AMERICAN UNIVERSITY OF BEIRUT

MUNICIPALITIES IN LOCAL CLIMATE GOVERNANCE: THE CASE STUDY OF MENJEZ (LEBANON)

by
FARAH TAREK EL KATERJI

A thesis
submitted in partial fulfillment of the requirements
for the degree of Master of Urban Planning and Policy
to the School of Architecture and Design
of the Maroun Semaan Faculty of Engineering and Architecture
at the American University of Beirut

Beirut, Lebanon
January 2024

AMERICAN UNIVERSITY OF BEIRUT

MUNICIPALITIES IN LOCAL CLIMATE GOVERNANCE: THE CASE STUDY OF MENJEZ (LEBANON)

by

FARAH TAREK EL KATERJI

Approved by:

Mona Harb

Dr. Mona Harb, Professor
School of Architecture and Design — Advisor

Mona Harb for Prof. Yazigi

Dr. Serge Yazigi, Senior Lecturer
School of Architecture and Design — Member of Committee

Aram Yeretzian
Digitally signed by Aram Yeretzian
DN: cn=Aram Yeretzian, o=American University of Beirut, ou, email=ay10@aub.edu.lb, c=LB
Date: 2024.02.01 09:25:43 +02'00'

Dr. Aram Yeretzian, Assistant Professor
School of Architecture and Design — Member of Committee

Mona Harb for Prof. Kabakian

Dr. Vahakn Kabakian, Climate Change Advisor
UNDP Climate Change Projects, Ministry of Environment — Member of Committee

Date of thesis defense: January 24th, 2024

AMERICAN UNIVERSITY OF BEIRUT

THESIS RELEASE FORM

Student Name:	EL KATERJI	FARAH	TAREK
	Last	First	Middle

I authorize the American University of Beirut, to: (a) reproduce hard or electronic copies of my thesis; (b) include such copies in the archives and digital repositories of the University; and (c) make freely available such copies to third parties for research or educational purposes:

- ☒ As of the date of submission
- ☐ One year from the date of submission of my thesis.
- ☐ Two years from the date of submission of my thesis.
- ☐ Three years from the date of submission of my thesis.

February 07, 2024

Signature Date

ACKNOWLEDGEMENTS

First and foremost, I would like to thank my advisor, Dr. Mona Harb, for her unwavering support, especially the last months leading up to the submission of this thesis. Thank you for pushing me to get to the finish line. I will carry your insightful lessons with me in chapters beyond this thesis.

I also would like to thank Dr. Serge Yazigi, who continuously extended his support and encouragement throughout the years. Dr. Vahakn Kabakian and Dr. Aram Yeretzian who have also provided me with such valuable feedback and support that enriched my research.

I also would not have been able to get through it all without my support system at home. Mama, I am the woman that I am because of you. Thank you for being front row at every one of my big achievements. Baba, thank you for all the sacrifices you've made to get me here (and for all the times you cut up fruits for me when I was working overnight). Aya, thank you for always finding ways to lift my mood, especially during the toughest parts of this. I also want to thank my uncle for always believing I could do it, and my Teta for calling me every day to check-in on her favorite granddaughter (sorry Aya).

I also couldn't have sat through all those late nights without the support of my closest friends. Sousou, Hattab, Leeno, Reem, Nemo, Noor, Omar, Karim and Rama... thank you for always picking up the phone when I needed to talk through things and for reminding me what I was working so hard for. I'd also like to thank Norma, a dear colleague who quickly became such a positive influence in this process. And of course, Muhiba, for her patience and understanding as I completed this thesis.

I won't ever take your support for granted; I promise.

She's doneeee!

ABSTRACT
OF THE THESIS OF

Farah Tarek El Katerji for Master of Urban Planning and Policy
Major: Urban Planning

Title: Municipalities in Local Climate Governance: The Case Study of Menjez (Lebanon)

Local governments have increasingly become recognized as key players in the climate discourse. Yet, in the context of weak decentralization, their jurisdiction and influence are undermined. In Lebanon, the existing gap between national and local levels of government hinders proper mainstreaming of climate action. Nevertheless, a number of municipalities across the country have taken steps to address their carbon emissions and adopt adaptation measures within their territories.

This thesis examines the case study of Menjez, a small village in the North of Akkar that has demonstrated municipal efforts in becoming a low-carbon resilient village. In 2014, Menjez was one of the first municipalities in Lebanon to join the Covenant of Mayors (CoM) – an EU network that supports cities and local governments in advancing their climate agenda – signaling its commitment to reducing its local carbon emissions. To understand how climate change issues are governed in this small village, I identified four main factors building on Bulkeley et al., (2009) and Hoppe et al., (2016) (Motivation, National climate governance policy, Municipal Governance and Membership in Transnational Municipal Networks (TMNs)), and accordingly developed an evaluation framework. Data for this thesis relies on semi-structured interviews with experts in the field of energy and climate policy, as well as members of the municipality. The framework can serve as a tool to examine local efforts in advancing climate action, in the context of a weakly decentralized system.

TABLE OF CONTENTS

ILLUSTRATIONS

Figure

TABLES

Table

CHAPTER 1

INTRODUCTION

Early political debates around climate change referred to it as a global issue that requires global solutions. Over the last decade however, this narrative shifted, with growing interest directed towards the role of local governments in addressing the climate crisis. In this regard, Gupta (2007) framed climate change as a "glocal phenomena" which includes both global and local characteristics. This shift manifested in a new understanding of governing climate mitigation and adaption responses – one that recognizes cities' position within a broader multi-level governance (MLG) system (Bulkeley and Betsill, 2003; Gupta, 2007; Kern and Alber, 2009). As such, climate governance takes the form of vertical and horizontal coordination, where the former refers to the interactions across levels of government, and the latter refers to the relationship between different agencies and policy divisions within municipal government (Bulkeley et al. 2009; Kern and Alber, 2009). Within the horizontal dimension, Transnational Municipal Networks (TMNs) play an important role in encouraging local governments to adopt and commit to climate policy actions by allowing collaboration between municipalities, providing them with financial and technical support, as well as guidelines for best practices (Kern and Bulkeley, 2009). In other words, they aim at institutionalizing climate politics at the local level, by empowering local governments to *break through* positions on climate change that have traditionally been occupied by nation states.

In this effort, the EU has been increasingly engaged with local authorities on climate governance. Indeed, climate resilience has become a focus area in their work

with their neighbors to the south (Abdullah, Elgendy, & Knaepen, 2021). Specifically, through the European Neighbourhood Policy (ENP), the EU launched several programmes aimed at supporting municipalities mainly in relation to energy efficiency and energy sustainability. Among the outcomes of these programmes is the development of local Sustainable Energy Action Plans (SEAPs) and Sustainable Energy and Climate Action Plans (SECAPs), which are a requirement of joining the Covenant of Mayors (CoM) (Abdullah, Elgendy, & Knaepen, 2021). The CoM represents an EU network that was launched in 2008, with the aim to increase sustainability in cities and communities. What started off as a goal to support European local governments to curb CO_2 emissions, grew to include cities and municipalities in the southern EU nations, with the network establishing itself as one of the most significant "urban-climate and energy-policy tools" (Basso and Tonin, 2022).

Yet, networks like the CoM face various challenges including (cf. Haupt and Coppola, 2019): (1) funding, since most of them are supported by organizations or sponsors; (2) the voluntary nature of their work often results in members lagging with their commitments; (3) the lack of attention to local particularities. Additionally, the impact of TMNs on long-term climate policy and organizational change is largely dependent on economic, political, and administrative systems shaping cities (Stehle, Höhne, Hickmann and Lederer, 2019). In this sense, several authors have raised the need to critically examine the way TMNs interact within a multi-level governance system to assess the processes of change, especially in cities and local governments within the Global South (Fünfgeld, 2015; Stehle, Höhne, Hickmann and Lederer, 2019).

The MENA region in particular is 'one of the most centralized in the world'[1], with ruling elites apprehensive about decentralization – claiming it might weaken national unity and stability (El-Mikawy, 2020, p. 1). Moreover, Harb and Atallah (2015) show how decentralization is used as a tool to "consolidate the interests of ruling elites and their networks", which in turn generates more centralization. When it comes to addressing climate change in this context, the resulting lack of proper regulation and urban planning only adds insult to injury. Moreover, the unsustainable urban development trends – such as energy and water inefficiency, unchecked land speculation, building on natural flood plains and a lack of alternative mobility modes – influence the capacity to build urban climate resilience (Abdullah, Elgendy, & Knaepen, 2021, p. 8). This is critical given that the Arab region is one of the most vulnerable in the world when it comes to the impacts of climate change[2].

In Lebanon, climate change is predicted to influence the country's environment, economy, and social conditions[3]. Indeed, its diverse natural environment is characterized by unique biodiversity and ecosystems which are vulnerable to increased forest fires, pest outbreaks, sea level rise, storm intensity and drought. Extreme weather events will also take a toll on public health, human settlements, infrastructure, agriculture, power supply and the economy as a whole[4].

At the national level, the country has taken steps to address the climate crisis. In fact, the country has been involved in international climate action negotiations since

[1] El-Mikawy, N. (June 2020). From risk to opportunity: Local governance in the southern Mediterranean. CIDOB notes internacionals. Retrieved from: https://www.cidob.org/es/publicaciones/serie_de_publicacion/notes_internacionals_cidob/n1_232/from_risk_to_opportunity_local_governance_in_the_southern_mediterranean

[2] IPCC, 2014: Summary for policymakers. Climate Change 2014: Synthesis Report, 899 pp., www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf.

[3] MoE (2021). Lebanon's Nationally Determined Contribution. Updated 2020 Version. Retrieved from: https://www.greenpolicyplatform.org/sites/default/files/Lebanon%27s%202020%20Nationally%20Determined%20Contribution%20Update.pdf

[4] Ibid.

2006 – ratifying both the Kyoto Protocol (Law 738/2006) and the Paris Agreement (Law 115/2019 and Decree 5599/2019) under the United Nations Framework Convention for Climate Change (UNFCCC). As part of this agreement, Lebanon submitted its Nationally Determined Contribution (NDC) in 2015, which outlined mitigation and adaptation measures across priority sectors. Despite its impeding economic and financial crisis, coupled with the COVID-19 pandemic, the country later submitted an update to its NDCs in 2020. As a result, Lebanon is committing to increase its GHG emission reduction target relative to the Business-as-Usual (BAU) scenario from 15% to 20% (as unconditional target) and from 30% to 31% (as conditional target). Moreover, the country is adopting more comprehensive adaptation priorities and aligning climate action with sustainable development, green recovery, and the green and blue economy[5]. Lebanon was also among the early adopters of an action plan that supports Renewable Energy in 2010. However, successive failure of governments, coupled with compounding crises, challenges the country's ability to uphold its energy and climate commitments.

The administrative structure governing Lebanon is characterized by a four-tier system: (1) the central level; (2) the governorate level (includes eight muhafazat led by a muhafiz); (3) the regional level, which is divided into 26 districts (*qadas*) and led by an appointed Kaemakam (except for Beirut governorate which is not subdivided into districts); and (4) the local level of municipalities, which is led by a mayor and a municipal council. The 1989 Taef Agreement advocates for a decentralized form of authority, with regional scales to be reinforced, but no legislation was issued to

[5] MoE (2021). Lebanon's Nationally Determined Contribution. Updated 2020 Version. Retrieved from: https://www.greenpolicyplatform.org/sites/default/files/Lebanon%27s%202020%20Nationally%20Determined%20Contribution%20Update.pdf

implement the text—although the decentralization draft-law reached advanced levels of negotiation in the Parliament. Like many other reforms advocated by Taef, the agreement ended up being more about "reorganization" of constitutional powers and apparatuses than "transformation" (Bahout, 2016; p. 9). Consequently, it institutionalized existing sectarian divisions by enabling political and ruling elites to take control of government and public institutions, thus undermining the structure of public affairs (Leenders, 2014).

Moreover, there exists a gap between national policies and local actions. This lies in the centralization of sectoral strategies at the national level, as well as the existing disparity between what the law necessitates, and what municipalities are capable of executing given their capacities and resources (Atallah and Harb, 2015). Although Lebanese municipalities are granted jurisdiction over all operations of public character within the municipality (Decree-Law, 118/1977), most developmental projects are implemented by line ministries or the Council for Development and Reconstruction (CDR). Additionally, international donors play a role in pushing for decentralization and work on strengthening the capacity of local governments in including more sustainable planning and development goals (Atallah and Harb, 2015: 191).

In this context, international programmes, and networks with the aim to mainstream local climate action have emerged – with projects like CES-MED and Clima MED developed to support the membership of municipalities of the EU Southern countries in the global network of the Covenant of Mayors (CoM). In Lebanon, with the support of these projects, a number of municipalities have joined the CoM and joined the network's call to reduce local CO2 emissions by at least 40% by 2030. Local targets are translated into Sustainable Energy Action Plans (SEAP) or Sustainable Energy

Access and Climate Action Plans (SEACAPs) which are submitted to the CoM within a year of the municipality's registration in the network. One of the features that distinguishes the CoM from other transnational networks is its accessibility to small and medium cities (less than 10,000 inhabitants), representing almost 66% of its signatories (Melica et al., 2018).

Yet, although it seems promising that municipalities are participating in climate action, it is critical to investigate and assess such participation at the local level. To do so, the thesis adopts a set of evaluation criteria derived from the urban climate governance literature. A framework of analysis of climate action policy, based on the work of Bulkeley et al., (2009) and Hoppe, Van der Vegt and Stegmaier (2016) covering four main factors was developed: (1) Motivation (municipal entrepreneurship, local networks, climate vulnerability); (2) National climate governance policy; (3) Municipal Governance and (4) Membership in TMNs.

1.1. Research Questions, Hypothesis and Aims

The thesis explores Menjez municipality as a case study to assess its capacity in developing and initiating climate action at the local level. The choice of Menjez is primarily grounded in the municipality's demonstrated commitment in pushing for a "climate resilient" village. Menjez is a small town (less than 2,000 inhabitants) which established its municipality in 2012. It is among the first municipalities in Lebanon to have signed with the Covenant of Mayors in 2014 and subsequently have had their SEAPs approved by the network—which makes it a significant case study. The thesis addresses the following research questions:

- What is the climate action policy in the municipality of Menjez? How did the policy emerge and how was it elaborated and implemented? To what extent did the policy achieve climate-responsive outcomes for the village?
- What is the status of the four identified factors affecting climate action policy (motivation, national climate policy, municipal governance, membership in TMNs) in the case of Menjez?
- What are the urban policy lessons that can be derived regarding local climate action policy, building on the case-study of Menjez?

