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# Reacting to the Solid Waste Management Crisis: Investigation of a Public-Private Partnership in Lebanon

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## **Abstract**

Since 2015, the provision of solid waste management-related services in Lebanon has been severely lacking and environmentally detrimental. This national crisis has led some municipalities and local enterprises to collaborate to implement sustainable solutions to the disposal of waste. This work explores the functioning of one specific partnership established in Lebanon between the municipality of Beit Mery and a local enterprise. To understand how this partnership affects the local and national solid waste management and how it changes the municipality on a social and environmental level, the way in which the partnership has shaped the municipal solid waste management is explored through its stakeholders' perceptions. The investigation is conducted through semi-structured interviews with representatives of the public and private sectors as well as residents of the municipality and other individuals active in the Lebanese solid waste management sector. The analysis of the data is conducted within the framework of socio-ecological resilience. The findings show that the public-private partnership, by working independently from the state, has allowed for change and improvement in the municipal solid waste management by making it more inclusive, independent and environmentally sustainable. This work sheds light on the dynamics of public-private cooperation initiatives to waste management operating at a local level and it triggers the debate on whether this approach constitutes a viable solution to the current waste crisis across Lebanon.

*Key words:* Solid waste management, partnership, waste crisis, Lebanon

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## 1 Introduction

With regard to solid waste management (SWM), Lebanon faces several of the issues common to many developing countries. They include fast population growth, high rate of urbanisation, lack of a legal framework for solid waste management, scarce knowledge of environmentally sustainable waste management practices and unbalanced high expenditures on solid waste management-related service and quality of the service.<sup>1,2,3</sup> In fact, although the composition of waste in Lebanon is mostly organic (52.5%) and therefore potentially compostable, the majority of the waste is landfilled (48%) and dumped (29%) while only little is recycled (8%) or composted (15%).<sup>4</sup> Furthermore, the lack of a legislative framework for solid waste management results in a confusing distribution of roles among the many state institutions that are involved in the Lebanese solid waste management. Finally, the participation of the Lebanese citizens within solid waste management is lacking as well as the general knowledge of solid waste management practices that do not include composting, landfilling and incineration.<sup>5</sup>

On July 17, 2015 the Nameeh landfill, the site where all the waste from Beirut and Mount Lebanon has been stored since 1997, was closed because it exceeded its maximum capacity. At the same time, the contract with Sukleen, the company in charge of the disposal of the waste in Beirut and Mount Lebanon since 1997 expired. The concurrence of these two events, in addition to the aforementioned issues with solid waste management, led to a waste management crisis, whose effects still impact solid waste management today. In the summer of 2015, waste piled up on the streets of Beirut and in the surrounding municipalities due to the lack of waste collection services. Due to the fact that the government could not in a reasonable amount of time find a replacement for Sukleen, which was the company in charge of waste disposal in Beirut and Mount Lebanon many Lebanese municipalities and citizens resorted to makeshift practices of disposing waste which included dumping it on streets, in valleys, near rivers<sup>6</sup> and openly burning waste. Each of these tactics represents a serious threat to

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<sup>1</sup> Emmanuel Yeboah-Assiamah, Kwame Asamoah, and Thomas Agyekum Kyeremeh, "Decades of Public-Private Partnership in Solid Waste Management: A Literature Analysis of Key Lessons Drawn from Ghana and India," *Management of Environmental Quality: An International Journal* 28, no. 1 (2017): 81.

<sup>2</sup> "Country Report on the Solid Waste Management in Lebanon," (GiZ Sweep-Net, April 2014).

<sup>3</sup> Arif Sherif and Doumani Fadi, "Cost of Environmental Degradation Due to Solid Waste Management Practices in Beirut and Mount Lebanon," (Tunis: GiZ Sweep-Net, 2014).

<sup>4</sup> "Country Report on the Solid Waste Management in Lebanon," 19.

<sup>5</sup> *Ibid.*, 19-33.

<sup>6</sup> Nadeen Hilal et al., "Approaching the Waste Crisis in Lebanon: Consequences and Insights into Solutions," (Beirut: Knowledge to Policy (KP2) Center, 2015), 7-8.

the natural environment and the health of individuals<sup>7,8</sup> and is not a sustainable solution to the lack of waste management services.

The waste crisis and its visible outcome—the garbage piling up on the streets—sparked civil protests, beginning in July of 2015 and lasting until the end of summer 2015. A visible feature of the protests was the You Stink movement, which was made of a heterogeneous group of people in terms of age, social class and religious confession,<sup>9</sup> which played a major role in organising the protests and took on documenting the waste crisis. Those involved in the movement linked the failed waste management services to the corrupt Lebanese political establishment, and therefore demanded political reform as a solution to the crisis.<sup>10</sup>

In order to face the protests and the waste crisis, in March 2016 the Council of Ministers adopted an emergency plan that included the re-opening of the Nameeh landfill for two months and the construction of coastal landfills, which is a move that still today contributes to the pollution of the Mediterranean Sea.<sup>11</sup> Furthermore, the emergency plan allowed Lebanese municipalities to deal with their waste in the way they considered most suitable.<sup>12</sup>

In addition to the civil protests during 2015, non-governmental organisations (NGOs), private enterprises and Lebanese citizens mobilised around finding long-term solutions to the waste crisis. One key outcome of the mobilisation was the setting up of initiatives that aim at dealing with waste in a sustainable way, especially through the practice of recycling.<sup>13</sup>

This thesis explores one such response to the waste crisis: the development of a business arrangement or ‘public-private partnership’ (PPP) for the collection and management of solid waste between the municipality of Beit Mery and a private enterprise called Environmental Solutions.<sup>14</sup> By investigating this particular case, this work aims to explore the development and viability of local public-private

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<sup>7</sup> Bassam Khawaja, "As If You're Inhaling Your Death: The Health Risks of Burning Waste in Lebanon," (Human Rights Watch, 2017).

<sup>8</sup>Rami Z Morsi et al., "The Protracted Waste Crisis and Physical Health of Workers in Beirut: A Comparative Cross-Sectional Study," *Environmental Health* 16, no. 1 (2017).

<sup>9</sup> Ziad Abu-Rish, "Garbage Politics," *Middle East Report* 277 (2015): 35-36.

<sup>10</sup> Marwan M Kraidy, "Trashing the Sectarian System? Lebanon's "You Stink" Movement and the Making of Affective Publics," *Communication and the Public* 1, no. 1 (2016): 19.

<sup>11</sup> Sherlock Ruth, "Environmentalists Warn of Mediterranean Pollution from Lebanon Land Reclamation," *Npr* January 11, 2018.

<sup>12</sup> Elias Azzi, "Waste Management Systems in Lebanon: The Benefits of a Waste Crisis for Improvement of Practices" (PhD dissertation, KTH Royal Institute of Technology, School of Architecture and the Built Environment 2017), 13.

<sup>13</sup> *Ibid.*, 33-40.

<sup>14</sup> The name of the private enterprise has been changed in order to ensure the anonymity of its employees.

partnerships in the solid waste management industry in Lebanon and the perceived impact that this arrangement has had on the practice of solid waste management.

This thesis thus poses the following research question:

*According to experiences of the stakeholders of the public-private partnership between Beit Mery and Environmental Solutions, how has the practice of solid waste management in the municipality been shaped by the partnership?*

This question is studied by investigating the partnership itself, in terms of how it works from a practical perspective, as well as how the stakeholders connected to this arrangement experience the partnership. The stakeholders include representatives from both the public and private sectors, residents living in Beit Mery and representatives of NGOs and private enterprises working in the Lebanese solid waste management industry.

Through the exploration of this particular case, this thesis sheds light on the growing effort of municipalities, private enterprises and citizens to find environmentally sustainable solutions to the issue of waste management in Lebanon. This work also shows the impact that this type of local initiative has on waste management from a practical perspective, and comments the viability of this type of arrangement for the industry. This thesis investigates a contemporary public-private partnership for solid waste management in Lebanon, which is a topic that has scarcely been dealt with academically in recent years. Furthermore, adopting a stakeholder-perspective to the ways in which the partnership has shaped the practice of waste management adds unique insight to the literature on public-private partnerships. Finally, this study is framed within socio-ecological resilience, which includes useful conceptual tools in order to explore dynamics of change and which is a novel approach for the investigation of changes within solid waste management.

## **1.1 Disposition**

Following the introduction, in the second chapter, I present a selection of the existing literature on the study of public-private partnerships in developing countries broadly speaking, in Lebanon as well as within the field of solid waste management. The third chapter is dedicated to the research methodology applied to this study; key points of this chapter are that data collection is carried out through semi-structured interviews and the analysis of the data is conducted applying thematic analysis. In the fourth chapter I provide an overview on socio-ecological resilience, which is the theoretical framework used in this study. My findings, which consist of three overarching themes, are

presented in the fifth chapter and analysed in the sixth chapter. In the final chapter, concluding remarks and suggestions for further research are made.

## 2 Literature review

This thesis closely examines a specific relationship of public-private partnerships for solid waste management in Lebanon. This case is the expression of a broader trend currently developing in the Lebanese context, in which individuals and local authorities attempt to compensate for the government's failure to provide appropriate and sustainable services related to solid waste management since 2015. This literature review aims to provide an overview of the rise of public-private partnerships as a particular approach for public service delivery. Furthermore, existing research looking at the pervasiveness of public-private partnerships in developing country contexts is reviewed, as well as in the field of solid waste management more specifically. Lastly, an overview of the research looking at public-private partnerships in Lebanon is presented, including within the field of solid waste management.

### 2.1 Public-private partnerships as a rising phenomenon

Since the 1990s, public-private partnerships have increasingly become a strategy used worldwide in order to deliver services to citizens. Generally speaking, 'public-private partnership' is a collaborative partnership between parties of different nature (governmental, non-governmental, private, public...)<sup>15</sup>. The private actors involved in public-private partnerships can be enterprises, not-for-profit organisations, development agencies, local and international organisations – any non-state actor that is in a position to collaborate with the state to deliver services traditionally under the responsibility of the state. This arrangement between state and non-state actors is usually based on a long-term contract and their implementation is always for the provision of specific goods or services.<sup>16</sup> Moving beyond this working conceptualisation of public-private partnerships, within academic literature these partnerships have been described in different ways. Khanom (2010)<sup>17</sup> puts forward three different descriptions of public-private partnerships. The first one regards the partnership as a 'tool of governance of management' as it represents an innovative way of providing a service, as claimed by Hodge and Greve (2005).<sup>18</sup> The second description regards the partnership as a financial agreement as partnerships of the public-private kind alleviate state budgets by outsourcing funding to the private sector. Finally, Khanom suggests that partnerships can be described as 'a tool for development'

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<sup>15</sup> Tony Bovaird, "Public-Private Partnerships: From Contested Concepts to Prevalent Practice," *International review of administrative sciences* 70, no. 2 (2004): 200.

<sup>16</sup> Nilufa Akhter Khanom, "Conceptual Issues in Defining Public Private Partnerships (Ppps)," *International Review of Business Research Papers* 6, no. 2 (2010): 154.

<sup>17</sup> Ibid.

<sup>18</sup> Graeme Hodge and Carsten Greve, eds., *The Challenge of Public-Private Partnerships: Learning from International Experience* (Cheltenham: Edward Elgar Publishing Limited, 2005), 3-4.

because they are established in order to achieve goals agreed upon by the parties involved, which can include not-for-profit organisations.

When it comes to the reasons for developing public-private partnerships, a range of different objectives have also been put forward in the literature. For instance, these partnerships offer a way to decrease expenditures of the public budget, as expenses are shared with the private sector. In relation to this they offer a way to improve infrastructure at a lower cost, since again the burden is shared among the actors involved in the partnership. Public sector institutions can also acquire new knowledge from the private sector. They are also a way for states, working at any level, to develop local economies and increase employment opportunities.<sup>19</sup> Finally, public-private partnerships have been increasingly implemented in cases where the state is no longer able to deliver a certain service to its population as efficiently. In fact, throughout the literature on public-private partnerships, it can often be found that public-private partnerships are considered to act as a “gap filler” in the provision of public services or goods.<sup>20,21</sup> According to Bovaird (2004) for instance, there is a need for governments to deal with “wicked problems” that the public sector cannot solve on its own.<sup>22</sup> However, public-private partnerships are not regarded unanimously as the best way to integrate lacking state infrastructure and some disadvantages of public-private partnerships are present in the literature. For example, Löffler (1999) claims that one downfall of public-private partnerships is that they make infrastructures fragmented and lead to a decrease in responsibilities and accountability.<sup>23</sup> Furthermore, Rosenau (1999) claims that the beneficiaries of a service are more afraid that the provision of the service will be more profit-driven and less for the wellbeing of the citizens.<sup>24</sup>

## 2.2 The rise of public-private partnerships in developing countries

It is particularly relevant to this thesis, which explores a particular case of public-private partnership in Lebanon, to present an overview of the literature on the interplay between public and private in developing countries. Given that ‘infrastructure is critical for economic development, reducing poverty and inequality, creating jobs, and ensuring environmental sustainability’, an efficient

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<sup>19</sup> Young Hoon Kwak, YingYi Chih, and C William Ibbs, "Towards a Comprehensive Understanding of Public Private Partnerships for Infrastructure Development," *California management review* 51, no. 2 (2009): 55.

<sup>20</sup> Shafiul Azam Ahmed and Mansoor Ali, "Partnerships for Solid Waste Management in Developing Countries: Linking Theories to Realities," *Habitat international* 28, no. 3 (2004): 471.

<sup>21</sup> Nabukeera Madinah, "Solid Waste Management System: Public-Private Partnership, the Best System for Developing Countries," *International Journal of Engineering Research and Applications* 6, no. 4 (2016): 63.

<sup>22</sup> Bovaird, "Public-Private Partnerships: From Contested Concepts to Prevalent Practice," 208.

<sup>23</sup> Löffler Elke, "Accountability Management in Intergovernmental Partnerships," (OECD, 1998).

<sup>24</sup> Rosenau Pauline Vaillancourt, "The Strength and Weaknesses of Public-Private Policy Partnerships," *American Behavioral Scientist* 43, no. 1 (1999).

infrastructure is essential for developing countries to flourish.<sup>25</sup> Ensuring equitable access to key resources such as drinking water increases standards of living and results in the decrease in inequalities. Furthermore, lacking delivery of services such as electricity and transportation highly affects the development of businesses.<sup>26,27</sup> However, developing countries often struggle to provide transparent, non-corrupt, efficient and well-maintained infrastructure to their citizens. Public-private partnerships can be a useful tool in order to improve infrastructure in developing countries as they can be cost effective; they allow for innovation drawing from the private sector's expertise; they allow the public and private sectors to share risks; and allow governments to focus on the provision of the service and not on its development.<sup>28</sup>

However, challenges to public-private partnerships between local authorities and the private sector in developing countries are also to be found. They are firstly attributed to the presence of an often weak regulatory framework, which is supposed to distribute the responsibility of the parties involved in the partnership.<sup>29</sup> Furthermore, non-state actors that are gaining advantages from the current lacking state of the service might represent a challenge, as claimed by Ahmed and Ali (2004).<sup>30</sup> For example, local political elites are likely to gain leverage on their electorate if they invest in infrastructure that the state is unable to allocate funds for. In such cases, these groups often oppose the public-private partnership in order to maintain their status quo, as shown by Allès (2012).<sup>31</sup> Furthermore, public-private partnerships are often regarded by politicians as a threat to the central power as the involvement of the private sector in the provision of public services 'dilute[s] political control over decision-making'.<sup>32</sup> However, there seems to be agreement in the literature that the state should not disappear but should actually play a role in monitoring, facilitating the public-private partnership and creating the legal framework within which the partnership can function.<sup>33,34</sup> If compared to the

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<sup>25</sup>"Public-Private Partnerships Reference Guide," ed. Olivier Fremond (International Bank for Reconstruction and Development/The World Bank, 2017), 15-16.

