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To cite this version:

Éric Verdeil. Infrastructure crises in Beirut and the struggle to (not) reform the Lebanese State. Arab Studies Journal, 2018, XVI (1), pp.84-112. halshs-01854027

HAL Id: halshs-01854027

https://shs.hal.science/halshs-01854027v1

Submitted on 17 Aug 2018

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INFRASTRUCTURE CRISES IN BEIRUT AND THE STRUGGLE TO (NOT) REFORM THE LEBANESE STATE

By Éric Verdeil

In July and August 2015, thousands of Lebanese citizens protested the conspicuous presence of mounds of garbage on the streets of Beirut and towns of Mount Lebanon. These scenes confirmed that infrastructure breakdown and public service disruption are symptoms of the state's inability to fulfill the demands of its citizens. In light of Jawad Mouawad and Hannes Baumann's call for researchers to go "in search of the state," this article considers infrastructure as a site for the examination of governance and society in Lebanon.[1] It addresses the following questions: How do we interpret the failure of the state to provide basic public services? How does analysis of this failure provide insight into the particularities of the Lebanese state? Urban scholars have tended to address the inefficiency and weakness of public institutions in Lebanon through two major paradigms: neoliberalism and sectarianism.[2] Neoliberalism-focused analyses emphasize the state's retreat from domains in which it formerly intervened, its promotion of market-led policies, and its creation of new, purportedly more efficient institutions and agencies. Urban design and construction, seen most spectacularly in

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Solidere, epitomize this kind of change, which leads to gentrification and rising inequalities in capital accumulation.[3] Sectarianism-focused analyses explore how political groups with sectarian ties capture or use state bodies in order to advance their territorial and political interests, for instance by constructing territories of exclusive control such as the Dahiyeh (Dahiyya, which is itself a suburban area south of Beirut that today comprises several municipalities and towns), thus undermining the state's sovereignty. But the categories neoliberal and sectarian are not mutually exclusive. They can be combined, as Mona Fawaz does when she looks at Waʿad, the Hizballah-led rebuilding project of Haret Hreik (Harat al-Hurayk) after the 2006 war that was central to the party's reestablishment of political control over the residents. Fawaz reveals that Waʿad, nominally a sectarian formation, operates according to a conception of property that does not radically depart from neoliberal enshrinement of private ownership, as exemplified by Solidere.[4] Both paradigms emphasize how various social and political forces take control of state institutions in ways that contradict the autonomy central to Weberian theory's conception of a state oriented toward producing the public good.[5]

Until recently, few scholars have examined infrastructure in Lebanese cities. Many scholars of the city elsewhere, inspired by Stephen Graham and Simon Marvin's seminal work *Splintering Urbanism*, analyze infrastructure reforms in neoliberal terms and claim these reforms are to blame for widening social gaps.[6] But others criticize this approach for overstating the scope and the effectiveness of these reforms and missing the complex trajectories of infrastructural change, which owe as much to contextual factors as to structural macroeconomic transformations.[7] Infrastructure, however, can be a useful lens through which to observe state reconfiguration, provided that one does not preclude specific interpretations of state transformation.

This article draws on French sociologists Pierre Lascoumes and Patrick Le Galès's conception of public policy instruments. These authors argue that a public policy instrument "constitutes a device that is both technical and social, that organizes specific social relations between the state and those it is addressed to, according to the representations and meanings it carries. It is a particular type of institution, a technical device with the generic purpose of carrying a concrete concept of the politics/society relationship and sustained by a concept of regulation."[8] Dominique Lorrain applies

this approach to infrastructure in his 2014 book *Governing Megacities in Emerging Countries*. Observing that in many megacities there is no formal government but rather political disarray, Lorrain argues that such cities are "de facto governed through their networked services."[9]

Using these tools, Lorrain develops a conception of infrastructure as "second-level institutions," which are "neither formal nor informal" and "guide the actors in the detail of action" without political consensus or shared perspectives. Political authorities and business milieus view networked services as vital infrastructure without which the city would collapse. They believe that regulating these services requires elaborating or reforming instruments—financial regulations, master plans, rules of connection—many of which are inherited from the past. Negotiations over these instruments result in low-level agreements. Despite being highly technical, and very often materially and metaphorically "blackboxed," these instruments serve as an indirect means of governing the city by acting as "invisible pilots of collective action."[10] They illustrate a form of Foucaldian governmentality.[11] For Lorrain, the governance of networked infrastructure alleviates urban splintering in most cases. He argues that infrastructure development typically balances the practices of big and small real estate developers and divisive political factions.[12]

Lorrain's rather optimistic (or functionalist) claims identify the state with the effective delivery of public goods, even in circumstances where political institutions are paralyzed. By contrast, I argue that technical infrastructure cannot avoid the logic of decomposition that prevails in Lebanon. Political conflicts derail or delay almost every agreement to fix or upgrade infrastructure networks, contributing to the common perception that the state is vanishing. But the management of these public services on the ground, whether by ministers and other officials, technical operators, or private companies, merits serious analysis, as does the interplay of the managers with residents who use the services.

