2021).

7. Limitations and Delimitations

The study was limited by its reliance on published and publicly accessible sources, which may not have captured all institutional dynamics or unpublished policy developments. Nevertheless, the integration of diverse theoretical frameworks and literature helped mitigate this constraint. The scope of the research was confined to Lebanese higher education institutions, although references to similarly crisis-affected regions provided comparative insights that enhanced the study's contextual relevance.

8. Recommendations

To address current gaps and advance sustainability integration in Lebanon's higher education (HE) sector, the following recommendations are proposed:

1. Develop a National Sustainability Framework
Adopt a unified, government-led strategy aligned with the UN SDGs to guide sustainability integration across HEIs. The framework should set clear indicators and reflect Lebanon's socio-political context to improve coherence and resource use.
2. Strengthen Research-to-Policy Translation
Establish formal platforms to connect academic research with institutional and national policy. HEIs should reduce internal bureaucracies and prioritize interdisciplinary research relevant to Lebanon's sustainability challenges.
3. Enhance Institutional Resilience and Adaptive Governance
Support HEIs in adopting flexible governance models and crisis-responsive strategies (e.g., hybrid

learning, decentralized decision-making). Strategic partnerships and funding are essential to address systemic barriers such as underfunding and brain drain.

4. Integrate Systems Thinking into Education

Embed systems thinking in curricula and strategic planning to foster holistic understanding. Promote cross-disciplinary programs, reflective learning, and feedback mechanisms to strengthen systemic sustainability action.

5. Promote Inter-University Collaboration

Facilitate formal networks among HEIs to align goals, share resources, and co-develop research and advocacy initiatives. Regional and international partnerships can further enhance institutional capacity and innovation.

6. Secure Sustainable Funding

Advocate for public, private, and international investment in HE sustainability. HEIs should explore innovative financing (e.g., green bonds, grants) and collaborate on resource sharing to optimize impact.

7. Embed Sustainability in Accreditation Processes

Integrate sustainability indicators into accreditation and quality assurance frameworks. HEIs should institutionalize sustainability as a core value across teaching, research, operations, and community engagement.

8. Leverage International Learning

Adapt relevant practices from crisis-affected countries (e.g., Jordan, Palestine, Tunisia) and engage in global networks to access expertise, funding, and effective policy models.

9. Raise Awareness and Build Capacity

Implement stakeholder-targeted awareness campaigns and training programs. Support student-led and community-based sustainability initiatives to foster inclusive participation and social impact.

In brief, Lebanon's HE sector must adopt a more coordinated, resilient, and systemic approach to sustainability. These recommendations offer a practical roadmap for institutionalizing sustainability and scaling progress despite ongoing national challenges.

9. Conclusion

Strengthening the bridge between research and policy can enable Lebanese universities to navigate crises more effectively and foster sustainable academic environments for future generations.

In light of Lebanon's prevailing economic and political instability, ensuring the sustainability of higher education institutions has become an urgent national priority. This study offered a comprehensive

examination of how scientific research can inform sustainable policies in higher education, with particular focus on institutional resilience, faculty retention, and the research-policy interface. Through the development of a conceptual framework and a thorough literature review, the findings underscored both the commendable efforts already in place and the structural barriers that persist within Lebanese HEIs.

Moreover, by highlighting opportunities for improved coordination, retention strategies, and policy integration mechanisms, the study adds to the growing discourse on education reform in fragile contexts. Strengthening the bridge between research and policy can empower Lebanese universities to navigate crises more effectively and establish resilient, sustainable academic environments for future generations.