<sup>26</sup> Michael Trebilcock and Michael Rosenstock, "Infrastructure Public-Private Partnerships in the Developing World: Lessons from Recent Experience," *The Journal of Development Studies* 51, no. 4 (2015): 336.

<sup>27</sup> Nora Stel and Wim Naudé, "'Public-Private Entanglement': Entrepreneurship in Lebanon's Hybrid Political Order," *ibid.* 52, no. 2 (2016).

<sup>28</sup> Fitzpatrick Andrew, Zovaro Véronique, and Draia Sabri, "Public-Private Partnerships in the Middle East and North Africa: A Handbook for Policy-Makers," (OECD, 2014), 22-25.

<sup>29</sup> *Ibid.*, 42.

<sup>30</sup> Ahmed and Ali, "Partnerships for Solid Waste Management in Developing Countries: Linking Theories to Realities," 476.

<sup>31</sup> An example of this phenomenon is reported by Christèle Allès, "The Private Sector and Local Elites: The Experience of Public-Private Partnership in the Water Sector in Tripoli, Lebanon," *Mediterranean Politics* 17, no. 3 (2012).

<sup>32</sup> Bovaird, "Public-Private Partnerships: From Contested Concepts to Prevalent Practice," 200.

<sup>33</sup> Therese Bjärstig and Camilla Sandström, "Public-Private Partnerships in a Swedish Rural Context-a Policy Tool for the Authorities to Achieve Sustainable Rural Development?," *Journal of Rural Studies* 49 (2017).

<sup>34</sup> Kwak, Chih, and Ibbs, "Towards a Comprehensive Understanding of Public Private Partnerships for Infrastructure Development," 59-62.

challenges posed to public-private partnerships specifically in the Middle East and North Africa (MENA) region identified by Fitzpatrick et al. (2014), it is found that the challenges posed are the same. Their common issues concern the difficulty in finding funds as well as the lack of an appropriate regulatory framework, governments' expertise and relevant studies on the problems to be tackled by the public-private partnership.<sup>35</sup>

An important element in overcoming the aforementioned obstacles in public-private partnerships is found in the decentralisation of the public-private partnership process so that local authorities, such as municipalities, can be in charge of the partnership and address the needs of the local populations.<sup>36</sup> Bjärstig T., Sandström C. (2017) investigated perceptions among state authorities involved in a public-private partnership for regional and local rural development. Their findings showed that authorities interviewed perceived municipalities as a valuable source of knowledge, and as representing local populations.<sup>37</sup>

As public-private partnerships are understood in terms of a tool to better deliver a service for the people, community involvement becomes an essential component of successful public-private partnerships.<sup>38,39,40</sup> As shown below through specific cases of public-private partnerships, relationships between beneficiaries of the service, who are usually citizens, and the private and public sector are crucial in order to address the issues in service delivery.

### **2.3 Public-private partnerships in the field of solid waste management**

Solid waste management has increasingly become a major issue in developing countries, where the process of urbanisation is currently going faster than in developed countries, as pointed out by Ahmed and Ali (2006). Such rapid urbanisation results in the production of an overwhelming amount of waste, which developing countries subsequently struggle to deal with.<sup>41</sup> According to Medina (2010), such incessant production of waste weighs on local authorities to a point where the expenditure for

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<sup>35</sup> Andrew, Véronique, and Sabri, "Public-Private Partnerships in the Middle East and North Africa: A Handbook for Policy-Makers," 42.

<sup>36</sup> Yeboah-Assiamah, Asamoah, and Kyeremeh, "Decades of Public-Private Partnership in Solid Waste Management: A Literature Analysis of Key Lessons Drawn from Ghana and India," 88.

<sup>37</sup> Bjärstig and Sandström, "Public-Private Partnerships in a Swedish Rural Context-a Policy Tool for the Authorities to Achieve Sustainable Rural Development?."

<sup>38</sup> Yeboah-Assiamah, Asamoah, and Kyeremeh, "Decades of Public-Private Partnership in Solid Waste Management: A Literature Analysis of Key Lessons Drawn from Ghana and India," 88.

<sup>39</sup> Ahmed and Ali, "Partnerships for Solid Waste Management in Developing Countries: Linking Theories to Realities," 477.

<sup>40</sup> Madinah, "Solid Waste Management System: Public-Private Partnership, the Best System for Developing Countries," 63.

<sup>41</sup> Shafiu Azam Ahmed and Syed Mansoor Ali, "People as Partners: Facilitating People's Participation in Public-Private Partnerships for Solid Waste Management," *Habitat International* 30, no. 4 (2006): 782.

its management amounts to 30-50 percent of municipal budgets in developing countries. However, in spite of the vast amount of money spent on this issue, the collection and disposal of the waste produced remains partial, which represents a serious threat to the health of populations.<sup>42</sup>

Several obstacles to the proper delivery of solid waste management can be found in developing countries. Yeboah-Assiamah et al. (2017) identify financial constraints, lack of technical skills, poor data on solid waste management-related issues, insufficient coverage of solid waste management services on countries' territories and lack of appropriate tools such as vehicles and roads.<sup>43</sup> With regard to solid waste management, Sahlu Desta et al. (2014) claim that local government authorities such as municipalities collaborate with the private sector, especially small enterprises, in order to provide solid waste management services and 'fill the vacuum left by the public sector capacity'.<sup>44</sup> An example of this phenomenon can be found in Addis Ababa, Ethiopia, where the government of the city decided to integrate micro-enterprises<sup>45</sup> towards a better deliverance of solid waste management services. However, the partnership was not implemented without problems. For example, the enterprises were allowed too much autonomy, which resulted in the loss of trust in the government from the private sector. Another obstacle to the success of the public-private partnerships was identified in the unclear role that the public and private sector were supposed to play within the partnership,<sup>46</sup> which is a recurrent issue reported in the literature.<sup>47,48</sup> Finally, local solid waste management, if not implemented with transparency and accountability, is found to foster corruption and favouritism in the sector.<sup>49</sup>

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<sup>42</sup>Martin Medina, "Solid Wastes, Poverty and the Environment in Developing Country Cities: Challenges and Opportunities," in *Urbanization and Development: Multidisciplinary Perspectives*, ed. Jo Beall, Basudeb Guha-Khasnobis, and Ravi Kanbur (New York: Oxford University Press 2010), 2.

<sup>43</sup> Yeboah-Assiamah, Asamoah, and Kyeremeh, "Decades of Public-Private Partnership in Solid Waste Management: A Literature Analysis of Key Lessons Drawn from Ghana and India," 81.

<sup>44</sup> Tesfatsion Sahlu Desta, Arsema Girmay Gebreselassie, and Araya Hagos Gebreegziabher, "Assessing the Status, Challenges, and Opportunities of Public-Private Partnership (Ppp) in Solid Waste Management (Swm) in Ethiopia: A Case Study on Mekelle City, Tigray," *International Journal of Research in Commerce & Management* 5, no. 6 (2014): 29.

<sup>45</sup> Enterprises can be considered micro, small and medium (SMEs) if they employ less than 250 persons and their annual revenue is up to EUR 50 million. "Commission Recommendation of 6 May 2003 Concerning the Definition of Micro, Small and Medium-Sized Enterprises," (Official Journal of the European Union 2003).

<sup>46</sup> Mesfin Tilaye and Meine Pieter Van Dijk, "Private Sector Participation in Solid Waste Collection in Addis Ababa (Ethiopia) by Involving Micro-Enterprises," *Waste Management & Research* 32, no. 1 (2014).

<sup>47</sup> MA Massoud, M El-Fadel, and A Abdel Malak, "Assessment of Public Vs Private Msw Management: A Case Study," *Journal of environmental management* 69, no. 1 (2003): 16.

<sup>48</sup> Bjärstig and Sandström, "Public-Private Partnerships in a Swedish Rural Context-a Policy Tool for the Authorities to Achieve Sustainable Rural Development?."

<sup>49</sup> Ahmed and Ali, "Partnerships for Solid Waste Management in Developing Countries: Linking Theories to Realities," 476.

As shown by Sahlu Desta et al. (2014), public-private partnerships are about people working together and their success can be undermined by the incapability or unwillingness of the several actors to interact. Therefore, in the literature some attention has been given to how the stakeholders involved experience the partnership (see for example studies by Bjärstig and Sandström, 2017; Tilaye and van Dijk, 2014). It has become important in the study of public-private partnerships related to solid waste to especially consider the point of view of the beneficiaries of the service, as claimed by Kassim and Ali (2006). Households are the major source of waste and can represent a valuable contribution to the collection of waste.<sup>50</sup> Through interviews, questionnaires and observation, it is shown that the relationship between beneficiaries and the private sector is essential to the success of the partnership over waste management in Dar es Salaam, Tanzania. This study shows that the increased awareness of the residents of how waste disposed and who is in charge of the service has led to an increase in participation and the consequent improvement of solid waste management services.<sup>51</sup>

#### **2.4 Research on public-private partnerships in Lebanon**

With regard to the mobilisation of the informal sector and the implementation of public-private partnerships for the delivery of public services that the state fails to provide, a study by Allès (2012)<sup>52</sup> is worth mentioning. The author shows how the implementation of a public-private partnership in water management in Tripoli from 2002 to 2007 created tensions between the private sector and local elites in the city, such as local political leaders, who had been working as service providers in the city since the end of the Lebanese Civil War. The fight over power in the distribution of water undermined the partnership and eventually the private sector had to let the local elites maintain their role as intermediaries between the water provider and the beneficiaries. In fact, the residents would consider local authorities more trustworthy than the central government or the private sector. Allès' study thus shows that public-private partnerships can have not only an impact on the provision of a service but also on the social dynamics and power distribution among beneficiaries, authorities and the private sector. This issue can be considered especially relevant to the Lebanese context, where clientelistic networks often represent a prevalent feature in communities' structure and influence social interaction.

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<sup>50</sup> Kassim Salha M and Ali Mansoor, "Solid Waste Collection by the Private Sector: Households' Perspective—Findings from a Study in Dar Es Salaam City, Tanzania," *ibid.*30, no. 4 (2006): 770.

<sup>51</sup> *Ibid.*

<sup>52</sup> Allès, "The Private Sector and Local Elites: The Experience of Public–Private Partnership in the Water Sector in Tripoli, Lebanon."

Another Lebanese case of an unsuccessful public-private partnership due to failed interaction among the parties involved is provided by Jamali (2004),<sup>53</sup> who considers the public-private partnership implemented in 1994 in the telecommunication sector. In her study, using both quantitative and qualitative methods, it is shown that following the establishment of the partnership an increase in revenues and subscribers to the telephone companies occurred. However, it is also shown that the lack of appropriate administrative framework and monitoring from the ministry in charge (Ministry of Post and Telecommunications) and a general lack of mutual trust between the private and public sector created continuous tensions between the parties and undermined the success of the partnership. Jamali therefore emphasises the complementary role of public and private sectors in public-private partnerships and on the importance of the government as a monitor tool for the partnership and not as a delegator of a service to the private sector. Jamali's study, by focusing on the providers, reminds us that public-private partnerships are not only about sharing risks and resources but are about bringing people together so that they can work towards a common goal.<sup>54,55</sup>

An assessment of public-private partnerships in Lebanon has also been provided by Jamali (2007),<sup>56</sup> who investigated the customer satisfaction with the service offered by Liban Post in collaboration with the Ministry of Post and Telecommunications. What inspired her study is the fact that although public-private partnerships are often praised for making the provision of the service more efficient, not much attention is given to the perception of the customer on whether or not the service has improved.<sup>57</sup> The data of this study—collected through surveys—show that the expectations of the customers towards the public services provided have dramatically decreased after the Lebanese Civil War; this is a reminder that the historical and political context plays a fundamental role in people's perception of provision of public services. There is a lack of studies on the experiences and perceptions of the parties involved in a public-private partnership in contemporary Lebanon; this thesis is a step towards mitigating that gap.

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<sup>53</sup> Dima Jamali, "Success and Failure Mechanisms of Public Private Partnerships (Ppps) in Developing Countries: Insights from the Lebanese Context," *International Journal of Public Sector Management* 17, no. 5 (2004).

<sup>54</sup> David R Kolzow, "Public/Private Partnership: The Economic Development Organization of the 90s," *Economic Development Review* 12, no. 1 (1994): 5.

<sup>55</sup> Jamali, "Success and Failure Mechanisms of Public Private Partnerships (Ppps) in Developing Countries: Insights from the Lebanese Context," 416.

<sup>56</sup> Dima Jamali, "A Study of Customer Satisfaction in the Context of a Public Private Partnership," *International Journal of Quality & Reliability Management* 24, no. 4 (2007).

<sup>57</sup> *Ibid.*, 371.

### 2.4.1 Research on public-private partnerships in solid waste management in Lebanon

A clear definition of the roles within public-private partnerships is essential to its proper functioning, as claimed by Massoud et al. in their comparison between solid waste management in Tripoli and Greater Beirut Area (GBA) in 2003, whose waste at the time was respectively taken care by the public sector and by a public-private partnership. The study departs from the assumption that once a public-private partnership is established, there should be a shift in the role of the government ‘from service provider to overseer and regulator’.<sup>58</sup> In order to create an ‘organizational plan’ for the division of tasks and responsibilities, the authors provide an assessment of the efficiency of the two solid waste management systems. It is shown quantitatively that the efficiency is greater with the intervention of the private sector, but that the costs of collection and disposal are higher. The environmental sustainability was not taken into account by this study since—regardless of the service provider—more than 90% of the waste was landfilled at that time.

With regard to public-private partnerships between the private sector and Lebanese municipalities, it is worth mentioning the contribution of Harb and Atallah (2015). The authors position public-private partnerships in Lebanon within the discussion of the decentralisation of service provision. They claim that in Lebanon, service provision at a municipal level is possible but heavily limited by dependence of municipalities on funding by ministries or central government agencies. Furthermore, it is found that although the regulatory framework in place allows municipalities to establish partnerships with the private sector, such agreements are often restrained by the intricate Lebanese bureaucracy.<sup>59</sup>

The perspectives of the consumers on a public-private partnership for solid waste management in Greater Beirut Area (GBA) are taken into account by Massoud and El-Fadel.<sup>60</sup> Their mixed methods-research, which involves interviews with decision-makers in the relevant sectors and surveys of the residents, shows that the response from both authorities and beneficiaries of the public-private partnership is overall positive. A perceived improvement of the solid waste management services in GBA implies that the partnership between municipalities and the private sector for solid waste management is a viable solution for Lebanon. However, the study dates back to 2002, when the disposal of waste in GBA consisted solely in landfilling, which is also pointed out by the same authors

<sup>58</sup> Massoud, El-Fadel, and Malak, "Assessment of Public Vs Private Msw Management: A Case Study," 16.