My argument is threefold. First, public infrastructure is a site of political struggle. Political actors seek to make infrastructure serve certain political and social interests, demonstrating their belief that these state institutions and instruments produce a range of effects worth competing for. Second, I challenge the view that that neoliberalism and sectarianism are radically narrowing and marginalizing the state and its institutions. When it comes to

infrastructure, the effects of neoliberal reforms are limited, largely because of the actions of local business elites who seek to preserve their business and political-sectarian interests. But political-sectarian groups cannot simply place infrastructure under their rule in order to achieve territorial autonomy and evade the state's authority. The evolving geography of public infrastructure neither reflects nor directly reinforces Lebanon's sectarian geography. Third, despite failing to deliver the expected service outcomes, the complex assemblage of more-or-less reformed infrastructural policy instruments produces strong social effects in terms of wealth distribution. These instruments accentuate Lebanese society's gaps and inequalities. This outcome is largely unintended, as is often the case with public policy instruments.[13] It is a product of the work of state institutions, however, and not proof of their absence.

To make this argument, this article explores urban services in Beirut through the main types of instruments that successive governments and their advisers—commonly from the World Bank and other international organizations—have adopted for their reform. I distinguish three kinds of instruments. First, I examine the geographic boundaries of the zones where urban services are organized and analyze their links with other administrative and political territorial frameworks. Do these spatial units exacerbate inequalities as a result of neoliberal policies? Do they accentuate sectarian divides? Second, I explore the services' financing instruments, such as subsidies and pricing. Which citizens—the poor or the rich—actually bear the costs of implementing physical and institutional changes? Can we identify mechanisms that protect the interests of political and sectarian groups? Finally, I discuss the introduction of public-private partnerships. By examining the procedures used by the government to regulate such partnerships, I identify their links to political and economic groups at the urban and national scales. I examine neoliberalism and sectarianism as opposing logics, although, as mentioned, they can be combined. Elites may also use these logics as discursive resources to hide other power-building and consolidation strategies.

After a brief discussion of the legacies of the Lebanese Civil War (1975-91) and the main orientations of post-war reform, the article examines waste management, sewage, and the provision of drinking water and electricity. I gathered data for this study in several ways. I carried out a number of

interviews concerning electricity management and reforms between 2005 and 2013 with political and administrative officials, consultants, workers, NGOs, and users. I also gathered extensive primary sources, such as internal reports and statistics, as well as press reports. The sections on the water and waste sectors rely more on secondary sources, as well as on a few meetings with officials, donors, and utility representatives.[14] This article concentrates on dynamics prior to the 2015 protests against the garbage crisis. However, the analysis therein incorporates some commentaries on the crisis that largely corroborate my findings.

Wartime Urban Services Management and Its Legacy

A few pioneering studies analyze urban services management during the Lebanese Civil War.[15] Their conclusions highlight several features. First, different factions used urban services such as water or electricity as weapons to achieve dominance in or reinforce power balances. Political-sectarian militias in highly fragmented territories replaced the state, which virtually ceased regulating and maintaining order. For example, Beirut's water supply came from reservoirs in the mountains east of the city, a territory dominated by the Lebanese Forces. The Lebanese Forces threatened to—and in some cases did—close sluices in order to put pressure on their adversaries, particularly during the 1982 Israeli invasion. Palestinian-progressive forces controlled the Jiyeh (Jiyya) power station south of Beirut and built a line to their western sector of the capital to achieve some autonomy from the Christian militia-controlled electric grid.[16] These practices shaped reconstruction plans. In these plans, the factors governing the development of power stations and water sources were not purely technical or financial. The plans also took into consideration how warring groups might control these resources if hostilities were renewed.

The war also affected network services by discouraging maintenance and investment. For example, families who were forced to relocate, searching for safety, expanded the city into areas where service networks could not handle increased demand or where there were no services. The mass dislocation produced local shortages and network deterioration due to excessive demand. The lack of investment hurt both production and networks. Neither the government nor the militias properly maintained water

treatment plants and power stations. Production capacity barely increased despite Lebanon's population growing by fifty percent during the war. The result was large-scale rationing: in the war's aftermath, the national utility limited power supply to around six hours per day.[17]

A third consequence of the war was widespread non-payment and what the utilities term "theft": illegal connections, tampering with meters, and so forth. The theft resulted from the state's withdrawal and its replacement by militias, which in some cases organized the pilferage themselves. In certain areas of the city, however, residents relied on theft as the only means of access to electricity, notably in informal settlements where the lack of building permits made legal access impossible (though in practice things were more complex).[18] Finally, the war facilitated the emergence of an informal water supply drawn from illegal boreholes, a trade in (more or less) drinkable water, and electricity produced by private generators. Initially, individuals owned these generators, and then residents developed collectives. The second half of the war featured the formation of commercial enterprises around such private service provisioning, sometimes supervised by militias, that charged very high prices. In the aftermath of the war, people wanted essential public services provision to return to the pre-war situation, in which the state provided services, albeit with difficulty.[19]

Infrastructure Reconstruction: Investment Precedes Reform

Infrastructure rehabilitation was a central priority in the Lebanese government's 1990s reconstruction policy. This policy aimed to both restore normal living conditions and promote economic development, viewing functioning infrastructure as an essential condition. To achieve these aims, the Lebanese government obtained a great deal of financial support, largely from international agencies.

According to Council for Development and Reconstruction (CDR) reports for the period 1992-2010, the state prioritized the transport, electricity, and waste sectors, along with drinking water and sewage. The disparity between the vast sums invested in these services and their chaotic performance is striking. It immediately raises questions about the effectiveness

Table 1. Public Investment in Lebanon, 1992-2010.

