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Al Murunah Project

Policy Brief

Financing climate adaptation through resilient nature-based water solutions in Lebanon

Al Murunah Project in Lebanon

- Led by the **International Water Management Institute (IWMI)** in partnership with the **International Union for Conservation of Nature (IUCN)**
- Implemented by the **Society for the Protection of Nature in Lebanon (SPNL)** and **Abaad**
- In coordination with the Lebanese **Ministry of Energy and Water**
- Supported financially and technically by **UK International Development**

Executive summary

Lebanon is facing accelerating climate risks—including water scarcity, flash floods, ecosystem degradation, and rising temperatures—that are increasingly undermining water security, agricultural livelihoods, and rural stability. At a time when Lebanon is advancing its Climate Policy Package (CPP), updated Nationally Determined Contribution (NDC), and National Adaptation Plan (NAP), a national policy dialogue convened government, financial institutions, and regional partners to identify pathways for scaling and financing Resilient Nature-Based Water Solutions (RNBWS).

The dialogue produced four core messages:

- Nature-based solutions (NbS) must be embedded in national planning systems and not remain project-based interventions.
- The main barrier to scaling NbS is not capital availability but structural finance constraints, including weak metrics, monetization challenges, and financing tenor mismatches.
- Lebanon urgently needs a finance-ready project pipeline and national coordination platform to access climate funds at scale.
- Community-led and gender-responsive approaches are essential for both implementation success and finance eligibility.

This brief synthesizes these findings and provides actionable recommendations for translating NbS commitments into investable, scalable climate adaptation pathways.

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SPNL homat al hima حماة الحمى

Context

Lebanon's climate vulnerability is intensifying due to compounding environmental and socio-economic pressures. Groundwater depletion, reduced rainfall recharge, deforestation, land degradation and unplanned urban expansion are driving severe water stress and increasing exposure to floods and droughts. At the same time, nature-based solutions offer important co-benefits for groundwater recharge, improved watershed functioning, and long-term water security. These risks are further amplified by fiscal constraints, governance fragmentation, conflict pressures and displacement dynamics, undermining ecosystem health, agricultural productivity, and rural resilience.

Although Lebanon's updated NDC and NAP recognize nature-based solutions (NbS) as a key adaptation pathway, implementation remains limited due to weak institutional coordination and restricted access to international climate finance. As a result, NbS investments remain fragmented, small-scale, and dependent on external pilots rather than integrated national programs.

At the Al Murunah policy dialogue, stakeholders emphasized the urgency of converting NbS commitments into finance-ready, scalable investment programs aligned with the 2025 Climate Policy Package (CPP) and the requirements of global climate finance institutions ahead of COP31.

The Al Murunah project—working in Qaa and Ras Baalbek, led by the International Water Management Institute (IWMI) in partnership with the International Union for Conservation of Nature (IUCN) and the Society for the Protection of Nature in Lebanon (SPNL) and supported by UK International Development—has co-created a model for RNBWS implementation through watershed restoration, flood management, groundwater recharge, and community-led governance. The project has also demonstrated the importance of flexible, conflict-adaptive implementation approaches and contingency planning in responding to socio-economic and security conditions. These dynamics are further shaped by Lebanon's protracted refugee presence and localized resource tensions, particularly in water stressed rural areas, requiring NbS approaches that carefully manage distribution impacts and avoid exacerbating tensions.



Traditional water-harvesting ponds in Aaqoura, Lebanon, capturing and storing seasonal water for agricultural use. Photo by Maha Al-Zu'bi/IWMI

Key findings: from pilots to policy

1. Institutionalizing NbS is a strategic priority

NbS must shift from fragmented implementation to systemic integration across national policy frameworks. The Ministry of Energy and Water is currently integrating NbS into the National Water Strategy (2024–2035), with additional entry points identified in the National Disaster Risk Reduction Strategy, Agriculture Strategy – which is in the process of being updated, and NAP. Scaling the Al Murunah model further will require continued strong formal integration with government systems to move beyond pilot-driven delivery and ensure institutional ownership and sustainability.

Importantly, existing interventions already align with NbS principles; however, initiatives such as Al Murunah demonstrate the added value of formalizing NbS in both policy and financing frameworks.

The Hima model[1], formally recognized under Law 130 (2019), illustrates how community-based ecosystem governance can be institutionalized at scale.

Implication for Lebanon: NbS must be institutionalized across sectoral policies and strategies with a designated coordinating authority to ensure coherence and accountability. This will require not only assigning a coordinating authority, but also establishing clear accountability mechanisms, budget alignment, and incentives for sectoral ministries and municipalities to integrate NbS into core planning and investment processes.