<sup>59</sup> Mona Harb and Sami Atallah, "Lebanon: A Fragmented and Incomplete Decentralization," in *Local Governments and Public Goods: Assessing Decentralization in the Arab World*, ed. Mona Harb and Sami Atallah (The Lebanese Center for Policy Studies, 2015).

<sup>60</sup> Met al Massoud and M El-Fadel, "Public–Private Partnerships for Solid Waste Management Services," *Environmental Management* 30, no. 5 (2002).

together with Malak in a subsequent study.<sup>61</sup> The study therefore did not consider the perception of environmental sustainability of the public-private partnership for solid waste management, which is an aspect that can be currently considered.

Particularly relevant to public-private partnerships for solid waste management in Lebanon and this thesis is the work by Azzi (2017). Through the framework of Integrated Solid Waste Management, the author identifies the creation of public-private partnerships over solid waste management in Lebanon as the expression of the decentralisation of solid waste management in the country in the post-waste crisis phase. He furthermore maps the current municipal solid waste in Lebanon, which includes municipal projects such as the one in Beit Mery, the municipality considered in this thesis. While Azzi aims to gain an understanding of solid waste management post-waste crisis in Lebanon, this thesis adds to that by exploring one specific case of public-private partnership and showing how the process of change in the municipal solid waste management after the crisis acknowledged by Azzi, is driven by the partnership. This work finally provides valuable data on the specific case of Beit Mery, which otherwise could have not been available to me.

## **2.5 Summary of the literature**

The literature shows that public-private partnerships are a tool increasingly used by the public sector in order to cut the costs of the delivery of public services and improve their efficiency, as in the case examined in this thesis. Especially in developing countries, it is shown through case studies that public-private partnerships often have the function of “filling the gaps” in the provision of services that the state is unable to deliver due to difficulties such as limited budgets, inappropriate technical skills and inaccurate data, as shown by Tilaye and Van Dijk (2014). The literature agrees on the fact that public-private partnerships are not merely a way to develop infrastructure at a lower cost but they are also an opportunity for the public sector to learn from the private one and to stimulate the participation of the beneficiaries, as shown by Kassim and Ali (2006). Therefore, the literature on public-private partnerships has started to give more attention to the interaction among participants in such partnerships, including the shift of the central government from decision-maker to regulatory body and the involvement of the community, or beneficiaries of the service, as it is case in Bjärstig and Sandström (2017), Massoud and El-Fadel (2002) and Jamali (2007). It is within this trend that this thesis is position itself. Across the literature considered it has been shown that in order to achieve a successful public-private partnership, the roles of all partners need to be clear; the state should be present as a monitoring body and facilitator of the partnership; and the beneficiaries should take active

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<sup>61</sup> Massoud, El-Fadel, and Malak, "Assessment of Public Vs Private Msw Management: A Case Study," 23.

part in order to better tailor the services to their needs. Especially with regard to public-private partnerships for solid waste management, households' adherence to the way waste is dealt with and their collaboration represent a crucial aspect towards the success of the partnership. For this reason, works such as this thesis have increasingly given attention to the experiences of the beneficiaries of public-private partnerships, mostly using interviews and surveys. However, literature on perceptions of public-private partnerships in Lebanon lacks updated studies, especially when it comes to partnerships in the solid waste management industry, which is an industry that has recently gone through one of its most dramatic phases. This thesis therefore, while drawing upon the qualitative methods used in some of the reviewed works, contributes to the literature by examining a case of public-private partnership as a strategy for the improvement of solid waste management in Lebanon.

### 3 Research methodology

This thesis examines a particular case study of a public-private partnership for solid waste management in a Lebanese municipality. The aim of this thesis is to investigate how the practice of solid waste management has been shaped by the partnership between the municipality of Beit Mery and Environmental Solutions, which is in charge of disposing the municipal waste and sell the recycled materials. The investigation looks at the functioning of the current public-private arrangement, as well as discusses it with various stakeholders who are connected to the public-private partnership: actors from the public sector, the private sector, the residents of the municipality in question and other relevant actors working in the industry.

Therefore, this thesis takes the following question as its point of departure:

*According to experiences of the stakeholders of the public-private partnership between Beit Mery and Environmental Solutions, how has the practice of solid waste management in the municipality been shaped by the partnership?*

Looking specifically at the municipality of Beit Mery allows this study to explore in depth one expression of the increase in public-private partnerships in the solid waste management industry aiming to face the waste crisis. That being said, this work does not intend to present this case study as representative of all the public-private partnerships for solid waste management in Lebanon, neither does it intend to depict all public-private partnerships for solid waste management in the country as homogenous. This thesis finally does not consider the development of the partnership but examines it at a single point in time.

#### 3.1 Paradigm: critical realism

The research paradigm that shapes this thesis is critical realism. This paradigm acknowledges that an independent reality exists but at the same time it acknowledges that humans interpret and reproduce knowledge and their social world. In this sense, critical realism acknowledges the influence that society has on the production of knowledge while rejecting the idea that knowledge is solely socially constructed.<sup>62</sup> Knowledge of objective reality is not objective itself, as knowledge is made by individuals, who fail to look at reality without it being filtered through subjective lenses. Critical realism therefore aims to understand objective reality while acknowledging the fundamental role that

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<sup>62</sup> Roy Bhaskar, "Philosophy and Scientific Realism," in *Critical Realism: Essential Readings*, ed. Margaret Archer, et al. (London: Routledge, 1998), 24.

humans play in shaping knowledge.<sup>63</sup> Furthermore, according to critical realism, the researcher should go beyond only describing effects and also look for the causes that generate certain events.<sup>64</sup>

Critical realism represents the most suitable paradigm for this thesis as this study aims to understand how the public-private partnership between Beit Mery and Environmental Solutions works and how it has shaped the management of municipal solid waste. The development of this public-private partnership can be understood as a process of transformation that has practical outcomes, which are objectively measurable—all the while considering the stakeholders of the partnership and their experience, which is inherently subjective. Furthermore, this work considers the experience of all the stakeholders and by doing so it aims to understand the partnership and its practical impact on solid waste management in its full complexity.

## 3.2 Research strategy

### 3.2.1 Descriptive case study

This thesis investigates the effect of the public-private partnership between Environmental Solutions and the municipality of Beit Mery on the municipal solid waste management. This thesis does so by looking at the practical arrangements of the partnership in terms of how it works, as well as by looking at the experience of the stakeholders of the partnership. Furthermore, a qualitative descriptive case study approach is used. A case study is defined as ‘an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident.’<sup>65</sup> A case study of the descriptive kind furthermore allows for the exploration of a case in close relation to the theory informing the analysis conducted by the researcher.<sup>66</sup> Descriptive studies aim to ‘reveal patterns and connections, in relation to theoretical constructs, in order to advance theory development.’<sup>67</sup> This kind of case study allows for the exploration of the Beit Mery-Environmental Solutions partnership within the frame of socio-ecological resilience, which informs the analysis of the data in this study. This theoretical framework includes concepts such as the ability of a system to transform in the face of disturbances, the advantage of a system made of a diversified set of actors and the value of introducing novelty in the system through experimentation at a small scale. These concepts are valuable in understanding

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<sup>63</sup> Alexander M. Clark, "Critical Realism," in *The Sage Encyclopedia of Qualitative Research Methods*, ed. Lisa M. Given (Thousand Oaks: SAGE Publications, Inc, 2012).

<sup>64</sup> Bhaskar, "Philosophy and Scientific Realism," 99.

<sup>65</sup> Robert K Yin, *Case Study Research: Design and Methods* (Thousand Oaks: SAGE, 2009), 46.

<sup>66</sup> Ruthanne Tobin, "Descriptive Case Study," in *Encyclopedia of Case Study Research*, ed. Albert J. Mills, Gabrielle Durepos, and Elden Wiebe (Thousand Oaks: SAGE Publications, Inc., 2010), 289.

<sup>67</sup> Ibid.

dynamics of change and useful in exploring how the public-private partnership in question has shaped the solid waste management in the municipality. The defined case in this study is the public-private partnership between the Municipality of Beit Mery and the private enterprise Environmental Solutions for the provision of solid waste management-related services in the municipality. The practice of solid waste management in the municipality of Beit Mery and the partnership between the municipality and Environmental Solutions represent the unit of analysis of this research. Furthermore, as the data for this study relies heavily on the experience of the stakeholders of the partnership, the case study is an appropriate research method because it considers a small unit of analysis and allows for the inclusion of stakeholders belonging to all the different sectors involved in the partnership—public and private sectors and residents. This research can finally be considered cross-sectional as it only examines the case study ‘at a single point in time’<sup>68</sup> and it does not take into account the development of the partnership over a long period.

### 3.2.2 Presentation of the case study

The case study that this thesis explores is the public-private partnership between the municipality of Beit Mery and the private enterprise Environmental Solutions. Given the lack of public data freely available on this partnership, developing an understanding of the organisational arrangement between Environmental Solutions and the municipality of Beit Mery was done using a variety of different sources. These sources include the company’s online platform, visits to the municipality of Beit Mery and the solid waste management facility in order to better understand how the partnership worked in practice, as well as interviews with stakeholders. The interviewees include a key representative of Environmental Solutions’ upper management and a representative of the municipality’s upper leadership, who are the individuals most closely involved in the creation and functioning of the partnership. Finally, valuable information concerning the functioning of the case study investigated are also provided by the PhD dissertation “Waste Management Systems in Lebanon”.<sup>69</sup>

Beit Mery is a municipality situated in Mount Lebanon, the area surrounding the Lebanese capital. Its population amounts to approximately 15 000 people. Environmental Solutions is a waste management enterprise working in Lebanon. Its range of services within the field of solid waste management includes consulting for municipalities on how to treat their waste, technological development when it comes to waste disposal—especially in the area of treatment—and the implementation of solid waste management collection and treatment services. Environmental

<sup>68</sup> Earl Babbie, *The Practice of Social Research Methods* (Wadsworth: Cengage Learning, 2013), 105.

<sup>69</sup> Azzi, "Waste Management Systems in Lebanon: The Benefits of a Waste Crisis for Improvement of Practices."

Solutions furthermore manages projects focused on composting organic waste, production of eco-boards—panels made of recycled plastic—and “green walls”—walls hosting growing plants.

Within the partnership, Environmental Solutions is in charge of building and managing the recycling plant, which is situated on a cliff overlooking a mostly green valley, where in October 2017 at the time of my field research, it was still possible to see the waste that had been dumped there during the summer of 2015 (see Appendix B for photos). Environmental Solutions is furthermore in charge of sorting the municipal waste, make the compost out of organic waste and sell the recycled materials. The waste is collected door to door by from all the households in the municipality. The waste is picked up daily and the employees in charge of the collection are locals that were offered the job when the partnership started working in September 2016. The residents pay 10 000 Lebanese Liras for the collection service but they can also bring their own waste to the facility and avoid to pay the fee. Finally, the municipality pays 62 USD to Environmental Solutions per ton of waste sorted. The loaded trucks are therefore weighed once they enter the sorting facility in order to determine the monthly price.

Environmental Solutions’ expenses are those related to the maintenance of the recycling plant, the disposal of waste and the salaries of the employees, who sort the material manually. The enterprise’s profit consists in the revenues from the sale of the recycled materials. The founder of the enterprise claims that the project that he is running in Beit Mery is “Zero Waste”, meaning that in the sorting facility it is possible to recycle all materials coming from households.

This particular case of public-private partnership in the field of solid waste management was chosen because it was geographically accessible to me being located in Beirut. Carrying out fieldwork in this municipality required me to visit the location often in order to carry out interviews and given that transportation in Lebanon is not always easily accessible and reliable it was advantageous to be situated relatively close to the case study. In addition to geographic feasibility, the municipality was favourable in terms of the contacts available to me. I was in fact put in contact with a representative of Environmental Solutions’ upper management by one other interviewee at the beginning of my fieldwork.

I am aware that the single case study examined in this thesis is not representative of all public-private partnerships connected to the field of solid waste management in Lebanon.<sup>70</sup> The use of a case study as a research approach does not imply that the results of this research can necessarily be extended to

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<sup>70</sup> Alan Bryman, *Social Research Methods* (New York: Oxford University Press, 2012), 69.

other similar cases. When carrying out research on public-private partnerships it is important to recognise that the arrangement is closely tied to the political, historical and geographical circumstances in which it develops. The Beit Mery-Environmental Solutions partnership is closely connected to contemporary Lebanon, which is facing long-standing issues with solid waste management and the partnership was established in a municipality that has the adequate financial and spatial resources for the partnership to function.

### **3.2.3 Data and data collection methods**

The nature of the research conducted for this thesis is qualitative and the data was collected from September to December 2017. The data in this study includes semi-structured interviews with stakeholders connected to the Beit Mery-Environmental Solutions partnership. In particular, interviews were carried out with municipal authorities, staff of Environmental Solutions, residents in Beit Mery and representatives of NGOs and enterprises working in the solid waste management sector in Beirut and neighbouring areas.

### **3.2.4 Access to the field**

As an outsider and a foreigner, I did not have any contacts within the Lebanese solid waste management sector before the beginning of the fieldwork. However, I did not find accessing relevant stakeholders in the field particularly difficult as they all showed themselves open to meet me and participate in my study. I conducted the first interviews with representatives of NGOs and enterprises working in the solid waste management sector whose contacts were available online. Access to several of the other interviewees was facilitated by the fact that I was put into contact with them by previous interviewees. In this sense, I relied on snowball sampling as a sampling method, which meant that some of my informants played the important role of “gate keepers” to the field. Some informants who work in the Lebanese solid waste management sector put me into contact with some of their colleagues and one of the residents I spoke with in the initial phase of my fieldwork put me into contact with other residents. Especially in the latter case, being introduced by a resident allowed me to be accepted by the local community more easily and with less suspicion. With regard to other interviewees, I found that being part of the Heinrich Boell Foundation, or a German foundation more generally, increased my credibility. Overall, I found that all of the actors that I approached for this study showed themselves willing to discuss solid waste management-related issues and the partnership developed in the municipality. This might be due to the fact that the waste crisis is a current topic that has affected every level of the population and local authorities and has become a recurrent topic in the Lebanese public discourse.