Sectors	Total Investment ($ millions)	Foreign Funding ($ millions)	Foreign Funding as Percentage of Total	Sectoral Share of Total Investment (%)
Physical Infrastructure				
Electricity	1455.17	1266.89	87	14
Telecommunications and Post	798.49	33.26	4	8
Transport	2625	995	38	25
Social Infrastructure				
Education	1077	499	46	10
Public Health	310.23	214.36	69	3
Environment & Urbanism	83.15	58.69	71	1
Social & Economic Affairs	104.52	41.81	40	1
Essential Services				
Water Supply	815.12	590.51	72	8
Sewage Treatment	650.16	382.22	59	6
Solid Waste	1558.45	33.58	2	15
Productive and Other Sectors				
Agriculture & Irrigation	114.68	87.03	76	1
Sovereign Services	161.45	10.49	6	2
Other Sectors	594.3	213.67	36	6
Overall Total	**10348**	**4427**	**43**	**100**

Source: Council for Development and Reconstruction, *Progress Report 2011*, http://www.cdr.gov.lb/eng/progress_reports/pr102011/index.asp.

of spending and quality of management, casting doubt on the adequacy of governance at both the national and urban levels.

The situation is partly explained by the source of the loans used to finance reconstruction and the political and financial conditions imposed by the funding agencies. In the early 1990s, the Lebanese government had little debt and easy access to credit. Arab countries provided political support to Prime Minister Rafiq al-Hariri. Israeli-Palestinian agreements seemed to promise a regional prosperity that would benefit Lebanon, offering the Arab states good prospects for returns on their investment.[20] Arab funders invested heavily, particularly in the electricity sector. In the late 1990s, however, the country's growing debt became difficult to manage in an economic climate that was much less dynamic than anticipated. The governments of Salim al-Hoss (1998-2000) and Hariri (2000-2004) turned to multilateral and European funding sources. The new financiers granted loans in return for promises of structural reform, particularly in public water and electricity services. Concurrently, the government rapidly implemented the privatization of waste management and telecommunications, and unsuccessfully attempted to privatize highways. Privatization was not the result of external pressure, but instead reflected the interests of part of Lebanon's political and economic elite, which hoped to benefit directly from private-sector involvement.[21]

Waste: Early Reform and Disputed Outcomes

In the aftermath of the war, the state immediately directed its attention to the waste sector. During the years of conflict, collection services nearly broke down and waste dumping became chaotic. Several improvised waste dumps on the coast became serious public health problems. These dumps provided justification for several large urban development projects in Beirut's city center and in Bourj Hammoud (Burj Hammud).[22] The government chose to address Beirut's waste problems by licensing a private company, which would receive public funds and operate on a scale wider than the metropolitan area.

In 1994, the CDR awarded the city's waste collection contract to the local firm Sukleen. In 1997, the CDR awarded Sukomi the license for waste treatment and inert waste storage at dump sites. Both Sukleen and Sukomi were owned by parent company Averda. Sukleen's waste collection service

has since expanded to cover all of Mount Lebanon, except the district of Jbeil (Jubayl). The CDR justified this expansion by arguing the advantages of an economy of scale. But Sukleen's scale of operations and its technical choices have proven inefficient. The service's costs, including treatment and storage, have been very high, especially compared to those in Tripoli and Sidon.[23] Many criticize the treatment and storage on environmental grounds: Sukleen has overfilled its dumps and sorts waste inadequately. Prior to 2015, the CDR was planning to introduce waste-to-energy processes, burning waste to increase electricity production.[24] They would have accompanied this change with a broader reform of the waste collection and treatment service in greater Beirut. The 2015 garbage crisis resulted from the CDR's delay in implementing these plans and the overfilling of dump sites.

The waste sector demonstrates the problems of implementing an instrument clearly inspired by neoliberal principles. The government organized the service according to a public license awarded following a tendering process. The chosen company had little experience in large-scale waste management. Its director, Maysara Sukkar, was a real estate developer known for his links to Hariri. For many observers and journalists, granting this public license to the private sector manifested not only the neoliberal ideology espoused by the CDR's chairman, but also a degree of clientelism, since they suspected Sukleen of donating to the Future Movement, the Hariri family's political party.[25] The government regularly renewed Sukleen's contracts without a competitive tendering process. Hariri's opponents in the Najib al-Miqati government attempted to review ongoing contracts but failed, apparently as a result of clandestine networks of influence within the CDR.[26]

The waste sector also illustrates the tensions between the central government—represented by the CDR—and local authorities. According to Lebanese law, the municipalities are responsible for organizing and funding waste management services. When the government introduced the current system, however, most municipalities were unable to assume these responsibilities—hence, the centralized system. Financing came from the Independent Municipal Fund, whose revenue is based on a combination of taxes and fees. The central government collects these taxes and fees on behalf of the municipalities, and is supposed to redistribute them to the municipalities—which it does only partially and without following clear rules. Thus the central government finances waste management services

with funds drawn from the municipalities, without consulting the municipalities and without charging residents a dedicated waste management fee.[27] Municipalities had different perspectives on the gradual expansion of Sukleen's scope of operations to include almost the whole of Mount Lebanon. Some were relieved to be spared responsibility for waste management because centralized management limits the extent of illegal dumping in ravines and improves the environmental situation. Others felt that they were paying a huge price for the service without having any input into the terms of operation. In the aftermath of the 2015 crisis, many have demanded that municipalities regain responsibility for waste services.[28] Some critics of the current setup argue that transporting waste over long distances to the only two extant dump sites is one of the causes of the service's inflated cost.[29] But local opposition, led by the municipalities, has prevented the CDR from establishing new waste sites. In addition to citing environmental threats—and the consequences for the real estate market—municipalities have opposed new dump sites in parochial and sectarian terms, refusing to accept other communities' waste.

