Bottom-up alternatives to persist top-down deficiencies in exceptional condition: Learning from recycling practices in the context of Lebanon

R. Nasr[1]

[1]Department of Real Estate and Planning, University of Reading, Reading, Berkshire, RG66UD, The UK
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Presenting author email: r.nasr@pgr.reading.ac.uk

My research draws on Lebanon's major dilemma in managing solid waste and addresses the role of recycling middlemen. The country faced a trash crisis in 2015 and piles of waste accumulated in streets for one year. Due to the failure of the state to find alternative solutions and to implement planning regulations, the government set an emergency plan to manage solid waste. Consequently, solid waste laws and planning were suspended. Only 8-10% of municipal solid waste is being recycled (the rest in dumped in sea landfills) and no new strategy is pursued by the government to improve the recycling industry (Rizkallah & Sabbagh, 2014). The research aims to deconstruct consequences of suspending the planning of solid waste services and to examine solid waste practices of local recyclers. Recyclers are found to be dealing with socio-economic and political pressures coming from their contexts and from external factors found in local and global markets, which can affect their survival. The following research question is derived and is to be explored: *What strategies (including institutional, spatial and power strategies) do recycling middlemen adopt to access waste and ensure its value flow in the face of various contexts of uncertainty and how these strategies are institutionalised?*

Choosing multiple case studies in different settings and at different scales can provide a rich understanding of various aspects of uncertainties that recyclers face and of various ways they adopt to deal with them. Consequently, I have conducted three case studies of waste practices (Local, regional, and national scales). I have conducted 40 semi-structured interviews with government representatives and with recyclers and their staff, in addition to non-participant observations of recyclers' spaces and activities. I also used secondary data (i.e., media reports of local newspapers and policy documents) to analyse various processes (socio-economic, political, and spatial dimensions) that shape the nature and intensity of uncertainties and pressures in the chosen contexts within which recycling operators are working. I attempt to explore the various strategies that middlemen adopt to govern and maintain their systems' functioning and to fit in uncertain circumstances caused by the suspension of planning. I argue that these strategies help recycling middlemen to endure over time, adapt to changes and develop their systems of operation that aim to ensure the flows of waste and its associated value.

| Local | Regional | National |

Innovation practices and research: plastic scraps transformed into plastic manhole covers

Delivering a solid waste management solution for municipalities
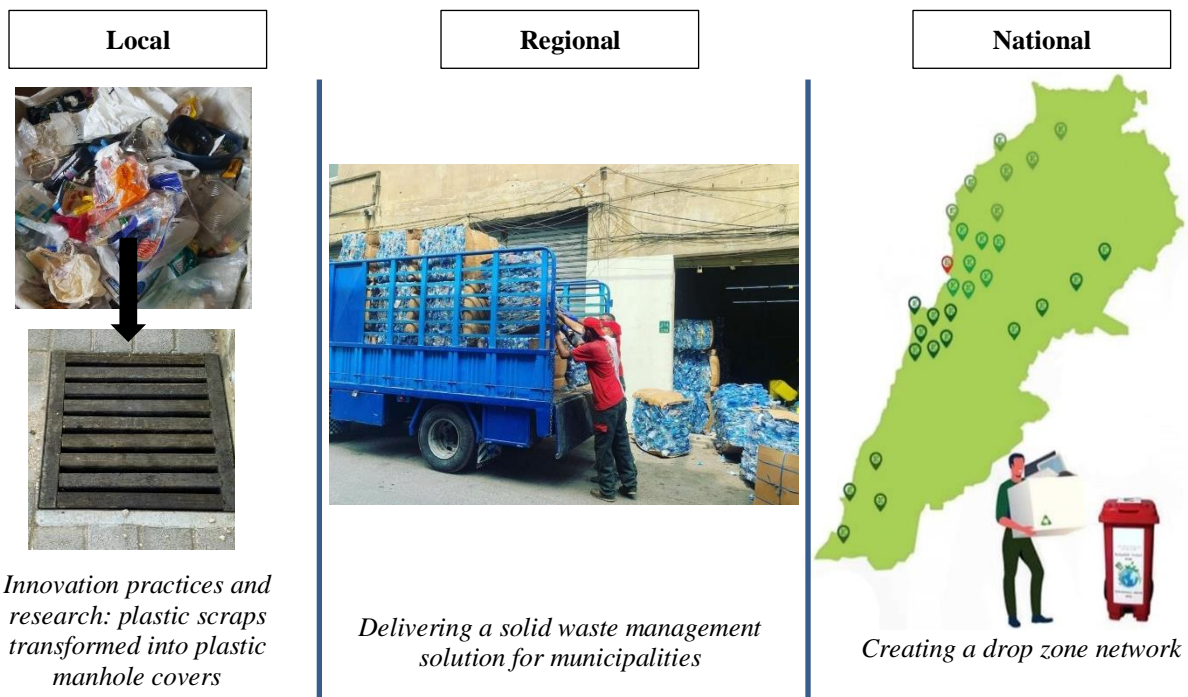
Creating a drop zone network