### 3.2.5 Selection of participants

As in a case study ‘participants are to be found within the case’,<sup>71</sup> the participants of this research consisted of three municipal authorities, one member of the staff of Environmental Solutions, six residents of Beit Mery municipality, four representatives of NGOs and/or enterprises working in the solid waste management industry in Lebanon and one activist, who is part of the YouStink movement. I tried to ensure that all the different stakeholder groups were represented in my data in order to gain a wider range of perspectives on the public-private partnership. The particular sampling of the participants is purposive as the participants were chosen so as to provide valuable insight into the research question posed.<sup>72</sup> Stakeholders closely connected to, or involved with the Beit Mery-Environmental Solutions partnership were able to provide valuable insight concerning the functioning and role of the partnership due to their hands-on experience. The representatives of NGOs and enterprises working in the solid waste management industry contributed to the exploration of the partnership by discussing it in relation to other similar projects and the greater Lebanese solid waste management sector, within which the partnership is situated. The age, gender and the level of education of the participants were not considered as criteria for the selection as the only prerequisite that the interviewees had to fulfil was that they were either involved in the partnership or working in the Lebanese waste management industry.

### 3.2.6 Data collection

The data collection consists of semi-structured interviews with the above-mentioned stakeholders of the Beit Mery-Environmental Solutions partnership and representatives of NGOs and enterprises working in the Lebanese solid waste management industry.

### 3.2.7 Interviews

The interviews are semi-structured, which means that even though an interview guide was designed and loosely followed during the interviews, it served mostly to guide the talk.<sup>73</sup> The interview guide includes a set of questions organised by topics that I determined at the beginning of the fieldwork and it served the purpose of making sure that those topics would be discussed within each interview. I considered those topics the most suitable in terms of answering the research question posed in this thesis. The interviews in most cases took the tone of informal exchange, which meant that the interviewees were allowed to put emphasis on the aspects of the Beit Mery-Environmental Solutions

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<sup>71</sup> Ibid., 419.

<sup>72</sup> Ibid., 418.

<sup>73</sup> Karen O'Reilly, *Ethnographic Methods* (Abingdon: Routledge, 2005), 180-81.

partnership that they viewed as most important when asked about its functioning and its role. Since the research aims to try to understand how the public-private partnership has shaped the way in which solid waste management services are implemented and managed in Beit Mery from the point of view of the stakeholders, it was appropriate to leave room for the participants' expression. In addition, the scope of my interviews changed or evolved as I carried out more of them. Throughout the fieldwork, I integrated in the interview guide topics that were brought up by the interviewees and that I found particularly relevant to this study. The full interview guide is available in Appendix A.

I began each interview by briefly introducing my study to the interviewee and by explaining that the study would be conducted for the elaboration of my Master's thesis. I also introduced myself to all interviewees as a student and an intern at the Heinrich Boell Foundation. I ensured confidentiality to all interviewees, apart from the two for whom a translator was needed. The interviews took place in various settings, which include the respondents' workplaces, homes and cafes in Beirut and the meeting point was always chosen by the interviewees. One of the interviews was conducted over the phone. The meetings were always arranged via email, text-message or phone. All interviews were digitally recorded and notes and reflections were always written down immediately afterwards. During the interview, I avoided taking notes directly because I felt that it would disrupt the informal atmosphere in which the interviews took place. I also thought that note taking could be intimidating for some. Recording the interviews allowed me to fully focus on the conversation—which means maintaining eye contact, asking relevant follow-up questions and focusing on what topics seemed most interesting to the interviewee.

Some difficulties encountered during the interviews included reassuring the interviewees, especially the residents, that I was not a journalist “looking for a story” and that there was no right or wrong answer, as some showed themselves either suspicious or intimidated. My role as “the researcher” seemed to intimidate some interviewees, thus they were cautious of giving the “wrong answer”. However, I found that I could put the interviewees at ease to some extent by sharing part of “my personal history” with them as a way to ease into the interview. The fact that I was an outsider in the community, and not Lebanese, led the respondents to think that I was unfamiliar with “how things work in Lebanon” and this encouraged them to provide thorough explanations. In particular, I found that my Italian origins allowed me to easily establish a connection with my interviewees, who in most cases felt closer to me because “we share the same culture” and “you know what it feels like to experience a waste crisis. Didn't you also have one in Naples?”. However, I was also told “here it's not like in Europe where you come from”.

Another obstacle encountered in my interviews is the fact that some interviewees found it difficult to understand concepts such as “sustainable” or “sense of community”, which I mentioned in my questions. As already pointed out in the paragraph on access, not only was it necessary at times to simplify the way in which I explained or described my research to certain participants, but I also had to re-phrase questions during some of the interviews to make them easier to understand. It was thus important to be aware that, ‘even when you have explained all about your research, people can still be confused or not really understand what you mean by certain terms’.<sup>74</sup> Apart from two, the interviews were carried out in English, which, with the exception of one participant, was not the first language of any of the interviewees. Therefore, linguistic nuances that could have been important in the phase of analysis might have gone missing. A translator was needed for the interviews carried out in Arabic, which ultimately meant that the presence of a third person did not allow me to ensure the confidentiality that I usually promised the other interviewees. Finally, some expressions and nuances in the speech of the Arabic-speaking interviewees might have been lost in translation.

Immediately following each interview, I took notes on my initial thoughts about the interview and reflected on how the main issues raised by the respondent related to the other respondents’ answers. I transcribed each interview within a few days after the interview was conducted. Being aware of the respondents’ answers before carrying out the next interviews allowed me to include new questions and topics in the interview guide and better identify themes to discuss the functioning and the role of the partnership in the municipal solid waste management.

### 3.2.8 Thematic analysis

The data analysis technique that I used to organise the data and extract key findings was thematic analysis. Thematic analysis is a process of reviewing and organising data that aims at ‘identifying, analysing, and reporting patterns (themes) within data’.<sup>75</sup> The themes are ‘a unit of meaning that is observed (noticed) in the data by a reader of the text’<sup>76</sup> and is the outcome of the analytical process. Themes can be found, according to Ryan and Bernard (2003), by looking for repetitions, unusual expressions, metaphors, transitions, similarities and differences across the data and missing data across the data collected.<sup>77</sup> In the context of my study, thematic analysis allowed for the exploration of the public-private partnership in question through the identification of the major dynamics that

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<sup>74</sup> Ibid., 62.

<sup>75</sup> Virginia Braun and Victoria Clarke, "Using Thematic Analysis in Psychology," *Qualitative research in psychology* 3, no. 2 (2006): 6.

<sup>76</sup> Greg Guest, Kathleen M MacQueen, and Emily E Namey, *Applied Thematic Analysis* (SAGE Publications Inc., 2011), 50.

<sup>77</sup> Gery W Ryan and H Russell Bernard, "Techniques to Identify Themes," *Field methods* 15, no. 1 (2003).

characterises how the Beit Mery-Environmental Solutions partnership is working and how the partnership has affected the municipal solid waste management. Organising my data by theme furthermore allowed me to identify what topics the respondents put most emphasis on, which is in line with my decision to use semi-structured interviews that allow for the respondents' expression.

In this study, a coding process that relied on both emergent codes as well as a priori codes based on key concepts of the theoretical framework was used.<sup>78,79</sup> This combination of the two approaches to coding is especially useful in a study such as this, which 'has some specific issues to explore, but also aims to leave space to discover other unexpected aspects of the participants' experience or the way they assign meaning to phenomena'.<sup>80</sup> The identification of the codes was in fact conducted by scrutinising the data in close relation to socio-ecological resilience, which is the theoretical framework used in this study. I broke down the theory into key concepts such as transformability, experimentation at a small scale and 'learning-by-doing', and created an a-priori set of codes based on those concepts. However, during the coding process, codes not related to the theory were also considered as valuable and they contributed to the creation of the themes. After I identified the initial codes, I connected them using a mind-map and finally grouped those that revolved around common concepts—axial codes. In this phase, part of the initial codes were deliberately left out. Finally, I created the themes overarching the selected codes. The themes that were created departing from the initial codes allowed me for the exploration of a public-private partnership by applying a theory in order to investigate how the partnership has affected the municipal solid waste management in Beit Mery. This type of thematic analysis allowed for the integration of socio-ecological resilience in the analytical process while leaving room for unforeseen codes to emerge. This hybrid way of coding furthermore allowed me to utilise the descriptive kind of case study at its full potential given that my analysis was strongly guided by the theoretical framework.

I am aware that the findings are to some extent shaped by my choice of certain concepts from socio-ecological resilience and by my selection of the codes that I considered would be most helpful in order to explore the research question posed in this study.

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<sup>78</sup> Carol Rivas, "Coding and Analysing Qualitative Data," in *Researching Society and Culture*, ed. Clive Seale (Los Angeles: SAGE Publications, 2012), 371.

<sup>79</sup> Heather L Stuckey, "The Second Step in Data Analysis: Coding Qualitative Research Data," *Journal of Social Health and Diabetes* 3, no. 1 (2015): 8.

<sup>80</sup> Nicola K Gale et al., "Using the Framework Method for the Analysis of Qualitative Data in Multi-Disciplinary Health Research," *BMC medical research methodology* 13, no. 1 (2013): 4.

### 3.2.9 Delimitations

This study is subject to some delimitations, which include the limited amount of time that was available. The fact that I had only four months to conduct my fieldwork meant that the time available to carry out interviews was restricted. As such, 15 interviews in total were carried out during the fieldwork period. Furthermore, during the fieldwork I was also completing a full-time internship at the Heinrich Boell Foundation. While the position provided me with an environment in which I could develop my research, it meant that I had less time available doing fieldwork.

In addition to the limited amount of time available, I was also restrained by language issues. Not being able to speak Arabic meant that I could only conduct one-on-one interviews with individuals that could speak English independent of a translator. Furthermore, my limited knowledge of Arabic prevented me from meeting more individuals in addition to those suggested to me by my interviewees. Thus, I had to rely on snowball sampling of primarily English language speaking participants, which likely influenced my findings.

### 3.2.10 Ethical considerations

The research for this thesis involved much interaction with people given that it mostly consisted in conducting interviews with stakeholders connected to the public-private partnership between Beit Mery and Environmental Solutions. Ethical considerations therefore mainly concern the interviews and my interaction with the interviewees. The issues discussed in the interviews were related to the public-private partnership between Environmental Solutions and the municipality of Beit Mery, which is not a particularly sensitive subject. However, some interviewees mentioned aspects of the partnership and solid waste management in relation to the state that could compromise their reputation if their identity was revealed. In fact, many of the interviewees showed themselves critical of the way that the state had dealt with the waste crisis and especially when such criticisms come from municipal authorities or staff of the private company, it is important to ensure their positions or work are not threatened. I therefore ensured confidentiality to all interviewees by storing the transcripts and the recordings safely and by making sure not to reveal the interviewees' identity to the other interviewees or anyone else during my fieldwork and the elaboration of this thesis. As already mentioned, some of the residents expressed their fear of giving the "wrong answer" to my questions. I reassured them I made all the possible effort towards not making the participants, especially the residents, feel intimidated by my position of researcher during the interviews. Finally, the name of the company was changed into a fictitious one in order to ensure its employees' anonymity.

### **3.2.11 Research reflexivity**

I am aware of the fact that this study's shape and outcomes are dependent on the questions I decided to ask the interviewees and on my interpretation of the findings. The choices that I made while conducting this study have affected the findings and the study overall. For example, the selection of the individuals that I decided to interview was closely related to my inability of conducting interviews in Arabic. The choice of who to interview was also highly dependent on the limited contacts available to me as a foreigner and an outsider in the solid waste management industry.

Furthermore, I am aware that this study has been affected by my identity of young European researcher, which played a role in the context of my fieldwork. This means that as a foreigner in Lebanon it took me longer to understand some processes, especially related to the industry of solid waste management, which might otherwise be implicit for a Lebanese national. Furthermore, within my case study, not being part of the community explored in this work prevented me from easily understanding some of the references that the interviewees mentioned. Nuances from their answers thus might have been lost. Finally, I am aware that my position of researcher might have affected the responses of some interviewees, who might have felt intimidated by my role.

## 4 Theoretical framework - Socio-Ecological Resilience

### 4.1 Resilience

Resilience can be broadly defined as ‘the ability to cope, respond to change and return to a degree of normal functioning following a crisis’.<sup>81</sup> In other words, the concept refers to ‘the ability of a system to efficiently bounce back to a steady-state point of equilibrium’.<sup>82</sup> System is intended in this work as social-ecological, which is the overlap of social and ecological systems. The former concerns ‘property rights, land and resource tenure systems, systems of knowledge pertinent to environment and resources, and world views and ethics concerning environment and resources’ while the latter ‘refer[s] to the natural environment’.<sup>83</sup> The term ‘socio-ecological system’ highlights the synergy of the two systems, which are believed to be interdependent and worth considering as a whole in order to explore the social dynamics informing management of natural resources.<sup>84</sup> Resilience is a multifaceted concept that describes the dynamics of a system reacting to the disturbances that are disrupting its equilibrium. It is the ability of a system not only to resist and adapt to traumas but also to react to them and re-organise. It is the ability to restore the equilibrium of a system through learning, not only in order to overcome the current crisis but also to better face the future ones. Resilience is the ability of a system to return to a state of equilibrium, which is either the one prior to the disturbance or a new one.<sup>85</sup>

In the spirit of Holling’s idea of multi stable equilibria, it is worth mentioning two essential components of a resilient socio-ecological system: adaptability and transformability. Adaptability is the capacity of individual and group actors to manage the system and make it follow the desired trajectory.<sup>86</sup> Furthermore, according to Folke et al. (2010), it is the ability of a system to ‘learn, combine experience and knowledge, adjust its responses to changing external drivers and internal processes, and continue developing within the current stability domain or basin of attraction’.<sup>87</sup> Transformability is the capacity of a system to change, even radically, when external or internal

<sup>81</sup> Raven Cretney, "Resilience for Whom? Emerging Critical Geographies of Socio-Ecological Resilience," *Geography Compass* 8, no. 9 (2014): 629.

<sup>82</sup> *Ibid.*, 628.

<sup>83</sup> Fikret Berkes, Carl Folke, and Johan Colding, *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience* (Cambridge University Press, 2000), 3-4.

<sup>84</sup> *Ibid.*

<sup>85</sup> Reghezza-Zitt Magali, Lhomme Serge, and Provitolo Damienne, "Defining Resilience: When the Concept Resists," in *Resilience Imperative: Uncertainty, Risks and Disasters*, ed. Magali Reghezza-Zitt and Samuel Rufat (London: ISTE Press- Elsevier Incorporated, 2016), 15.

<sup>86</sup> Brian Walker et al., "Resilience, Adaptability and Transformability in Social–Ecological Systems," *Ecology and society* 9, no. 2 (2004): 5.

