

An enabling environment for elite capture:

The political economy of environmental policies in Lebanon

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About the Author

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Abstract

Lebanon's environmental and energy crises are deeply rooted in its political economy, where elite capture has stymied efforts at reform. Addressing these challenges requires more than technical fixes; it demands a comprehensive overhaul of the political structures and institutional frameworks that enable the country's ruling elite to prioritise private gain over the public good. With targeted legal reforms, better governance, and a commitment to inclusive development, Lebanon can make meaningful progress toward a sustainable future.

Executive Summary

This policy paper examines the intricate relationship between environmental policies and clientelistic politics in Lebanon, with a focus on how political and business elites exploit the country's natural resources for personal and financial gain. It delves into two key sectors—quarrying and energy—to reveal how elite capture, a fragmented institutional framework, and entrenched political patronage have led to the erosion of sustainable policy-making since the 1990s.

The analysis follows a two-tiered approach, first outlining how Lebanon's flawed political economy negatively impacts its population, particularly in terms of environmental degradation and energy insecurity; and then identifying the root causes of these problems through the lens of 'extractive' versus 'inclusive' political institutions. Extractive institutions, which concentrate wealth and power among a small ruling elite, perpetuate inequality, stifle economic growth, and exacerbate environmental degradation. This entrenched system of elite control over resources has left Lebanon's environmental and energy sectors in a state of prolonged crisis.

The Quarrying Sector:

Illegal quarrying, which supplies the construction and cement industries, exemplifies how extractive institutions function. Despite the existence of laws and regulations, more than 90% of quarries in Lebanon operate illegally. Political elites leverage their influence to bypass regulatory frameworks, thereby facilitating environmental destruction for private profit. Quarrying continues to devastate Lebanon's natural landscape, including its mountains and coastlines, while regulatory authorities have failed to enforce existing laws. This failure stems from political and economic elites protecting their vested interests and shielding these illegal activities from scrutiny, leaving local populations to bear the brunt of the environmental damage and associated health risks.

The Energy Sector:

Similarly, Lebanon's energy sector is fraught with inefficiency and corruption. Électricité du Liban, the state-run electricity provider, is financially insolvent, delivering poor service while being burdened with enormous debt. The generator market, estimated to be worth billions of dollars, is dominated by politically connected owners, who have thrived under the status quo, turning the energy crisis into a profitable business at the expense of the broader population. Efforts to transition to renewable energy, particularly solar power, have gained momentum in recent years, but progress is hindered by regulatory bottlenecks, infrastructure challenges, and the political class's reluctance to relinquish control over the energy sector.

The paper argues that Lebanon's environmental and energy crises are political in nature. Without addressing the political structures that enable elite capture, even technically sound policy solutions will remain ineffective. Real reform requires dismantling the patronage networks and establishing inclusive institutions that serve the public interest, not the elite's private gains.

Key recommendations include enforcing comprehensive laws to regulate quarrying, liberalising the cement industry, and establishing an independent energy regulator. These structural reforms are essential for Lebanon to achieve sustainable development and environmental justice.

Key recommendations:

- 1. Regulation of the Quarrying Sector:** Lebanon must strictly enforce comprehensive laws and regulations for quarrying activities. Regular inspections and stringent penalties for violations should be mandated. Strengthening monitoring bodies and enhancing coordination with law enforcement bodies, such as municipalities and the judiciary, are essential for effective governance in this sector.
- 2. Liberalisation of the Cement Industry:** The cement industry must be liberalised to foster competition and reduce the dominance of the elite cartel. This requires opening the market to new entrants, both domestically and internationally, through transparent licensing processes and removing import barriers. By promoting fair competition, the cost of cement could be reduced. It is also vital to address conflicts of interest, particularly by enforcing asset disclosure laws to prevent politically exposed individuals from holding stakes in the industry.
- 3. Energy Sector Reform:** Lebanon's energy sector must undergo significant reform to ensure reliable, affordable, and sustainable energy. Establishing an independent energy regulator is crucial for overseeing the sector, ensuring transparency, and depoliticising decision-making. Additionally, separating policymaking, regulatory, and service provision functions within the energy sector will help reduce conflicts of interest. Decentralising the energy grid, especially by empowering local communities and municipalities to generate their own electricity through renewable sources, could also alleviate Lebanon's dependence on costly diesel generators. However, the success of decentralised solar micro-grids hinges on adequate funding and regulatory support.
- 4. Transition to Renewable Energy:** While solar energy offers a promising alternative, its expansion depends on a regulatory framework that encourages private investment and infrastructure development. The recently adopted Distributed Renewable Energy Law is a positive step. However, to fully realise its potential, Lebanon must create the long-delayed Electricity Regulatory Authority, upgrade the national grid, and introduce incentives for renewable energy investments.
- 5. Good Governance:** Fundamental to the success of these recommendations is the promotion of transparency and accountability. This includes enforcing asset disclosure laws, ensuring strong and independent oversight bodies, and removing political interference from the management of public resources. Structural reforms are necessary to dismantle the patronage networks that have dominated Lebanon's policy-making for decades.