The Lebanese government's introduction of private operators into the waste sector was an early reform effort.[30] The public service license contract undoubtedly improved the previously anarchic environmental situation. But the government achieved this result through opaque means, which benefited a company with ties to certain political-financial interests, and whose contract was renewed without procedural transparency. In 2015, these contradictions and the exposure of corruption in the sector resulted in vibrant protests. Protesters expressed aspirations to greater control over this service and proposed many alternatives schemes.[31] But even if these protests have rendered the political elites' power more fragile, the government's "temporary" solutions seem to largely reproduce the status quo. Dump sites threaten the environment, while the government has not adopted a recycling strategy and has extended Sukleen's contract.

Drinking Water and Sewage: Incomplete Reform

In a country with among the most abundant water resources in the Middle East, the inadequacy of Beirut's drinking water supply exemplifies the persistence of public service dysfunction after twenty years of reconstruc-

Table 2. Percentage of Households Connected to and Using Selected Service Networks in Beirut and Environs in 2007

	Beirut	**Southern Suburbs**	**Mount Lebanon**	**All of Lebanon**
Connection to the public drinking water system*	87	66	82.9	77.4
Consumption of drinking water mains	39.9	1.3	48.3	45.9
Use of a well**	62.5	43.1	9.5	18.2
Purchase from water tankers	21.6	53	86.8	55.8
Connection to the public electricity grid	100	97.3	94.5	97.8
Use of a private network (shared generator)	56.3	34.9	77.7	61.5
Connection to the sewage system	99.6	96.8	64.2	65.7

Source: Republic of Lebanon, Central Administration of Statistics, Ministry of Social Affairs, *Households Survey*, 2007.
* All uses.
** These figures refer to the use of a well as the primary or secondary source of drinking water.

tion. Although some describe the high mountains around Beirut as the water tower of the Eastern Mediterranean, Beirut's drinking water service is particularly poor. The sector has undergone significant institutional reform through a combination of territorial reorganization and commercial rationalization. Initially neoliberal in inspiration, with hopes of private-sector involvement, the government's approach ultimately became more modest. The water sector struggles to manage the resource across the country, against a background of political and sectarian tensions and unbalanced regional development.

Beirut's water supply is particularly poor, both quantitatively and qualitatively, as revealed by the household survey conducted by the Central Administration of Statistics (ACS) in 2007 [Table 2] and the World Bank's 2008 Social Impact Analysis (SIA). The percentage of households connected to water mains ranges, depending on the source, between eighty-seven and ninety-six percent, compared to around eighty percent for Mount Lebanon, although the percentage is lower in Beirut's southern suburbs. Several factors explain this disparity within Beirut's metropolitan area. In the informal neighborhoods that form a significant proportion of Beirut's southern suburbs, residents must possess a building permit or complete a regularization process in order to connect their households to the public network. There are no pertinent data, but it is clear that these requirements exclude many residences from the public network and thus residents obtain their supplies by other means.[32] The low percentage of connected households in Beirut proper seems to arise from a second factor: voluntary non-connection. The World Bank's SIA survey estimated that ten percent of households nationwide choose not to connect to the public network. The survey ascribed this choice to distrust of the public system and preference for other sources.

The water mains are unreliable, with service in Beirut ranging from four hours per day in summertime to six in wintertime, and from six to eleven hours per day in Mount Lebanon. Intermittency rates in the southern suburbs are closer to those of Beirut. Intermittent service forces households to use rooftop water tanks or, if there is not enough pressure, to pump water. Demand exceeds supply, which requires people to turn to alternative sources—private wells, tanker delivery, direct pumping from reservoirs—especially in the summer. The spread of high-rise housing in Beirut and certain suburbs is exacerbating water pressure problems and stimulating the development of private, autonomous water access systems, often illegal wells.

A very large proportion of households consider the water main's quality inadequate. The 2007 ACS survey indicates that only 1.3 percent of southern suburbs residents drink water from the mains, though this figure perhaps reflects the conditions of the survey, conducted in the months following the 2006 war. The SIA survey gives higher figures: sixty-two and fifty-six percent of Beirut and Mount Lebanon residents, respectively, stated that

they drink water from the mains. The rest buy bottled, tanker, or spring water for drinking and cooking. As a result, household spending on water represents a significant proportion of their expenditures, between three and five percent. Residents spend between half and two thirds of this amount on alternative water sources.[33]

The water company that manages service in Beirut and Mount Lebanon could be faring worse in commercial terms. Over eighty percent of its bills are paid and, in contrast to companies serving other regions, its revenues cover operations and maintenance.[34] But the system is far from perfect for several reasons. First, the quantities of water the company produces and distributes are not meeting residents' needs, particularly in the summer. Second, some assessments put network losses at thirty to forty percent. The rate of payment varies from one district to another, and it is significantly lower in the southern suburbs despite undoubted improvements since the 1990s. The rate of illegal connection (not authorized by the water company) ranges between five and twenty percent. Another issue is that the distribution and billing system demands lump-sum payment for an estimated volume, generally one cubic meter per day. This system does not reflect household consumption patterns and so provides no incentive for efficient consumption. Instead, it penalizes households that consume little or would like to do so.