<sup>87</sup> Carl Folke et al., "Resilience Thinking: Integrating Resilience, Adaptability and Transformability," *ibid.* 15, no. 4 (2010): 2.

factors make the system, in its status quo, incapable of surviving.<sup>88</sup> Transformational and adaptive capacities of a system should not be seen as colliding with, but as working in synergy towards the recovery and improvement of the system in the face of a disturbance. As claimed by Adger (2003)<sup>89</sup> and subsequently re-enforced by Barnes et al. (2017), ‘to varying degrees, both adaptation and transformation require changes in human behavior and the norms and rules that guide it’ as individuals within a system have to make changes in their society’s institutions and general organisational structure in order for them to adapt to disturbances and transform.<sup>90</sup>

## 4.2 Socio-ecological resilience

Since the concept of resilience has been widely used in several fields of studies, variations in its definition can be found across the literature. Before the 1970s, resilience was known mainly as what is now called “engineering resilience”. Engineering resilience was considered as ‘the ability of a system to efficiently bounce back to a steady-state point of equilibrium’.<sup>91</sup> The concept further evolved when Holling applied resilience to ecology as a tool able to ‘measure the magnitude of disturbance that can be absorbed before the system changes its structure’.<sup>92</sup> Disturbances, in relation to the concept of resilience theory, are considered as those triggered by nature, such as hurricanes, but also disturbances that are a result of human activities, such as mismanagement of resources and pollution.<sup>93</sup> This shift is fundamental to understanding the modern conception of resilience, which is based on the idea that systems have more than one point of equilibrium.<sup>94</sup> Systems ‘rather [have] a zone of stability that allows for the re-organization of a system to continually exist and function even in the face of disturbance and change’,<sup>95</sup> according to Cretney (2014)’s interpretation of Holling.<sup>96</sup> From ecology, the concept of resilience has also been applied in social science and more recently to studies that aim to understand environmental change in relation to human society. In fact, ‘socio-ecological resilience is widely used as a concept for understanding the links between social and

<sup>88</sup> Brian Walker et al., "Resilience, Adaptability and Transformability in Social–Ecological Systems," *ibid.* 9, no. 2 (2004): 5.

<sup>89</sup> W. Neil Adger, "Social Capital, Collective Action, and Adaptation to Climate Change," *Economic Geography* 79, no. 4 (2003).

<sup>90</sup> Michele L. Barnes et al., "The Social Structural Foundations of Adaptation and Transformation in Social–Ecological Systems," *Ecology and Society* 22, no. 4 (2017): 18.

<sup>91</sup> Cretney, "Resilience for Whom? Emerging Critical Geographies of Socio-Ecological Resilience," 628.

<sup>92</sup> Crawford S. Holling, "Engineering Resilience Versus Ecological Resilience " in *Engineering within Ecological Constraints*, ed. Peter Schulze (Washington: National Academy of Engineering 1996), 33.

<sup>93</sup> Berkes, Folke, and Colding, *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience*, 14.

<sup>94</sup> Eric Desjardins et al., "Promoting Resilience," *The Quarterly review of biology* 90, no. 2 (2015): 151.

<sup>95</sup> Cretney, "Resilience for Whom? Emerging Critical Geographies of Socio-Ecological Resilience," 628.

<sup>96</sup> Crawford S Holling, "Resilience and Stability of Ecological Systems," *Annual review of ecology and systematics* 4, no. 1 (1973).

ecological systems, preparing for and mitigating global environmental crises, and as a framework for disaster preparedness and response'.<sup>97</sup> This approach values the relation between society and environment and situates individuals' actions within the environment, on which they are dependent. Socio-ecological resilience describes the dynamics that involve a diverse range of individuals facing disturbances, creating ecological knowledge and reinforcing their system by innovating it. Socio-ecological resilience is therefore used as a theoretical framework for the elaboration of this thesis, which explores how the public-private partnership for solid waste management in the municipality of Beit Mery has reacted locally to the waste management crisis in Lebanon.

#### 4.2.1 Crises as opportunities

Change is considered an intrinsic part of resilience in socio-ecological systems. Change, from a resilience perspective, should not be regarded negatively but should be seen as an opportunity for innovating and improving the system.<sup>98</sup> From a resilience standpoint, novelty is considered to be an essential human resource when dealing with crises.<sup>99</sup> A resilient system allows 'new initiatives to emerge' and expresses novelty through 'transformative experiments at a small scale',<sup>100</sup> where new knowledge on how to deal with shifts from one stable state of the system to another is created and the risks are shared and therefore minimised. A resilient system thus takes advantage of crises and makes use of them as opportunities to evolve for the better.<sup>101</sup> Transformational change is preferred at a smaller scale as smaller contexts often represent 'arenas for safe experimentation' in which transformations can be tested before they are applied on a larger scale.<sup>102</sup> In a resilient system, local actors such as communities, stakeholders and citizens have agency and can work on solving problems in the system. Local actors function as 'structural holes', especially when some fields of action are left unfilled or responsibilities have not been specified. This phenomenon of filling and distributing responsibilities is a way to make the system more solid in face of disturbances.<sup>103</sup> The capacity of the actors within the system to self-organise is considered to be an intrinsic part of resilience. This idea

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<sup>97</sup> Cretney, "Resilience for Whom? Emerging Critical Geographies of Socio-Ecological Resilience," 629.

<sup>98</sup> Marjolein Sterk, Ingrid A van de Leemput, and Edwin THM Peeters, "How to Conceptualize and Operationalize Resilience in Socio-Ecological Systems?," *Current Opinion in Environmental Sustainability* 28 (2017): 111.

<sup>99</sup> Lance H. Gunderson, "Adaptive Dancing: Interactions between Social Resilience and Ecological Crises," in *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change*, ed. Berkes Fikret, Colding Johan, and Folke Carl (Cambridge: Cambridge University Press, 2003), 41.

<sup>100</sup> Folke et al., "Resilience Thinking: Integrating Resilience, Adaptability and Transformability," 20.

<sup>101</sup> Ibid.

<sup>102</sup> Fikret Berkes, Johan Colding, and Carl Folke, eds., *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change* (Cambridge: Cambridge University Press, 2003), 115.

<sup>103</sup> Gunderson, "Adaptive Dancing: Interactions between Social Resilience and Ecological Crises," 43.

is based on the assumption that in a crisis, the system will re-organise,<sup>104</sup> not in a passive way but because of people's action. In fact, key individuals might play a role in making the transitional change happen and trust is regarded as the necessary oil that allows the "machine" to work and people to collaborate.<sup>105</sup>

#### **4.2.2 Learning-by-doing and social memory**

The inclusion of local actors in the decision-making process goes hand in hand with another fundamental feature of resilient systems: the diversity of the actors within a system. Community involvement and inclusion of local knowledge are considered essential to a resilient system because non-governmental actors can bring about change more quickly than big apparatuses such as states, which are often slowed down by bureaucracy.<sup>106</sup> Furthermore, the importance of a diversified set of actors with different functions in the system highly affects the creation of knowledge. Merging different kinds of knowledge and allowing every actor to contribute their set of expertise has in fact proven to be effective in learning and facing ecological disturbances.<sup>107</sup> The local knowledge generated by citizens at a local level can be crucial in order to overcome a crisis, as shown by Gadgil et al. (2003) through three case studies that illustrate the benefits of the involvement of locals in the management of natural resources.<sup>108</sup> Local knowledge, in our case ecological knowledge, can be acquired while facing disturbances through the process of learning-by-doing<sup>109</sup> and can be added to social memory, which represents a fundamental tool in dealing with future crises as it is 'the accumulated experience and history of the system, and it provides the source for self-organization and resilience'.<sup>110</sup>

#### **4.2.3 Suitability of socio-ecological resilience for this study**

Socio-ecological resilience is a suitable theoretical framework for this thesis because it includes conceptual tools that are useful in exploring dynamics of change. Socio-ecological resilience is

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<sup>104</sup> Berkes, Colding, and Folke, *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change*, 6-13.

<sup>105</sup> Per Olsson, Carl Folke, and Fikret Berkes, "Adaptive Comanagement for Building Resilience in Social-Ecological Systems," *Environmental management* 34, no. 1 (2004): 83.

<sup>106</sup> Kristen Blann, Steve Light, and Jo Ann Musmeci, "Facing the Adaptive Challenge: Practitioners' Insights from Negotiating Resource Crises in Minnesota," in *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change*, ed. Berkes Fikret, Colding Johan, and Folke Carl (Cambridge: Cambridge University Press, 2003), 231.

<sup>107</sup> Fikret Berkes, "Understanding Uncertainty and Reducing Vulnerability: Lessons from Resilience Thinking," *Natural hazards* 41, no. 2 (2007): 290.

<sup>108</sup> Gadgil Madhav et al., "Exploring the Role of Local Ecological Knowledge in Ecosystem Management: Three Case Studies," in *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change*, ed. Berkes Fikret, Colding Johan, and Folke Carl (Cambridge: Cambridge University Press, 2003).

<sup>109</sup> Olsson, Folke, and Berkes, "Adaptive Comanagement for Building Resilience in Social-Ecological Systems," 75.

<sup>110</sup> Berkes, Colding, and Folke, *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change*, 20.

employed in this thesis as the framework for the exploration of how the solid waste management in Beit Mery has been shaped and changed by the Beit Mery-Environmental Solutions partnership. This theoretical framework is suitable for the investigation of a public-private partnership, a collaboration of individuals established in order to face a disturbance: the waste management crisis in Lebanon. Socio-ecological resilience is furthermore appropriate to investigate the response to such a disturbance as the response is based on self-organisation at a local level in order to face an issue affecting the whole country. The case of public-private partnership considered in this thesis includes the initiative of diverse actors—private, public sectors and residents—and stems from joint resources. The partnership aims to create knowledge on how to reduce the impact that the production of waste has on the natural environment. Furthermore, this theoretical framework allows exploring a dynamic that involves the restoration of the solid waste management system not only for its survival but also for its improvement. Socio-ecological resilience, which values the interconnection between human society and the natural environment, represents a suitable tool in exploring the Beit Mery-Environmental Solutions partnership, which is one of the reactions to the waste management crisis in Lebanon, a man-made disturbance that is affecting both society and nature. Socio-ecological resilience emphasises the action of humans within nature, gives agency to the individuals acting within the system and values the diversity of actors, which is useful while exploring how local authorities and the public sector in Lebanon have reacted to the solid waste management crisis through the establishment of a partnership, the transformation of their institutions and norms.

However, this thesis investigates a case study at only one specific point in time and it therefore does not consider the temporal development of the public-private partnership nor the evolution of the resilience of this system. Furthermore, this thesis does not aim to measure the level of resilience of this system or its effectiveness in overcoming the crisis. In this thesis, socio-ecological resilience is exclusively used in order to frame one specific reaction to the solid waste management crisis in Lebanon and explore how the public-private partnership between the municipality of Beit Mery and Environmental Solutions has shaped the municipal solid waste management.

## 5 Findings

In this chapter, I present the findings that I collected through the interviews conducted during the fieldwork. First, I present the data and the profile of the participants interviewed. Subsequently, I explain how the data was organised and analysed in order for themes to be identified. The findings are presented as three overarching themes, which shed light on how the public-private partnership between Beit Mery and Environmental Solutions has shaped the practice of solid waste management. The themes relate to: how the public-private partnership arrangement represents a break from old practices; how the public-private partnership works as means of empowerment for improvement; and finally, how the partnership as a new management strategy is a solution to face the waste crisis. Quotes from the interviews are presented in order to illustrate how the experiences, perceptions and opinions of the stakeholders relate to the themes.

### 5.1 Presentation of the data

The data analysed are qualitative and consist of 15 interviews with individual stakeholders who are connected to the practice of solid waste management and thus provide insight into the case study at hand. More specifically, the interviews consist of municipal authorities (public sector), a representative of the consulting company involved in the public-private partnership (private sector) and residents of the municipality, as presented in Table 5.1. Including a diverse sample of stakeholders—actors coming from the private sector, the public sector and residents—allows for the investigation of the partnership from the point of view of all its stakeholders. Including a diverse sample of stakeholders ensures that the experiences, opinions and perceptions gathered in the interviews provide insights from a variety of angles when it comes to how the public-private partnership has shaped the management of solid waste management in Beit Mery. The interviewees, as shown in Table 5.1, also include activists and representatives of NGOs and enterprises that are not directly involved in the Beit Mery-Environmental Solutions partnership, but are involved in the field of solid waste management in Lebanon. Interviews with these experts helped me to better understand how the field of solid waste management has historically been run in Lebanon, what actors have been involved, what issues have shaped the management practices, and where gaps exist when it comes to service delivery and effectiveness. This knowledge relates to my study as the public-private partnership I explore positions itself within the greater field of the Lebanese solid waste management, which due to its inefficiency, has seen growing efforts by different actors addressing issues with the provision of solid waste management related-services.

Table 5.1 – List of interviewees.

<b>Interviewee</b>	<b>Role within/in relation to the case study</b>
Interviewee 1	Upper leadership of the municipality of Beit Mery
Interviewee 2	Board member of the municipality of Beit Mery
Interviewee 3	A Mukhtar <sup>111</sup> of Beit Mery
Interviewee 4	Upper management of Environmental Solutions, the consulting company working in collaboration with the municipality of Beit Mery
Interviewees 5-10	Resident of Beit Mery
Interviewee 11	Representative of NGO, owner of consulting company working in the SWM sector
Interviewees 12,13	Representative of NGO working in the SWM sector
Interviewee 14	Representative of social enterprise working in the SWM sector
Interviewee 15	Political and environmental activist, member of the <i>YouStink</i> movement

## 5.2 Coding

The interviews were analysed using a thematic analysis approach in order to identify recurrent concepts, ideas, topics and experiences raised by the interviewees. The recurrence of these themes in many interviews is taken to signify underlying, common dynamics that play an important role in understanding how the Beit Mery-Environmental Solutions partnership has affected the practice of solid waste management.

The analytical process is presented in Table 5.2, which shows how the themes developed from a hybrid coding approach based on a combination of deductive and inductive analyses. A priori codes based on the theory of socio-ecological resilience were used to direct attention to dynamics related to how the practice of solid waste management was being affected by the new partnership arrangement, and how a national issue was addressed through small-scale change. In the analysis process, I was also open to emerging ideas, concepts, and words that shed light on how the change in solid waste management was received and to what degree it influenced the way in which solid waste management is practiced.

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<sup>111</sup> Originally the head of the village, in nowadays Lebanon the mukhtar's role is mainly that of issuing documents such as identification cards, passports, and birth and marriage certificates, which are not provided by other municipal authorities. The mukhtar is elected by the community, is not part of the municipal board and is the authority closest to the population as he is part of the community that he serves and is known personally by most of the village's population.

Table 5.1 – Formation of overarching themes.

<b>Initial codes</b>	<b>Axial codes</b>	<b>Themes</b>
Now vs. Before No alternative/Something has to be done State's inactivity Corruption Mistrust in the state Residents' involvement Sense of responsibility Perceived individual/collective impact on the environment	Acknowledgment of change  External factors prompting the change of the system  System rooted in the community	PPP as a break from old practices / carrier of change
Search for a solution Crisis as opportunity Need for control/tracking Dependence on the state President's will They vs. We	PPP as reaction  Individual initiative's action vs. state's inactivity  Drivers of change	PPP as means of empowerment for improvement
Unique case Model Need for expertise Centralisation/decentralisation Perceived financial change Bottom-up approach A clean city Ongoing negotiations with the state	PPP as carrier of improvement and innovation  Concrete changes  External factors challenging the change of the system	PPP as new management strategy for future success

The final themes created through the process of axial coding are public-private partnership representing a break from old practices/carrier of change, public-private partnership working as means of empowerment for improvement and public-private partnership as new management strategy solution to face the waste crisis. In the next sections, the themes will be presented in detail.