List of Acronyms

AUB	American University of Beirut
CoM	Council of Ministers
DGA	Department of Geographic Affairs
DRE	Distributed Renewable Energy
EDL	Électricité du Liban
EDZ	Électricité de Zahlé
ERA	Electricity Regulatory Authority
IEA	International Energy Agency
kWh	Kilowatt-hour
LAF	Lebanese Armed Forces
LBP	Lebanese Pound
LCEC	Lebanese Centre for Energy Conservation
MoE	Ministry of Environment
MoEW	Ministry of Energy and Water
MoIM	Ministry of Interior and Municipalities
MoF	Ministry of Finance
NCQ	National Council for Quarries
NPMPLT	National Physical Master Plan of the Lebanese Territory
SOER	State of the Environment Report

Introduction

This paper explores the intersections between environmental policies and clientelistic politics in Lebanon. It shows how, since the 1990s, sustainable environmental policy-making has been forfeited to the benefit of politicians and politically connected businesspeople. These actors have used loopholes in Lebanon's fragmented institutional framework for their profit, in pursuit of personal power and monetary gains. Two sectors of activity with an environmental dimension were investigated in this regard: the quarrying industry and the transition to clean and affordable energy.

The paper provides a synthesis of existing analyses and lived experiences of activists through a political-economic lens. A thorough documentation review was conducted, covering a diverse array of technical studies, policy papers, academic articles, and investigative reports. Additionally, key informant interviews were carried out between July and August 2023 with subject matter experts, including researchers, consultants, government officials, staff of international agencies and organisations and activists with unique exposure to the subject. Inputs from the interviews are not quoted in the paper but were used as anecdotal information to guide the analysis and narrative.

The analysis follows a two-tiered approach. It starts with a summary of the policy problem based on how it is observed and experienced by those who are meant to benefit from these policies: the population of Lebanon. Then, the analysis delves into the root causes—the deeper political-economic factors, structures, and relationships—that perpetuate the problem. The root-cause analysis is premised on the conceptual opposition between 'extractive' and 'inclusive' political institutions. Extractive institutions are defined as economic and political arrangements that concentrate power and resources in the hands of a small ruling elite, often at the expense of the broader population. These institutions tend to stifle economic growth, discourage innovation and investment, and reinforce inequality. In contrast, inclusive institutions protect the rights of wide sections of society and enable them to participate in governing the country and make decisions that are beneficial to the majority, thereby fulfilling the public good (Acemoglu & Robinson, 2013).

At its core, the making of extractive institutions is the story of how taxpayers' money and society's resources are systematically channelled to politicians and politically connected businesspeople. In this respect, this paper adopts a similar stance to a recently published article by Julia Choucair-Vizoso (2024) titled 'The political economy of environmental harm in Lebanon.'

Lebanon's sectarian power-sharing political system lends itself well to this analytical framework. Hannes Baumann (2016) sums up the *modus operandi* of Lebanese politics perfectly: 'Lebanon is run by a confessional elite cartel. Their continued rule and their ability to deliver to "their" community in the process of confessional bargaining depends on their control of patronage resources, which they redistribute through communal clientelism. The power of Lebanon's sectarian elite cartel is therefore dependent on a political economy that concentrates wealth in the hands of an economic and political elite, which redistributes a small part of these resources through patronage' (Baumann, 2016). Along the same lines, Reinoud Leenders (2012) writes that the goal of policy-making in Lebanon 'is to service patronage relationships rather than to deliver the vital resources that residents need to live.'

Lebanon's quarrying activities qualify as a textbook case of how nature has been normalised as a site for direct plunder and rent extraction—a concept known as the 'commodification of ecosystems.' Acting with impunity, oligarchs are actors who personally command massive concentrations of material resources, have ravaged the country's coast for private development and speculation, and decimated mountains through unregulated and illegal quarrying to produce lucrative cement (Choucair-Vizoso, 2024; Basbous et al., 2019).

Another sector that illustrates extractive institutions at work is energy. The quest for clean and affordable energy has been a challenging one because political decision-makers have handled the electricity system as a golden opportunity for rent extraction, leaving the population to suffer the cost of environmental degradation, including growing healthcare bills.

Subject matter experts largely agree that Lebanon's woes are political in nature, leading to symptoms that can be technically dissected. With vested interests at play, Lebanon's top officials have effectively prevented the enforcement of any sustainable environmental policy, regulation, and governance roadmap. As a result, policy recommendations consisting of technical steps alone are likely to fail, as they have over the past thirty years. A structural solution to these complex problems, therefore, can only be political.

Case Study 1: The quarrying sector

1. The observed problem: The growth of illegal quarrying

The persistent demand for cement and other building materials since the post-war reconstruction period and the real estate development boom that lasted until 2016 has placed the quarrying sector at the heart of interconnected political and business elites (Boswall & Minkara, 2021). During that period, the number of active and passive rock gravel and sand quarries grew significantly. According to one study, there were 784 quarries in 1989, covering an area of 28.97 km² (Darwish et al., 2011). A study conducted by the Department of Geographic Affairs (DGA) of the Lebanese Armed Forces (LAF) in 2003 has identified 1,200 quarries—1,125 of which are illegal, 67 operating under a short-term grace period, and only 8 operating with a valid permit. A 2008 study geo-referenced an increase in the number of quarries between 1996 and 2005, from 711 to 1,278, covering a total area of 52.67 km² (Darwish et al., 2008). In 2018, Attallah geo-referenced about 1,330 active and passive, as well as formal and informal rock, gravel, and sand quarries, with an aggregated area similar to previous estimations, that is, 0.6% of Lebanon's land area.