The thesis hypotheses suggest that Menjez successfully elaborated a climate action policy for the village, with several climate-responsive projects and initiatives. However, climate action policy implementation is partial and incomplete due to a set of administrative, financial, and political constraints at the local and national levels.

The thesis also shows that the four factors affecting climate policy are a productive lens to assess the climate action policy of Menjez. Indeed, the findings reveal that while motivation to engage in climate governance and climate action is high in Menjez (especially due to the strong leadership of the mayor) and while municipal governance is relatively effective thanks to effective partnerships with donors, international organizations and other partnerships, largely facilitated by the positive returns from membership in TMNs, the dysfunctional national climate governance policy hinders progress in achieving climate action goals. Yet, Menjez succeeds in advancing a relatively effective climate action policy agenda.

Several policy lessons can be derived regarding the potential of local climate action policy in Lebanese municipalities. Foremost, the thesis demonstrates the high value of membership in TMNs in enabling access to resources that can benefit the

municipality and its climate action policies. The thesis also shows that high motivation to intervene in climate action and effective municipal governance are essential ingredients to advance the climate action agenda, even though national climate governance can present shortcomings.

These findings are significant as they provide evidence-based knowledge on local climate action in practice and inform future climate action policy on the effective ingredients and modalities for amplifying the climate action agenda across local governments and local actors—especially in contexts where national climate governance policy is constrained by multiple crises.

1.2. Methodology

Gillham (2000) notes that case study research is a key research method for urban planning/design research. It is "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 and the investigator has little control over events" (Yin, 2003: 13). This thesis will take a case study approach by investigating the case of Menjez municipality. The research methodology will adopt a primarily qualitative approach, which allows for better understanding of the processes leading to the results, rather than "the significance of the results themselves" (Gillham, 2000: 10-11). This is relevant given the need to understand the mechanisms involved in elaborating and implementing climate policy and action. Case study evidence will be extracted from observations, interviewing and content analysis, which will be further elaborated below.

The thesis explores climate governance at the national level, relying on information extracted from reports submitted under the Ministry of Environment (MoE), as well as others prepared by UN agencies, particularly UN-Habitat. Other available data that are of use, such as existing environmental laws, regulations, and reports on the status of the environment in Lebanon have also been analyzed.

Additionally, through semi-structured interviews with local experts, data was collected on climate governance in Lebanon, and the mechanisms through which local governments are included in this process (if at all). Interviewees included four main experts from: the Ministry of Environment Climate Change Unit, CES-MED/Climate-Med project, Bureau Technique des Villes Libanaises (BTVL) as well as an energy and legal expert. Moreover, in order to understand the capacity of municipalities in elaborating local climate interventions and policies, I relied on semi-structured interviews with two members of the municipality as well as those with local experts who have worked closely with the municipality on several local interventions (specifically from the University of Balamand, Lebanon Reforestation Initiative, USAID and OTB Consult). A total of ten interviews was conducted, using ethical principles of data collection.

The thesis faced several challenges and had a number of limitations. I started off with the ambition of selecting two municipalities and comparing their climate action policy. I wanted to work on Baakline and Menjez, given Baakline is also a member of the Covenant of Mayors, and represents a good case-study of a municipality invested in advancing its climate action agenda. However, given my research started during the covid-19 pandemic, and in light of my relocation to another country, my plans got interrupted over the course of two years. This change in location prompted me to

narrow my scope of research and prevented me from carrying out additional field visits, interviews, and discussions with other local actors – which otherwise would have enriched my analysis of the case study. Moreover, the literature could have been further enriched by a thorough review of other evaluation frameworks. However, the challenges faced throughout the research restricted me from doing so.

1.3. Thesis Structure

The thesis opens with a chapter introducing the subject, research questions and hypothesis, as well as an explanation of the research methodology and overall thesis significance. The second chapter traces the emergence of local governments as important players in global climate policy, before exploring the role of municipalities in the multilevel governance framework and the role of TMNs in the context of the global south. The chapter also ends with a framework of analysis of climate action policy that will be used to assess the case study of Menjez municipality. The third chapter provides a lens on the current status of climate governance in Lebanon and positions the role of Lebanese municipalities in the country's climate policymaking and actions. The fourth chapter serves as a case profile of Menjez, as it explores the village's local characteristics, municipal governance, vision, and ambitions, and presents its local climate initiatives. The fifth chapter presents the analysis of the main research findings on the municipality's climate governance, using the framework developed in Chapter 2. Finally, the thesis wraps up with reflections on local climate governance in the context of a small Lebanese municipality and draws urban policy lessons from local climate policy.

CHAPTER 2

ROLE OF LOCAL GOVERNMENTS IN CLIMATE POLICY

Local governments have emerged as key players in developing and implementing climate policy and action at the local level. As these occur according to multilevel governance, with various government and non-government actors and agencies, several factors have been identified in the literature as shaping municipalities' capacity in adopting climate-related policies and actions. Among those that have been most commonly identified are *leadership, municipal competencies, resources, and urban political economies* (Bulkeley et al., 2009). Additionally, authors also identified membership in Transnational Municipal Networks (TMNs) as an importance resource impacting local climate capacities. This chapter will first trace the emergence of civil society, NGOs, Universities, and the private sector as important players in the global climate policy process, before exploring the role of municipalities through the multilevel governance framework. It will then discuss the influence of TMNs on enabling local climate capacity within municipalities, specifically in the context of the global south. The chapter closes with outlining the framework of analysis through which the potential for local climate governance can be explored among municipalities.

2.1. The Global Policy for Climate Governance

Climate change had been framed as a "global problem requiring global solutions" (Kern and Bulkeley, 2009). Major climate agreements that stem from global negotiations are usually set at international and national levels. Following the adoption of the UN Framework Convention on Climate Change (UNFCCC) in 1992, which laid

the foundation for addressing anthropogenic climate change, the international community dedicated over two decades to negotiations aimed at developing legally binding regulations for limiting global GHG emissions (Falkner, 2016). The global response to address the climate crisis requires both mitigation and adaptation actions. Mitigation focuses on "human intervention to reduce the sources or enhance the sinks of greenhouse gases", while adaptation relates to the "process of adjustment to actual or expected climate and its effects" (IPCC, 2012).

The role of cities and local governments was undermined in the global climate discourse. Yet, the recognition that GHG emissions result from anthropogenic activities at the local, regional, national, and international levels has gained traction in academic and policy communities (Bulkeley and Kern, 2006; Van Der Heijden, 2019). Increasingly, the understanding of climate protection as an urban problem emerged (Bulkeley and Kern, 2006; Gupta, 2007; Sassen, 2015). Local governments progressively engaged in establishing local knowledge, education, and financial schemes as well as setting up municipal frameworks for local climate action (Sassen, 2015). Nevertheless, the role of local governments in climate policy and action is not new, as urban initiatives have been integral components to climate governance, even if not formally recognized by the global regime (Sassen, 2015; Broto, 2020). According to Broto (2020), there is a false interpretation in the literature of the wave of "urban optimism" as a "moment of discovery of cities as new sites for climate change action" (p. 242). She emphasizes that this premise understates the historical development of the relationship between local action and global environmental policy. In fact, as Sassen (2015) highlights, these initiatives date back to the 1980s and 1990s, when cities like

Tokyo and Los Angeles managed to implement clean air ordinances, out of fear for public health safety (p. 27).

The mobilization of cities and local governments towards recognition of their efforts in international negotiations evolved into transnational networks, which operate as platforms for knowledge exchange and policy dissemination in addressing climate change. One of the notable platforms was the Cities for Climate Protection (CCP), which was developed by the International Council for Local Environmental Initiatives (ICLEI), the first and largest transnational network of local governments engaged in climate action. This trend towards "transnationalization of climate initiatives", which saw a rise in the early 2000s, strengthened national climate policy commitments, and facilitated the spread of low-carbon policy approaches and technologies worldwide (Falkner, 2016; p.1112).

These initiatives gathered the momentum needed for the 2015 Paris Climate Agreement, which was described by UN Secretary-General Ban Ki-moon as "a monumental triumph for people and our planet". By adopting the Paris Agreement, the 195 parties to the UNFCCC committed to the internationally recognized goal of limiting global temperature rise to below 2 degrees Celsius, and to strive for 1.5 degrees Celsius compared to pre-industrial levels. As part of the agreement, parties are obligated to submit pledges, known as "Nationally Determined Contributions" (NDCs) on a regular basis. This shift towards relying on countries' national climate action plans and policy ambitions recognized the unique political, economic, and social factors that shape the state approach in addressing climate change (Dubash, 2021). The Agreement thus officially recognized the "importance of the engagements of all levels of government, and various actors" (UNFCCC, 2015). Civil society organizations, Universities, NGOs,

the private sector, and local governments who had a limited role as "observers" of negotiations and discussions, were then granted a more integrated role in the global effort. Specifically, their role was consolidated in the monitoring of national actions, as well as experimentation with local, regional, and transnational mitigation and adaptation strategies (Bäckstrand, Kuyper, Linnér and Lövbrand, 2017; p. 562).

This increasing interest in the role of local actors and governments in global climate policy led to a new understanding of how to govern climate change – one that recognizes the multiple forms of governance that cooperate at different levels, instead of a traditional top-down regulatory understanding (Corfee-Morlot et al., 2009; Broto, 2019).

2.2. Policies of Climate Change via Multilevel Governance Systems

Various scholars, especially those who developed Earth System Governance (ESG), have advocated for multilevel governance (MLG) as an analytical framework for addressing climate change policies. Originally used to describe the evolving governance in the EU, the term "multilevel governance" has developed and expanded beyond the European context (Hooghe and Marks, 1997). In the context of the diminishing role of the nation state as power, given the key authority of the European Union, but also the increasing roles of regional governments, a new multilevel system of governance was consolidated[6]. Marks (1993) defines multilevel governance as 'a system of continuous negotiation among nested governments at several organizational tiers.'[7] (p. 392) Corfee-Morlot et al. (2009) explain how using this critical lens to

[6] Hooghe L. and Marks G., "Contending Models of Governance in the European Union," in Alan Cafruny and Carl Lankowski, eds., Europe's Ambiguous Unity: Conflict and Consensus in the Post-Maastricht Era (Boulder: Lynne Rienner, 1996), pp. 21–44.
[7] Marks, G. (1993). "Structural Policy and Multilevel Governance in the EC." In The State of the European Community, ed. Alan Cafruny and Glenda Rosenthal. Boulder: Lynne Rienner, 391-411.

understand the political economy of climate change policies allows to shift from a "state-centric understanding" towards examining the relationships between diverse actors horizontally and vertically between different levels of government. Furthermore, Bulkeley and Betsill (2005) argue that "a perspective informed by multi-level governance can examine the ways in which urban sustainability is being constructed and contested" (p. 45).

Academics, policy makers and practitioners recognize the unique position of local governments in providing "innovative" and "more responsive" climate actions, which are more tailored to "environmental preferences and economic circumstances" when compared to national level responses (Melica et al., 2018). This recognition is evidenced by local governments' capacity to actively engage the wider community in shaping and implementing climate policies (Melica et al., 2018). As such, multilevel climate governance refers to the policies elaborated and implemented by local governments in implementing mitigation and adaptation measures that are shaped and funded by multiple levels and actors (Betsill and Bulkeley, 2006; Bulkeley, 2010). The capacity of local governments is related to the coordination modalities between municipalities, regional authorities, and national governments (Type I MLG, or Vertical

Coordination) as well as with different agencies and departments within local governments (Type II MLG, or Horizontal Coordination) (Figure 1).

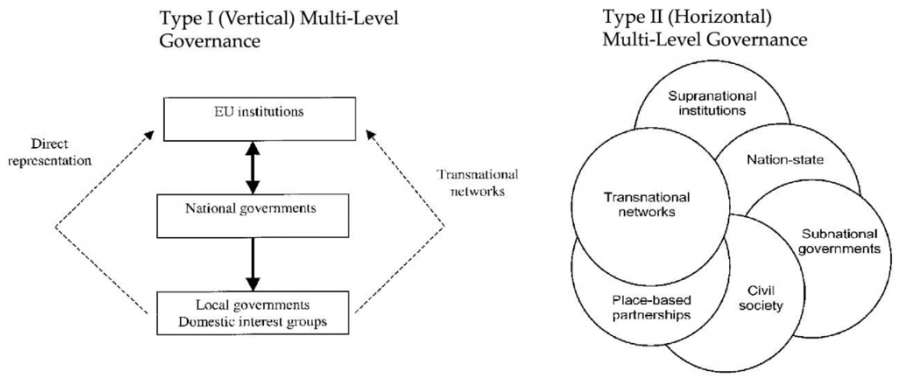


Figure 1: Type I and II Multilevel Governance. Source: Bulkeley et al. 2003

Although cities and municipalities have been active in addressing both mitigation and adaptation policies, strategies remain weakly integrated as they have been classified in different policy sectors (Hoppe, Van der Vegt, and Stegmaier, 2016). Indeed, the "energy sector" is generally the principal target of mitigation measures, whereas the "water sector" is often the target of adaptation measures (Hoppe, Van der Vegt, and Stegmaier, 2016). When it comes to the waste management sector, which municipalities often have control over, interventions can include installation of waste to energy technology or encouraging waste recycling programmes.

In the context of countries of the global south, climate change policymaking faces significant challenges because of limitations of resources, lack of local autonomy as well as pressing development needs[8]. Several scholars explored multilevel governance in the context of centralized governments like Egypt and Turkey. They

[8] Croese, S., Oloko, M., Simon, D., and Valencia, S. C. (2021). Bringing the Global to the Local: the challenges of multi-level governance for global policy implementation in Africa. International Journal of Urban Sustainable Development, 13(3), 435-447. doi:10.1080/19463138.2021.1958335

noted how climate change policies are constrained by the fragmentation between institutions across different levels of government and these weak governance links (Eissa and Khalil, 2021; Yazar and York, 2021). Yazar and York (2021) discuss how the municipality of Istanbul, which collaborates with global municipal networks and international NGOs on setting its climate policy agenda, is undermined by the national government that remains reluctant in incorporating local knowledge in climate policy. Eissa and Khalil (2021) also reveal that institutional fragmentation in Egypt is the main culprit for climate policymaking and is closely associated to the poor coordination between different institutions, and the lack of funding allocated to climate change issues, as well as the absence of an entity responsible and accountable for climate policies.