2. The climate finance gap is structural, not a capital constraint

Stakeholders from financial institutions and development partners confirmed that Lebanon's core challenge is not lack of finance, but lack of bankable adaptation architecture.

Three structural constraints were identified (Figure 1):

- Monetization gap: adaptation benefits (e.g., avoided damage, recharge) are not easily converted into financial returns
- Data and metrics gap: absence of standardized key performance indicators (KPIs) and adaptation taxonomies
- Financing tenor mismatch: misalignment between long-term ecological benefits and short-term finance cycles

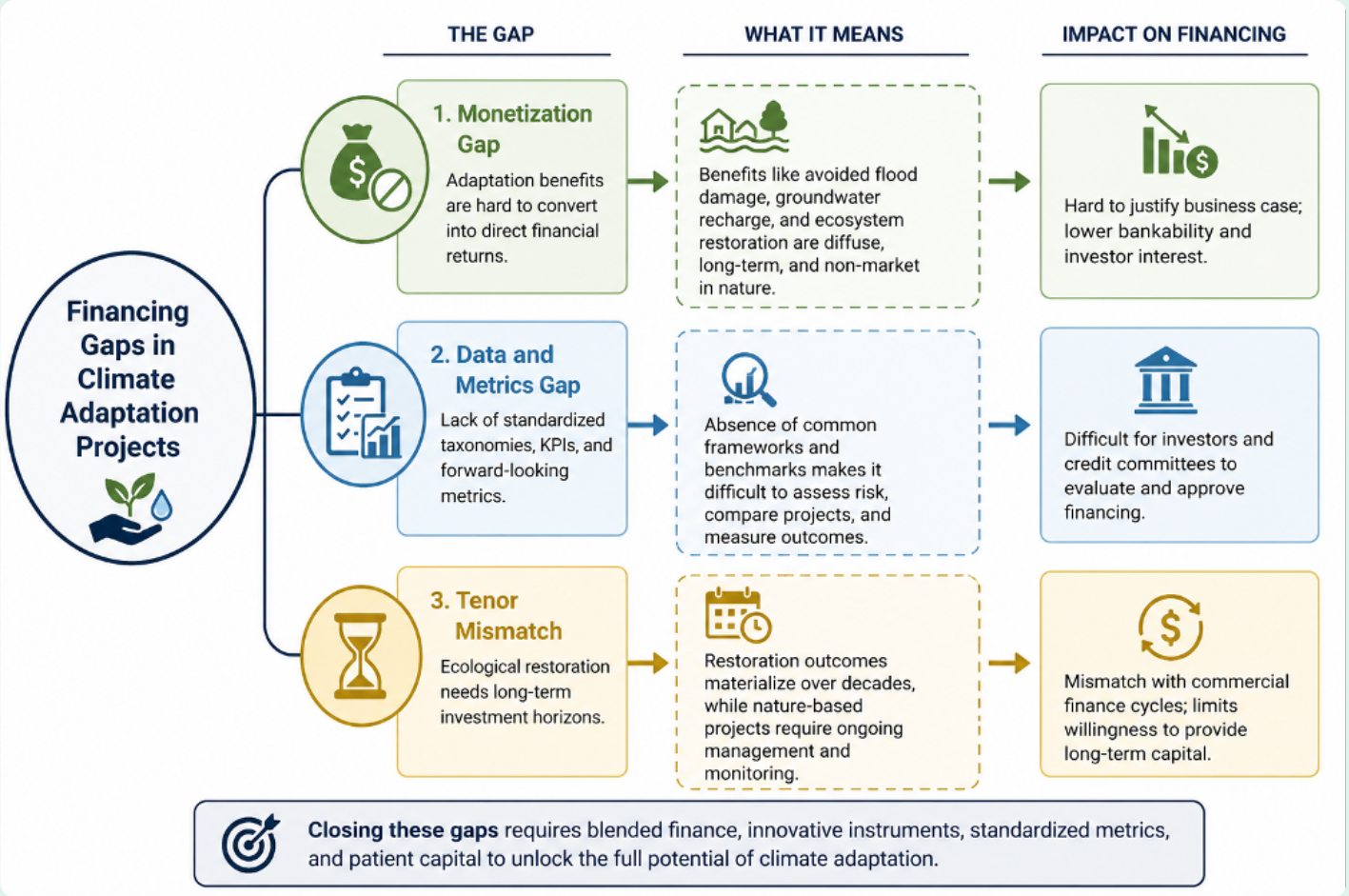


Figure 1. Key financing gaps limiting investment in climate adaptation projects. *Source*: Al Murunah (2026)

These barriers reduce investor confidence and limit access to climate funds.