In 2022, a follow-up survey by the LAF's DGA identified at least 1,235 illegal quarries that operated between 2007 and 2021, covering an area of 15.15 km² (L'Orient Today, 2023; Doumani 2022), which is a relatively low estimate. The survey also showed that 10.2% of quarries encroach on state property, 16.3% on private property, and the ownership of 12% of them could not be specified (Swaidan, 2023; Weltzien, 2008).

Although several laws and decrees have attempted to regulate quarry creation and operations, illegal quarries continue to operate in plain sight, with over 90% of Lebanon's quarries being illegal and unregulated (Weltzien, 2008; Boswall & Minkara, 2021).

2. The governance framework: legal loopholes and law enforcement deficiencies

Decree 8803 of 4/10/2002 and its amendments are the main sources of legislation defining the licensing procedures for quarries and crushers, as well as their operation, management, and rehabilitation (SOER, 2020, p. 283). It designated four remote areas of the Beqaa Valley where quarries are permitted, covering a total area of 163 km². Twelve additional areas were added by Decree 1735 of 14/04/2009, raising the total quarrying area to 237 km². In the same year, the National Physical Master Plan of the Lebanese Territory (NPMPLT) was adopted (Decree 2366 of 20/06/2009), which identified land use options, including quarrying. Although the NPMPLT was intended to supersede previous quarry regulations, it has not been implemented in the quarrying sector or beyond. As such, Decree 8803 and its amendments continue to serve as the main framework for regulating quarries and crushers.

Today, more than 95% of quarries are located outside the areas designated by the National Plan of Sites Suitable for Quarries of the Ministry of Environment (MoE). Moreover, the numerous standards and requirements stipulated by the MoE are often ignored. For instance, the regulations forbid quarries from being located on high hilltops visible from the seashore and the international roads, as well as in areas of touristic and archaeological importance, green lands, and regions of high biodiversity. All crushers must also meet environmental standards and, if located outside the quarry, be installed within the vicinity of the project and only for a limited time.

A drive through the Lebanese mountains provides enough proof that these regulations are being flouted with impunity (Boswall & Minkara, 2021). Mobilisations against quarrying—such as those by the Matn-based Lebanese Committee for Environment and Development, and the demonstrations in Koura and Ain Dara—have all failed.

The MoE issued several decisions regulating the licensing system, including Decision 48/1 of 2009, which defines the licensing mechanism for the rehabilitation of crushers; Decisions 52/1 to 57/1 of 2011, which outline the licensing conditions and documentation requirements for various types of quarries and crushers, including stone, friable gravel, sand, rock, and mosaic gravel; Decision 190/1 of 2018, which specifies the licensing conditions and required documents for the operation of 'small quarries', defined as sites with a maximum extraction of 40 cubic metres per day, where the sale of extracted material is prohibited. A successful permit must pass through the Ministry of Interior and Municipality (MoIM), the National Council for Quarries (NCQ), and the relevant municipality (see Figure 1), and it can be renewed annually for up to five years. The key player in the licensing process is the NCQ, which comprises representatives from nine public agencies and is presided over by the Minister of Environment, as per Decree 9222 of 9/12/2002. This framework entrusts the MoE with monitoring powers while leaving enforcement powers to the MoIM which are exercised through governors and municipalities, or qaimaqams in the absence of the latter.

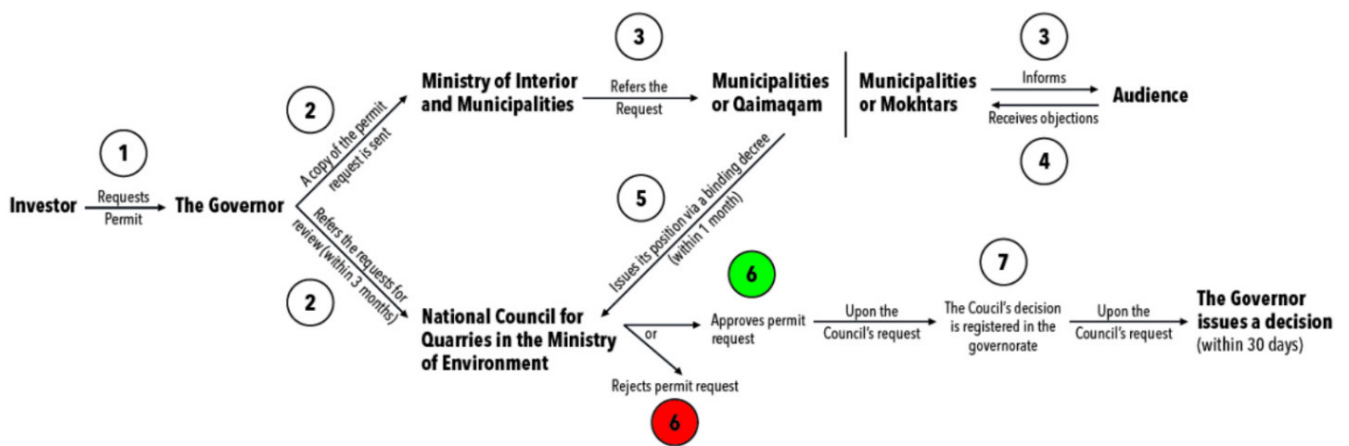


Figure 1. Permitting procedure for quarries (Public Works Studio, 2019).

