From Collapse to Capacity: How Civil Society and the Private Sector Are Powering Lebanon's Energy Transition

By Ilda Nahas

Lebanon's energy transition didn't begin with policy—it began with collapse. In the wake of the August 4, 2020 Beirut port explosion and the country's deepening financial meltdown, electricity became a luxury. Daily power supply on the public grid dropped to as little as two to three hours. Diesel generators—once the unofficial backbone of Lebanese electricity—faltered under skyrocketing costs, limited supply, and logistical breakdowns. For many Lebanese, the lights went out—and didn't come back on.

In response, households, farmers, businesses, and civil society actors did what the state could not: they built power from the ground up. Rooftops became solar farms. Parking lots turned into microgrids. Community centers, health clinics, schools, and even gas stations installed solar panels to stay operational. For many, solar was no longer a green choice—it was the only way to survive.

This bottom-up movement is now powering a decentralized energy transition across Lebanon. It's not government-led, nor uniformly legal. But it is effective. And while it remains vulnerable to institutional inertia and legal ambiguity, it offers a clear lesson: in the absence of the state, communities innovate.

A Crisis-Driven Transition

Lebanon's decades-long energy dysfunction is rooted in political gridlock, underinvestment, and outdated infrastructure. But the post-2019 collapse accelerated the unraveling. As the Lebanese lira plummeted and fuel imports dwindled, the once-ubiquitous diesel generators could no longer keep pace. Neighborhoods faced rolling blackouts. Refrigerators sat empty. Mobile phones were charged in shifts. Businesses closed early, or shut down altogether.

In this vacuum, the shift to solar was not a calculated energy policy—it was necessity. Families pooled resources to install small rooftop systems. Some neighborhoods shared power through improvised wiring. Farmers in the Beqaa Valley built solar irrigation systems to keep crops alive. Urban hospitals and manufacturers began supplementing diesel with solar to stabilize critical operations and reduce costs.

By 2023, Lebanon had installed over 1,300 megawatts (MW) of decentralized solar—exceeding government targets and covering more than 30 percent of demand in some areas. But this achievement was largely invisible to formal energy planning, as most systems were off-grid, donor-supported, or installed informally.

Private Sector Leadership

As the market responded to growing demand, Lebanon's private sector moved quickly. Solar installers, engineers, technicians, and importers filled the gap left by the state. Businesses invested in hybrid systems to power their factories and retail spaces. In the absence of centralized guidance, innovation thrived. Installers developed tailored systems for urban balconies, rural water pumps, and complex industrial setups.

The solar boom also created new jobs and spurred entrepreneurship. Young engineers and technicians entered the workforce with green skills. Startups offered energy storage solutions and digital monitoring tools. Informal microgrids sprouted across villages, allowing communities to share solar-generated power—often without formal authorization.

However, this momentum operated in a legal grey zone. Lebanese law allows individuals to generate solar power for personal use up to 1.5 MW. But sharing power—even within communities—remains technically illegal. Without enabling regulation, most systems exist by informal tolerance, not institutional support.

Civil Society at the Center

Where the private sector delivered hardware and innovation, civil society provided inclusion, access, and trust. NGOs, development organizations, and local cooperatives mobilized donor funds—from the UN, EU, bilateral agencies, and the Lebanese diaspora—to support solar adoption in underserved areas.

Their work has been far-reaching. Solar-powered irrigation projects have sustained agricultural communities. Streetlights installed by NGOs have improved safety in rural towns. Public schools and vocational centers gained uninterrupted electricity, often for the first time. Health dispensaries now store vaccines in solar-powered refrigerators and conduct night-time medical services with reliable lighting.

Crucially, these projects weren't imposed from above. NGOs led community consultations to identify needs, build trust, and ensure sustainability. Many promoted gender equity in project design, trained women as technicians, and prioritized youth engagement. In doing so, civil society filled governance gaps—not only by providing services, but by modeling transparency, participation, and social cohesion.

Data and Regulation: The Missing Links

Despite the impressive progress, the transition remains fragile. Lebanon lacks centralized, reliable data on energy demand, solar production, and system performance. Energy planning today depends on estimates and anecdotes. Without technical visibility, it is impossible to scale, coordinate, or regulate effectively.

Public safety is also a growing concern. Poor-quality installations, improper wiring, and inadequate safety standards have led to fires and equipment failure. Winter storms have dislodged solar panels, damaging property and risking injury. Though such incidents are rare compared to total installations, they highlight the urgency of inspection systems, installer certification, and quality enforcement.

Meanwhile, the lack of end-of-life planning for solar components—particularly batteries and panels—poses emerging environmental risks. Without clear regulations for recycling or disposal, Lebanon could face a new form of waste crisis in the years ahead.

Legal Frameworks Exist—But Are Dormant

Lebanon is not without laws. Law 462 (2002) allows for independent power producers and public-private partnerships up to 10 MW. More recently, Law 318 (2023) authorized net metering and peer-to-peer solar trading—potentially unlocking over 1,200 MW of clean energy integration.

But legal progress in Lebanon is often trapped by consensus politics. Reforms pass but stall in implementation. Municipalities lack the authority to issue permits or co-finance energy projects. National bodies lack the capacity—or will—to enforce safety standards. As a result, well-intentioned laws gather dust while informal systems carry the load.

What Comes Next?

Despite these structural constraints, Lebanon's grassroots energy transition continues to expand. Villages are building local mini-grids with diaspora or donor support. Some municipalities have introduced basic energy management systems, while others are exploring community solar co-ops and blended finance schemes.

Wind energy, too, remains an untapped opportunity—particularly in the Akkar region, where stable wind corridors could complement solar in diversifying Lebanon's energy mix. Pilot projects have begun, but significant investment, planning, and regulatory reform are still needed.

To sustain and scale this momentum, Lebanon needs a new social compact around energy—one built on trust, shared responsibility, and institutional support.

A Path Forward

The path forward is clear, if difficult:

- **Legalize community energy systems** and provide municipalities with the authority to manage, monitor, and co-invest.

- **Operationalize peer-to-peer solar trading** through technical guidelines, permitting tools, and legal frameworks.
- **Enforce safety standards and installer certification**, with an independent inspection body and public reporting tools.
- **Expand inclusive financing mechanisms**, such as pay-as-you-go solar loans, crowdfunding platforms, and microfinance for rural access.
- **Invest in open energy data** platforms to inform planning, support research, and track progress transparently.
- **Center energy equity** by ensuring low-income households, refugees, and marginalized communities are not left behind.

This is not just a policy challenge—it's an opportunity. Lebanon's citizens have already demonstrated vision, capacity, and will. What they need now is a government—and a regulatory system—that matches their urgency.

Lebanon's lesson is powerful: when state institutions fail, communities can—and do—lead. But without institutional backing, bottom-up innovation risks becoming unsustainable. A decentralized energy transition is not only possible—it is already underway. The question is whether Lebanon's leaders will choose to recognize it, regulate it, and help it thrive.