Implication for Lebanon: Scaling NbS requires blended finance, standardized adaptation metrics, de-risking tools, concessional capital structures and a clear pipeline of feasible projects.

3. Lebanon Requires a Finance-Ready Pipeline and National Coordination Platform

International climate finance institutions prioritize programmatic pipelines over isolated projects. As presented during the dialogue, regional experience demonstrates effective models:

- **Jordan City and Villages Development Bank (CVDB)**: accredited financing institution with municipal observatory and blended finance capacity
- **Egypt Nexus of Water, Food and Energy (NWFE) platform** : structured national platform bundling interventions into bankable sector programs

1. The Hima model is a traditional community-based natural resource management approach, formally recognized in Lebanon under Law 130 (2019), that combines local stewardship, biodiversity conservation, and sustainable resource use to support ecosystem resilience and community livelihoods.

Lebanon currently lacks comparable mechanisms, resulting in fragmented project development. Priority directions identified:

- Translate NDC/NAP commitments into structured investment programs
- Use Green Climate Fund (GCF) readiness funds for pipeline development and concept notes
- Establish a national climate finance coordination platform aligned with CPP

Implication for Lebanon: A NWFE-like platform could catalyze shifting from pilots to investable national programs. Such a platform will require high-level political sponsorship and sustained government convening power to align ministries, donors, and financiers around a shared investment framework.

4. Community ownership and gender inclusion determine success

Effective NbS implementation requires co-design and co-management with local stakeholders, not top-down delivery models. The Al Murunah approach demonstrates that embedding municipalities, farmers and women from the design stage improves both implementation outcomes and climate finance readiness. Experience from Al Murunah further demonstrates the importance of adaptive management approaches that can respond to changing climatic, socio-economic and security conditions while maintaining community ownership and project continuity.

Women's leadership is particularly critical in water management, agriculture and household resilience, yet remains underrepresented in formal planning systems. Institutional fragmentation was identified as a major barrier, with no single actor currently mandated to coordinate NbS across sectors.

Implication for Lebanon: NbS must be designed as governance systems, not only technical interventions, with strong community and gender integration. This is particularly critical in fragile and conflict-affected contexts, where inclusive governance and transparent benefit-sharing mechanisms are essential to maintaining trust, minimizing elite capture, and ensuring long-term sustainability.

From priorities to action: scaling community-led RNBWS

Structured group discussions identified a ranked set of priority RNBWS for Lebanon over the next 5–10 years, focusing on scalable, finance-ready interventions with clear livelihood co-benefits (Table 1).

Table 1. Priority RNBWS for Lebanon over the next 5–10 years

Rank	Challenge	RNBWS Intervention	Livelihood Co-Benefits
1 — Highest	Climate-driven water scarcity affecting agricultural livelihoods	Managed Aquifer Recharge (MAR) through floodwater spreading and recharge basins	Increased dry-season irrigation, reduced pumping costs, local construction and maintenance jobs
2	Flash flood risk in rural and peri-urban areas	Hillside rock-fill dams, afforestation, wadi bank stabilization, retention ponds, gabion walls and urban sustainable drainage systems	Reduced crop and asset losses, improved slope stability, reduced rural out-migration
3	Rising temperatures, land degradation and ecosystem loss	Ecosystem reforestation, urban cooling green spaces and restored pastoral landscapes	Crop shading, improved microclimates, diversified ecosystem-based income opportunities

The groups agreed on two immediate, actionable priorities to accelerate implementation:

- Pilot managed aquifer recharge (MAR) schemes in 2–3 priority watersheds, designed with smallholder farmer co-management to ensure local ownership, skills development and employment generation.
- Establish a fast-track implementation programme for hillside gabion walls and retention ponds in the five most flood-vulnerable rural zones, combining infrastructure delivery with local capacity building and maintenance systems.

Key Message: Lebanon must urgently scale nature-based water security solutions — from aquifer recharge to ecosystem rehabilitation — as a cost-effective path to building and protecting smallholder livelihoods from accelerating climate-water stress.

Turning regional experience into actionable climate finance pathways for Lebanon

Lebanon can draw on regional experience to translate fragmented climate and NbS initiatives into structured, investable finance pathways. The following cases from Jordan and Egypt illustrate scalable institutional, programmatic, and governance models that can inform Lebanon's emerging climate finance architecture (Table 2).