By law, those operating a quarry without a license or with an expired one face up to one year of imprisonment and a heavy fine. If the violation is repeated, the penalty may be doubled. In reality, there are several ways to circumvent the system. For example, most licenses are obtained through political or economic clout, without complying with Decree 8803/2002 (Public Works Studio, 2019; Boswall & Minkara, 2021). Additionally, many quarries operate under different labels (see Box 1) to evade regulation (SOER, 2020, p. 279).

Box 1 | Labels used for quarrying activities to avoid the licensing process

- Administrative 'extensions' or permits
- Land reclamation or parcelling
- Stock transfer
- Transportation of extracted material from communal lands
- Construction materials warehouses
- Sand washing plants
- Concrete mixers
- Asphalt mixers
- Stone saws
- Crushers
- Artificial sand mining
- Construction of roads
- Rehabilitation, leasing, construction, and maintenance of internal roads
- Construction permits
- Execution of hilly lakes

Furthermore, applications for a crushing license without a quarry require the approval of the Ministry of Industry.

The Ministry of Finance (MoF) is another important player since it sets licensing fees. Quarrying fees payable to the MoF include a lump sum of 5 million Lebanese Pounds (LBP) upon issuance of a quarrying permit and an additional fee of LBP 1,000 for every cubic metre extracted. Fees paid to the MoF are then transferred to the concerned municipality. Municipalities also have the right to charge a variable annual fee on licensed quarries operating within their jurisdiction, depending on the type of material extracted. Since the devaluation of the Lebanese pound, which lost 98% of its value in mid-2019, it is worth questioning whether these licensing fees remain aligned with the current economic condition.

Finally, the institutional framework would be incomplete without acknowledging two key actors in the sector: the Council of Ministers (CoM) and the judiciary.

There has been a long unsuccessful track record to stop illegal quarrying. In June 1994, the government decided to shut down the crushers and issued Decree 5616 of 06/09/1994 to that effect—the first of its kind at the time. However, the decree was later nullified by the same government and subsequent ones, which granted consecutive 'administrative grace periods' for quarry owners and operators. In 2019, the government issued decisions to close down illegal quarries, but these were quickly overturned by successive temporary authorisations permitting the resumption of operations. On 19 January 2022, the State Council issued two rulings nullifying administrative decisions that had authorised cement companies to continue operating quarries. The first ruling concerned a case filed by the Federation of Koura Municipalities in cooperation with the Legal Agenda against the government's decision on 10 August 2019 to grant a three-month grace period for all quarries to continue operating. The second ruling involved a case that the environmentalist organisation Earth Will filed, also in cooperation with the Legal Agenda, challenging the MoIM Minister's decision to grant a grace period allowing cement companies' quarries to continue operating on 19 March 2021 (Saghieh, 2023).

Less than 20 days later, however, the CoM granted crusher owners a 90-day administrative grace period to continue operating. Illegal activities are still ongoing to this day.

The CoM's decision to close the quarries came as an acknowledgement—often by individual ministers or the Prime Minister—of the severe environmental harm caused by the quarries and their illegal operations. At the same time, the CoM has been quick to justify their decision to grant grace periods by citing 'market needs' and the 'need for reconstruction'—referencing issues throughout the 1990s, then the aftermath of the July 2006 war, the Beirut port blast, and other events. Another reason given is the 'pragmatic choice' to allow the sector to operate until comprehensive legislation to regulate the extractive industries is developed. Despite its urgency, no such legislation is currently being discussed. In March 2019, the MoE developed a policy for the Integrated Management of the Quarries and Crushers Sector, which was adopted by the CoM through Decision 45 of 21/03/2019. This decision also granted a three-month grace period for quarries operating without a permit. Based on this policy, the MoE drafted a new quarries master plan in 2019, which included a draft decree revising Decree 8803/2002 and its amendments, but it has not yet been issued. Until its adoption, no measures have been taken.

3. The root causes: élite capture in action

Many of the shareholders and board members of Lebanon's three cement production companies Cimenterie Nationale S.A.L. (44% of the market), Lafarge Holcim Ltd (38% of the market), and Ciment de Sibline S.A.L. (18% of the market)—have close connections with the political class and the banking sector. Since 1990, these companies have owned at least one-quarter of quarries, almost all of which are illegal. Many, if not most, of the remaining quarry owners also nurture privileged ties with politicians, influential municipal officials, and security agencies. In exchange for political protection, quarry owners provide valuable raw materials to cement production companies to perpetuate their oligopolistic dominance.

The cement companies' connection to political power is the main obstacle to implementing proper regulation in the quarrying and crushing sector. This proximity facilitated the adoption of prohibitive tariffs on cement imports (approximately 75% of the product's value) in the 1990s, effectively functioning as an import ban. Another regulatory anomaly is a requirement under Decree 8633/2012 that Environmental Impact Assessment studies be provided by the contracted company rather than a third party. Such a requirement, however, creates a clear conflict of interest.

With foreign competition excluded, Lebanese consumers are left with no choice but to buy overpriced Lebanese cement. Even local newcomers to the cement sector are at a disadvantage. Price fixing and opaque licensing procedures by the Lebanese authorities have consolidated the cartel's oligopoly.

In August 2020, the government threatened to lift tariffs on cement imports to secure the cartel's compliance with a new cement price ceiling (Boswall & Wood, 2020). This led cement providers to drop their prices to around USD 30 per tonne, a significant drop from the previous price of USD 100 per tonne. However, this isolated measure did not upend the status quo. Despite the eventual lifting of the cement import tariffs, not a single bag of cement has arrived in Lebanon from abroad due to continuous restrictive import requirements (Boswall, 2021). This means that the cement production companies still have the leverage to raise their prices at any time.