Figure 1: Recycling practices in Lebanon at different scales, developed by Author, 2022, photos retrieved from recycling operators' Facebook pages (accessed in February 2022)

The main findings suggest that implementing planning regulation is currently too difficult and not needed since local waste practices have proved their efficiency and adaptability in delivering services for people. Recyclers form a 'self-organised' business that is filling the gap left by the government and presenting an alternative solution for people. Recyclers took advantage of the suspension of planning to create an 'experimental' space from which communities can benefit and through which they build their inclusivity in everyday city-making (Blokland et al., 2015). Through delivering a solid waste management plan for municipalities, through innovation, research, building networks and spatial expansion, recyclers constructed a socially acceptable image in their context as they are found to reply to society's needs (as represented in figure 1). At the local scale, innovative solutions accompanied by research are being delivered. For instance, due to the bad economic situation in the country, a great number of metal manhole covers were stolen and sold in the black market for high value. This has caused danger for pedestrians and cars in streets. Consequently, one recycling operator decided to create a solution through producing manhole covers from scrap plastics. He created a melting process through multiple trials and errors and research. The operator designed and installed more than 40 covers in streets. The plastic manhole covers are found to be effective as they have satisfied society's needs. At the regional level, recycling operators are presenting a solid waste management solution for municipalities. This includes raising awareness, collection, secondary sorting and treatment for some types of solid waste. Through these efforts, recycling operators are filling deficiencies of municipalities' role to handle solid waste management issues particularly since municipalities are facing administrative and financial issues. Consequently, municipalities do not pay for recyclers' service and recyclers do their best to benefit from cost revenues when selling recyclables or in some cases create an end-product that they sell to the market (e.g., compost). This is found to be a win-win collaborative situation. From one side, municipalities have improved their image by showing to citizens that they are putting efforts to handle solid waste issues in appropriate ways. From the other side, operators are building their reputation through contributing to solving the management of solid waste and to reducing possibilities of future trash crisis. At the national level, some operators developed a web of networks to increase their connections with sources of solid waste and thus to improve their performance. By doing so, they have expanded the territorial coverage of their service and controlled their system of operation. Through all these activities taking place at multiple scales, recyclers are constructing an image that serves as a social 'reservoir' for legitimacy building (Taylor, 2019) to ensure the survival of operators particularly in turbulent environments and in anticipation of future crisis. However, it appears that recyclers are still subject to continuous political and economic turbulences found in their context which can affect their existence (Lok, 2006). Additionally, if the government stops the exception without considering their practices, local consequences will be seen in the long run (Lo Piccolo & Todaro, 2021). Thus, the activation of planning and solid waste laws is needed at some point but should be carefully crafted to involve the needs of existing solid waste practices.

The theoretical contribution of my research is found in the exploration of legitimacy building in exceptional conditions. The research advocates a shift in thinking about planning policies where efforts to improve solid waste management needs to include learning about existing practices that proved powerful in navigating uncertainties and building inclusivity under exceptional conditions. Planning needs to learn and work with these practices and to recognize their valuable role instead of seeking to regularise them (Fawaz, 2009).

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