Policy recommendations

For the Government of Lebanon

- Mainstream NbS across national strategies by formally integrating them into the National Water Strategy, National Disaster Risk Reduction Strategy and Agriculture Strategy to ensure long-term institutional anchoring beyond project cycles.

Table 2. Scalable institutional, programmatic, and governance models that inform climate finance architecture

Regional Model	What the model demonstrates	Financing Barrier addressed	Implication for Lebanon
Jordan – City and Villages Development Bank (CVDB)	A dedicated public financial intermediary with climate finance accreditation can channel funds directly to municipalities and bundle local investments into bankable portfolios.	Overcomes municipal fragmentation, weak creditworthiness, and high transaction costs for subnational projects.	Establish a municipal climate finance window within a national institution (e.g., Council for Development and Reconstruction or Ministry of Environment) to aggregate, de-risk, and finance local NbS investments.
Egypt – Nexus of Water, Food and Energy (NWFE) Platform	A national investment platform that consolidates fragmented projects into sector-wide, donor-aligned investment packages improves access to multilateral climate finance.	Addresses project and institutional fragmentation, and weak pipeline development for international climate finance access.	Develop a Lebanon NbS investment platform aligned with the Climate Policy Package (CPP) to structure and prioritize investable project pipelines.
Jordan & Lebanon – Hima Model	Traditional ecological governance systems can become investable NbS assets when formalized with management structures, monitoring systems, and financing linkages.	Bridges the gap between informal/customary governance and formal climate finance eligibility.	Integrate Lebanon's Hima systems into formal restoration and climate programs to generate measurable, financeable ecosystem service outcomes.

- Designate a clear institutional champion (e.g., Council for Development and Reconstruction or Ministry of Environment) to coordinate NbS across sectors and reduce fragmentation. Ensure this coordinating entity is adequately resourced and politically empowered, with a clear mandate to convene line ministries, engage municipalities and interface with international climate finance institutions.
- Establish a national climate finance coordination platform, modelled on Egypt's NWFE, to bundle fragmented NbS interventions into coherent, scalable and GCF-eligible investment programs.
- Leverage GCF readiness support to develop high-quality, finance-ready concept notes that combine strong climate rationale, community co-management, and sustainable operation and maintenance models.
- Align NDC and NAP priorities into a focused investment portfolio, targeting the priority challenges identified in this dialogue (water scarcity, flood risk and ecosystem degradation).
- Strengthen enabling policy and regulatory frameworks to remove inconsistencies that hinder NbS investment and implementation.
- Promote conflict-sensitive and adaptive implementation approaches for NbS investments, including contingency planning, flexible programming and local governance mechanisms that can sustain implementation under changing environmental and socio-political conditions.

For international partners and financiers

- Prioritize institutional readiness support for Lebanon, including technical assistance for pipeline development, project preparation and GCF concept note design.
- Expand blended finance and de-risking instruments (guarantees, first-loss capital, concessional funding) tailored to Lebanon's macroeconomic and institutional constraints.
- Engage accredited entities such as IUCN to support pipeline development and scale RNBWS investments through larger, structured programs.
- Promote regional programmatic approaches that bundle smaller Lebanese NbS interventions into multi-country investment portfolios suitable for multilateral climate funds.

For the private sector and financial institutions

- Strengthen engagement with blended finance mechanisms and adaptation taxonomies to improve internal capacity for evaluating NbS investments.
- Explore models such as Egypt's banking sector experience (e.g., adaptation-aligned finance allocations and resilience bonds) as entry points for Lebanese financial institutions.
- Position NbS as core infrastructure investments, not add-ons, highlighting their role in reducing long-term risk, operational costs, and asset losses.

Immediate next steps (6–12 Months)

- Conduct local stakeholder consultations in priority areas (Ras Baalbek and Akkar) to ensure alignment, ownership and context-specific adaptation of RNBWS investments, including conflict-sensitive implementation considerations where appropriate.
- Undertake a rapid evidence and data consolidation review of existing NbS studies, Return on Investment (ROI) data, and technical assessments to support a bankable Global Environment Facility - ninth replenishment cycle (GEF-9)/GCF concept note.
- Develop a GCF-aligned concept note drawing on regional evidence (including Jordan and West Bank ROI cases) and Al Murunah implementation data.

- Launch the process for a Lebanon national climate finance coordination platform, informed by Egypt's NWFE model.
- Engage GCF readiness facilities and the IUCN-led Santiago Network for targeted technical assistance to strengthen pipeline development.
- Develop strategic communications and outreach plan to communicate NbS impact to municipalities, farmers, youth, and national stakeholders through evidence-based storytelling.

Acknowledgements

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