As for quarry owners, their activities remain immune to prosecution. In the rare occurrence where legal action is taken against them, the cases of Koura and Ain Dara have shown that politicians can quickly mobilise judicial authorities and law enforcement agencies to revert to business as usual.

Case Study 2: Lebanon's energy sector and the transition to clean and affordable energy

1. The observed problem

The International Energy Agency (IEA), a leading intergovernmental organisation dedicated to shaping sustainable energy policies, identifies three fundamental pillars of energy security: availability, affordability, and accessibility. None of these principles are followed in Lebanon.

Since 1992, Lebanon's population has had to adapt to prolonged electricity blackouts and a normalised violation of their right to electricity, as well as their right to an adequate standard of living, health, and a healthy environment (Majzoub et al., 2023). In 2018, Électricité du Liban (EDL), 'covered just 63% of the country's total electricity demand. Ten years earlier, 78% of the demand was met' (Van Halm & Ghantous, 2022). The growing gap is attributable to the country's increasing population and consumption, as well as the lack of planning and insufficient investment in adequate infrastructure. As of March 2023, households in Lebanon endured an average of 12 to 20 hours of daily blackouts, depending on the area, with some areas experiencing total blackouts for up to 24 hours (Bou Khzam, 2024).

EDL, the state-run electricity company, is mired in staggering financial losses that have amounted to half of Lebanon's public debt. According to 2017 World Bank data and the American University of Beirut (AUB) Issam Fares Institute's Energy Policy and Security programme, EDL is the most unprofitable utility in the region (2017). According to a 2022 World Bank report, EDL has been a significant contributor to the high government debt, costing the government around USD 40 billion, with annual losses adding up to USD 1.5 billion between 1992 and 2018 (Bou Khzam, 2024). According to another source, aggregate transfers from the national treasury to cover EDL's losses totalled approximately USD 43 billion between 1993 and 2020 (Monson, 2023), i.e., an average of around USD 1.6 billion per year.

EDL is the only state-owned enterprise responsible for electricity generation, transmission, and distribution in Lebanon. It falls under the tutelage of the Ministry of Energy and Water (MoEW), which is responsible for strategic planning and policy development for the sector. The MoF also holds considerable influence, as it exerts financial oversight over EDL and is instrumental in bankrolling electricity projects. Another key policy actor is the CoM, which ultimately signs off on all policies and related spending.

The national grid's reliance on expensive and highly polluting imported fuel oil makes it particularly vulnerable to energy insecurity, with little strategic interest in alternative energy sources until very recently. Amid spiralling inflation and a fluctuating exchange rate (with the Lebanese pound losing 98% of its pre-crisis value), the government has struggled to import fuel to maintain supply. The ensuing 'fuel crisis' was particularly acute between 2020 and 2022, until the MoEW eventually raised electricity tariffs in February 2023 to absorb a small part of its deficit.

Informal electricity generation is also a major problem. To supplement EDL's insufficient coverage, the government has tolerated the stopgap 'solution' of privately-owned diesel generators. This lucrative, costly, and highly polluting market has been filling the electricity supply gap for decades. The use of generators has grown rapidly since the mid-2000s, with coverage increasing from 22% to more than 50% of demand by 2020. Currently, their number ranges from 32,000 to 37,000 (Ahmad, 2020). By law, the generation of electricity, especially by private individuals, is strictly prohibited without a concession from EDL (MoEW, 2022). However, in 2011, the CoM issued a decree permitting the MoEW and the Ministry of Economy and Trade to regulate the informal electricity sector. This regulation of price-setting by generator operators provided tacit legal consent for generators to sell energy publicly (Ray, 2021).

The generator market is estimated to be worth between USD 2 and 3 billion (Ahmad, 2020). Generator owners thrive on massive profits and opaque tariffs, with rates as high as USD 0.30 to 0.45 per kilowatt-hour (kWh) depending on the area (Ahmad, 2020), which is double the cost borne by EDL to provide electricity. This results in exorbitant costs for individuals and businesses. In terms of negative externalities, Greenpeace found that the annual cost of fossil fuel-induced air pollution to Lebanon was USD 1.4 billion—equivalent to between 1.3% to 4% of the country's GDP in 2018—due to lost work and associated healthcare costs (Majzoub et al., 2023). According to another study, in 2016 alone, electricity outages were estimated to have cost the Lebanese economy USD 3.9 billion (Bouri & El Assad, 2016). Forthcoming research by air pollution scientists at AUB has found that the Lebanese capital's over-reliance on diesel generators in the past five years has doubled the risk of developing cancer (Cheeseman, 2024).

A distinct feature in the Lebanese electricity sector is Électricité de Zahle (EDZ), a decentralised local utility in the Beqaa Valley, where customers receive uninterrupted public power provision. However, far from being a model worth replicating, this setup reinforces the status quo. The EDZ model involves purchasing subsidised electricity from EDL, when available, and autonomously generating its own power when EDL's supply is unavailable. Although EDZ has improved service for its customers, it is still plagued by corruption (Ahmad et al., 2022).

2. The political roots of the problem

The post-war history of Électricité du Liban unfolds a tale of unsustainable policies, persistent financial mismanagement, and resistance to external audits.