Multilevel governance is also not a very productive lens when we look at political contexts led by semi-authoritarian policy makers like China. Westman, Broto and Huang (2019) examine Rizhao, a national manufacturing and shipping hub in China, which is trying to establish itself as a tourist destination, despite air and water pollution "suffocating" the city center (p. 18). The city is considered a "success in environmental protection" and a "pioneer in environmental issues", having developed an Eco-City Construction Plan (2001-2020). However, centralized actors are the ones that “have a disproportionately large leverage over decision making, while the interests of other groups are systematically overlooked." (Westman, Broto and Huang, 2019; p. 20). As such, “horizontal coordination” here reinforces the existing status-quo (p. 20).

Stehle, Höne, Hickmann and Lederer (2019) explored the influence of domestic policy on climate policy in the context of emerging economies, drawing on case studies from India, Indonesia, Brazil, and South Africa. One of the significant factors they

identified relates to “leadership and prioritization”, where swings in leadership can revoke local climate action. They illustrated this through the case of São Paulo where, following the election of the new mayor in 2013, all initiatives aimed at emission reduction were ceased. Although these were previously considered successful, the mayor shifted the focus on development needs. Additionally, they note that political priorities are often focused on exclusively improving basic service provision or development aspects (Stehle, Höne, Hickmann and Lederer, 2019), failing to recognize the link to climate change. This could be attributed to the lack of understanding and knowledge of climate change as a problem which, according to Zea-Reyes, Olivotto and Bergh (2021), is likely resulting in a misconstrued vision of the nature of dealing with climate change, what level of government should address its risks and the ways it could be embedded into related projects such as water and energy management, territorial planning etc. (p. 11).

Recommendations to improve MLG and such contexts call national governments to encourage the participation in local and international city networks to “fill the gaps in resources and knowledge” (Eissa and Khalil, 2021; p. 20). Another suggestion is to establish climate change departments in municipalities which supports local capacity and facilitates multilevel governance collaborations with international city networks, local civil society groups and businesses.

There is a gap in the literature on climate governance in the context of small rural municipalities. Bausch and Koziol (2020) are one of the few studies on this matter. They present a comprehensive survey covering 400 small-medium sized municipalities in Bavaria, Germany where they sought to understand the perceptions of climate change risks as well as the perceived need for response, fields of action, factors shaping the

political process as well as the people and entities involved. The survey reports show that more than half of the municipalities affected by climate change are actively discussing it, with most of them setting the topic on their agenda (Bausch and Koziol, 2020; p. 6). The study also reveals a gap between discussing climate change and implementing mitigation and adaptation measures. Whilst larger municipalities are more likely to adopt a comprehensive approach to climate policy, very small municipalities (with fewer than 5,000 inhabitants) are unable to cope with such a complex field, and focus instead on specific areas of action, such as energy or public supply (Bausch and Koziol, 2020; p.12). Additionally, in terms of responsibility for strategy implementation, the mayor of smaller municipalities is primarily held accountable, compared to larger municipalities, where it was reported to be the municipal administration (p. 10). Among the factors reported to have a positive impact on local climate change policy was the participation of the municipality in climate networks.

2.3. Transnational Municipal Networks as Effective Channels for Local Climate Policy

This section elaborates on the consolidation of transnational governance and international networks that foster climate action and support municipalities in their effort to tackle the climate crisis. It also highlights their modes of function and potential influence in highly centralized political systems that constrain municipal authority.

According to Kern and Bulkeley (2009), transnational municipal networks (TMNs) are international network organizations of local governments operating on voluntary basis, that focus on improving climate governance. The early 1990s witnessed, prior to the Rio United Nations Conference on Environment and

Development, the emergence of three transnational municipal networks (Bulkeley, 2010; p. 232): the International Council for Local Environmental Initiatives (ICLEI), the Climate Alliance and Energy-cities. Most of these initiatives were not as geographically diverse, and almost exclusively included cities from the Global North. Regarded as the "first wave" of municipal responses to climate change, they focused on the mitigation agenda, often overlooking those of adaptation and resilience (Bulkeley, 2010).

A "second wave" of municipal action followed in the early 2000s, with municipal networks becoming more nationally organized, mobilizing private actors, and taking a more explicit urban focus (Bulkeley, 2010; p. 233). Networks adopted more political stances on the climate crisis and positioned cities and local governments as key actors in addressing the issue, often opposing national governments (Bulkeley, 2010; p. 233) . These networks highlighted the importance of considering vulnerability and adaptation along with mitigation strategies. Indeed, many new TMNs focusing on adaptation and resilience emerged such as 100 Resilient Cities (100RC), the Asian Cities Climate Change Resilience Network and Cities Development Initiative for Asia (ACCCRN) or Mayors Adapt. This shift came when international discourse and reports also started acknowledging and promoting the necessary synergies between mitigation and adaptation as components of climate change actions (UNFCCC, 2015).

TMNs thus go beyond the traditional approach to climate governance as they challenge the norms centered around who governs and how, blurring the lines between local, national, and international scales, and drawing new political geographies, positioning cities on the transnational level (from Papin, 2020 who referenced: Bouteligier, 2013). Authors like Roman (2010) highlighted how these networks,

through utilizing institutional and market-based elements, create a new system of governance from the middle. In this sense, TMNs appear to "govern cities from a space in-between" (Papin, 2020; p. 2). Transnational municipal networks operate through three main functions aimed at empowering cities and local governments in global climate politics (in Johnson, 2018; p. 65): (1) they provide access to finance, technology, and expertise; (2) they facilitate the dissemination of policy commitments, standards and norms through workshops and conferences; (3) they improve cities' recognition and anchor their position on an international scale. Notwithstanding, TMNs serve as means for horizontal information sharing and policy learning across cities. They provide useful exchange of best practices and awareness across member municipalities and offer "an aura of legitimacy" for members (Karhinen et al., 2021). Nevertheless, the effective translation of such lessons needs to consider differences in municipalities' size, administrative structure, infrastructure, culture, and economic resources, which influence policy options.

Nevertheless, there remains a lack in the understanding of the influence and impact of TMNs on environmental outcomes at the local level, as well as the motives driving members to join them (Heinrichs, Krellenberg, & Fragkias, 2013). Some authors argue that municipalities are often more motivated to join these for the political and financial resources provided by the program than the knowledge and peer-experience offered (Fünfgeld, 2015; p. 70). Moreover, the recognition for innovation, as well as the certificates and benchmarking offered by TMNs, while it increases local government's visibility, can also be exploited for political interests and luring additional international capital (Heinrichs, Krellenberg, & Fragkias, 2013).

Yet, although TMNs can contribute to policy and organizational change in cities, their influence is contingent on economic, political, and administrative systems that shape municipal capacities (Stehle, Höne, Hickmann and Lederer, 2019). Moreover, Michaelowa and Michaelowa (2017) reveal that the lack of ambition in government mitigation cannot be "made up" by mitigation efforts achieved through Transnational Climate Governance (TCG) (p. 132). As such, TCG are more effective in fully addressing emission reductions when aligned with state regulations, rather than taking independent action on the matter. Indeed, national governments "cannot rely on other actors to do their job", specifically as it relates to meeting ambitious emission targets and consequently contributing to the global climate change limitation target (Michaelowa and Michaelowa, 2017; p. 151). This is especially true considering their role in defining a number of policy instruments for implementation. The authors further note that the main focus of most TCG initiatives is networking, which makes their contribution less significant when it comes to "closing the emissions gap" (p. 151).

Additionally, while TMNs opened new opportunities for the engagement of cities in the Global South in climate policy making (Bulkeley, 2010; p. 233), they remain rather a North American and European business (Bansard, Pattberg, and Widerberg, 2017). Yet, several Global South cities and towns are engaged in TMNs. Lankao (2007) studied Mexico City and explored the role of local initiatives, research groups, policy networks (e.g., ICLEI) and individuals in promoting "a carbon agenda" at the urban level. The author finds that, although the municipality was crucial in facilitating the learning process, they still failed at institutionalizing effective policy actions (Lankao, 2007; p. 526), due to institutional fragmentation and weak political participation.

A renowned TMN is the Covenant of Mayors (CoM). Launched in 2008 by the European Commission which, the network aims to mitigate CO_2 emissions through energy efficiency, renewable energy, and clean transport. It merges both vertical and horizontal modes of governance, encouraging local governments to comply with EU climate goals, whilst creating network connections, allowing for peer-to-peer learning and the dissemination of best practices between members (Kemmerzell, 2018). The CoM has over 11,000 signatories that have voluntarily committed to EU 2020 climate and energy targets. In order to align itself with the EU's 2030 climate and energy goals, the initiative was upgraded in 2015. Member cities previously pledged to reduce CO_2 emissions within their territories by at least 20% by the year 2020, with this target translated into climate action plans, called Sustainable Energy Action Plans (SEAPs). With the upgrade, the reduction target went up to at least 40% by 2030. With the timeframe extended to 2030, the scope of the initiative also broadened to include adaptation to climate change (through Mayor's Adapt initiative), as well as access to clean energy. These upgrades translated into the development of Sustainable Energy Access and Climate Action Plans (SEACAPs).

Through their membership with the CoM, cities and local governments are positioned at the forefront of the fight against climate change and are provided with tools to provide sustainable energy solutions through adopting both mitigation and adaptation actions that will support the implementation of the National Determined Contributions (NDCs) targets by 2030. Moreover, the common framework through which SEAPs/SEACAPs are developed allows room for flexibility and adjustability to tailor climate policy solutions that consider specific needs and local realities. This

framework is also based on consistency and transparency through reporting, evaluation of the data and promotion of exchange and experience.

One of the features that distinguishes the CoM from other transnational networks is its accessibility to small and medium cities (less than 10,000 inhabitants), representing almost 66% of its signatories (Melica et al., 2018). Some scholars highlight how small municipalities are more likely to be active participants in climate and energy initiatives/schemes, provided they receive support from other administrative units/local governments in the form of territorial coordinators. The CoM relies on Covenant Territorial Coordinators (CTCs) in facilitating multilevel governance by providing strategic guidance, technical and financial support to member municipalities in reaching EU targets. Particularly significant is the influence of CTCs in including rural areas in territory based sustainable development plans. This recognizes the synergies between rural and urban areas in terms of energy, products, and service provision. Melica et al. (2018) note the case of the province of Limburg, where climate mitigation plans included the "agricultural and forestry" as a key sector for attaining climate neutrality, which surpasses the Covenant targets (p. 731).

In 2012, as part of the European Commission's decision to extend the CoM to the European Neighbourhood South Region, the "Cleaner Energy Saving Mediterranean Cities" (CES-MED) project was established to support cities and municipalities in joining the CoM and setting up their SEAPs. CES-MED was later followed by the Clima-Med project in 2018, which focuses on supporting the development and implementation of Sustainable Energy Access and Climate Action Plans (SEACAPs). The Clima-Med also established the Covenant of Mayors for the Mediterranean (CoM Med). As of November 2023, the CoM Med has garnered 145 signatories, including

cities and local governments from Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, Palestine, Syria, Tunisia, as well as Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates and Yemen. CoM Med members share a long-term vision for a sustainable future in 2050 in expediting decarbonization in their territories, strengthening adaptive capacity to climate impacts and facilitating access for citizens to secure, sustainable and affordable energy.

2.4. Evaluation Framework

As discussed, climate change policymaking operates in a multilevel governance policy context, where municipalities emerge as key players in adopting mitigation and adaptation interventions. In developing the evaluation framework of this thesis, it was important to select indicators that explore the case study of a small rural municipality shaped by a weak decentralized system.

The evaluation framework draws inspiration from key factors listed by Bulkeley et al., (2009) as local conditions influencing climate action. These include: (1) leadership (presence of a committed individual); (2) municipal competencies (mandate and duties); (3) resources (administrative, financial) and (4) urban political economies (political will). The framework also benefited from indicators put forward in the local climate action framework developed by Hoppe, Van der Vegt, and Stegmaier (2016) – who explored the case study of four small to medium municipalities in the Dutch region of Twente. The next sections explain the rationale behind choosing the factors and subsequent indicators for this thesis's evaluation framework.

One of the primary focus areas of this thesis centered around exploring municipal "motivation" in climate governance. This is crucial in the context of the

thesis case study where priority might be given to addressing pressing development needs, rather than local climate responses. As such, indicators such as "leadership" and "urban political economies" (Bulkeley et al., 2009) were understood to be essential in shaping perceptions of the climate crisis as well the local agenda. As such, these were adapted under one indicator, "Municipal entrepreneurship", to reflect the role and capacity of mayoral leadership in guiding local climate policy decisions. Similarly, it seemed relevant to look at, what Hoppe, Van der Vegt, and Stegmaier (2016) refer to as "characteristics of the local environment". Particularly it was important to explore "vulnerability to climate change" as an indicator, given the heavy reliance of rural communities on climate-sensitive resources. The role of "local actors" also seemed relevant to look into when it comes to their influence on public perception of climate change. Finally, the notion of climate responses being framed as "co-benefits", which Hoppe, Van der Vegt, and Stegmaier (2016) presented as an "outcome" of local climate action, could also be understood as a motivating factor for engaging in local climate action – especially for small municipalities motivated to lower their energy bills, generate municipal revenue, and create local job opportunities. As such, these four indicators were adapted in this evaluation framework under "**motivation: municipal entrepreneurship, local networks, climate vulnerability.**"

Additionally, "vertical coordination" (between central and local levels of government) of competencies and resources has been viewed as a crucial factor in enabling/constraining municipal responses (Bulkeley et al., 2009). As such, Hoppe, Van der Vegt, and Stegmaier (2016) presented two indicators that would resonate with the thesis case study. These explore the alignment of local governments with national agendas and the availability of inter-government support schemes. As a result, they

could inform the extent to which climate change is mainstreamed from national to local levels of government, especially in the context of Lebanon where such vertical coordination appears weak, and where networks of power continue to shape key policy sectors. As a result, the two identified indicators were adapted in this evaluation framework under **"national climate governance policy"**.