### **5.3 The public-private partnership as a break from old practices and as a carrier of change**

Key concepts that are continually raised in most of the interviews relate to how solid waste was managed prior to and in the immediate lead up to the waste crisis of 2015, as well as in the municipality today. Most of those interviewed claim that after the waste crisis change to the way in which solid waste was managed in the municipality of Beit Mery occurred. Among the interviewees, there is a desire to compare how solid waste was disposed of before and after the waste crisis, and before and after the establishment of the partnership between the municipality and the private sector,

which are events close in time. ‘Before getting into this new project...mmh...the people used to send [throw] their garbage to the bins that were spread all over the roads and Sukleen was in charge in taking all of the garbage out of Beit Mery’, says one of the residents. ‘Never heard about recycling [before the partnership]. I knew that Sukleen was picking up my garbage all the way up till the crisis...’ These quotes highlight that the partnership has triggered a new way of thinking that is a positive way of dealing with waste.

The residents acknowledge change with regard to different specific aspects of solid waste management—cost, efficiency, and environmental sustainability. However, across the interviews, acknowledgment of change in solid waste management is often voiced through the recurrent use of expressions such as ‘before (the crisis and/or the establishment of the public-private partnership)’ and ‘now’, which denote a desire to compare the two systems. One of the residents expresses their acknowledgement of change in solid waste management saying, ‘before we got the new municipality basically we practiced our garbage disposal like any other person in Lebanon, me included. We put it in a decent bag, we put it in a bag and basically go on the street, find a bin and dump it there.’ The quote exemplifies change in the municipal solid waste management, as the new solid waste management is no longer perceived to be the same one practiced prior to the partnership in Lebanon, as well as in the municipality.

The perceived change in solid waste management due to the adoption of this new public-private arrangement is regarded by many of the people interviewed as a necessary and positive change in the way in which solid waste is addressed in the municipality. It is viewed as necessary because the limited capacity of the state to deal with the issue of solid waste management needed to be addressed. It is also regarded as necessary by those interviewed as a way to preserve the long-term wellbeing of the community and the environment. A representative of the municipality says, ‘[with this partnership] we are protecting our village, our nature...’

The change in solid waste management at the municipal level was needed, as claimed by one of the residents, ‘...because the government couldn’t do it, the municipalities started doing it...’ As shown, several interviewees claim that the change was enacted in order to distance the municipal solid waste management from the inefficiency of the state with regard to the crisis and the corruption of the government, which generated the crisis and contributed to the already strongly felt mistrust in the state, which they voice by highlighting its poor track record. Speaking of the municipal solid waste management prior to the crisis, a representative of the consulting company working with the municipality says,

It was typical. It was a deal brokered by politicians to monopolise the waste. They created a company, they brought in their people, to run the company, they took all the waste.’ And ‘there is no trust from the people towards the government when it comes to waste management, ok? Because of the Naameh history, they tried to find other places in Lebanon for landfilling but no one agreed. No one agreed to accept Beirut’s waste. Ok? So this is why in the end corruption prevailed as well, and they decided to bury it in the sea and reclaim land, which is an environmental crime.

These quotes highlight that the state is considered by many of those interviewed as being responsible for the waste crisis that started in 2015. Furthermore, the state is perceived as unable to provide a solution to the crisis once it occurred. A representative of the enterprise says that during the waste crisis ‘...no one was working on a plan B. No one was foreseeing that “what if Nameeh landfill closes? What happens to the waste?” I mean, no one in the government.’ The government is thus regarded by many as lacking the capacity as well as the will to deal with the waste crisis.

According to socio-ecological resilience theory, transformability is the ability of a system to change, even radically, and is essential in order for a system to survive and return to proper functioning.<sup>112</sup> Across the interviews, the choice of creating a partnership between the municipality of Beit Mery and the consulting company is expressed as the only way to face the crisis. ‘This, waste management, they were obliged to work with this team. [...] they had no other alternative’, says one of the residents. One of the municipal authorities reinforces this idea by claiming that ‘in all cases, what he [the owner of the consulting company] is doing is great because we don’t have other options...’ Most interviewees present the change in solid waste management, which is brought about through the creation of the public-private partnership, an independent and local way of disposing the waste, as the only way to face the waste crisis.

One of the residents acknowledges the involvement of the residents themselves in making the change in solid waste management by saying, ‘...people who are from Beit Mery must have done it [participating in the creation of the partnership], otherwise it would have not happened like that on its own...’ The last quote also shows that change in socio-ecological systems does not happen by itself but it is brought about by individuals.<sup>113</sup> The authorities of the municipality and the residents made an effort to change the solid waste management in their municipality driven not only by the fact that ‘there is no alternative’, but also by a sense of responsibility towards the environment. Socio-

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<sup>112</sup> Walker et al., "Resilience, Adaptability and Transformability in Social–Ecological Systems."

<sup>113</sup> Olsson, Folke, and Berkes, "Adaptive Comanagement for Building Resilience in Social–Ecological Systems," 83.

ecological systems are in fact those in which society and the environment are dependent on each other and in which they react to each other.<sup>114</sup> After the crisis, the residents claim to have become more involved in how solid waste is managed and that residents' participation in the disposal of waste has come to be seen as a responsibility. With regard to this point, a resident says, 'My role as a resident is to be as aware as all these people that are working for this municipality, and to be responsible. I mean, I'm not waiting for them to give me all I'm asking but I'm always going to them. This is, what I think, all the residents around are doing and the people I know, is to ask them "how can we help? How can we be part [of managing waste]?"'. This quote denotes a desire for the residents to be involved in the municipal solid waste management and the partnership.

The residents acknowledge their role in the partnership as they recycle, are part of an informal committee of residents active in the municipality, spread awareness to their family members and communicate with the municipality about how the service might be lacking. One of the residents acknowledges the involvement of the residents in easing the establishment and development of the partnership by saying, '...the people that were struggling for it [the partnership], like myself and the people around me, I like to say that we played a role, because knowing that there is an intention for the residents to be part of this kind of project probably made the president [of the municipality] more confident in going through the project.' The residents are therefore aware of their agency and their ability to facilitate change and make it happen. In fact, in a socio-ecological system the variety of the actors is valued as they are usually able to make the change in the system happen faster than states, which often act slower under the weight of intricate bureaucracies.<sup>115</sup> The interviewees are furthermore aware of the impact that the improper solid waste management has on the environment and speaking of the solid waste management pre-partnership, one representative of the municipality says, '...they were sending all the garbage on the valley and they have destroyed the valley. What we call the Lamartine valley, they have destroyed it. It was wonderful valley but they were putting all the garbage, not only the garbage of Beit Mery but as well the...all the surrounding municipalities.' Another resident's quote shows that the creation of the public-private partnership and the need for change stem also from a general sense of frustration with the growing pollution in Lebanon. 'The ecology, you know, we've always been very proud to have like a clean land, sun, and now we don't have this. We have a dirty land, unfortunately polluted etc...so my generation, my parents', mine and my younger generation, people are aware that something needs to be done, right?' The interviewees

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<sup>114</sup> Cretney, "Resilience for Whom? Emerging Critical Geographies of Socio-Ecological Resilience," 629.

<sup>115</sup> Blann, Light, and Musmeci, "Facing the Adaptive Challenge: Practitioners' Insights from Negotiating Resource Crises in Minnesota," 231.

are aware that the lamented pollution is man-made and therefore their action to prevent it from impacting the environment is needed.

The residents perceive that their awareness of both their individual and collective impact on the environment has increased as a consequence of the crisis and the establishment of the public-private partnership. 'I can only speak for the people I know, that I see, that I encounter, that I exchange with, and I can say that yes, they are more aware of the sustainability of the project, I can say that they're more concerned about every little paper now dumped in the streets than they were before [...] They don't take for granted anything anymore because now we are more aware of everything.'

#### **5.4 The public-private partnership as means of empowerment for improvement**

The interviewees regard the partnership established between the municipality of Beit Mery and the private sector as the means through which change was brought about as opposed to the outcome of the progress in the field of waste management. Furthermore, many of those interviewed regard the partnership between the municipality and a private consulting company as a reaction to the waste crisis and a positive solution, or at least an attempt to find a solution.

This is in line with the concept of socio-ecological resilience, which asserts that change within a system takes place in reaction to disturbances through re-organisation.<sup>116</sup> Speaking of the establishment of the partnership, a resident says, 'what we were seeking for [...] especially after the garbage crisis, and especially after the garbage started piling up in front of our houses and in every corner, was for a solution, a solution that was not only just picking up the garbage and throwing, dumping everywhere'. The quote shows that the public-private partnership is regarded by some stakeholders as a solution to the waste crisis, one that is based on a new and improved way of functioning.

The partnership is furthermore regarded by some as a way for the municipality to become more independent from the state, which is largely viewed positively. One of the municipal authorities claims, '...in our solution, in our case, we are dealing with our garbage in the boundaries of our city [...] from the time we have started dealing with our garbage, Sukleen is out of Beit Mery'. The quote shows that a detachment from the state with regard to solid waste management has occurred. Independence from the state results in better control of the disposal of waste, on where the waste goes and how much it costs, which, the interviewees claim, was lacking in the previous solid waste management. All municipal authorities and representatives of the private sector interviewed express

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<sup>116</sup> Olsson, Folke, and Berkes, "Adaptive Comanagement for Building Resilience in Social-Ecological Systems," 83.

their satisfaction with the higher degree of control that the municipality has in comparison to when Sukleen, the company entrusted by the state, was taking care of solid waste. One of the municipal authorities says, ‘...we have meters which are checked by both, the private company and the municipality people, so we are sure about the exact tonnage that is treated by the plant’ because ‘before [the partnership] Sukleen took all the money’, says another municipal authority. It appears that the municipality values the higher degree of transparency of the solid waste management system and its control of the amount of waste treated and on the cost of the treatment. Furthermore, the public-private partnership is regarded as a way to learn from the unfavourable solid waste management pre-crisis.

One of the municipal authorities claims, ‘...it’s the first time we do this [deal with the waste], because before we know that the government do this.’ A representative of a private company dealing with municipal waste also reinforces this concept by saying, ‘...municipalities didn’t know how to handle their own waste. They were left overnight. They slept when there was someone taking care of their waste, they woke up with no one taking care of their waste. They had to do something [...] there is a lack of knowhow because there was something doing the job for them.’ These quotes show that the municipalities, having relied too much on the government to deal with waste disposal, have never developed the knowledge to deal with it themselves. The public-private partnership is therefore considered a way to create and directly apply new knowledge of better solid waste management and it represents a means of knowledge-sharing between the private and the public sectors. According to socio-ecological resilience, adaptability is the property of a system to be shaped by its actors in the desired direction.<sup>117</sup> The partnership contributes to the improvement of solid waste management through a change that follows a specific trajectory, avoids previous mistakes, explores a new path and moves forward.

The representative of a consulting company working with municipal waste says, ‘The crisis, the waste crisis, allowed the population to be aware that there is a crisis and that some things need to be changed in the waste management system...’ A resident of Beit Mery also says, ‘...this garbage crisis made us realise as citizens the importance of recycling and the importance of being aware of what we were doing and our habits, in buying and throwing garbage [...] so I’m not mad at the garbage crisis.’ Speaking of the crisis and the decision to establish the public-private partnership, one of the municipal authorities adds, ‘We found that this is a chance for us to solve our problem’. These quotes show that

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<sup>117</sup> Walker et al., "Resilience, Adaptability and Transformability in Social–Ecological Systems," 5.

most interviewees experience the crisis as an adversity from which it is possible to learn, an obstacle that people need to react to and an opportunity to improve the system.

As previously mentioned, the partnership is considered necessary to the municipality as the state did not provide a national solution to the waste crisis and appropriate solid waste management-related services. The public-private partnership is regarded as a result of the individual initiatives aiming at improving solid waste management in contrast to the state being viewed as incapable and inactive. Change is therefore regarded as an adaptation to the current structure and situation. However, adaptation in this case is not a passive process but an active one in which individual initiative restore the malfunctioning provision of solid waste management-related services. Speaking of the work of NGOs and enterprises dealing with solid waste management independently from the state, the representative of the consulting company working in Beit Mery says, 'It's not their [NGOs and enterprises] job to be doing it but they decided that since no one is doing it they fill the vacuum.' The quote shows how individual initiatives, such as the partnership in Beit Mery, have emerged after the waste crisis as a consequence of the fact that the state could not provide appropriate solid waste management services and that these initiatives aim at filling the gap in the provision of the service. It is a common feature in resilient systems that communities or stakeholders work towards filling the gaps by functioning as 'structural holes'.<sup>118</sup>

However, for as much as this process of "filling the vacuum" might sound organic and spontaneous, the change in solid waste management and the initiative aiming to fill the gap in the service does not happen by itself but is actively brought about by individuals. For the change to occur there is the need for key actors that initiate the change. In fact, according to socio-ecological resilience, individuals reshape, through their actions, the system in the face of disturbances. Among these individuals, it is common to find key actors that more than others push for the transitional change to happen or ease the collaboration among actors.<sup>119</sup> One of the main actors identified by the interviewees as a driver of change is the president of the municipality. Speaking of the reasons that led to the establishment of the public-private partnership, one of the residents says, 'Just because the chief of the municipality decided that he would, that he wanted the project to work out. That's all! It is because of one person and the will of one person'. In relation to the same topic, a municipal authority says, '...because we have the will, especially with our mayor, he has the will...' This quote shows the president's determination to start dealing with waste differently and it furthermore shows the residents'

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<sup>118</sup> Gunderson, "Adaptive Dancing: Interactions between Social Resilience and Ecological Crises," 43.

<sup>119</sup> Berkes, Colding, and Folke, *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change*, 6-13.

admiration and support. They encourage the change and see the municipality and residents' actions as part of a collective effort.

Drivers of change are not only to be found among the municipal authorities however, but among residents as well. For instance, one of the residents, who created what she defines as an 'informal committee of neighbours' says, 'I have to say, with all modesty, that I was the mmh...the leader to this, if you want. I took it up on a personal level and I made it a personal goal to achieve, it was a very personal matter, and all my neighbours stood up for me and helped me in this.' The stakeholders of the partnership take ownership of the change in solid waste management and often discuss the work being done in the municipality by using the pronoun 'we'—for the municipality and residents—in contrast to 'they', which usually refers to the previous municipal board or the government. One of the municipal authorities says, 'I was the one fighting against what *they* did in the valley, the way *they* throw the garbage [...] ....I went down and *we* stopped the way *they* are throwing the garbage in the valley and *we* closed the landfill...'. Another respondent, also working for the municipality, claims that: '*we* have taken the decision and moved on because we were in a mess...the government was in a mess because *they* don't know what to do with their garbage whereas...*we* have taken the decision and moved forward'. These quotes show that the activity of the municipality is framed in contrast to the inactivity and malfunction of the state and often times it is discussed within the current debate on the decentralisation of the solid waste management in Lebanon.