EDL's lack of financial viability results from high electricity production costs and low cost-recovery. Since 1994, EDL has maintained artificially low tariffs (USD 0.095 per kWh), while the cost of providing electricity by EDL increased from USD 0.02–0.13 per kWh in 1994 to USD 0.16 in 1996 and USD 0.23 in 2023 (Kanso, 2023; Monson, 2024). According to International Monetary Fund, additional debilitating factors include inadequate maintenance, leading to high technical and non-technical losses (35% of total energy generated) (2019), high rates of electricity theft, and significant non-payment of bills (40–45% according to a 2019–2020 MoEW report, but 57% in 2019 according to another source) (Monson, 2024). Despite its dire financial standing, EDL's policies have been lenient toward households that have not settled their bills, thereby reinforcing such behaviour. To cover EDL's budget shortfalls, the MoEW and the government have instead tapped into taxpayers' money.

One might wonder how such a dysfunctional system could have lasted for so long. A question that may lead us toward the answer is: who benefits from these policies? The small group of fuel-importing companies that dominate Lebanon's fuel supply.

While the Lebanese government imports 30% of the local market's needs, a handful of companies import the remaining 70%, including the diesel used by private generators. According to The Century Foundation, these companies own 53% of the country's fuel storage infrastructure, 68% of its tanker trucks, and 55% of its fuel stations (Cuyler, 2023). Moreover, these companies have made outsized profits from the government's fuel subsidies. They set the oil prices, while the government absorbs the annual national oil bill, estimated at nearly USD 6.5 billion (The Cradle, 2021). In other words, when the government incurs a deficit, fuel companies make a profit.

Examining Lebanon's political economy helps clarify how this vicious circle has continued for so long. Fuel importers hold sway in the political sphere because many of their shareholders are politically

connected or are politicians themselves. This situation leaves the MoEW with little leverage to exercise its regulator role. In fact, it is those companies that hold the upper hand.

Much like the fuel cartel, private generator owners coordinate through a syndicate (Cuyler, 2023, 2023) and maintain close relationships with politically affiliated individuals (Majzoub et al., 2023), which gives them additional clout and hinders policy changes. Their business model relies heavily on a stable exchange rate and profitable fuel importation. In 2017, Lebanon imported approximately USD 900 million worth of diesel for generators. By 2022, this figure was reported to have increased to USD 1.9 billion (Cuyler, 2023).

At the peak of Lebanon's fuel crisis in the summer of 2021, as the fluctuating exchange rate was undermining the profits of oil importers and generators, the fuel cartel manipulated the market by hoarding fuel to create artificial scarcity and capture higher profits. This occurred as the government slowly and reluctantly raised fuel prices (Cuyler, 2023). In summary, both generator owners and fuel importers have been making a fortune from this dysfunctional system, in complicity with the country's political class.

The high financial stakes in the generator market and among diesel importers explain why the electricity sector has been resistant to reform and why the government has continued to adopt policies that entrench Lebanon's oil dependency (Majzoub et al., 2023). The government's acceptance of private generators is therefore not only a matter of political pragmatism: vested political interests depend on their normalisation. In fact, the country's elites have actively allowed the proliferation of private generators, whose owners are politically connected.

The failures of the electricity sector all seem to stem from a single source: deliberate mismanagement by a political ruling class more concerned with safeguarding their own business interests and patronage networks, rather than serving the public good.

There has been consistent reluctance from the successive governments and the MoEW to implement governance reforms that would dismantle patronage networks. For instance, the government has steadfastly resisted international pressure for a financial audit to establish the extent of the electricity sector's financial woes. Although a local firm won an independent audit tender in 2022, as required by the World Bank to unlock two loans worth USD 600 million to import gas from Egypt and electricity from Jordan (Rose, 2022), the audit has not yet been conducted.

In addition, the Electricity Regulatory Authority (ERA), tasked with regulatory oversight of the sector and policy-setting, has not been created despite being stipulated in Law 462 of 2002 (Ayoub et al., 2021). This law, introduced in response to international demand and pressing local needs, provided a comprehensive framework for regulating the sector and laid the foundations for the privatisation and liberalisation of the electricity sector by ending EDL's monopoly on the production and distribution of electricity.

This law, however, has never been implemented. Even if it were, its implementation would be problematic due to the concentration of multiple powers within the ERA, which creates an internal conflict of interest. For example, the ERA is authorised to launch tenders and contracts with companies that produce electricity, making it both a regulator and a service buyer. According to good governance principles, regulatory authorities should remain independent and avoid involvement in policymaking and service provision.

As a result, the executive power—through the CoM, MoEW, and MoF—has been given significant control over the sector. These entities combine the roles of policy-setter, regulator, service provider, and funder: they issue production licenses and permits, develop policies, supervise their implementation, and exercise financial oversight. This centralisation of power has left EDL vulnerable to political

influence, as board appointments are based on partisan affiliation rather than merit. Consequently, this has created a diffuse decision-making system—a ‘perfect mechanism’ for evading accountability (Majzoub et al., 2023).

3. Lebanon’s ‘solar revolution’: The key to brighter days?

Crippling blackouts and skyrocketing bills have fomented a surge toward alternative energy solutions, mainly solar photovoltaic (Bou Khzam, 2024). At USD 0.049–0.057 per kWh (depending on estimates), solar is the most cost-effective energy source, significantly cheaper than EDL and generator bills. Additionally, solar energy improves air quality, provides more reliable coverage, and generates cost savings.