The Technical, Economic, and Political Results of Incomplete Reform

Since the mid-1990s, the government, national institutions, and stakeholders have discussed numerous proposals to resolve the problem of water shortages. A number of international funding agencies are involved in these debates, including the World Bank, the European Union, the Agence Française de Développement (AFD), Greater Lyon's decentralized cooperation agency, the German GIZ agency, and USAID. Law 241-2000, passed by the Lebanese parliament in May 2000, was a compromise among several objectives. The law proposed three different instruments.[35] First, at the institutional level, it aimed to restructure regional water governance by merging the five water offices in Beirut and Mount Lebanon into a public water board. The parliament adopted a similar solution for the rest of Lebanon, forming three regional boards. These new institutions would also be responsible for

sewers. Second, the reform package had financial objectives. It intended the new districting to improve resource sharing across wider areas, generate economies of scale, and spread costs more effectively among consumers with different socioeconomic profiles. Finally, the reform planned to shift the billing system from lump-sum payment to user-pays pricing, and it advocated the introduction of public-private partnerships. While the government has implemented the reform's redistricting proposals, the proposed reforms for billing and public-private partnerships have faded.

The only place where the government has contracted a private company to run the water treatment and supply service is the city of Tripoli. A foreign company, Ondeo-Suez Environnement, received the Tripoli service contract between 2002 and 2007, with funding from the AFD. Despite improving service, Ondeo-Suez withdrew due to severe problems in its relations with the director of the Water Authority of the North, which oversaw the company, and with the local political class, as well as serious instability in the local political situation.[36] The Water Authority of the North now runs the service once again. This failure—or semi-failure, depending on one's perspective—can also be attributed to private operators adopting much greater caution about contracts of this kind, which have proven less profitable than they anticipated in the early 1990s.[37] In any case, the failure froze the development of private-sector partnerships in other regions of Lebanon, including Beirut.[38]

Billing arrangements—the water boards' local prerogative—have not changed in Beirut. In Sidon, the Water Authority of the South has begun introducing water meters.[39] Household surveys indicate skepticism about changes in public billing, despite the prospect that better service might reduce the total cost of water by reducing the cost of alternative supplies. The reluctance indicates residents' deep distrust of public operators. Changes to the billing system—which residents perceive as water cost hikes—seem above all difficult to implement without increasing the quantities supplied.[40] Ultimately, this story suggests that shortages are the main problem to be solved.

In Beirut, one of the factors preventing service improvements is construction delays for the Bisri-Awali complex. The Bisri-Awali project is an ambitious plan to divert part of the Litani River first into a reservoir on the Bisri River, then to a reservoir on the Awali River, and finally to Beirut. The

project aims to better supply the thirsty city, which accounts for around sixty percent of national water demand.[41] This expensive project has prompted a stack of studies and counter-studies of its technical, institutional, and financial aspects, going back almost thirty years. One major disagreement is between partisans of a "buy, operate, transfer" (BOT) scheme and proponents of public management. While this disagreement reflects the conflict between Hariri's supporters and opponents, there is more to it, such as the trans-partisan, pro-dam business lobby that is eager to win lucrative public works contracts. Disagreements on the project also reflect concerns about transferring water to the capital from the deprived, Hizballah-dominated regions of the south and the Bekaa Valley (Wadi al-Biqaʿ).[42] Some argue that the Bisri-Awali project conflicts with a large-scale agricultural irrigation project in the south that also uses water from the Litani River. This project has been delayed nearly fifty years, and it is only now beginning to show signs of implementation. Beirut's water supply thus cannot be considered purely in terms of the city's internal priorities, but it must be linked political balances in the rest of the country.[43] A series of local resistance movements have halted the influence of neoliberal principles on water sector reform. The political elite has largely led this resistance, fearing that the implementation of reform threatens their influence and clientelist power.

Electricity: Symbol of Urban Services Crisis

The electricity supply crisis is the most resounding failure of post-civil war reconstruction. The two cases discussed above illustrate how political and, at times, sectarian bickering foiled policy choices with clear neoliberal roots. In the electricity crisis, neoliberal ambitions remained limited, and controversies have always directly reflected sectarianism and political clientelism. I begin by briefly presenting how the crisis manifested before analyzing the reform process.

A Crisis with a Long History

The electricity crisis is not a problem of access to the grid (see Table 2), although some informal neighborhoods remain unconnected or connected via temporary arrangements.[44] It is primarily a shortage crisis. The crisis developed in two phases. In the first, from 1991 to 2006, the country was

on the road to recovery. In 2004, the average supply was twenty-two hours per day. In the second, following the 2006 war, the electricity supply has declined due to the absence of new capacity and failure to upgrade existing plants. In 2010, the Ministry of Energy estimated the supply deficit at more than one third: the utilities provided fifteen hundred megawatts to meet a demand for twenty-three to twenty-four thousand megawatts.[45] The sector's financial deficit exacerbates the crisis. A planned transition to natural gas would have brought savings of several hundred million dollars per year, but it never occurred due to geopolitical problems, first between Lebanon and Syria, then between Egypt and Israel. The public utility has not adjusted the price of electricity since 1994, when a barrel of oil cost twenty dollars, resulting in very low revenues. Finally, "theft" remains very common (around twenty percent of energy distributed is not billed), as is technical loss (fifteen percent). Non-payment, though less prevalent than at the end of the civil war, remains widespread, and has increased since 2006, as has theft. Électricité du Liban (EDL) loses 1.5 to two billion dollars annually, made up for by the treasury. The government estimated that more than one third of Lebanon's debt—currently sixty billion dollars, or two hundred percent of GDP—results from EDL's deficit.[46]