In order to understand how municipalities can elaborate on and implement climate policy, it was important to explore "municipal competencies" in so far as they relate to municipal mandate and duties (Bulkeley et al., 2009). In doing so, it is critical to keep in mind that such competencies are defined and delegated by central governments to local authorities and are therefore subject to the nature of the political system. Hoppe, Van der Vegt, and Stegmaier (2016) drew on indicators like size, financial resources, fiscal health, technology, legal authority, and staff expertise to reflect these competencies (which they referred to as "municipal organization"). They also find communication as a relevant policy instrument influencing local climate action. As such, four main indicators relating to local capacity were adapted under "**municipal governance.**"

Finally, it was also important to explore the role of Transnational Municipal Networks in influencing local climate action. Whilst both Bulkeley et al. (2009) and Hoppe, Van der Vegt, and Stegmaier (2016) suggested the potential positive influence of such networks, investigating how these networks operate in the context of a weak decentralized system and whether or not they advance serious local climate actions was missing. That said, four indicators exploring the availability of such memberships in such networks and development of climate action plans, targets as well as monitoring

progress were identified under **"membership in transnational municipal networks (TMNs)"**

The following sections will elaborate on the indicators identified under each factor by presenting findings from other research and publications across the urban climate governance literature that validate their significance, drawing on some case studies in centralized political systems.

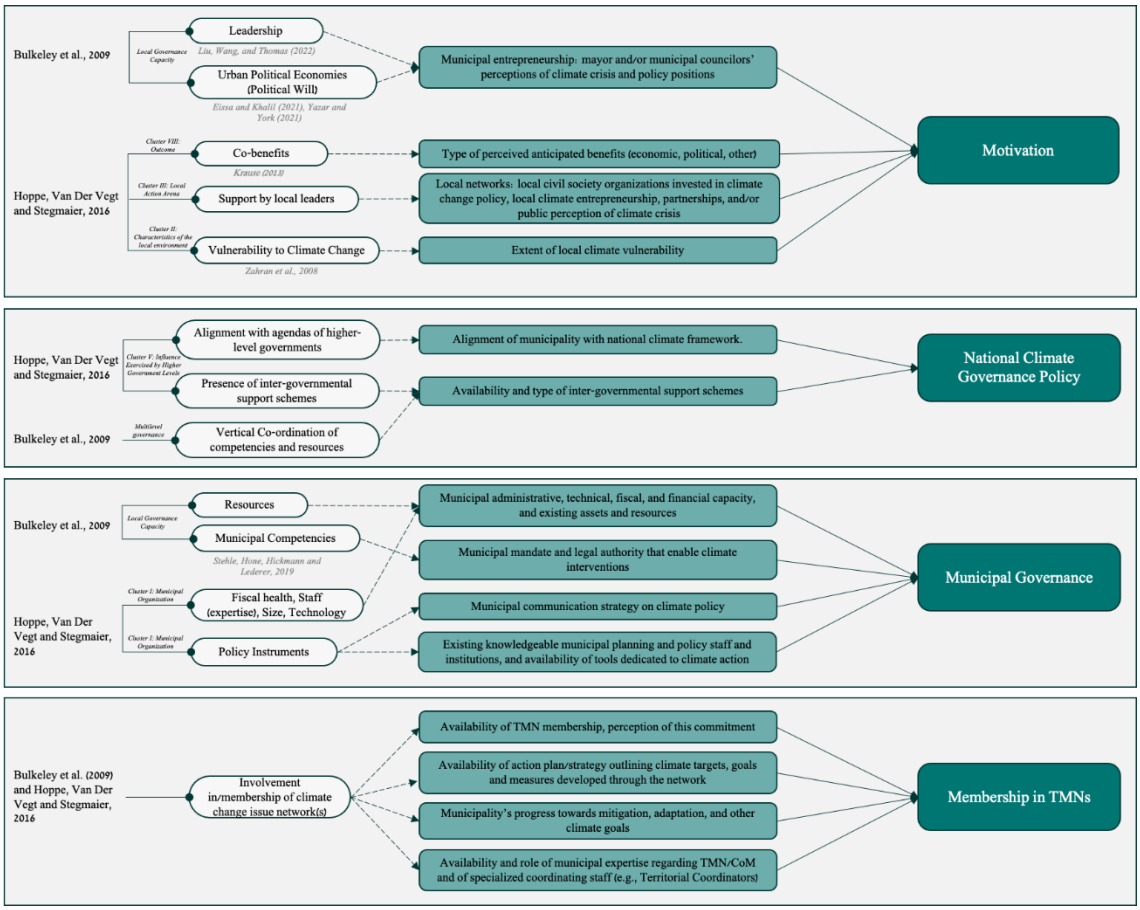


Figure 2: Graphic representation of the evaluation framework, building on Bulkeley et al. (2009) and Hoppe, Van Der Vegt and Stegmaier (2016).

2.4.1 Motivation: Municipal Entrepreneurship, Local Networks, Climate Vulnerability

Scholarship notes that municipalities invest in climate-related policies and actions as a result of anticipated benefits, either economic (cost reduction or

employment creation, access to external funding and investment and/or political (involvement of influential politicians or pressure from local actors) (Krause, 2013). Climate action can thus be a "win-win" situation (Scanu and Cloutier, 2019; p. 18) that generates "co-benefits" beyond environmental ones (Krause, 2013). Municipal motivation can also be linked to leadership (Bulkeley et al., 2009; Liu, Wang, and Thomas, 2022). In their discussion of the case of Rizhao's eco-city strategies, Westman et al. (2019) highlight the instrumental role of the "well-educated and internationally aware" mayor in the initial endorsement of the eco-city building plan (p. 19). Mayors with experience in sustainability-related issues seem more likely to play an "entrepreneurial role" in pushing the issue on the local policy agenda (Liu, Wang, and Thomas, 2022; p. 779).

The driver of municipal policy action can also depend on political leadership and how they prioritize climate change action. Eissa and Khalil (2021) note the key role of "political will" and how shifts in political leadership also matter as they may impact the priority given to climate change on the local agenda. In Istanbul for instance, following the 2019 elections, the ruling party lost control over the city, and a new mayor was elected from the main opposition party in Turkey. He presented a new vision for the city, one that centered climate change actions, and included plans to invest in green infrastructure and renovating vulnerable sewage systems (Yazar and York, 2021; p.11). However, since the mayor's party affiliation opposes the national ruling party, he struggled to secure national funds to implement these policy changes. Another example is São Paulo where a change in municipal leadership in 2013 undermined climate-related policies with the new mayor shifting the policy focus towards "pro-poor development" (Stehle, Höne, Hickmann and Lederer, 2019; p. 225).

The motivation to act on the local climate policy level can also be triggered by an active civil society. The perceived importance of the climate crisis among the public is often reflected in increased local initiatives. Authors find that cities and towns with reported high levels of civic participation are more likely to adopt urban climate policies[9].The presence and involvement of local environmental groups can thus serve as an indicator for "civic capacity" in facilitating local climate action (Hoppe, Van der Vegt and Stegmaier., 2016; p. 5). These groups, along with citizens, and private sector organizations can hence act as policy entrepreneurs that create "windows of opportunity" to prioritize climate change in the local political agenda (Hoppe, Van der Vegt and Stegmaier., 2016; p. 5).

Climate vulnerability is another dimension that impacts the municipality's motivation to intervene in climate policies and actions. Cities considered as risk-prone areas – subject to heat waves or have experienced extreme weather events for instance – are more likely to participate in climate protection efforts and seek to build more resilience than their less risk prone peers (Zahran et al., 2008; Bulkeley, 2010; Hoppe, Van der Vegt, and Stegmaier, 2016). However, this "vulnerability causal story" can sometimes be misleading and is more indicative of adaptation rather than mitigation efforts (Krause, 2011).

In summary, the following lists of indicators will be used to identify and assess motivations for local climate governance:

a) municipal entrepreneurship: mayor and/or municipal councilors' perceptions of climate crisis and policy positions

[9] Neebe, M., & Reusswig, F. (2012). Chapter 4 Climate protection and civil society: Does effective local climate policy need the participation and engagement of citizens? A comparison between the cities of Potsdam and Muenster. In W. G. Holt (Ed.), Urban areas and global climate change (pp. 75–104). Emerald Group Publishing Limited.

b) type of perceived anticipated benefits (economic, political, other)
c) local networks: local civil society organizations invested in climate change policy, local climate entrepreneurship, partnerships, and/or public perception of climate crisis
d) extent of local climate vulnerability

2.4.2. National Climate Governance Policy

Municipalities depend on the support provided by the institutional and financial structures of higher levels of government (provincial, regional, and central government) who play a key role in incentivizing and facilitating local climate actions through inter-governmental schemes that enable capacity building (Bulkeley et al., 2009; Hoppe, Van der Vegt, Stegmaier, 2016). Often, these support schemes focus on particular areas of climate action (mitigation or adaptation). Nonetheless, some cities are still able to invest in local climate policies even without governmental support. For instance, in the context of US cities, state-level actions, such as statewide GHG targets or climate action plans, had no significant influence on municipal climate commitment and policy adoption (Krause, 2011).

That said, the following indicators will be used to identify and assess the role of national climate governance policy in enabling local climate strategies:

a) Availability and type of inter-governmental support schemes
b) Alignment of municipality with national climate framework

2.4.3. Municipal Governance

The nature of the political system, as well as the level of fiscal, administrative, and political decentralization, largely shape capacities of local response to climate change (Bulkeley et al., 2009; Stehle, Höne, Hickmann and Lederer, 2019). These indicators influence the municipality's ability to collect and allocate taxes, establish municipal structures, and develop independent policies and long-term strategies. Additionally, they dictate its capacity to secure external loans, which allow municipalities to finance otherwise costly sustainable initiatives such as metro-systems, clean bus fleets or renewable energy projects (Stehle, Hone, Hickmann and Lederer, 2019; p. 214). The mandates granted to local governments to oversee various climate-related policy sectors such as transportation, energy, water, and waste services dictates the extent to which they can prompt climate mitigation and adaptation measures across these sectors.

Along with the political mandate and legal authority needed for municipalities to develop and implement climate policies and actions, informing, communicating, or even convincing other local actors of the need of climate change interventions should also be considered as part of local climate capacities. Indicators related to personnel capacity (staff, skills, training, education) and information capacity (availability of data, statistics, models) also determine local climate response. In terms of personnel capacity, while staff availability is a necessary component to consider in the delivery of climate policies and actions, expertise, experience, and motivation of staff members holds equal significance (Hoppe, Van der Vegt, Stegmaier, 2016; p. 4). Additionally, hiring and/or training existing staff on climate projects requires sufficient budgets, which is why municipalities that lack the necessary knowledge tend to outsource the issue to

consultancy and engineering companies (c.f. Stehle, Hone, Hickmann and Lederer, 2019; Eissa and Khalil, 2021). Some authors suggest that a climate change department or unit in municipalities could facilitate multi-level collaboration, allowing access to learning opportunities for existing municipal officials, thus increasing local climate capacity (Yazar and York, 2021).

The following indicators will be used to identify and assess municipal governance capacity in enabling local climate strategies:

a) Municipal administrative, technical, fiscal, and financial capacity, and existing assets and resources
b) Municipal mandate and legal authority that enable climate interventions.
c) Municipal communication strategy on climate policy
d) Existing knowledgeable municipal planning and policy staff and institutions, and availability of tools dedicated to climate action

2.4.4. Membership in Transnational Municipal Networks (TMNs)

As discussed, transnational municipal networks are significant in the involvement of local governments in climate policies and actions (Bulkeley, 2015). As Karhinen et al. (2021) put it, "network membership can provide [at best] a framework for structuring municipal climate work whereby it provides strategic vision translating to concrete actions with quantifiable emission reductions." (p. 9). Municipalities that participate in TMNs are encouraged to adopt a common approach to mitigation and/or adaptation actions, that often extend beyond traditional local public services and comprehensive planning efforts.

For members of the Covenant of Mayors, as Basso and Tonin (2022) highlight, signing with the network supports in showcasing and legitimizing the mayor's role and their commitment in addressing climate change. However, some municipalities may lack genuine political interest in actually implementing and monitoring their SEAPs, which is essential to evaluate the effectiveness of actions in achieving goals and quantitative targets, particularly with regard to CO_2 emissions reductions (Basso and Tonin, 2022; p. 10-11). Moreover, the presence of competent expertise within the municipality tasked to monitor actions and calculate emission inventories becomes essential.

The following indicators will be used to identify and assess the inclusion of municipalities in TMNs and how this membership enabled local climate action strategies:

a) Availability of TMN membership, and perception of this commitment
b) Availability of action plan/strategy outlining climate targets, goals and measures developed through the network
c) Municipality's progress towards mitigation, adaptation, and other climate goals
d) Availability and role of municipal expertise regarding TMN and of specialized coordinating staff (e.g., Territorial Coordinators)

Table 1: Evaluation Framework for Local Climate Governance (building on the work of Bulkeley et al., 2009 and Hoppe, Van Der Vegt and Stegmaier, 2016)

FACTORS	#	INDICATORS	SOURCE OF DATA
1. Motivation: municipal entrepreneurship, local networks, climate vulnerability	1.1	Municipal entrepreneurship: mayor and/or municipal councilors' perceptions of climate crisis and policy positions;	Semi-structured interviews
	1.2	Type of perceived anticipated benefits (economic, political, other)	Semi-structured interviews
	1.3	Local networks: local civil society organizations invested in climate change policy, local climate entrepreneurship, partnerships, and/or public perception of climate crisis	Semi-structured interviews, social media
	1.4	Extent of local climate vulnerability	Semi-structured interviews, technical reports
2. National climate governance policy	2.1	Availability and type of inter-governmental support schemes	Semi-structured interviews, technical reports
	2.2	Alignment of municipality with national climate framework.	Semi-structured interviews
3. Municipal governance	3.1	Municipal administrative, technical, fiscal, and financial capacity, and existing assets and resources	Semi-structured interviews, technical reports
	3.2	Municipal mandate and legal authority that enable climate interventions	Semi-structured interviews, technical reports
	3.3	Municipal communication strategy on climate policy	Technical reports, Semi-structured interviews, social media
	3.4	Existing knowledgeable municipal planning and policy staff and institutions, and availability of tools dedicated to climate action	Semi-structured interviews, informal conversations
4. Membership in TMNs	4.1	Availability of TMN membership, and perception of this commitment	Semi-structured interviews
	4.2	Availability of action plan/strategy outlining climate targets, goals and measures developed through the network	Online sources
	4.3	Municipality's progress towards mitigation, adaptation, and other climate goals	SEAP Document, project progress reports, semi-structured interviews, social media
	4.4	Availability and role of municipal expertise regarding TMN/CoM and of specialized coordinating staff (e.g., Territorial Coordinators)	Semi-structured interviews

CHAPTER 3

CLIMATE GOVERNANCE IN LEBANON

This chapter explores climate governance in the context of Lebanon, a country with a long tradition of laissez-faire policies that shaped planning and development at the cost of depleting natural resources, increasing sources of emissions and impeding adaptive capacities of key sectors, namely Energy, Water and Food security. The chapter starts by highlighting the vulnerability of key sectors that are facing aggravated risks and challenges given the climate crisis, as well as their impacts on overall Green House Gas (GHG) emissions. It will then trace how Lebanon has been participating to global climate politics and identify key state and other actors involved (directly or indirectly) in climate policies and actions. The chapter thus reveals how centralized institutional and regulatory constraints hinder the ability of local governments to adopt climate policies and actions. Additionally, it introduces the role of Transnational Municipal Networks (TMNs), particularly the Covenant of Mayors (CoM), in the context of Lebanese municipalities and explores their potential in advancing local climate policymaking.

