Integrated Local Governance for a Just Energy Transition in Lebanon: Decentralized Renewable Energy, Water Management, and Regional Cooperation in the MENA Context

By Sabine SAAD, Ph.D in Renewable Energy and Sustainability

Abstract:

Lebanon faces a convergence of energy, water, and agricultural crises, exacerbated by political stagnation and economic collapse. In this fragile context, subnational governments are emerging as key actors in driving a decentralized and just energy transition. This paper explores how local authorities can leverage legal tools such as Law 318/2023 on Distributed Renewable Energy, integrate climate planning mechanisms like SEACAPs, and engage in regional cooperation frameworks to address interlinked resource challenges. It also examines the role of climate finance and blended investment models in enabling municipal-led energy transitions, with an emphasis on social equity, water conservation, and agricultural resilience.

Keywords: Lebanon, distributed renewable energy, Law 318/2023, SEACAP, just transition, MENA cooperation, energy-water-agriculture nexus, climate finance, municipalities, solar energy

Introduction

Lebanon is at the epicenter of a multifaceted crisis encompassing energy insecurity, water scarcity, and agricultural instability. National-level reform remains largely paralyzed, and public infrastructure continues to deteriorate under the pressure of economic collapse. Amidst these systemic failures, subnational actors—particularly municipalities and unions of municipalities—have emerged as the most immediate agents of service provision and resilience-building. This paper examines the transformative potential of decentralized renewable energy deployment in Lebanon, with a focus on local governance, social equity, and regional cooperation in the MENA region.

Leveraging Local Governance for Energy-Water-Agriculture Integration

Municipalities in Lebanon, especially in semi-arid regions such as the Bekaa Valley, Akkar, and the South, operate at the nexus of energy, water, and agriculture. Law 318/2023 on Distributed Renewable Energy (DRE) provides a significant opportunity for local authorities to manage these interdependencies more effectively. By legalizing net metering and peer-to-peer electricity trading, the law enables agricultural cooperatives and municipalities to:

- Install solar-powered irrigation and water pumping systems, reducing dependence on diesel generators;
- Optimize energy use for cold storage and irrigation schedules;
- Monetize rooftop and land assets for photovoltaic (PV) systems, thereby funding water-saving technologies like drip irrigation.

The integration of DRE with Sustainable Energy and Climate Action Plans (SEACAPs) is key to achieving long-term resilience. SEACAPs provide structured, locally-driven roadmaps for identifying vulnerabilities, setting measurable goals, and mobilizing international finance. When linked with Law 318/2023, SEACAPs empower local authorities to coordinate decentralized energy projects with water conservation and agricultural productivity objectives.

Barriers to Implementation: Financing and Capacity Gaps

Despite promising legislative frameworks, Lebanese municipalities face major barriers. The collapse of green financing tools like NEEREA and the banking sector crisis have left local entities with limited access to capital. Additionally, most municipalities lack technical expertise in renewable energy design, implementation, and maintenance. To address these constraints, a multi-stakeholder approach is needed:

- International donors and public-private partnerships (PPPs) must play a greater role in funding decentralized systems;
- Vocational training programs and diaspora-funded capacity-building initiatives can support long-term project sustainability;
- Regulatory oversight is required to ensure that decentralized energy benefits are equitably distributed and technically sound.

A Just Transition: Reaching Marginalized Communities

In Lebanon's fragmented governance landscape, local authorities are uniquely positioned to lead a just energy transition—one that centers the needs of marginalized groups such as women-headed households, rural farmers, refugees, and informal laborers. Small-scale, solar PV microgrids and cooperatives offer a scalable solution. These systems can reduce energy poverty by:

- Offering affordable electricity in underserved regions;
- Powering water systems, clinics, and schools;
- Enhancing economic inclusion through community-managed energy projects.

Law 318/2023 provides a legal mechanism for municipalities to create local energy communities, facilitating peer-to-peer trading and cooperative ownership models. However, intentional planning is required to embed social equity into energy transitions. Local governments must integrate inclusive criteria into SEACAPs by mapping energy poverty, engaging vulnerable groups in planning, and aligning renewable energy efforts with social protection policies.

Regional Cooperation: A Pathway to Shared Solutions

Lebanon's energy and water challenges are not unique. Across the MENA region, climate-induced stress, water scarcity, and unreliable grids call for regional cooperation. Platforms such as the Covenant of Mayors – Mediterranean (COM-MED) and meetMED facilitate cross-border knowledge exchange and policy harmonization. These programs:

- Offer training on the water-energy nexus;
- Share case studies from Tunisia, Morocco, and Jordan on solar-powered water systems;
- Support local staff through technical assistance and gender mainstreaming in energy strategies.

Moreover, institutions like UNESCWA, GIZ, and the Union for the Mediterranean (UfM) provide crucial support for Lebanese municipalities in project development, data harmonization, and accessing climate finance. A decentralized, modular approach—focusing on thematic clusters such as solar for agriculture or municipal energy planning—can offer adaptable cooperation tailored to Lebanon's local context.

Financing the Transition: Climate and Blended Finance Models

Access to finance remains the cornerstone of a successful decentralized energy transition. Global mechanisms like the Green Climate Fund (GCF) and Adaptation Fund provide viable financing options but often require co-financing and technical proposal development, which exceed the capacity of most Lebanese municipalities.

To bridge this gap, intermediary institutions or technical assistance hubs should be established to:

- Help local governments develop bankable proposals;
- Coordinate blended finance models that combine public grants with concessional loans or private investment;
- Ensure project monitoring, reporting, and sustainability standards are met.

Successful examples already exist, including UNDP's CEDRO project, which funded solar installations for both Lebanese and Syrian refugee populations, and RESLOG, which enabled participatory planning in vulnerable regions.

Institutional Flexibility for Regional Engagement

Current regional institutions—such as the Arab Ministerial Council for Electricity—provide high-level policy guidance but often fail to engage local governments meaningfully. Lebanon would benefit from the establishment of decentralized cooperation platforms that:

- Directly involve municipalities in design and monitoring;
- Encourage data sharing across borders;
- Enable modular project design tailored to fragile contexts.

For instance, thematic regional working groups on municipal PV systems or water-saving solar agriculture could help local actors across MENA overcome shared barriers while advancing climate goals.

Conclusion

Lebanon's local authorities stand at the front lines of the country's transition toward sustainable and resilient energy systems. In the absence of national leadership, municipalities must lead with decentralized, integrated, and inclusive energy strategies. Legal frameworks like Law 318/2023,

when paired with SEACAPs and supported by regional cooperation, present a unique opportunity for Lebanon to advance a just energy transition.

However, the success of this approach depends on four critical enablers:

1. Reliable access to finance and technical assistance;
2. Strengthened institutional capacity at the municipal level;
3. Deepened cooperation with international partners and regional platforms;
4. A deliberate focus on social equity and community engagement.

Only through these mechanisms can Lebanon achieve not just a green transition—but a just and resilient one.