The electricity crisis is highly spatialized and regionalized. In 2004, forty-four percent of Lebanon's consumers of electricity resided in metropolitan Beirut, which increases to sixty-six percent when Mount Lebanon consumers are added. In 2000, metropolitan Beirut residents used forty-five percent of Lebanon's total electricity, increasing to sixty-five percent with Mount Lebanon.[47] Moreover, the rationing system is highly differentiated by geography, which is exacerbated by capacity inequalities in the distribution grids. The Beirut municipality receives a disproportionately large supply. It experienced practically no regular power cuts between 1996 and 2006. Since 2006, the situation has somewhat deteriorated and, according to the official supply figures, there are currently three hours of downtime per day. By contrast, the suburbs never received twenty-four hours per day of electricity, although supply improved significantly in 2004-06, when power cuts lasted three to four hours per day.[48] Today, in the context of the overall deterioration mentioned above, these cuts can last as long as twelve hours per day. Differences in network capacity exacerbate this intermittency.[49] For example, whereas average daily demand in the southern suburbs is

four hundred megawatts, network capacity is only one hundred and forty megawatts. The number of transformers is very clearly inadequate to meet demand, which reflects the lack of investment in these neighborhoods. Conversely, in the downtown Solidere district, developers have invested to supply two hundred and ten megawatts while demand is currently only seventy megawatts.[50]

Government policies to resolve this crisis have varied over the years, but generally lacked a single, clearly defined set of priorities.[51] Because of the complexity of the proposed reforms over the years, I divide my analysis of these policies into three categories: financial issues, privatization, and distribution.

Addressing the Financial Issue

Until around 1996, successive governments worked to restore the electricity networks and increase production capacity by building new plants in the north and south of the country. Theft diminished but remained widespread. Because of the damage caused during the Israeli occupation, the government did not suppress illegal connections. This period was marked by numerous scandals over construction costs, perceived by some as ways to funnel funds to entrepreneurs and politicians close to Syria.[52] From the late 1990s, rising awareness of the impact of non-payment prompted the government and EDL to pursue theft and non-payment more vigorously. The government and EDL considered these customers freeloaders and deemed them responsible for the company's losses. In interviews with me, EDL engineers ascribed these practices primarily to the Shiʿi inhabitants of the south and southern suburbs. Public gossip concurred with this perception. These allegations brought the sectarian factor right to the heart of the electricity controversy, although my 2009 analysis of the geographical and social distribution of these practices revealed a much more complex situation.[53] When Gebran Bassil—son-in-law of Free Patriotic Movement (FPM) leader Michel Aoun, the current president of Lebanon—became minister of water and energy, he contributed to sectarian stigmatization. For example, in August 2010 he alleged that Christians are more likely to pay than Muslims.[54]

These controversies leave aside financial issues related to the electricity tariff. The government has not increased the tariff set up in 1994 even though

oil prices have since boomed. The public budget has compensated for this structural deficit. The deficit resulted in a de facto subsidy that mostly benefits large consumers, a fact that the World Bank and other officials have acknowledged and ceaselessly criticized.[55]

The sustained inequality of electricity supply between the city of Beirut, its suburbs, and the rest of Lebanon has also entailed an unfair repartition of public subsidies. On two occasions, FPM ministers—Alain Tabourian in 2009 and Bassil in 2013—proposed that Beirut's residents receive the same daily supply of electricity as other regions. The Council of Ministers refused on the grounds that reducing Beirut's supply would encourage greater use of private generators and pollute the capital. Some believe the council's refusal had more to do with protecting the heart of the country's business activity, in particular the banking and financial centers and large hotels, that burnish Beirut's international image. Keeping the capital's advantageous supply expressed important economic and social priorities. On one hand, prioritizing Beirut's power supply could guarantee higher revenues compared to areas with higher non-payment and theft levels. On the other hand, privileging Beirut's supply appears to many as a particularly unfair subsidy to the largest and wealthiest consumers, leaving residents of the suburbs and elsewhere to cope with expensive generators. The government has postponed the price hikes in order to better reflect the generation cost until supplies are improved. Successive energy ministers have feared that implementing tariff hikes before increasing supply will spark protests.

Privatizing the Electricity Sector?

Since the late 1990s, widespread criticism of the public electricity company's incompetence has prompted discussion of privatization, particularly within Hariri's political circle. Privatizing the electricity sector would follow the example of waste management and mobile telephones, recalling plans for the water sector. Multilateral funding agencies strongly backed this approach. Rafiq al-Hariri froze recruitment at EDL, obliging the company to use temporary staff and subcontractors to carry out tasks it could no longer perform using its own resources. EDL recruited staff and allocated contracts in the conditions of secrecy that characterize political clientelism, and it offered no social and retirement benefits to the new workers, prompting further

accusations of mismanagement. In 2002, the government passed Act 462, permitting the total privatization of the sector. The law's terms were imprecise however, and it was never implemented. Following 2002, privatization plans for sector reform proliferated, backed by foreign funding agencies. Every new minister instituted new studies with an almost complete lack of continuity. Funding of new production plants was a central issue. A number of private players offered to build new power stations. But the law granting EDL the electricity generation monopoly prevented it from buying privately generated electricity. Members of the 8 March alliance—made up of the FPM, Hizballah, and its fellow Shi'i party Amal—disliked this solution. Charbel Nahhas, a minister close to the FPM, summarized the objections as fearing a shift from a "public monopoly to a private monopoly"[56] without adequate regulation. Although Nahhas was commenting on telecommunications, his remark was equally applicable to electricity.