### **5.5 The public-private partnership as new management strategy for future success**

Most interviewees regard the partnership as a unique case and a model for other Lebanese municipalities that are facing similar issues with regard to solid waste management. The change that occurred in the municipal solid waste management is considered by those interviewed as an improvement if compared to the way in which solid waste was managed prior to the waste crisis in 2015.

Many of those interviewed claim that a decentralised solid waste management system is more desirable, if not the ultimate solution to the waste crisis. As expressed in previous quotes, key individuals made themselves drivers of change because they took the cause to heart. One of the residents says, 'I think that living the solution to the municipalities is *the* solution for Lebanon'. This quote suggests that the municipality and its residents' agency is valued and trusted by the interviewees more than the will and the capacity of the state. A representative of the upper management of the company working with the municipality of Beit Mery says, 'If this [decentralised] model works, then it will break the monopoly mentality'. This quote shows that the public-private partnership is an

expression of the decentralised model and that the partnership is bringing innovation to the national solid waste management system by challenging the system in place.

On this debate, the representative of an NGO and owner of a consulting company says, ‘I know for a fact that if I live in Dbaye, me myself I have a waste management centre in Dbaye I will be more curious about the efficiency of the centre than someone who is living, I don’t know, in Beirut, for example, because the direct impact I will see it myself. That’s why I believe that the control should be decentralised...’ This quote suggests that there is a relationship between good functioning and closeness to the municipality.

The partnership is seen by most interviewees as a unique case in Lebanon and a model of decentralisation that other municipalities should be inspired by. By being a unique case, the Beit Mery-Environmental Solutions partnership represents innovation within solid waste management. Socio-ecological theory in fact considers novelty as the primary human resource in order to face a crisis.<sup>120</sup> Furthermore, the creation of new knowledge on how to deal with a crisis is the first step in order to better face future ones.<sup>121</sup> One of the residents says, ‘Mmh...[the owner of the company], as I said, is a consultant, and he is considering Beit Mery and all the people that are calling out to him as experimental fields, which in my sense is a win-win relation. I mean, if I was in [the owner]’s shoes and someone would call me saying “listen, I want to find a solution” I would say “great!” ‘cause I’m experimenting solutions, “would you like to be part of this experimentation?”’ This quote shows that the municipality is seen as a place for the experimentation of new techniques and solid waste management practices at a small scale. Resilience in a socio-ecological system is in fact enhanced through the creation of new knowledge on how to deal with the disturbance in question. This knowledge is created and acquired by the actors in the system through the process of learning-by-doing.<sup>122</sup> This means that the new knowledge is created at a local level in ‘arenas of safe experimentation’ in which transformations can be tested at a lower risk.<sup>123</sup> Furthermore, the partnership is regarded as correctly established with the help of experts in the disposal of waste because, as mentioned, the municipalities lack the knowledge on how to deal with waste. The owner of the company working the municipality says that during the crisis ‘all municipalities were calling to say, you know, “we have garbage on the streets, what can we do?”’ Another interviewee,

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<sup>120</sup> Gunderson, "Adaptive Dancing: Interactions between Social Resilience and Ecological Crises," 41.

<sup>121</sup> Berkes, Colding, and Folke, *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change*, 20.

<sup>122</sup> Olsson, Folke, and Berkes, "Adaptive Comanagement for Building Resilience in Social–Ecological Systems," 75.

<sup>123</sup> Berkes, Colding, and Folke, *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change*, 115.

representative of an NGO working in the solid waste management sector and owner of a consulting company says, 'This is one of the results of the crisis because the people were aware that the operations of waste were not as it should be done. The people were aware of that and since I'm a scientist and since I know all the science related to good waste management practices, I had the opportunity to sign a contract with a municipality...' The interviewees acknowledge the need for experts in the field and value their participation in the partnership. A resident says, '...they [the municipal authorities] need to start somewhere, and we need to do it with the experts and with people who know what they're doing. The municipality and the people are not experts in this matter.'

The participation of experts in the Beit Mery-Environmental Solutions partnership allows for new creation of knowledge on solid waste management and adds to the variety of the actors in the system. The experts' contribution and experimentation at a small-scale in order to address a national issue expands the knowledge on how to face similar crises in the future.<sup>124</sup> The partnership is identified by the interviewees as a model. In fact, a resident says, 'it's a model, it's a reference and it should encourage others to do...' By being a model, the partnership serves as a point of departure for the new knowledge on solid waste management to be spread to other municipalities in similar situations. One of the municipal authorities says, '...you cannot live in an island surrounded by garbage if all the other municipalities surrounding you are not clean, I mean...it has to spread, this discipline has to be spread all over the other municipalities'.

The concrete changes that the interviewees associate with the partnership include decreased costs related to solid waste management, improvement of the city's look, improvement in the environmental sustainability of solid waste management and more independence for the municipality with regard to solid waste management. With regard to the financial change in solid waste management, one of the municipal authorities says, 'The municipality pays to [the private company involved in the partnership] something like 57. No, 62 dollars per ton instead of the 155 dollars which we paid to Sukleen. Compared to what we were paying to Sukleen it's something like less than a half, what we are paying now to [the private company involved in the partnership].' The sentiment expressed by this quote is prevalent across the interviews and it denotes a significant decrease in the costs related to the disposal of waste. Furthermore, it shows that Sukleen, who was in charge of the solid waste management before the crisis, was likely overcharging the municipality. Respondent 15, active within the protests that followed the waste crisis, says, 'What happened, most of the municipalities that took back their waste management find that Sukleen was invoicing them 40 to 50

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<sup>124</sup> Berkes, "Understanding Uncertainty and Reducing Vulnerability: Lessons from Resilience Thinking," 290.

percent more on tonnage...so somehow the cost for garbage was like 100 became 60...On the budget it's a win.' The advantage of the public-private partnership is not only exemplified by the financial gain but also in the increase of transparency that characterises the new municipal solid waste management. Furthermore, the municipality is not the only stakeholder benefiting financially from the partnership. The private company involved in the partnership is also seen as making a profit from the new solid waste management system in place. One of the residents says, 'We have reached a point where the municipality, both the municipality and Environmental Solutions are profiting from the issues of recycling'. This quote also shows how something defined as an issue is allowing both the private and public sector to have a financial return. The issue is turned into possibility.

All interviewees closely affected by the Beit Mery-Environmental Solutions partnership express their satisfaction with the improved look of the municipality as 'there is no more garbage on the street', which is a recurrent remark made by the interviewees. All of them acknowledge that lack of garbage on the street and they all convey in a way or another that 'Beit Mery is clean now'.

In addition to the cleanliness, the interviewees appreciate the increase in the environmental sustainability of the new solid waste management system. Speaking of the partnership in Beit Mery, a representative of an NGO working in the solid waste management sector says, 'It's a system that brings about the value of reducing and creating something from the waste and that's what is really important. And it's not involved in burning and it's not involved in dumping'. Once again, it is worth noting that the environmental sustainability of the partnership is in stark contrast to the state's solid waste management, which includes dumping and plans to include the incineration of the waste in the near future.

As previously mentioned, the interviewees perceive the municipality as more independent from the state with regard to solid waste management, which in their eyes appears to be a positive change. One of the residents says, 'I feel that the municipality has more control [on solid waste management] and it looks cleaner and it feels nicer'. The improvement in solid waste management is seen as consequential to the increase in independence from the state. However, although the municipality is seen as more independent and empowered, it is still subject to operating within the state's structure and, as already mentioned, it adapts itself to the gap in the service. Several of the interviewees have voiced their concern about the ongoing negotiations between the state and the municipality about the partnership. While the state allows the Beit Mery-Environmental Solutions partnership to operate independently, it does not allow the municipality and the company to establish a long-term contract, which as a result hinders the partnership's long-term planning. One of the municipal authorities says,

‘Three months. Three months of hard working and going and coming and going and coming. Because I need to get the approval of many departments and many ministries before starting. And now, we are only authorised to work till middle 2018 so we have to work on the approval...it’s hard to continue working like this’ and ‘they don’t have a plan to solve the waste issue in Lebanon. They are doing nothing! And more than that they’re trying to stop what we are doing in one way or another.’ These quotes show that the new relationship between the partnership and the state is complicated and the negotiation in sharing responsibilities is still ongoing.

## 6 Analysis

In this section, I discuss the findings in order to answer the research question posed in this thesis, which concerns how the public-private partnership between Beit Mery and Environmental Solutions has shaped the municipal solid waste management. I furthermore discuss the findings in relation to socio-ecological resilience, which is the theoretical framework that informed the analytic process conducted for this work. Finally, I analyse the findings in relation to the literature reviewed in the second chapter of this thesis in order to determine how the findings complement and oppose major trends in the literature concerning scopes, keys for success, obstacles of public-private partnerships in Lebanon and developing countries more generally.

### **6.1 A more inclusive, independent and environmentally sustainable solid waste management**

According to the findings, we can observe that the Beit Mery-Environmental Solutions partnership has started the process of change that has given the municipal solid waste management to a new form. The partnership has re-shaped the solid waste management in Beit Mery in three main ways: by making it more inclusive, more independent and more environmentally sustainable. Together these changes mark a positive improvement when it comes to dealing with issues such as inefficiency in service delivery, scarce knowledge of environmentally sustainable solid waste management practices and corruption within solid waste management.

The solid waste management in Beit Mery has become more inclusive as it now includes a wider range of actors. The partnership has in fact allowed the private sector to be part of the municipal solid waste management while making the municipal authorities more engaged in the disposal of waste and making the community more involved. The increased involvement of these different actors within the practice of solid waste management increases people's sense of responsibility when it comes to the disposal of waste. Everyone in the municipality is responsible for the proper functioning of the solid waste management and everyone is held accountable because of the recently established sense of responsibility to contributing to an environmentally sustainable solid waste management among the residents, the municipality and the private company.

The solid waste management in Beit Mery has become more independent as it includes experts' knowledge on how to deal with the disposal of waste and thus does not need to rely on the state for this type of expertise. In virtue of being more independent, the municipal solid waste management is also more transparent because both municipality and private company can double-check the amount

of waste sorted and the consequent cost of it. As a result of being self-sufficient and independent from the state, the new solid waste management in the municipality has become more trustworthy in the eyes of the public-private partnership's stakeholders.

The solid waste management in Beit Mery has furthermore become more environmentally sustainable as it now involves the practice of recycling, which allows the municipality to distance itself from the harmful solid waste management practices advocated by the state, which include the use of coastal landfills. Finally, the introduction of the practice of recycling, which is highly dependent on the effort of the community, results in the perceived decrease in the municipal population's impact on the natural environment.

It can thus be claimed that a higher degree of inclusivity, involvement of experts' knowledge, independence from the state, inclusion of recycling have proven beneficial to the improvement of the municipal solid waste management. In fact, as a consequence of the establishment of the public-private partnership, the solid waste management in Beit Mery not only has regained an appropriate level of functioning but it has improved. In light of the improvement that the establishment of the Beit Mery-Environmental Solutions partnership has brought to the municipal solid waste management, it can be claimed that local partnerships of the kind explored in this thesis, if applied to other municipalities in Lebanon, could represent an effective way to mitigate the waste crisis.

## **6.2 The transformation of solid waste management through socio-ecological resilience**

Socio-ecological resilience has proven to be a valuable tool in exploring the dynamics of change that the solid waste management in Beit Mery has been subject to after the establishment of the public-private partnership. In Figure 6.1, I present how solid waste management has changed following the establishment of the partnership by framing the change within socio-ecological resilience.

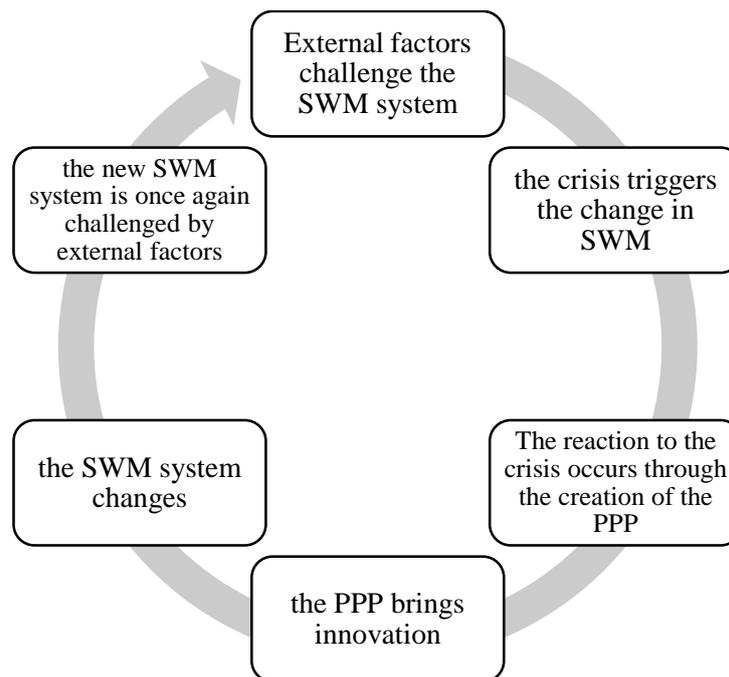


Figure 6.1 – The change process of the practice of solid waste management.<sup>125</sup>

The findings show that the solid waste management system in Beit Mery changed in the face of the waste crisis. The municipal authorities and the residents, which are a community concerned with its impact on the natural environment, decided to make the change happen. They reacted through the creation of the public-private partnership, which allows the private sector to be included in the solid waste management. Furthermore, the creation of the public-private partnership has allowed for a higher degree of involvement of the residents, who were not active participants in the previous solid waste management. The residents add to the plurality of actors in the system, which enhances the chances of the system to better face the crisis as different actors can provide different types of contributions. The actions taken by the municipality with regard to the waste crisis are always presented by the interviewees as the reaction to challenges posed to the functioning of the solid waste management, such as the inactivity of the state, the crisis, the misconduct of the previous municipal authorities. The findings furthermore show that the municipality has not seen the waste crisis as a discouragement but as an opportunity to innovate the solid waste management system by learning from previous mistakes, such as trusting that the state will take care of the disposal of waste. While

<sup>125</sup>Figure 6.1 is inspired by the idea of adaptive cycles conceived by C.S. Holling, Lance H. Gunderson, and Garry D. Peterson, "Sustainability and Panarchies," in *Panarchy: Understanding Transformations in Human and Natural Systems*, ed. Lance H. Gunderson and C.S. Holling (Washington: Island Press, 2002), 72-79.

adapting to the gap in the national provision of solid waste management and functioning within the national solid waste management structure, the municipal solid waste management in Beit Mery has developed its independency and has been transformed through the partnership. The public-private partnership has allowed the solid waste management in Beit Mery to be improved through the expertise provided by the private sector combined with the effort of the community and its will to start the practice of recycling. Furthermore, through the Beit Mery-Environmental Solutions partnership, new knowledge on solid waste management has been created and applied in an environment that allows for experimentation. The knowledge created is potentially going to be transferred to other municipalities either facing the same waste crisis or similar issues with solid waste management. Through the Beit Mery-Environmental Solutions partnership, concrete changes in the municipal solid waste management, which are perceived as positive by the interviewees, have occurred. After the crisis, the solid waste management in Beit Mery has thus found a new way of functioning and the partnership has brought the municipal solid waste management to a new improved point of equilibrium. However, the new solid waste management is challenged once again by disturbances mainly created by the state in their ongoing negotiation of roles, possibly opening up the opportunity for a new process of change.