In 2018, renewable energy accounted for less than 3 % of total electricity generation, and 4 % in 2024 (IEA, 2021). In 2019, the share of renewables in Lebanon’s electricity generation had increased to 7.83%, with solar power contributing just 0.73% and hydropower to 1.82% (Majzoub et al., 2023). In 2022, Lebanon imported 80,315 tonnes of solar panels, four times the amount imported in the previous decade (Taha & Akel, 2024). In monetary terms, over USD 500 million was invested by the private sector in decentralised solar applications during the crisis (Boukather, 2023), excluding millions of dollars in solar power installations financed by international donors and aid organisations. This trend is encouraging, with MoEW’s pledge to produce 30% renewable energy in Lebanon’s total electricity production by 2030. This target was originally part of Lebanon’s commitment under the April 2016 Paris Agreement but gained significant attention in the wake of the financial crisis. According to several studies, it is technically possible for Lebanon to reach the 30% renewable energy target, and perhaps even to exceed it (Moore & Collins, 2020; Ersoy et al., 2021; Ayoub & McCulloch, 2021).

In this context, the ‘solar rush’ has prompted the MoEW to regulate the installation of solar panels in a centralised manner (see Figure 2). Instead of empowering municipalities and municipal federations, which would normally be the primary bodies in such cases, the procedure must first go through the Lebanese Centre for Energy Conservation (LCEC, an advisory body within MoEW), then the MoEW, followed by the MoIM, and finally reach the Internal Security Forces. It is highly unusual for national authorities and a security agency to have oversight over the installation of solar panels at residential and non-residential levels.

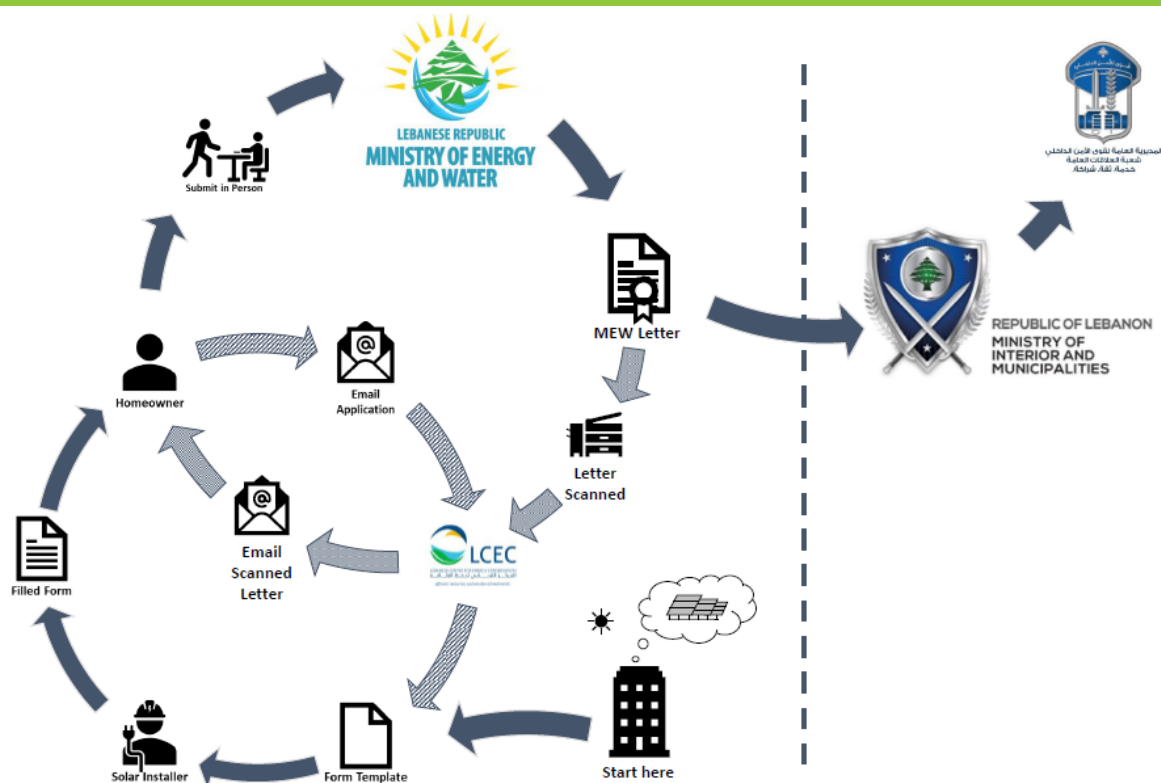


Figure 2. Permitting Procedure to Install Solar Panels (LCEC, 2021).

Another much-touted solution is to decentralise and go local by supporting municipalities and community groups in sustainably producing their own electricity, such as by establishing solar micro-grids (often called 'solar farms') at the community level. Several pilot projects have established solar micro-grids based on the single net-metering model in the towns of Kabrikha, Bshehleh, and Kfarmishki. In Kabrikha, the setup was formalised by appointing a 'local community energy committee', which served as a legal entity and entered into an agreement with EDL. The model offers several benefits, including bill savings, integration of energy surplus into the EDL grid, local ownership, and enhanced intra-communal trust—an essential element in a divided society like Lebanon's.

This growing infatuation with solar energy is not, however, enough to pull Lebanon out of the dark. Replicating and scaling up these models depends on the availability of private or donor funding, as well as necessary infrastructure upgrades, investments, and regulations by EDL—and for good reason: EDL has stopped operating the net-metering discount.