In 2009 Bassil was appointed minister of water and energy. He steered through the Council of Ministers, and then through Parliament, a very ambitious plan to return to twenty-four hour per day of power within four years. Bassil proposed increasing production capacity, first with publicly financed and managed projects, and ultimately through independent power producers, which would entail a change in the law. He also proposed distribution reform, transferring distribution to the private sector, financed by France and the World Bank. Interminable controversy accompanied each stage in this plan's implementation. Accusations flew back and forth—of embezzlement, hidden interests, opposition to progress, and a desire to leave Lebanon in the dark. Six years later, public investment in several projects had begun without noticeable improvement in supply, and private projects remained stalled.[57]

Distribution Challenges: Socio-Territorial Inequalities, Privatization, and Sectarianism

Bassil's main achievement as minister was his promotion of distribution reform. These reforms introduced a service contract with private companies, with a three hundred and fifty million dollar price tag. Backed by the World Bank and other funding agencies, Bassil and other advocates intended these

reforms to make the private sector responsible for upgrading the distribution networks. Service providers would be responsible for collecting payments and combating theft. The reforms emphasized installing new meters so that the service providers could manage subscribers and track consump-

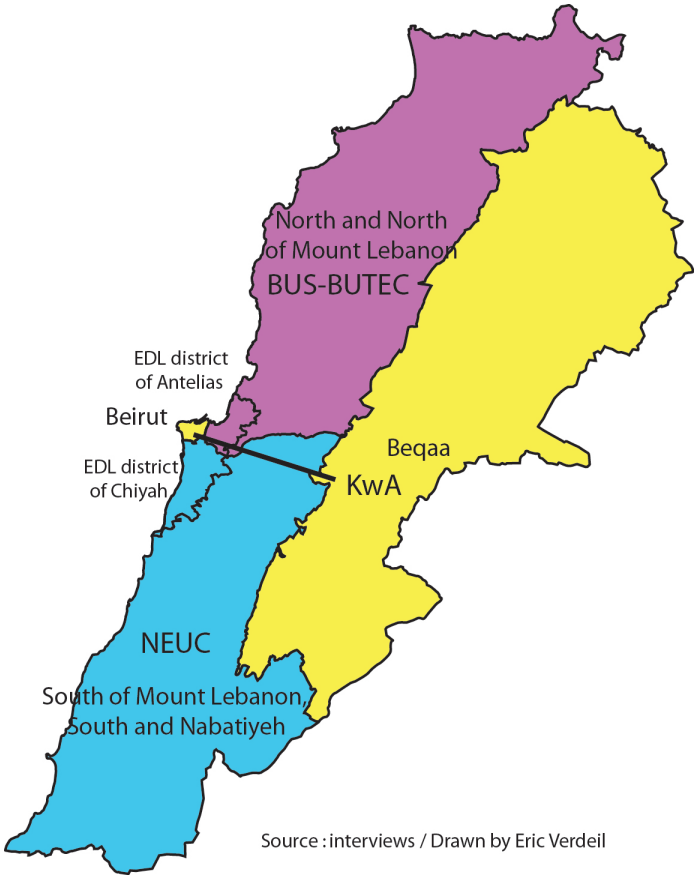

Figure 1. 2012 reorganization of the operating districts
of electricity distribution in Lebanon.

tion patterns remotely. Following a call for tenders, the ministry selected three companies for three sectors of operation. According to officials at the Higher Privatization Committee, this organizational model would generate competition among the companies by allowing the ministry to monitor their service performance.[58]

The reform redrew the boundaries of the service areas for these companies [Fig. 1]. Advocates of this reform designed it to establish regions with mixed economic and social profiles and well-balanced consumption patterns, while avoiding any alignment with political-sectarian territories. In contrast to reforms in waste management and water services, electricity reformers did not align the new operational districts with existing spatial administration. The result is a completely new geography of electricity supply. While Greater Beirut formerly constituted a single operational management unit for the public operator, the new districting separated it into three sectors. One company, BUTEC, manages Beirut's eastern and northern suburbs, northern Mount Lebanon, and the northwest; the second (NEUC) manages an area stretching from Beirut's southern suburbs to the southwest of Lebanon; the third (KwA) manages inner Beirut and the Bekaa Valley, two discontinuous zones. These companies began operating in September 2012. Four years later, neither the companies nor the government had made official records of their activities available, and controversy continued concerning the renewal of the companies' contracts.

Electricity sector workers strongly resisted these new contracts. EDL's contract workers organized the longest strike in Lebanon's recent history, from May to September 2012. They refused to be transferred to the operating companies' employ and demanded to be fully integrated into EDL. An initial compromise in September 2012 was that EDL would examine the possibility of incorporating these contract workers into the public company and granting them various guarantees regarding their work for the operators. Disagreement on these issues persists to the time of writing. These strikes highlighted the issues of working conditions and recruitment because the EDL employed these contract workers on terms that did not comply with industrial law: no national insurance, no pension rights. They also revealed the sectarianism and political favoritism that governs EDL working conditions.[59]

The backers of the current electricity distribution reforms allegedly attempted to avoid political-sectarian factors by redefining the operating

parameters and procedures. But those factors have been omnipresent in the political factions' perceptions of the reforms, and have delayed decisions on investments, the introduction of new technologies, and the implementation of equitable supply among the different regions. Sectarianism's influence largely prevents debate on these reforms' socioeconomic aspects, such as the question of working conditions revealed in the transition to contractual employment in public-private partnerships, or the supply inequalities among Beirut, its suburbs, and other regions.