3.1. The climate crisis seen from Lebanon: a threat to existing vulnerabilities

Lebanon is at the core of several interrelated crises, with the weight of climate change exacerbating a range of existing pressures on livelihoods: unchecked urban growth, privatization of public and communal lands, overexploitation of natural resources and poor land management. These key anthropogenic activities exacerbate land degradation and increase climate vulnerability (Khechen, 2022). Moreover,

Lebanon's overwhelming reliance on fossil fuel significantly contributes to GHG emissions, influences carbon sink capacity and consequently reduces air quality. Indeed, the energy sector (including transport) represents the largest contributor to GHG emissions (80%), followed by industrial processes (11%) (MoE/UNDP/GEF, 2022). In response to growing demand of fuel for electricity and transport, total GHG emissions have increased around 3-fold since 1994, with a yearly average increase of 6% (p. 46).

Lebanon is also highly susceptible to the risks associated with the climate crisis. Increased temperature, coupled with drier conditions, are likely to increase the severity and intensity of fires. In fact, forest fires already represent over half the incidents of natural disasters in the country (World Bank, 2018). Increased temperatures are also likely to drive higher demand on cooling, with related consumption of electricity (MoE/UNDP/GEF, 2022; p. 126). Soil moisture will also decline as a result of higher temperatures, reduced precipitations and higher evapotranspiration which will consequently reduce land productivity, agriculture yields and crop quality (p. 126). We know that such outcomes disproportionally affect lower-income households whose livelihoods largely depend on agricultural work and/or local production for food intake (Verner et al., 2018; p. 43).

Buildings and public infrastructure are also subject to changing patterns in precipitation, sea level rise as well as increased frequency and intensity of storms. The country already experiences one to two cases of flooding annually, with projections expecting a rise in these numbers. This is of particular concern given that 90% of the country's population and most of its infrastructure are located in a corridor of 500m wide along the coastline. Changes in precipitation patterns and the decrease of mean annual precipitation are predicted to impact groundwater recharge and snow cover

storage. Consequently, water availability is projected to decline by 29% by the year 2080. Extreme climatic changes are also expected to result in direct and indirect impacts on public health. Indeed, previous research has indicated a correlation between temperature rise due to climate change and premature mortality in Lebanon[10].

Consequently, there is an urgent need to adopt serious mitigation and adaptation policy responses. Yet, these are largely contingent on Lebanon's ongoing economic and financial collapse, which unfolded in late 2019 after devastating wildfires attested to the government's longstanding political and economic failure. In 2020, the deadly Beirut port explosion further exacerbated an already challenging situation.

As the chapter reveals, climate responses are largely framed at the national level, leaving little room for contributions from municipalities and local authorities. As discussed previously, the ability of municipalities to respond to climate change is shaped by the degree of fiscal, administrative, and political decentralization[11]. This includes the capacity of municipalities to autonomously collect and redistribute taxes, establish local governmental structures, and develop their own local policies and strategies (Stehle, Höne, Hickmann and Lederer, 2019). Moreover, municipalities' access to external loans also determines the extent to which they can finance sustainable transformations of infrastructure such as renewable energy generation, clean bus fleets etc.

In the next section, I turn to the climate policy initiatives and frameworks adopted at the national level, through which I outline the key state and other actors

[10] El-Fadel and Ghanimeh (2013). Climate change and temperature rise in the Greater Beirut Area: Implications on heat-related premature mortality. Regional Environmental Change. 13. 10.1007/s10113-013-0415-9.
[11] Lodge, M. (2012). Administrative patterns and national politics. In B. Peters & Jon Pierre (eds.), The SAGE Handbook of Public Administration. London: SAGE, 545–560.

involved (directly or indirectly) in climate response, starting with recalling the emergence of environmental consciousness in the country.

3.2. Early and Post-Civil War perspectives on the environment in Lebanon

Early environmentalist efforts in Lebanon can be traced back to the early 1970s, when noted AUB botanist, Ricardus Haber, established one of the first explicit environmental NGO in the country called "Friends of Nature". He is regarded as a leading environmentalist who spoke out against unchecked urban planning and development and focused on protecting and preserving Lebanon's natural environment. One of his notable policy achievements was his lobbying efforts in the late 1980s that led to the establishment of the nature reserve of Horsh Ehden. Haber's approach was not entirely "apolitical" insofar as it accommodated for the existing sectarian status quo: indeed, Nagel and Staeheli (2016) suggest that "nationalist elites in Lebanon wove themes of nature and landscape into their narratives of national origins and uniqueness." (p. 251) In other words, environmental initiatives were embraced by some elites as means of establishing local, territorialized, political power and of distributing patronage.

Lebanon's environmentalist movement was hampered by the onset of the civil war in 1975 which challenged efforts to rally civil society around environmental issues and stalled the possibility of creating any sort of serious national environmental movement in the country (Makdisi, 2016). Momentum for such national efforts later came during the post-civil war period, specifically following the Earth Summit (or Rio Conference) held in Rio de Janeiro in 1992. In this context, and in response to the influx of international funds, the environmental movement experienced "NGOization".

Although NGOs claimed to adopt an apolitical approach to their work, they largely failed to address the root causes of environmental degradation, instead becoming a tool for clientelist networks (Kingston, 2001; Nagel and Staeheli, 2016). This was evident in the establishment of the Lebanese Environment Forum (LEF) in 1992, which fell short of its commitment to create consensus and forceful stance on environmental issues (Kingston, 2001; p. 66). In lieu of that, the LEF was used to channel donor funds to protected areas controlled by sectarian leaders (Nagel and Staeheli, 2016; p. 259).

The mid-1990s were dotted by ambitious and costly post-war reconstruction plans that required significant donor funding and investments, which demanded environmental assessments (Makdisi, 2016; p. 223). The increased involvement of the international donor community in Lebanon's environmental policy led to the establishment of the Ministry of Environment (MoE) in April 1993 (Kingston, 2001; Makdisi, 2016). However, being largely underfunded and understaffed, the MoE had little capacity to address environmental issues that accompanied reconstruction efforts. Moreover, the national environmental movement was "short-lived" as it dissolved in the face of then Prime Minister, Rafic Hariri's state-led neoliberal agenda, sectarian elite, and donor influence (Makdisi, 2016; p. 224). Kingston (2001) further argues that Lebanon's post-war environmental politics was coopted by patron-client networks that undermined the role of civil society in its attempt to promote environmentalism in the country.

3.3. Lebanon's global climate policy framework, initiatives, and institutional arrangements

3.3.1. Lebanon's national climate policy framework

Lebanon made its debut in international climate politics in the late 1990s, becoming a Party to the UNFCCC (Law 359/1994) and ratifying both the Kyoto Protocol (Law 738/2006) and later the Paris Agreement (Law 115/2019 and Decree 5599/2019). In 2015, as dictated by the Paris Agreement, the country submitted its Nationally Determined Contribution (NDC) (i.e., national pledges/climate action plan to reduce emissions and adapt to climate impacts). In the absence of major legislation that directly addresses climate change in Lebanon, NDCs play a significant role in guiding national climate efforts (MoE/UNDP/GEF, 2022). Additionally, a number of environmental legislations that are considered relevant to addressing climate change have also been passed in the last decade (refer to Table 2).

In 2021, amid the country's severe economic and financial crisis, Lebanon submitted an update to its NDCs, where it committed to increasing its GHG emission reduction target scenario from 15% to 20% (as unconditional target) by 2030, compared to Business-as-Usual (BAU) projections. It also raised its conditional emissions reduction target, which depend on foreign financing, by 1% to 31% (MoE/UNDP/GEF, 2022). In terms of efforts in the energy sector, the country aims to increase electricity generation and heating from renewable sources by 18% and 11% respectively – which is up from a previous combine target of 15%. While Lebanon's global carbon footprint is negligible, supporters of these targets argue that reducing emissions is crucial to improving the overall air quality in the country[12].

[12] Yahya M. and Kayssi I. (2023). Lebanon: Can a Green Economy Pave the Way Out of Economic Collapse? Climate Change and Vulnerability in the Middle East. Retrieved from: https://carnegieendowment.org/2023/07/06/climate-change-and-vulnerability-in-middle-east-pub-90089

Noticeably, Lebanon is also prioritizing adaptation measures, and aligning climate action with sustainable development, green recovery, and the green and blue economy. Adaptation priorities include strengthening the agricultural sector's resilience, promoting the sustainable use of natural resources, developing sustainable water services (including irrigation), managing terrestrial and marine biodiversity, reducing the vulnerability of coastal zones, ensuring climate-resilient health systems, and reducing disaster risk (MoE/UNDP/GEF, 2022).

In the last years, there has been increased integration of climate change mitigation and adaptation into governmental decisions as well as sectoral plans (MoE/UNDP/GEF, 2022). These include the National Strategy for Women in Lebanon (2019), the draft Disaster Risk Management strategy (2020), the draft National cooling plan (2020), the Renewable Energy Outlook (2020), the Ministry of Agriculture Strategy (2020), and the National Health Strategy (2021). The entity that acts as focal point to coordinate all ministerial efforts in regard to climate related actions is the Ministry of Environment (MoE). Yet, the governance of natural resources is often subject to ad-hoc and overlapping roles and responsibilities of various stakeholders and authorities (refer to Figure 3). As a result, proper implementation of climate action across the country is challenged (Yahya and Kayssi, 2023).

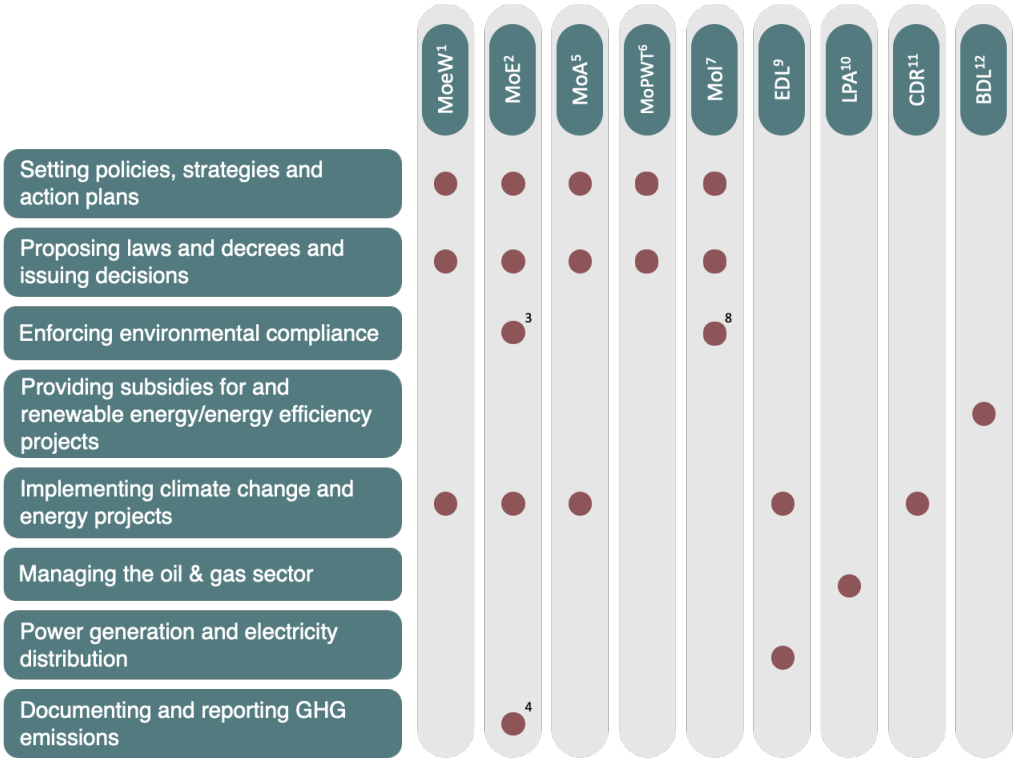


Figure 3: Climate Action Responsibility Matrix of different institutions. Adapted from: SOER, 2020

[1] Ministry of Energy and Water (MoEW), Law 462/2002: Organization of energy sector.
[2] Ministry of Environment (MoE), Law 690/2005: Regulating the MOE and defining its tasks and competences and then detailed by Decree 2275/2009
[3] Law 444/2002: Environment protection
[4] Law 359/1994: Ratification of UNFCCC
[5] Ministry of Agriculture (MoA), Law 31/1955: Designating the tasks of the MoA; Decree 5246/1994: Organization of the MoA and designation of its mandate.
[6] Ministry of Public Work and Transport (MoPWT). Decree 2872/1959: Organization of MoPWT
[7] Ministry of Interior (MoI), Law 642/1997 amended by Law 20/2008: Establishment of MoI
[8] Decree 9765/2003: Inspection procedures by MoI
[9] Électricité du Liban (EDL), Decree 16878/1964: Establishment of EDL
[10] Lebanese Petroleum Administration (LPA), Decree 7968/2012: Establishing the LPA
[11] Council for Development and Reconstruction (CDR). Legislative-Decree 5/1977: Establishment of CDR
[12] Banque du Liban (BDL). Decree 13513/1963: The Code of Money and Credit

Table 2: Environmental legislations relevant to Climate Change. Source: MoE, 2022; p. 11-12

