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Energy, the city and everyday life: Living with power outages in post-war Lebanon

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ABSTRACT

Years of civil war in Lebanon (1975–1990) resulted in considerable destruction in its towns and cities, with significant impacts on buildings and infrastructure. Notably, the electricity sector continues to suffer from power outages long after the war ended, and the country's citizens have adopted various strategies for maintaining desired electricity services in their homes. This has given rise to informal infrastructures, such as diesel-powered generators run by commercial actors or co-owned by urban residents.

This paper uses a qualitative approach to explore the multi-faceted experience of power outages in urban areas of Lebanon, the nature and practices of the resulting informal electricity services that have filled that gap, and their impact on everyday life. It argues that the different practical solutions that households have adopted in order to augment electricity provision to their homes create a differentiated experience of infrastructural services in the city, its neighbourhoods and buildings. It explores these impacts through three junctions: the network of informal electricity providers, new routines and practices of households and the objects and artefacts that constitute the energy landscape in the city. This research contributes to an understanding of relationships produced by these 'new' and informal infrastructures.

1. Introduction

Despite the fact that the civil war that blighted Lebanon in the 70s and 80s ended in 1991, the urban landscape of the country's capital and neighbouring towns and villages still bear the marks of this long-lived conflict. In the last two decades, the noted efforts in reconstruction [1–4] – mainly in the capital Beirut – may have succeeded in regenerating some of its urban spaces; rebuilding destroyed neighbourhoods and reviving different economic sectors [5]. However, what belie the country's new growth and development are failing infrastructure services that have long been tolerated and managed by its inhabitants. Significantly, the country's inadequate electricity services have resulted in endemic power outages, which have become part of the normal everyday life of its citizens, suggesting an adaptation through several means.

Electricity in Lebanon is provided and managed by Électricité du Liban (EDL), the nationalized utility company. EDL are responsible for providing electricity to homes and businesses, maintaining the transmission and distribution network, metering, and redeeming payments from customers [6]. In addition, resources and investment in electricity infrastructure, such as the building of power plants and fuel imports, are controlled by the government's Ministry of Water and Energy. Yet, an electricity crisis remains, with electrical output significantly less than demand [7–9], leading, over the years, to the country's residents and businesses having to rely on self-generation, amounting to almost 40% of the total electricity generated in the country [10]. EDL are also blighted by financial problems, with the company's inability to balance its books and its increasing reliance on loans from the government [7]. Arguably, a political inertia hinders the needed price rises for tariffs to match costs, and these are compounded by the prevalence of theft on the grid and inefficiencies in payment collection [11]. These "non-technical" deficiencies or political barriers [12] are often cited as causes for the longstanding electricity crisis, but very view studies have unpacked the nature and extent of these challenges insofar as the ramifications of the crisis have affected the provision of electricity in Lebanon's cities and towns (c.f. [13,14]). This paper explores in more detail the multifaceted yet mundane impacts of the electricity crisis by tracing the socio-material entanglements that result people's need to augment electricity services for homes, and how eventually these constitute electricity and energy in the city of Beirut.

Since the end of the civil war, considerable investment in infrastructure has taken place, yet for electricity, these have proven to be insufficient [8,10] and as a result, the current electricity network is incapable of providing the 24 hours of electricity customers need. Instead, a schedule of rolling power outages is implemented; the capital rotates 3 hours of power cuts a day across its different neighbourhoods,

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whereas the districts outside metropolitan Beirut can have the power to their homes cut to up to 8 hours a day. The length and frequency of power outages can vary depending on circumstances, some of which are outside the control of the electricity network managers. These include excessive electricity demand for cooling during summertime, which often coincides with a temporary increase in the size of the population due to returning migrants visiting in the time of year, as noted by a leading electrical engineer interviewed for this study. Other factors that lie outside the control of network management include acts of war targeting infrastructure which have slowed down progress over the years since the end of the civil war in 1991 [16].

What can be observed across towns, neighbourhoods, streets and homes (as well in extensive media coverage) is how the unreliability of electricity-related services became inherent in the Lebanese everyday life, resulting in the normalization of "coping strategies" adopted by citizens in order to maintain required levels of electricity services for their comfort and convenience. Equally, businesses and smaller industry have also had to invest to ensure reliable power supply; though this paper will only draw on homes in the city and its suburbs. Over the years, the different strategies for coping with electricity cuts included the purchase of a diesel generator for a single home, the collective purchase of a larger generator which is shared by residents in an apartment block, or individual households subscribing to neighbourhood-level informal electricity providers (IEPs), who sell them a restricted amount of electricity during the power outages for a monthly fee.