The findings show that the Beit Mery-Environmental Solutions partnership has allowed the municipal solid waste management to include different actors working for the proper functioning of the system, react to the waste crisis and improve. Thanks to the partnership, the solid waste management in Beit Mery has changed and has been subject to a transformation that makes it more resilient. Through the inclusion of a community that is more concerned about its impact on the natural environment, the acquisition of new knowledge of solid waste management and the introduction of the practice of recycling, not only has the solid waste management in Beit Mery faced the present crisis but it is also more likely to better face future issues threatening the system.

### **6.3 The findings in the context of the literature**

The findings of this study contribute to the existing literature on the scopes, the utility, the obstacles and the experiences of public-private partnerships by re-enforcing or opposing trends found across the literature.

With regard to the scope and the utility of public-private partnerships, the literature shows that public-private partnerships are often established in order for states to acquire knowledge from the private sector, share the risk and the expenses related to a provision of a certain service, develop local

economies<sup>126</sup> and deliver a service that the public sector is unable to provide.<sup>127,128,129</sup> My findings re-enforce all these concepts present in the literature. In fact, the partnership established between Environmental Solutions and Beit Mery has allowed the municipality, the public sector, to acquire new knowledge on solid waste management practices and technologies from the experts of the private sector. Secondly, the risk that such a project might entail is shared with the private sector and the expenses related to the disposal of waste are claimed to have decreased, even though they are not necessarily perceived as shared. The Beit Mery-Environmental Solutions partnership has allowed for the development of a solid waste management system whose expenses and profits do not exit the boundaries of the partnership. Finally, the partnership explored in this thesis works as a “gap filler” in the lacking provision of solid waste management-related services by the Lebanese state.

As for the obstacles, one of the impediments posed to the functioning of public-private partnerships is the fact that the state often regards public-private partnerships as a threat to the central power, as it is the case for Lebanon.<sup>130</sup> The involvement of non-state actors within the decision-making process deprives the state from part of its authority.<sup>131</sup> With regard to the specific case of public-private partnerships in Lebanon, it is claimed that such partnerships are often limited by long bureaucratic processes.<sup>132</sup> This work re-enforces this claim as my findings show that the partnership in question has faced “bureaucratic harassment” from the Lebanese state, which does not intend to favour the development of the partnership. However, the findings indicate that the reason that the state does not see the partnership as desirable is because, rather than being a threat to its power, it represents a financial loss to the state. The literature further claims that the state should be included in public-private partnerships and that it should play an essential role in monitoring, facilitating the partnership and setting the framework within which public-private partnerships can develop.<sup>133,134</sup> In the case explored in this thesis the intervention of the state is regarded as neither necessary nor desirable by

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<sup>126</sup> Kwak, Chih, and Ibbs, "Towards a Comprehensive Understanding of Public Private Partnerships for Infrastructure Development," 55.

<sup>127</sup> Ahmed and Ali, "Partnerships for Solid Waste Management in Developing Countries: Linking Theories to Realities," 471.

<sup>128</sup> Madinah, "Solid Waste Management System: Public-Private Partnership, the Best System for Developing Countries," 63.

<sup>129</sup> Desta, Gebreselassie, and Gebreegziabher, "Assessing the Status, Challenges, and Opportunities of Public-Private Partnership (Ppp) in Solid Waste Management (Swm) in Ethiopia: A Case Study on Mekelle City, Tigray," 29.

<sup>130</sup> Harb and Atallah, "Lebanon: A Fragmented and Incomplete Decentralization," 192.

<sup>131</sup> Bovaird, "Public-Private Partnerships: From Contested Concepts to Prevalent Practice," 200.

<sup>132</sup> Harb and Atallah, "Lebanon: A Fragmented and Incomplete Decentralization," 206.

<sup>133</sup> Bjärstig and Sandström, "Public-Private Partnerships in a Swedish Rural Context-a Policy Tool for the Authorities to Achieve Sustainable Rural Development?," 49.

<sup>134</sup> Kwak, Chih, and Ibbs, "Towards a Comprehensive Understanding of Public Private Partnerships for Infrastructure Development," 59-62.

the interviewees. Thus, within the municipal solid waste management, the absence of the ostensibly untrustworthy and corrupt state is seen as an advantage for the development of the partnership.

With regard to the keys for success of public-private partnerships, in the existing literature, it is found that the engagement of the community in public-private partnerships is fundamental.<sup>135,136,137</sup> The municipal authorities of Beit Mery, the private sector as well as the residents recognise the importance of the community's participation in solid waste management. The residents of Beit Mery acknowledge that they played a role in the establishment of the partnership and in the good functioning of it. Public-private partnerships are claimed to be a way to bring people together so that they can work towards a better provision of the service.<sup>138,139</sup> In the literature, relationships among the stakeholders of public-private partnerships are thought to be crucial to the good functioning of the partnerships. My findings show that the partnership explored has impacted the social dynamics between the residents themselves, as well as between the residents and the municipality and has made the solid waste management more inclusive, which confirms Azzi (2017)'s findings on this matter.<sup>140</sup> The findings show the improvement in the relationship between the residents and the municipality, as exemplified by the participation of the community in the disposal of waste. Furthermore, the municipality is considered to be providing a more efficient, environmentally sustainable and less corrupt service. Another feature of partnerships that contributes to its success is its transparency.<sup>141</sup> My findings show that transparency is highly valued among the interviewees. In fact, the activity of the Beit Mery-Environmental Solutions partnership is often presented in relation to the previous solid waste management, which is seen as corrupted.

With regard to cases of Lebanese public-private partnerships explored in the literature, my findings re-enforce some and oppose others. A study of a comparison between the solid waste management in Tripoli and in Greater Beirut Area (GBA) shows that in GBA, where the solid waste management is dealt with by the private sector, the costs related to the collection and disposal of waste are higher.<sup>142</sup>

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<sup>135</sup> Yeboah-Assiamah, Asamoah, and Kyeremeh, "Decades of Public-Private Partnership in Solid Waste Management: A Literature Analysis of Key Lessons Drawn from Ghana and India," 88.

<sup>136</sup> Ahmed and Ali, "Partnerships for Solid Waste Management in Developing Countries: Linking Theories to Realities," 477.

<sup>137</sup> Madinah, "Solid Waste Management System: Public-Private Partnership, the Best System for Developing Countries," 63.

<sup>138</sup> Kolzow, "Public/Private Partnership: The Economic Development Organization of the 90s," 5.

<sup>139</sup> Jamali, "Success and Failure Mechanisms of Public Private Partnerships (Ppps) in Developing Countries: Insights from the Lebanese Context," 416.

<sup>140</sup> Azzi, "Waste Management Systems in Lebanon: The Benefits of a Waste Crisis for Improvement of Practices."

<sup>141</sup> Ahmed and Ali, "Partnerships for Solid Waste Management in Developing Countries: Linking Theories to Realities," 476.

<sup>142</sup> Massoud, El-Fadel, and Malak, "Assessment of Public Vs Private Msw Management: A Case Study," 18-19.

Although there is a lack of knowledge among the interviewees on what the costs of collection amounted to before the public-private partnership was established, my findings show that the costs related to the disposal are lower. Furthermore, while the aforementioned study could not consider the environmental sustainability of the two kinds of solid waste management, my findings contribute the inclusion of this factor to the exploration of Lebanese partnership in the solid waste management sector.

As pointed out by Jamali (2007),<sup>143</sup> not much attention is given in the literature to the perceptions of the beneficiaries of a certain service. It is important to consider their opinion if one is to evaluate whether improvement in the provision of a service has occurred. My study takes into consideration the experience of the stakeholders on the Beit Mery-Environmental Solutions partnership and the provision of the service. My findings also re-enforce Massoud and El-Fadel's study,<sup>144</sup> which also considers the perceptions of the residents involved in the partnership in Greater Beirut Area. Although this study shows that the public-private partnership has improved the solid waste management in the area considered, like the previously mentioned study by Massoud M.A., El-Fadel M., Malak A.A., it does not take into account the environmental sustainability of the project given that at the time the standard way of disposing waste in Lebanon was landfilling.

Finally, this thesis, through an in-depth exploration of the Beit Mery-Environmental Solutions partnership, complements Azzi's work, which considers this particular case study among other Lebanese ones, by confirming this municipal initiative in solid waste management to function as a "gap filler" in the national Lebanese solid waste management. This work furthermore re-enforces Azzi's findings by showing that the Beit Mery-Environmental Solutions partnership not only represents an alternative way of dealing with waste but a different and more sustainable one compared to the national solid waste management.

This work complements the literature on the utility and the key for success of public-private partnerships by illustrating how, especially in the context of developing countries, partnerships can be a useful tool in order for local communities to overcome the gap in the provision of a service. This thesis furthermore shows how public-private partnerships at a local level can compensate for the lack of a national framework within which solid waste management is implemented, the lack of knowledge of solid waste management practices, and corruption within solid waste management. This work does so by showing that the diversity of actors, and especially the inclusion of a community that feels

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<sup>143</sup> Jamali, "A Study of Customer Satisfaction in the Context of a Public Private Partnership."

<sup>144</sup> Massoud and El-Fadel, "Public-Private Partnerships for Solid Waste Management Services."

responsible and accountable for its functioning, contributes heavily to the success of the partnership. This thesis furthermore sheds light on the obstacles that public-private partnerships often have to face, especially when they have a conflicting relationship with the state. Finally, this thesis contributes to the current understanding of public-private partnerships in solid waste management by considering the environmental sustainability and adding it to the benefits that the establishment of partnerships can bring to the solid waste management industry in Lebanon and other developing countries through the introduction of innovative practices.

## 7 Conclusions

This thesis explores how the public-private partnership between Beit Mery and Environmental Solutions has shaped the municipal solid waste management. The investigation is conducted by looking at the practical arrangements of the partnership in terms of how it works, as well as looking at the experience of the stakeholders of the partnership. The experiences of those working with the partnership and those relying on the services it provides are important for understanding the impact that the arrangement has had on solid waste management related-services in the area.

The findings show that the partnership in question has shaped and changed the solid waste management in the municipality by making it more inclusive, more independent from the state and more environmentally sustainable. It is therefore argued that the Beit Mery-Environmental Solutions partnership has been beneficial to the municipality in two ways: it served as an effective response to the waste management issues following the waste crisis, and it provides a model for efficient management of solid waste in the future. This model is potentially applicable also to the wider Mount Lebanon and city of Beirut more generally. The findings thus confirm that public-private partnerships can be a useful tool for municipalities with limited capacity when it comes to waste management in Lebanon.

Aside from contributing to the understanding of public-private partnerships in developing countries, this thesis shows the growing effort of Lebanese municipalities, citizens and enterprises to find long-term solutions to waste management. Furthermore, this thesis contributes to the understanding of public-private partnerships in developing countries. This work in fact shows that public-private partnerships for solid waste management, such as the one explored, can be a viable way for developing countries to overcome their issues with solid waste management, such as the lack of technical skills, the absence of a national legal framework for solid waste management and the improper allocation of funds. By relying on the experience of the stakeholders of the partnership, this thesis contributes to the literature that explores the impact of public-private partnerships on a certain service from the perspective of its members and beneficiaries—representatives of the public and private sectors, and customers and/or citizens. Finally, by applying socio-ecological resilience to this study, change within solid waste management is framed in an innovative way, which allows for describing not only the change itself but also its dynamics and its causes.

Suggestions for future research include comparisons between the case study explored in this thesis and similar initiatives in Lebanon. Comparisons with similar partnership arrangements between

municipalities and local enterprises in other parts of the world facing similar issues related to solid waste management are also of value. Studies of such kind are valuable especially in order to investigate how the type of partnership explored in this thesis is received by other states and communities. Exploration is also encouraged of other initiatives stemming from the civil society, municipalities and enterprises, dealing with the Lebanese waste crisis in a long-term, sustainable way.

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## **Appendix A: Interview guide**

### **The reasons for the establishment of the public-private partnership:**

How do you assess the services provided by the government with regard to solid waste management before the partnership between the municipality and the private sector was established?

If positively, how were they better than the current ones provided by the municipality in collaboration with the private sector?

If negatively, do you regard the current provision of solid waste management services as an improvement?

Why was a partnership between the municipality and the private sector established?

### **Change in the provision of solid waste management-related services:**

How do you feel that the partnership with Environmental Solutions has changed the solid waste management in Beit Mery?

- What services provided now were not provided before the partnership?

### **Environmental sustainability of solid waste management:**

Would you assess the current solid waste management in Beit Mery more environmentally sustainable? If so, on the basis of what do you express this judgement?

Is environmental sustainability a factor that contributes to your appreciation/criticism of the new way of dealing with waste?

Do you think that this partnership has had any impact on your awareness of issues with solid waste? If so, how?

I know that an awareness campaign was carried out by the municipality before the partnership was established. Did you take part in the workshops? If so, did they have an impact on your awareness of issues with solid waste management?

### **Roles of the different actors in the public-private partnership:**

What do you perceive as your role in the partnership?

Do you think that the residents have contributed to the establishment of the partnership? If so, how are they supporting it? If not, how are they opposing it?

If you think that the residents have contributed to the establishment of the partnership, do you think that their involvement has played any role in their sense of community?

**Challenges/encouragement to the public-private partnership:**

What do you think are the advantages of the partnership?

What do you think are the disadvantages of the partnership?

Do you have any complaint about the service or things that could be improved?

**Role of the central government in relation to the public-private partnership:**

Is the central government contributing financially to support this partnership?

Is the central government playing an active role as monitor of your partnership?

If so, how? Do you think this has a positive or negative impact on the development/progress of the partnership?

Do you feel that the control that the central government had on decision related to solid waste management in your municipality has changed?

**Assessment of the public-private partnership:**

Do you assess the partnership of the municipality with Environmental Solutions successful?

- If successful, why? What do you think it's the reason for this success?
- If unsuccessful, why? What has been the main issue towards success?

Do you think this kind of partnership could be applicable and viable in other municipalities in Lebanon? Would you recommend it?

## Appendix B: Photos from the field

Photos of the waste management facility in Beit Mery. Photos by Elisa Giannozzi.



Figure B.1 – View of some of the waste accumulate during the waste crisis in Beit Mery.



Figure B.2 – Sorting facility in Beit Mery.



Figure B.3 – Sorted material at the sorting facility of Beit Mery.



Figure B.4 – Bags of compost at the sorting facility in Beit Mery.