Legislation/Strategy	Description and linkages with climate change
Emission limit value for air pollutants – MoE decision 16/1 (2022)	• Provides emission limit values for air pollutants from a range of sources including power plants, private generators, industries, waste plants, etc. • Limiting air pollutants to internationally accepted standards will consequently limit emission of greenhouses.
Tax incentives on environmental products and services - Decree 167 (2017), MoE decision 1281/1 (2017), MoF decisions 18/1 (2020), 35/1 (2021).	• Provides customs reductions on environmental products including equipment related to energy efficiency, renewable energy, waste recycling, etc. • Provides tax break to companies undertaking environmental actions/projects including climate-related projects. • Encourages the deployment of climate-friendly technologies and services
Vehicle tax reduction – Article 55 of budget law 79 (2018) Article 95 of budget law 10 (2022)	• Provides tax reduction and/or exemption (customs, etc.) for hybrid and electric vehicles. • Encourages the deployment of low emission vehicles. • Tax exemption has been maintained throughout the period of 2019-2022
Air Quality Law 78 (2018)	• Provides a legal framework for air quality monitoring and assessment, control and surveillance, information management and research and capacity building promotion, as well as financial provisions and liabilities and sanctions. • Endorses the National Strategy for the Ambient Air Quality Management • Tackles emissions from mobile and stationary sources and fuel quality, which will have a direct impact on the reduction of GHG emissions
The National Strategy for the Ambient Air Quality Management 2015-2030 (2017)	• Provides a vision and long-term goals for the implementation of the strategy by 2030, in addition to proposed modalities for the implementation, monitoring and evaluation and information sharing. • Aligns goals with the NDC targets
Carbon reporting mechanism - MoE decision 99/1 (2013)	• Provides a framework and tool for the private sector to report annually their greenhouse gas emissions (on a voluntary basis) – and receive a reporting certificate from the MoE

3.4. Institutional Set-Up

3.4.1. Ministry of Environment (MoE): a key player in national climate policymaking

The Ministry of Environment (MoE) plays a significant role in climate policymaking, as it is the main national coordinator on climate issues and the country's focal point to the UNFCCC since 1994. According to Law 690/2005, the MoE holds authority over all supervision and guidance in regard to environmental protection in Lebanon. Moreover, the MoE coordinates closely with other ministries and a number of

public and private sector organizations on issues related to environmental regulation and inspection, climate adaptation, sustainable management of natural resources, continuous air quality monitoring, promotion of hazardous and non-hazardous waste management etc. The MoE also chairs the National Council for the Environment (NCE) which was established in 2012 following the approval of the Council of Ministers (CoM) (decree 8157/2012). The NCE, which is composed of representatives of seven ministries and seven non-public entities, provides policy and planning suggestions in all environment and climate-related areas. Additionally, it reviews and approves proposed policies and workplans, and forwards them to the CoM for approval. According to the 2020 State of the Environment Report, the council used to convene regularly prior to the October 2019 protests (SOER, 2020; p. 505).

Figure 4: MoE Organization Chart. Source: MoE Lebanon website.

Although the MoE is endowed with a great deal of prerogatives and responsibilities, it still falls short in terms of its human resources; staff size has constantly been restricted and does not meet 50% of the staff limit as mandated by decree 2275/2009 (SOER, 2020). Instead, capacity in human resources is secured through cooperation projects with international development partners. Through these

projects, the ministry receives experts and support staff that assist in carrying out a range of activities and functions related to research, monitoring, training, legislation, and environmental awareness (SOER, 2020). The MoE is also limited by a weak budget – one of the lowest among the government ministries, which reduces the capacity to contract its own consulting, as well as to secure operational and maintenance services (SOER, 2020; p. 24).

Furthermore, Mahmalat and Zougheib (2021) show how ministerial rotations create institutional "memory losses", whereby staff either leave office, or hinder the work of incoming ministers by retaining information and preventing new leadership from building on previous efforts. They also add that "institutions more lenient to a political party appear to complicate matters for an incoming minister of another party" (Mahmalat and Zougheib, 2021; p. 2). Yet, according to the 2020 SOER, despite political instability, regional crises, parliamentary deadlocks, as well as frequent cabinet reshuffles, policymaking at the MoE does not seem to have suffered from "detrimental effect" (p. 29), as evidenced by the consistency in governmental decisions and work plans developed within the ministry.

In 2013, a Climate Change Coordinating Unit (CCCU). The CCCU was considered a project that ran between 2013 and 2015, under the UNDP – which acts as the implementing and executing agency. In fact, the UNDP has been working closely with the MoE since 1999 on mitigating the impact of climate change in the country. The project's main aim was to mainstream climate change into national and sectoral development plans, as well as coordinate between all relevant national, regional, and international partners. It also sought funding donors for the development and implementation of a low-carbon and climate resilient agenda. Following the end of the

project in 2015, the climate change project team continued to carry these tasks under the Service of Environmental Technology within the MoE. As such, although the climate change unit is not officially recognized by an institutionalized system under the MoE, the climate change project team still assumes the role of focal point to the UNFCCC, as it follows up on international climate change negotiations. Supported by multilateral funds, the team is also responsible for the preparation and submission of reporting obligations under the UNFCCC, which include the national Biennial Update Reports and National Communications to the UNFCCC.

In 2017, the MoE received approval from the Council of Minister (CoM) to form a committee responsible for following up on the country's NDC commitments, as per decision 33/2017. The committee, which meets one/twice a year, coordinates efforts of the various ministries and institutions that contribute to Lebanon's NDCs. It also updates the country's NDCs to include more ambitious targets every five years, with the first update submitted in 2021. According to the fourth Biennial Update Report on Climate Change (BUR 4), meetings related to the 2021 NDC update involved sectoral mitigation and adaptation experts from line ministries. Moreover, consultations with nonprofit actors, academic experts, youth, the private sector, and Civil Society Organizations (CSOs) also took place. Yet, there remains a gap in coordinating climate action efforts of other actors (municipalities, civil society groups, private sector, etc.), and therefore their alignment with NDC targets.

3.4.2. The Role of Municipalities

According to the MoE, the gap in involving and coordinating climate action efforts with other actors is specifically attributed to: (1) a lack of strategy and vision,

awareness, and common understanding of what qualifies as climate action; (2) lack of financing mechanisms to support private investments; (3) lack of technical information on available technologies; (4) scattered non-state actors' initiatives; (5) uncaptured achievements, fragmented data, and unclear progress against targets of action (MoE/UNDP/GEF, 2022; p. 286) . Moreover, climate change in Lebanon remains framed as a national problem that requires national solutions. According to an expert from the MoE, "there is no modality to give the chance for decentralization of the [climate] problem". Indeed, decision-making in core sectors remains highly centralized, with sectoral strategies and plans concentrated at the ministerial level, leaving local and regional governments with little to no authority over decision-making processes related to these sectors (Harb and Atallah, 2015; p. 197). Furthermore, indicators that have been set to track progress of Lebanon's NDCs can be captured, monitored, and reported without contributions from the municipalities: "We would love to have municipalities contribute to reporting; but [it can happen] once they have activities at scale that can be added up to meet targets".

The constraints of municipal actions become apparent especially with regard to mitigation targets, across sectors, particularly the energy and transport sectors. Interventions in these domains extend beyond municipalities' jurisdictions as outlined in Decree-Law 118/1977, which defines a municipality as a local government with administrative and fiscal autonomy across all actions and tasks of public interest and nature, within their geographical boundary.

Mitigation measures in the transport sector, which include public transport planning or greening existing fleet, are subject to decisions taken at the council of ministers and therefore cannot be tackled at the local level. Moreover, despite the varied

and broad range of duties endowed to municipalities, legal capacity of municipalities to establish renewable energy initiatives has largely been limited. Indeed, municipalities play a major role in the residential sector, as they are responsible for granting permit, enforcing building codes, and surveilling implementation. As such, they can become important players in facilitating or incentivizing energy efficient buildings. The current building code provides municipalities the option to give one limited incentive for buildings for the usage of double walls (Schimschar et al., 2020). Although some municipalities have reported their interest in giving financial incentives by reducing municipal fees, others were reluctant, citing that insufficient municipal budgets fall short in considering costs associated with promoting such measures (Schimschar et al., 2020). That said, there is a strong perception that municipalities are constrained in terms of capacities related to climate mitigation policies, given they cannot impose new taxes and have very limited financial capacities and access to human resources (Harb and Atallah, 2015). Additionally, the absence of a Decentralized Renewable Energy (DRE) law until very recently has largely limited the scale up of distributed renewable energy. Yet, a number of municipality-led solar PV projects have either already been implemented, or are in consideration, in response to increased power cuts and diesel prices (Ahmad, 2020; p. 50).

Similarly, things are complex when it comes to mitigation and adaption measures concerning the water sector, as it remains highly centralized in the hands of the Ministry of Energy and Water (MoEW), as well as the Regional Water Establishments (RWE). In this regard, municipalities play a key role as “interlocutors between local communities and RWEs” (Eid-Sabbagh and Ray, 2021; p. 12). However, these two lack coordination, with their roles and responsibilities often overlapping, and

their relationship defined by competition over funds (Eid-Sabbagh and Ray, 2021; p. 5). Nevertheless, municipalities have demonstrated their ability to manage water supply systems, improve them, mediate, and resolve conflict related to water issues, as well as effectively operate wastewater treatment plants. Moreover, municipalities play a major role in negotiating and approving/rejecting projects within their territories (Eid-Sabbagh and Ray, 2021; p. 13).

That said, even at the national level, there is little evidence of effective policies and regulations guiding local climate actions into planning policy documents. The National Physical Master Plan for the Lebanese Territory (NPMPLT) – which was published in 2005 and endorsed in 2009 (Decree 2366/2009) – stands as the main reference for sustainable development planning. The Plan aims at guiding large public investments while ensuring integrated development and rationalizing the use of resources. Originally set out to regulate urban growth, the plan champions the establishment of a "green and blue network" that connects areas with ecological significance, spanning from the mountain tops to the coastlines (MERP/UNDP/UN-Habitat, 2022). It also highlights the importance of rationalizing the use of water resources, as well as explore solutions that address the challenges facing natural resources and posing serious threats to human health (i.e., wastewater, solid waste, quarries etc.). However, the NPMPLT was not followed by an implementation decree that clearly defines institutional responsibilities, which explains its shortcomings in implementation[13]. Moreover, political, and institutional challenges to issuing the decentralization law that would have facilitated the allocation of developmental and planning responsibilities at the regional scale impedes the Plan's objectives (Harb and

[13] UN-Habitat (2013). "Reforming Urban Planning System in Lebanon: Findings of the Research/ Assessment."

Atallah, 2015). The Directorate General for Urban Planning (DGUP) and the Higher Council for Urban Planning (HCUP) are the main agencies that elaborate and implement physical master plans, but these do not always comply with the NPMPLT guidelines. Moreover, contrary to these guidelines and recommendations, (un)sanctioned exploitation and extraction of the country's natural resources continue to occur (MERP/UNDP/UN-Habitat, 2022; p. 46).

Nevertheless, a small number of municipalities in Lebanon have been joining global climate networks and engaging in climate-responsive policymaking. In this next section, I explore the role of EU-led projects in encouraging Lebanese municipalities to join Transnational Municipal Networks (TMNs) and developing local climate action plans.

3.5. Transnational Municipal Networks: Effective Tools for unlocking climate actions at the local level?

In the past decade, under the framework of the European Neighbourhood Policy (ENP), the EU has led a number of programmes in its Southern Neighbourhood that have been increasingly focused on strengthening climate resilience of local authorities (Abdullah, Elgendy and Knaepen, 2021). Most of these have been dedicated towards energy efficiency and energy sustainability. Among the projects financed under ENP-South was Cleaner Energy Saving Mediterranean Cities (CES-MED) project, which ran between 2013 and 2018. The project was a significant support to the Covenant of Mayors (CoM) network. The project centered on helping local authorities integrate energy management in local planning through the development of Sustainable Energy Action Plans (SEAPs), which was a requirement for members of the CoM.

In Lebanon, CES-MED was viewed as an opportunity to shift the conventional approach of local authorities and municipalities in carrying out their tasks within their territory. It supported the development of three SEAPs for Beirut, Baakline and Qab Elias. Developing these actions plans allows municipalities better insight into their local energy consumption and emission trends. It also informs them on major emission contributing sectors and develop tailored mitigation measures. According to a CES-MED expert, these measures were designed to cut down on local emissions, as well as reduce municipal expenses on local energy which could otherwise be allocated towards developing sustainable projects. He also adds that the SEAP allows municipalities to present their action plan and proposed measures to investors/donors who can easily navigate through and identify areas that align with their preferences.

The CES-MED project ended in 2018 and was followed by Clima-Med (Phase I and II). The latter builds on the previous project by supporting the transition of partner countries in the Southern Neighbourhood towards sustainable, low-carbon and climate resilient development. Specifically, Clima-Med provides technical support for the development and implementation of Sustainable Energy Access and Climate Action Plans (SEACAPs). One of the notable differences between SEACAPs and SEAPs is the consideration of adaptation measures along with those of mitigation. In 2023, under Clima-Med, ten SEACAPs were developed for thirty-two cities in Lebanon. These include Batloun, Moukhtara, Khreibi, Hasbaya, Bishmizzine, and East Baalbeck Union of Municipalities (7 municipalities). Four of these SEACAPs were developed for Donnieh, which represented twenty municipalities from the area that were grouped in four clusters. Moreover, at the national level, a Clima-Med National Coordination

Group[14] (NCG) was established in coordination with the Climate Change unit under the MoE. The NCG's main role is to mainstream climate change and encourage complementarity between key actors at the national and local levels. However, the role of the NCG in Lebanon came to a halt following the October 2019 uprising. As such, the Climate Change unit have assumed the role of intermediary with key national authorities[15].

Yet, municipalities' experience with the CoM, and the degree to which they can enact change with their localities, largely depends on political leadership. For instance, the SEAP for the Municipality of Beirut presented an important opportunity for the capital city: "The SEAP developed for Beirut was done very well," explained the expert, "and they could have done a lot of things; they have the resources and the money to make these projects work". However, political interferences within the Municipality prevented the implementation of the action plan.