This is why there is considerable optimism about the new Distributed Renewable Energy (DRE) Law (No. 318). The law was adopted in December 2023 after a three-year process that involved the support of the European Bank for Reconstruction and Development, the MoEW, the LCEC, and EDL. In March 2022, the CoM approved the draft law after major amendments were made at its request. According to its advocates, the law could significantly increase Lebanon's reliance on clean energy sources and reduce its dependence on expensive and polluting fossil fuels.

The DRE law legalises net metering and peer-to-peer trading of renewable energy, allowing private renewable energy producers to connect their systems to the central EDL grid and sell electricity. Under this new law, consumers can trade the electricity they generate, from renewable energy sources, with EDL or store it in the grid for 12-month cycles, after which they are compensated for a percentage of the remaining surplus. As for the production and direct sale of electricity from renewable energy technologies, authorised producers can use the public grid to distribute their generated capacity nationwide, following an agreement with EDL and payment of a grid utilisation fee, capped by the ERA. They may also sell directly without using EDL's infrastructure when the end-users are on an adjacent estate. In both cases, electricity sales occur according to purchase agreements signed directly between the two. The law limits the capacity of privately owned renewable energy systems to 10 megawatts.

Several hurdles are currently preventing the application of the DRE law. Firstly, the law is linked to the establishment of the ERA and the appointment of its members. Secondly, the amendments introduced to the DRE law before its adoption are problematic. For example, the establishment of an 'intermediary' between the investor and the investment through the licenses awarded for production. While the draft law aims at incentivising private investment, it does not allow investors to generate, transmit, and distribute energy, thus hindering future investment (Maroun, 2022).

A successful DRE system where solar energy is integrated into the grid requires meticulous planning and strategic upgrades. The transition necessitates a forward-thinking approach to grid management, involving not only infrastructure enhancements but also the implementation of smart systems to ensure stability and efficient energy distribution.

At its core, the energy sector reform is organically dependent on a comprehensive transformation of the Lebanese financial system and the way political institutions function. A rigorous good governance framework, an enabling business environment, and access to financing opportunities are key—yet all are absent. For example, the stagnation of the banking sector is impeding access to financing opportunities from international financial institutions and private investors. To unlock funds, an overhaul of the banking sector is needed; this, however, conflicts with deeply entrenched political interests.

Without such improvements, the DRE system and the renewable energy market will continue to suffer significant losses from damages and inefficiencies. Another risk is that generator owners might use their growing wealth and influence to dominate the future DRE system. They could, for instance, leverage their political connections and control over the power supply to obstruct progress, or secure advantages for their operations. This would exacerbate the existing predatory and highly unequal system (Cuyler, 2023). Additionally, a commonly overlooked problem is the environmental cost of end-of-life solar panels. Instead of paving the way for a collective 'green transition', the 'solar revolution' could lead to severe environmental hazards from photovoltaic panel waste (Choucair-Vizoso & El Murr, 2022; Kanso, 2022).

Is there a way out? Current initiatives and prospects for redressing environmental politics

In 2020, the CoM tasked the LAF's DGA with surveying and documenting all existing active and inactive rock or sand quarries and extraction sites. It also appointed an inter-ministerial committee to oversee operations and set the fees to be collected from owners and investors. These fees include costs for environmental degradation, site rehabilitation, additional charges to the MoF if the exploited area exceeds the surface initially paid for, penalty fees for late payments, and fines for working without a license or violating the terms of an obtained one.

Following suit, Lebanon's caretaker Environment Minister Nasser Yassin announced in September 2023 an action plan to recover USD 2.4 billion in unpaid dues from quarrying operators. The sum of unpaid dues owed by the sector to the Treasury was estimated by a study prepared by the MoE and UNDP (Swaidan, 2023; L'Orient Today, 2023).

While these measures seem promising, their success requires a sustained and coordinated effort among national and sub-national government authorities—particularly between the MoE, the Ministry of Industry, and municipalities—as well as harmony with the judiciary and security agencies.

In the energy sector, a plethora of studies have proposed technical solutions for initiating an inclusive, equitable, and sustainable energy transition based on the principles of availability, affordability, and accessibility. The technical solutions are almost unanimously agreed upon by subject matter experts. Much like the quarrying sector, the energy sector also requires political decisions to solve an eminently political problem. Long-lasting change starts with the following entry points:

The quarrying sector:

- Adopt and strictly implement comprehensive laws and regulations, including physical master plans and land-use regulations, to definitively stop illegal quarrying activities.

The cement industry:

- Liberalise the sector to enable free and fair competition. New laws and regulations, including licensing and permitting procedures, should (1) support the entry of new cement production companies into the market and (2) remove all barriers to cement imports, thereby driving their prices down.
- End conflicts of interest arising from the involvement of politically exposed individuals in the industry. This can start with the implementation and gradual improvement of Lebanon's Law on Asset Disclosure, Conflicts of Interest, and Illicit Enrichment (amended in October 2020).

The energy sector:

- Establish and empower an independent regulator.

- Separate policy-making, regulatory, service provision, and oversight functions.
- Liberalise and decentralise the sector within a stringent regulatory framework that ensures users' right to clean and affordable energy.

Develop a roadmap to gradually professionalise and integrate the informal sector into the formal energy provision system.

- Mainstream transparency and accountability in public institutions.

In this light, the bigger question is: Can Lebanon overcome its sectarian-based and patronage-dependent

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