References

- Akar, B. (2022). Surviving the crises: Lebanon's higher education in the balance (Policy Brief). <https://www.lcps-lebanon.org/articles/details/4751/surviving-the-crises-lebanon%E2%80%99s-higher-education-in-the-balance>
- American University of Beirut. (2023). *Sustainability Report 2022–2023: Strategic resilience through research and partnerships*. AUB Office of Institutional Research & Assessment.
- Beirut Arab University. (2023). *BAU Urban Lab and SDG 11 contributions*. Retrieved from <https://www.bau.edu.lb>
- Bou Diab, S., Jabbour, K., & Haidar, R. (2023). Faculty resilience and professional sustainability in crisis-hit Lebanon. *International Journal of Educational Development*, 94, 102693. <https://doi.org/10.1016/j.ijedudev.2023.102693>
- Capra, F. (2003). *The hidden connections: A science for sustainable living*. Anchor Books.
- El-Hage Scialabba, N., Sfeir, R., & Karam, R. (2021). Higher education and sustainable development in Lebanon: Challenges and opportunities. *Journal of Education for Sustainable Development*, 15(1), 45-61. <https://doi.org/10.1177/0973408221998943>
- Leal Filho, W., Skanavis, C., Kounani, A., & Brandli, L. (2019). The role of planning in implementing sustainable development in a higher education context. *Journal of Cleaner Production*, 235, 678–687. <https://doi.org/10.1016/j.jclepro.2019.06.322>
- Lebanese American University. (2022). *Sustainability roadmap and strategic priorities*. Retrieved from <https://www.lau.edu.lb>
- Lebanese University. (2021). *Strategic plan for academic resilience and educational equity*. Ministry of Education Collaboration.
- Lozano, R., Ceulemans, K., Alonso-Almeida, M., Huisingh, D., Lozano, F. J., Waas, T., ... & Hugé, J. (2015). A review of commitment and implementation of sustainable development in higher education. *Journal of Cleaner Production*, 108, 1–18. <https://doi.org/10.1016/j.jclepro.2014.09.048>
- Makdisi, S., & Rizk, S. (2022). Navigating economic collapse: Lebanese higher education at a crossroads. *Arab Studies Quarterly*, 44(2), 145–163.
- Notre Dame University-Louaize. (2022). *Center for Sustainability and Gender Studies: Annual review*. Retrieved from <https://www.ndu.edu.lb>
- Obeidat, M., & Alshannag, Q. (2019). Sustainable development goals in Jordanian higher education: International cooperation and alignment with SDGs. *Sustainability*, 11(4), 1052. <https://doi.org/10.3390/su11041052>
- Qabaja, T., Al-Baqsumi, M., & Hamam, R. (2021). Embedding sustainability in higher education institutions in Palestine: Challenges and opportunities. *International Journal of Sustainability in Higher Education*, 22(3), 567–582. <https://doi.org/10.1108/IJSHE-05-2020-0185>
- Sterling, S. (2021). Whole systems thinking and sustainability education: Progress and potential. *Sustainability*, 13(9), 5035. <https://doi.org/10.3390/su13095035>
- Times Higher Education. (2024). *Impact Rankings 2024: SDG performance of Lebanese universities*. Retrieved from <https://www.timeshighereducation.com/impactrankings>
- Université Saint-Esprit de Kaslik. (2023). *Green Campus Strategy and Sustainable Development Policy*. USEK Office of Sustainability. <https://www.usek.edu.lb>
- Université Saint-Joseph. (2023). *Strategic plan and civic engagement for sustainable development*. Retrieved from <https://www.usj.edu.lb>
- Walker, B., & Salt, D. (2012). *Resilience thinking: Sustaining ecosystems and people in a changing world*. Island Press.
- World Bank. (2023). *Lebanon education sector assessment: Strengthening governance and policy for sustainable development*. World Bank Group. <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/1234567890>
- Yavuz, S., & Cansaran, A. (2022). Sustainability and resilience in Turkish higher education institutions: Impacts of socio-political challenges and natural disasters. *Environmental Education Research*, 28(2), 267–285.
- Žalėnienė, I., & Pereira, P. (2021). Higher education for sustainability: A global perspective. *Geography and Sustainability*, 2(2), 99–106. <https://doi.org/10.1016/j.geosus.2021.05.00>