Conclusion

This article has explored urban service network management in order to question the dominant conceptualizations of the state in Lebanon. By analyzing the policy instruments used by political figures and administrative officials to transform these sectors, this article has unraveled political debates triggered by the reforms and the tactics various stakeholders employed to implement, stall, or stop these projects. My most striking finding is that the three sectors differ substantially in management, making the state's logic difficult to summarize in a unified paradigm. I now conclude by summarizing my findings in the three main dimensions (or families of instruments) of urban service reform.

The first dimension is the redefinition of operational districts. Reforms in this vein sought to achieve economies of scale, pool methods of action, and establish spatial units in which operators could earn greater revenues. A noteworthy product of these reforms is large-scale transformation without territorial convergence. The waste and water sectors adjusted to a metropolitan perimeter corresponding to Mount Lebanon's administrative boundaries, a very broad but relevant approximation of Greater Beirut.[60] By contrast, reformers sought to restructure electricity distribution according to quite different territorial principles. Proponents and critics mobilize a variety of technical and economic arguments to explain this difference, but, whatever the explanations given, it does not reflect a convergence of the new territorial organization with political or sectarian territories.

The second dimension is the introduction of public-private partnerships. To this question, the Lebanese experience offers contradictory answers. Although many view urban development, particularly Solidere, as

a manifestation of unbridled neoliberalism, urban services do not really fit into their analysis. It is true that waste management is a striking example of poor regulation and expensive outsourcing of public service contracts, whose renewal under less than transparent conditions reflects the dominance of partisan interests. In the water sector, however, the failure of Ondeo-Suez's drinking water management contract in Tripoli seems to have blocked similar privatization attempts in Beirut, despite persistent lobbying. As for the electricity sector, Parliament's recent opening of the power generation sector to independent producers has not resulted in a single major deal. Parts of the necessary legislative framework, such as an independent regulator, are still missing. The possible discovery of offshore gas could alter these reforms' conditions markedly. Electricity distribution reforms have also privatized public services, although in a more limited fashion, through service contracts. Reforms in this sector have above all revealed the scandalous condition of workers, a product of institutionalized political clientelism. Yet it is too soon to measure these minor reforms' results. Through inertia, Lebanon seems to be less exposed to the consequences of urban service liberalization, whose benefits and limitations are evident in Jordan and Morocco.[61]

The last family of instruments is funding. While reforms in each sector operate with different funding sources, all converge to receive money from the national budget. Until recently, waste and sewage services received no direct contribution from users. Rather, the Municipal Fund finances the former and water authorities' budgets finance the latter. As for drinking water, users pay on a lump-sum basis. In Beirut and Mount Lebanon, these payments cover operating and maintenance costs. Lump-sum payments, however, do not account for individual consumption and provide no incentive for more rational resource management. Finally, the electricity sector's deficit is so large that the national budget ultimately provides most of the sector's funding. In all, urban services—reformed or otherwise—remain primarily financed through taxation and debt, either due to public budget or international loan financing for projects or to operational deficits. Service costs are totally disconnected from place of residence and mode of consumption, which ultimately runs counter to commercial service principles. The originality of these findings is methodological. They highlight the utility of examining policy instruments and adopting a geographical

approach to public policies in order to understand the territorialization of the state and the continuous shaping of space by state policy, even when those processes are dysfunctional.

Infrastructure remains the object of popular expectations of the state. It is also a site of political struggle, because politicians see it as central to their strategies for expanding their power. Politicians have proposed numerous reforms of the instruments that regulate infrastructure and service delivery. Certain sections of the population express deep mistrust of these mostly liberal reforms, fearing their social consequences. But paradoxically, and in contrast to the idea that managing infrastructure is an indirect but effective way to govern the city, in Beirut political fragmentation prevents even agreements on modest improvements to key sectors to ease the burdens of daily life or to encourage economic growth. Hence, these reforms' failure results above all from resistance by the political system—whether its partisan and sectarian or its regionalist and clientelist elements. Opposing factions paralyze state institutions.

So loud are the controversies among the political class and wider population, who invariably interpret service provision deficiencies in political-sectarian terms, that they mask the socioeconomic effects of the flawed public policy instruments that regulate infrastructure. Political-sectarian polarization has pushed socioeconomic issues to the margins of the services debate. For example, the taxation that funds urban services is levied very unequally on Lebanese citizens of different classes. The same is true of the electricity supply inequality between Beirut and its suburbs. The number of hours of electricity Beirut residents receive resembles a massive subsidy to the most affluent, who are also the biggest consumers. The state maintains a kilowatt-hour price that bears no relation to production costs in order to prevent popular protests. This low price provides a considerable advantage to the wealthiest classes. Outside Beirut proper, the wealthiest classes are so well equipped with alternative systems that they find the grid's interruptions tolerable, if costly. While these geographical inequalities in electricity supply are not identical to those in water or waste management, the social effects of deficient and unequal service are similar across all three sectors. The catastrophic mismanagement of urban services thus contributes, above all, to widening the country's already frightening social inequalities. But the fact that reforms are stalled does not mean that the policy instruments

in place have stopped producing their effects. My analysis of the electricity tariff instrument precisely evinces that second-level institutions keep on shaping society, in that case for the worse. Beyond discussion of weak and strong states, social scientists must pay attention to the invisible mechanisms that structure public action.

ENDNOTES

Author's Note: The author strongly thanks the journal's anonymous referees for their suggestions, as well as the editors for their encouragement, support, and edits.

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