In contrast, the expert gave the example of Batloun municipality, who became a signatory to the CoM in 2016 and only recently developed its SEACAP. The municipality signaled its commitment to reducing solid waste generated within the area by encouraging residents to sort at source. Indeed, 67% of the households are sorting paper, cartons, plastic, glass, and metal (Batloun SECAP, 2023). These sorted materials are transported to a separate municipal-owned facility where they compressed, bundled, and later sold to recycling centers. The municipality, who aims to become an "eco-town role model" is also looking to retrofit the plant to run on renewable energy. The expert

[14] Members of the NCG include the Ministry of Environment, Ministry of Interior & Municipalities, Ministry of Energy & Water, Ministry of Finance, UNDP – RPTA.
[15] Clima-Med (2022). Recommendations for Climate Action Coordination Strategy. From Planning to Action: Mainstreaming Climate Change "Engaging Local Authorities". Retrieved from: https://www.climamed.eu/wp-content/uploads/files/Final-CAS-LEBANON-1-7-2022-1.pdf

emphasized that the success of this project has largely depended on the coordinated efforts of the mayor, municipal council, local community, and other stakeholders. He adds that "the most important thing is for the municipality not to work alone, to have a clear vision, goals, to reach out to people, appoint responsibilities, and monitor the work."

Moreover, the municipality of Hammana, who became a signatory of the CoM in 2019, also represents a "successful example" of a Lebanese municipality that has demonstrated its eagerness and capacity to actively assume its role in water governance (Abdullah, Elgendy and Knaepen, 2021). Indeed, the municipality recently developed a SECAP-Self Sufficient Programme, which essentially utilizes a new and more accessible methodology to take stock of local emissions[16]. The municipality also set a target to reduce its local emissions by 40% by the year 2030, compared to 2016 levels. Based on its SECAP, the municipality retrofitted its wastewater treatment plant to operate on solar energy instead of electricity and diesel which reduces the plant's environmental impact as well as its operating costs. The project was financed by UNDP and was recognized for the 2019 Energy Awareness Award under the local government category, co-organized by UNDP (Abdullah, Elgendy and Knaepen, 2021).

The expert further highlights that SEAPs/SEACAPs should be renewed and updated on a yearly basis to better reflect the realities on the ground, adding that "[municipalities] need to always look for new things to add [to the SEAP/SECAP]". However, I was unable to find any research or monitoring reports that could give insight on the progress of municipalities towards their CoM targets. This lack of reporting is

[16] Saad, S., Mourtada, A., Brouche, M., & Ghandour, M. (2019). A developed tool allowing the South-Mediterranean cities to establish their sustainable energy plans. IOP Conference Series: Materials Science and Engineering, 609, 072074. doi:10.1088/1757-899X/609/7/072074

not limited to Lebanon nor the other member countries within the Southern Neighborhood, as research reveals a shortage of monitoring reports among CoM signatories in the EU, with less than 50% of municipalities submitting updates of their emission inventory (Rivas et al., 2022). This is the case despite the "flexible framework" and the reporting guidelines provided by CoM. According to Rivas et al. (2022), among the factors that were suggested to influence this shortage include: (1) the attribute of "voluntariness" of the CoM; (2) low priorities of municipalities in monitoring climate action as a result of the required workload; (3) lack of technical expertise and funding (p. 8).

In the next chapter, I will explore the case study of Menjez, a small village in Akkar that was among the first to champion the development of a SEAP in Lebanon.

CHAPTER 4

CASE STUDY OF MENJEZ MUNICIPALITY

This chapter provides an overview of the small village of Menjez in terms of its geographic characteristics, ecological and archeological significance, as well as its economic drivers. It will then elaborate on the village's climate vulnerability as well as its on emissions generated from its main economic sectors. The chapter will then trace the emergence of the role of the municipality, the planning tools it utilized since its inception in 2012 and the key local and international stakeholders involved. Being a signatory of the Covenant of Mayors Mediterranean, an EU funded network that supports cities and municipalities in developing Sustainable Energy Action Plans/Sustainable Energy Access and Climate Plans (SEAPs/SEACAPs), and setting emission reduction targets for their localities, some of the measures implemented by the municipality of Menjez have been carried out under this context. The chapter will describe these measures, along with others undertaken in alignment with the municipality's goal to mitigate local emissions and increase adaptive capacity. Data in this chapter was extracted from semi-structured interviews with experts and members of the municipality, as well as data collected from online sources (local action plans, project progress reports, social media posts etc.).

4.1. Brief Overview of Regional Context

The small village of Menjez is located in northern Lebanon, nestled in the mountains of the Akkar governorate, located close to the Syrian border. Given the strong reliance in rural areas on natural resources, the impacts of climate change largely manifest in disruptions in agriculture income and food security, water, and

energy supply, as well as forestry. Indeed, agriculture is said to account for up to 80% of Akkar's local GDP and presents the major income-earning and employment opportunity in the region (MoA, 2020)[17]. However, long-standing issues of insufficient funding, limited development, outdated equipment, and inefficient production techniques overwhelm the productivity of the agriculture sector[18], making it more vulnerable to climate risks. Across Akkar, farmers are facing mounting challenges due to reduced rainfall, coupled with the rising costs of diesel and electricity required to pump water to the crops[19]. As a result, some farmers often refrain from cultivating products with high water demands. A recent study published by IFI examined the influence of climate change and variability on agricultural production and rural communities (Farajalla, Zgheib, Korbane and Zaghbour, 2022). Based on data from 2019, the study revealed that the North, Akkar and certain parts of the Bekaa region demonstrate low levels of resilience to climate change, with future projections indicating that already vulnerable areas are likely to face higher risks. On the other hand, Akkar is home to vast stretches of forested land, which are considered to be the country's most prone areas to forest fires. Particularly, it is forests stressed by fragmentation, pest outbreaks, wildfires as well unsuitable practices that are most affected by climate change. Indeed, amid the economic crisis and subsequent increase in the cost of diesel, residents have increasingly resorted to illegal logging practices as means to secure wood for heating, especially during the winter season. As a consequence, this has increased the risks of wildfires.

[17] The Akkar plains, including the lower slopes of the northern Mount Lebanon, constitute the country's main crop production regions, where cereals, potatoes, grapes, and vegetables are grown.
[18] https://www.aljazeera.com/news/2021/7/6/lebanese-ngo-helping-the-uplift-agriculture-sector
[19] Syed, Z. July 08, 2023. Akkar farmers see climate change affect their crops. L'Orient Today. Retrieved from: https://today.lorientlejour.com/article/1342848/akkar-farmers-see-climate-change-affect-their-crops.html

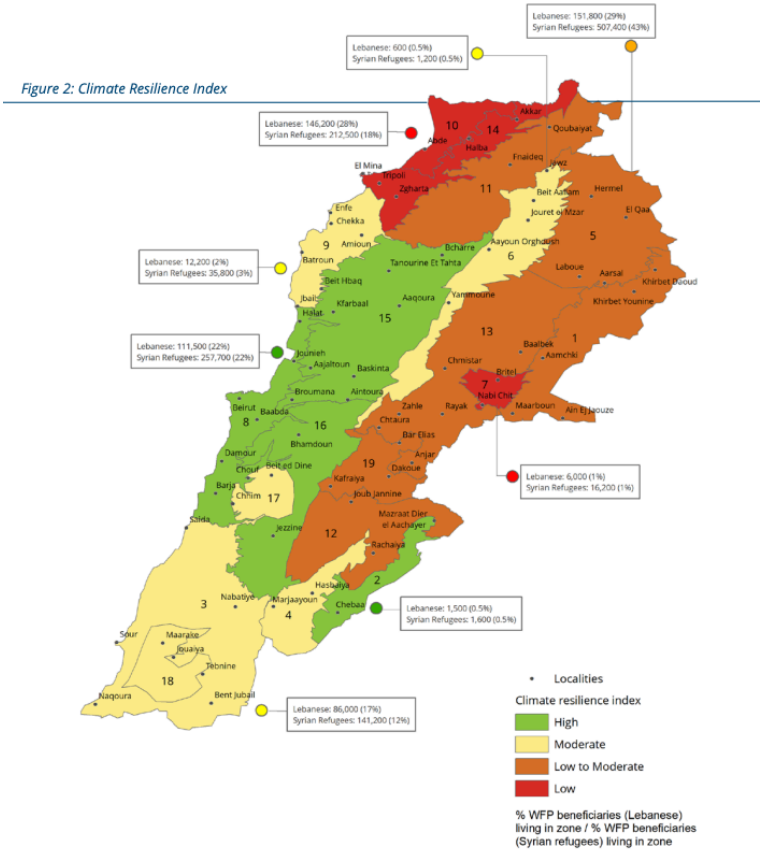


Figure 5: Climate Resilience Index. (Source: Issam Fares Institute (IFI), AUB)

4.2. Overview of Menjez

4.2.1. Geographical Location

At an altitude that ranges from 290 to 350 m above sea levels, Menjez is characterized by a Mediterranean climate. The village witnesses mild rainy winters (between October and March) and hot dry summers (between June and September). The recorded annual average precipitation is between 800-900 mm, with an average number of 77 rainy days/year which, compared to the regions in the Near East, makes it a richly irrigated area. The mean annual temperature is around 20°C.

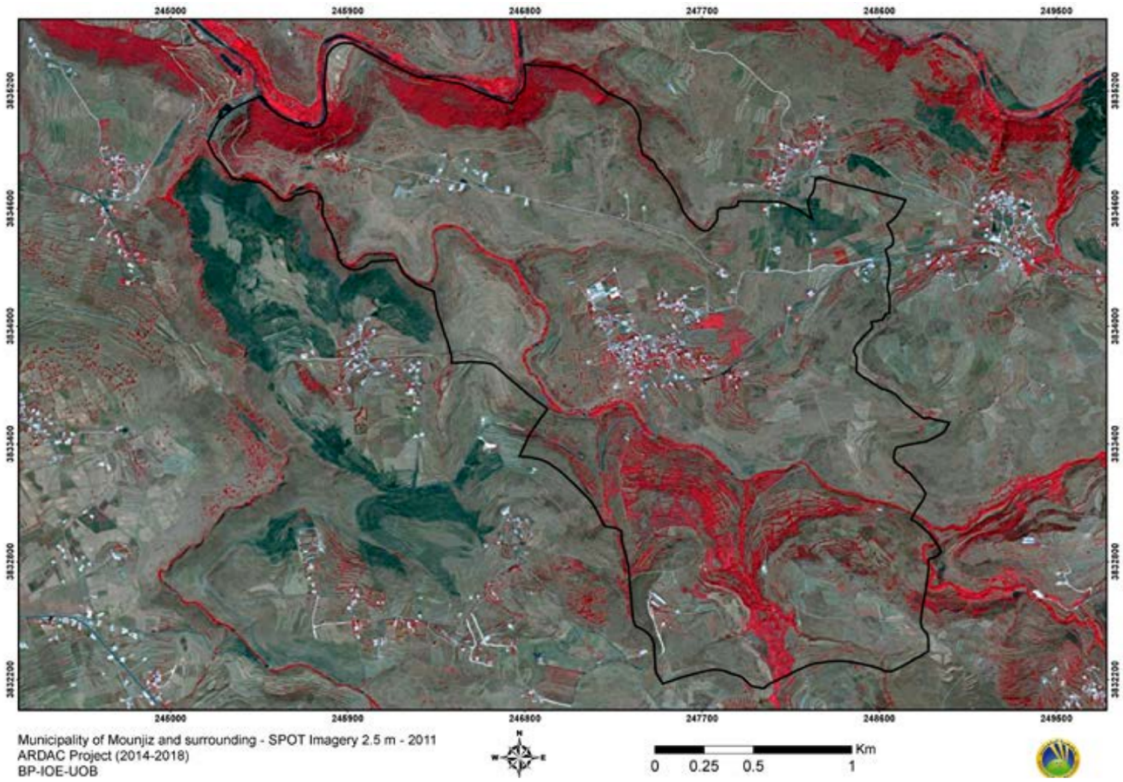


Figure 6: A map of the village of Menjez (Source: University of Balamand, ARDAC Project)

4.2.2. Demographic Characteristics

As a result of the First World War (1914-1918) and the Civil War (1975-1990), a segment of the population of Menjez disappeared or migrated, abandoning some parcels and houses, and erasing certain traditional practices. In 2015, the village had a registered population of around 1,410[20], mostly Maronite; 70% are considered permanent residents throughout the year, whilst 30% are present only during specific periods of the year[21]. Most of the residents work in the city during the week and spend their weekends in the village. The village is also host to a number of Syrian refugees[22].

[20] According to 2016 figures
[21] Menjez SEAP Document, 2016
[22] In 2015, it was estimated that Menjez hosted 32 Syrian refugees. A more recent source reveals that the village hosts 600 Syrian refugees (July 2020) (source: https://citesunies.s3.amazonaws.com/pages/6064747ede94a.pdf).

According to the mayor, the majority of the population has received an education, attaining at least a brevet. Additionally, a significant number of them hold baccalaureate degrees, whilst some are current university students[23]. Nevertheless, most of the residents are classified as low-income, with a significant number of the population representing military pensioners whose incomes have been halved as a result of the devaluation of the local currency. Agriculture workers represent almost half of the total workforce in the village (20% of which are women)[24].

4.2.3. Economic Sectors

The agriculture sector stands as the main economic driver in Menjez. In 2013, Menjez became the first self-proclaimed Fair-Trade Village in Lebanon[25], with two agriculture cooperatives certified by FLOCERT[26]. As a result, organic and sustainable agriculture practices became prominent among local farmers. Menjez is also home to one of the largest organic farms in Akkar.

In Menjez, local produce varies from olives (table olives and olive oil), almonds, table grapes (production of Arak), carobs (production of molasses), to honey, seasonal vegetables, pomegranate, and avocado. Farmers rely on their agriculture produce for their livelihoods and income, with some selling their produce to small vegetable shops in nearby villages. Nevertheless, farmers have been experiencing the dual concern of water shortages and pollution of water sources. Additionally, farmers have also faced setbacks in production due to new agriculture diseases.

[23] Interview with mayor of the municipality, 08/09/2022
[24] IMPACT Website, Rural Development, Menjez
[25] Menjez was officially awarded Fair Trade Village status by Fair Trade Lebanon on June 5th, 2016. Source: https://www.fairtradetowns.org/20-news-events-conferences/294-9-lebanese-fair-trade-villages-awarded-status-ahead-of-the-international-fair-trade-towns-conference-in-baskinta
[26] an independent certification body auditing and certifying all actors within Fairtrade supply chains.