2. Beirut's electricity interruptions

Electricity services interruptions, and the resulting need for diesel generators mean considerable costs are added to the monthly expenses of many Lebanese households [10]. The costs vary depending on the area of residence and the average length of power outages. Whilst residents in metropolitan Beirut can pay between 30–50 USD a month for 5 amperes or 10 amperes, people living in the suburbs and across the country face connection costs of 50 USD/month, rising to 120 USD/month for 5 or 10 amperes respectively. These prices are not subsidised, are not fixed and are subject to fluctuations owing to the price of diesel [10]. Furthermore, the limited amperage for a household mean that for the duration of the power outage, only basic household appliances can be used, such as lighting, a medium sized refrigerator/freezer, and a television set. The use of more energy intensive appliances such as water heaters, washing machines, or the charging of computing equipment, which require more amperage, would have to be postponed or shifted until the electricity is reconnected. Whilst in metropolitan Beirut such shifting can be managed or tolerated, in other areas, longer power outages coupled with higher IEP fees can have crippling impacts on people's ability to manage their everyday life and partake in the typical daily routines. Another impact is health related, whereby the generators (whether co-owned by residents or belonging to IEPs) tend to be located in the backyards or basements of apartments blocks. The co-location of generators and housing in the densely populated residential areas of Beirut and its suburbs posits a significant environmental health risk to residents, with the discharged particulates linked to increasing levels of cancer and respiratory illnesses among the population [17].

It is important to note that both the health and economic impacts are endured in such a way that penalizes poorer households [14], creating uneven energy geographies not only in terms of access to electricity services, but also in how the informal network for electricity supply impacts on residents. To clarify, the reliance on IEPs – which are more expensive than co-owning and running a private generator – is more common in poorer suburbs where households lack the economic or social capital to invest in co-owned generators for their apartment blocks. Likewise, the proliferation of large polluting generators for IEPs in the poorer suburbs suggests that levels of exposure to diesel particulates can be higher than other more affluent neighbourhoods. As such, the experience of power outages in urban areas of Lebanon is not only multi-faceted, but also differentiated by geography and income. What becomes evident when attempting to understand the impacts and experiences of power outages in Beirut is the difficulty in separating these lives from the geography of energy in the city. In other words, in eliciting the lived experiences of power outages in Greater Beirut – the geography of the user [18], we begin to trace the associations the co-constitute energy in the city – the geography of production and supply which are themselves fragmented and uneven [14,19]. Faced with the requirement of bringing in all these disparate yet connected elements, the concept of assemblage or network [20], broadly conceived, is useful in explaining the nature and experience of power outages, which are always in flux, always changing, and contingent. As such, it is the view in this paper that approaching the case of power outages in Beirut informed by concepts from assemblage contributes to better understanding the spatial dimensions of the energy landscape affecting the city's inhabitants. The purpose is to suggest a shift towards a broader and a more spatial view of the opportunities and limitations of energy access in Beirut that are now entrenched as a result of system failures, the rising informal networks of provision and the emerging practices of energy consumption. Taking the case of Lebanon, this can be helpful in pointing to new directions for engaging with the challenges of energy as they manifest in the cities of the global south, whether these are problems of access or the quality of energy services available, but more importantly the multiplicity of factors that can instigate change to fairer and better access to electricity.

3. Conceptualizing power outages in everyday life

Positioning the experience of power outages within the socio-materiality of everyday life emphasises their heterogeneity, and the rich and multi-faceted accounts they provide. It is this relational account of our encounter with energy and its various modes of consumption that forms the basis of the study of power outages in people's everyday life. Understanding space as constituted through social and material relations [21], an assemblage approach enables an unpacking of the challenges of energy access in Lebanon that goes beyond techno-economic assessments [7,8] or reform and growth plans for the country's energy capabilities [22], but which ignore spatial determinants that can hinder a transition towards a fairer, safe and more equitable access to electricity services. As Verdeil [14] argues, flows of electricity and power in the city of Beirut constitute the urban geography that structures life for its residents in the everyday. This is therefore an invitation to proceed with two objectives: the first is to explore and better understand the everyday experiences of using electricity in the city, and secondly to do so by focusing on the power outages, these disruptions in electricity services that, due to their emerging and contingent attributes, are better at unpacking the processual nature of energy infrastructure [23,24].

This paper presents several vignettes of experiences with power outages, the aim of which is to show examples of how the flows of electricity and their disruption entangle the everyday lives of the people in Greater Beirut. The traces of these flows on people's routines, their homes and appliances, as well as on their sense of safety and comfort in the city, shows how living with disruptions becomes normalised and embedded in the urban infrastructure. This approach and analysis benefits from a relational turn in geography [25,26]. By thinking with assemblage, we are able to focus our attention to networks and the relations that form or break down, but that both produce a landscape of electricity services in Lebanon. From this perspective, relations can be traced from the formal electricity grid to the informal network of IEPs and includes the city of Beirut's built environment that permits or summons the various wires and connections. This produces a networked flow: two 'grids' that function in the same space, and a myriad of everyday practices that enable and sustain the relationships and associations necessary for electricity services in homes.