On the other hand, Menjez is home to a number of significant historical and religious sites, which have increasingly attracted tourists from across the country and abroad. In 2016, it was reported that the village receives around 200 tourists/visitors per year. However, this figure is estimated to be higher, given the more recent establishment of a Rural Tourism Strategy and Action Plan, the installation of a heritage house and a hiking circuit[27].

In terms of commercial activities, these are limited to small businesses, such as mini markets, bakeries, a privately owned gas station and a water pumping station. Some residents operate guest houses that host tourists and visitors in the village, all year-long.

4.2.4. Infrastructure and Key Services

4.2.4.1. Electricity Network

In 2015, it was reported that the village received an average electricity supply of twelve hours per day from the national grid, through Electricity du Liban (EDL), whilst the rest was supplied by municipal owned diesel generators which cover most households in the area. In 2018, the municipality installed a Solar PV Power Plant which aimed at securing uninterrupted electricity supply to the village. This seemed particularly significant given that EDL supply has witnessed significant decline since the onset of the economic crisis, with Menjez often receiving only four hours of electricity per day. However, as the next chapter will reveal, the project fell short in its ambitious target. Moreover, with the increased price of diesel, the municipality began

[27] In a recent Facebook post (June 22, 2023) on the municipality's page, it was estimated that Menjez receives more than 2,155 visitors and tourists per week exclusively for the Monastery of Our Lady of the Castle.

rationing power. On the other hand, some residents resorted to installing private solar rooftop panels.

4.2.4.2. Water Network

The municipality also manages its own drinking water, parallel to the state network, that is said to operate 24/7[28]. Indeed, through their partnership with the Embassy of Japan, the municipality managed to replace metal pipes that supply the village drinking water with new pipes approved for such use. Moreover, in 2020, under the USAID-funded "A Holistic Water Solution for Underserved and Refugee Host Communities in Lebanon and Jordan" project, the municipality installed a reverse osmosis water treatment kiosk in the village to treat brackish groundwater sources using reverse osmosis technology. The kiosk, which was implemented by René Moawad Foundation (RMF), operates independently from the water network, and serves as a sustainable business model whereby purified water is sold to residents at below market rates. The intention for such project was to reduce residents' reliance on water bottles[29].

4.2.4.3. Wastewater Network

Although the village does not have a wastewater treatment network, the municipality recently reported having a "comprehensive strategic plan and technical study for the sewage treatment sector in Menjez"[30]. As part of the strategy, the municipality, with the support of a UNICEF, implemented a pilot project for a

[28] Interview with the mayor of the municipality, 08/09/2022
[29] Ibid.
[30] According to a Facebook post on the Municipality's page, December 09, 2021.

wastewater treatment plant. This intended to serve twenty-five households and was implemented in response to unchecked dumping of sewage into the nearby river[31]. The treated water can be utilized for irrigating crops and potentially pumped back into Menjez's lake nearby. The pilot plant was said to serve seventeen households as of August 2022[32].

4.2.4.4. Solid Waste Management

As for waste management, Municipal Solid Waste (MSW) is collected from the village and disposed of in a nearby landfill (Srar Landfill). The municipality used to subcontract a truck owner to transport the village's waste to the landfill, on a bi-weekly basis. As of 2019, union-owned waste trucks have been responsible for collecting the waste from member municipalities.

4.2.5. Notable Landmarks and Institutions in Menjez

Among the significant establishments and institutions within the village include a parish church dedicated to the prophet Daniel, a non-profit technical school (220 students), and the Saint Francis of Assisi school directed by Franciscan sisters (300 students). Moreover, the village houses a fire department, two agricultural cooperatives, as well as two Lebanese army posts. In terms of public health services, there is no hospital in or nearby the village, with the closest one 20 km away in Kobayat. Nevertheless, a local dispensary is available in the village.

[31] Informal conversation with municipality employee, 09/09/2022
[32] Ibid.

4.3. Sectors Highly Vulnerable to Climate Change

4.3.1. Agriculture Sector

In Menjez, climate threats are largely being experienced at the agricultural level[33]. This is particularly significant for the village, as it heavily relies on agriculture activities for its local economy. Menjez features an average 154 ha of agricultural lands, which mainly include vineyards and olive groves. However, crop production is at risk of agricultural diseases that have emerged in response to climatic changes. According to the mayor, "farmers are struggling with agricultural diseases which they are not used to witnessing before"[34]. Additionally, farmers are major consumers of water resources, which are increasingly becoming scarce. This is in spite of the fact that the village is supplied by a large water source, flowing from both Nahr Menjez and Nahr El Kabir, that is integral for drinking water and the irrigation of agricultural lands. Additionally, analysis of Nahr El Kabir and its major tributaries, has revealed high levels of pollution led by anthropogenic activities in the watershed[35]. Weather patterns also threaten water security and consequently crop production, which has driven some farmers in Menjez to abandon their land plots[36].

4.3.2. Forestry Sector

Out of the total surface area of Menjez, 39.2 hectares are occupied by a mixed forest of laurel trees (Laurus nobilis), oaks (Quercus sp.) and carob (Ceratonia silica). The majority of forests and other wooded land are found on municipal land as well as

[33] Interview with the mayor of the municipality, 08/09/2022
[34] Ibid.
[35] Hassan, S., Thomas, R.L., Shaban, A., Kawass, I. and Khawlie, M. (2005), Phosphorus and nitrogen in the waters of the El-Kabir River watershed in Syria and Lebanon. Lakes & Reservoirs: Research & Management, 10: 109-116. https://doi.org/10.1111/j.1440-1770.2005.00263.x
[36] UNDP (2017). The New World Project in Action. 10 Case Studies and their Contributions to the Sustainable Development Goals. Retrieved from: https://www.undp.org/sites/g/files/zskgke326/files/migration/eurasia/undp-rbec-NewWorld_ProjectinAction.pdf

some private parcels (FAO, 2016; p. 35). A unique surface area covered exclusively by laurel trees, also known by the community as the "Black Forest", is located north of Menjez, adjacent to the Syrian border. The forest had long remained inaccessible as a result of conflict with the Syrian governmental border guards – who would consider any presence in the area as a threat and/or a smuggling attempt (FAO, 2016; p. 35). Today, the forest is regarded as an Important Plant Area (IPA), and one of the most significant forests in Lebanon of a regionally endemic Oak species (Quercus ithaburensis Decne) (Talhouk et al., 2017; p. 13). Additionally, it is one of two IPAs that features a wetland that stretches along the southern banks of Nahr El Kabir and comprises 71 plant species (p. 13). The black forest is also characterized by several "Non-Timber Forest Products" (NTFPs) that can serve economic benefits, such as edible mushrooms (Agaricus sp. and Macrolepiota sp.), as well as aromatic and medicinal plants like thyme (Origanum syriacum), chicory (Cichorium intybus), chamomile (Matricaria chamomilla) and others[37]. Particularly significant is the dense presence Laurel trees, the fruits of which used to be collected for oil extraction whilst the leaves were used as cooking spice. Although this was a historical practice performed in the area of Menjez, production ceased in the mid-1970s, with the exception of gathering leaves for domestic use (FAO, 2016; p. 35).

Increased wildfires, as well as anthropogenic activities such as fuelwood collection and selective logging lead to forest degradation. Menjez experiences wildfires that destroy an annual average of 10 ha, largely impacting small crops (75%), followed by agroforestry (25%) and forests (5%) (SEAP, 2016; p. 39). A study by the Lebanon Reforestation Initiative (LRI) in 2019 revealed that 94% of the total area of

[37] UNESCO Website (2019). Ensemble des monuments historiques et des sites naturels du village de Menjez. Tentative Lists. Retrieved from: https://whc.unesco.org/en/tentativelists/6430/

interest was classified as “high vulnerability”, which included agricultural and reforested areas as well as houses and infrastructure located close to densely vegetated areas (LRI, 2019; p. 55). More notably, the dense oak and laurel forest was designated as “land of high vulnerability”, given its significant potential in benefiting the local community with wood and non-wood products (LRI, 2019; p. 55).

4.4. Sector Emissions

In Menjez, the energy sector represents the lion’s share (68%) of the overall CO2-eq emissions produced in the village, with residential buildings accounting for the majority (43%) of the overall energy emissions (Menjez SEAP, 2016). As of 2015, there are about 250 residential buildings in Menjez, all of which have resorted to diesel generators for electricity supply. The agriculture sector accounts for the second largest (18%) contributor of overall CO2-eq emissions – with the majority attributed to ranching activities and fertilizer use. Whilst ranching activities accounts for Methane (CH_4) emissions[38] generated by animals through digestion and the production of manure, fertilizer use results in expected Nitrous Oxide (N_2O) emissions of 228 kg/year.

[38] Methane is the primary contributor to the formation of ground-level ozone, a hazardous air pollutant and greenhouse gas (Source: https://www.unep.org/news-and-stories/story/methane-emissions-are-driving-climate-change-heres-how-reduce-them)

Finally, the transportation sector stands as the third most significant source of emissions in the area (14%).

4.5. Menjez as a Municipality

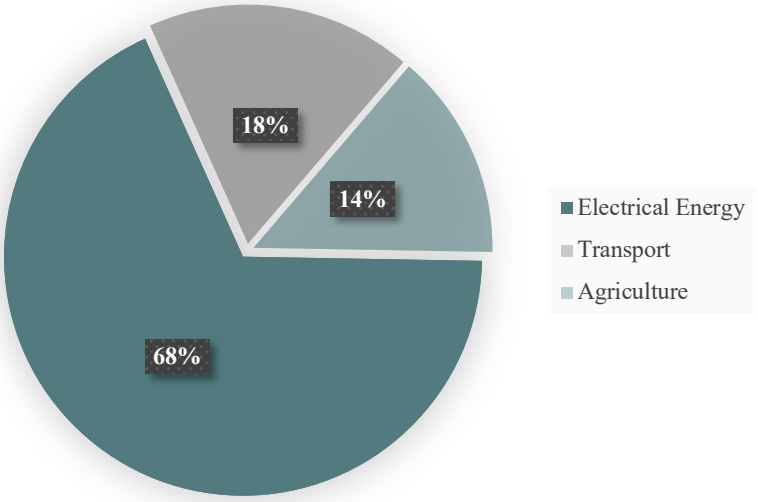


Figure 7: Menjez Overall CO2-eq Emissions. (Source: Menjez SEAP, 2016)

4.5.1. Municipal Governance

In 2012, under the impulse of prominent figures from the town, special elections were organized for Menjez and a list of nine members were elected to the municipal council. In 2016, whilst the Mayor and Vice President maintained their positions, new members of the municipal council were elected and have been in power since—as the elections of 2022 were postponed by the Ministry of Interior and Municipalities (MoIM). The elections featured the opposition of the village's major political parties: the Lebanese Forces (LF) and the Free Patriotic Movement (FPM). In 2016, the winning electoral campaign was backed by the FPM. However, the mayor maintains his position as having no political affiliations.

Prior to 2012, the village lacked municipal structure, with essential services across various sectors having been largely absent or outdated. At the time, the area was administered by an elected *Mukhtar* (village chief), in charge of administrative tasks, who used to also refer back to the *Qaimacam* on issues related to land ownership and registration. These duties have since then been transferred to the municipality, whilst the role of the *Mukhtar* remained limited to carrying out duties related to social and administrative affairs. Given its small size, the municipality is entitled to a modest workforce, which includes two full-time employees: 1 secretary and 1 police officer. The municipal building, which once housed a school, also doubles as a civil defense center. Moreover, the municipality does not have a designated environmental unit and lacks technical expertise needed to develop local studies and assessments, monitor and report on the progress of municipal projects, and address necessary maintenance and repairs. As a result, the municipality relies on outsourcing consultants/experts to carry out these tasks. Partnerships with local and international universities as well as (i)NGOs also play an important role in shaping local plans and strategies in the village, as they often fill the gap in technical expertise within the municipality. Some municipal tasks often warrant the need for additional workers who are contracted by the municipality (from the village) on temporary basis.

The municipality lacks substantial financial resources, with a limited tax base and high reluctance of residence to pay necessary taxes and fees. Securing necessary revenue for the municipality, especially under the weight of the ongoing economic crisis and devaluation of the local currency, remains a burden. As a result, the municipality largely relies on grants and donations from international and local funding

agencies, namely USAID, EU, Embassy of Norway, Embassy of Japan, IFAD and UNDP (c.f. Table 3).

Figure 8: Civil Defense Center/Municipal Building, Menjez. (Source: Katerji, August 2022)

Additionally, there are eight municipal committees in Menjez; each committee is led by one member of the municipal council and two residents from the village. All the committees are headed by the mayor. These cover issues related to energy, water, agriculture, investment, social affairs, forestry, women, and tourism. According to the mayor, municipal committees play an important role in drafting proposals for potential municipal projects[39].

Most of the projects that have been conceived within Menjez adopt a sustainable "business model"[40]. In other words, they are framed as "opportunities" with potential to generate revenue, create jobs for local residents whilst simultaneously reducing local carbon footprint and/or increasing climate resilience.

[39] Interview with the mayor of the municipality, 08/09/2022
[40] Ibid.

4.5.2. Municipal Vision and Local Policies

Over the years, Menjez built a reputation based on its low-carbon municipal policy, as well as its rich biodiversity and cultural heritage. The municipality, and specifically the mayor, has made recurrent appearances in international conferences, representing Menjez as a "model" in the field of climate change and sustainability. The mayor has also been vocal about the role of local authorities in addressing the climate crisis, emphasizing in a 2021 media interview the urgency of the crisis and the "need to join forces and innovate to combat climate change", adding that "it is very important to transform and give future generations a livable planet."[41]

With the support of the municipal council, the mayor has been laying the groundwork for this vision since assuming office in 2012. Indeed, their first election campaign drew inspiration from the Millennium Development Goals (MDG), a framework developed by the UN to address pressing global issues by 2015. At the time, the primary focus of the municipality was to ensure the provision of basic services for the community by installing and improving necessary infrastructures such as roads, electricity, and water networks. In doing so, the municipality sought to establish strong autonomy in key municipal aspects in the village.

In 2013, the municipality joined the Bureau Technique des Villes Libanaises (BTVL) network of Lebanese local authorities. This local network aims to support municipalities by strengthening the capacities of local officials in planning and implementing their development projects as well as enhancing their international affiliations.

[41] Mayor of Menjez's interview in an article for Climate Champions, as reported by Jarita Kassen (October 26, 2021). Link to the article: https://climatechampions.unfccc.int/menjez-the-tiny-lebanese-municipality-thats-racing-to-resilience/

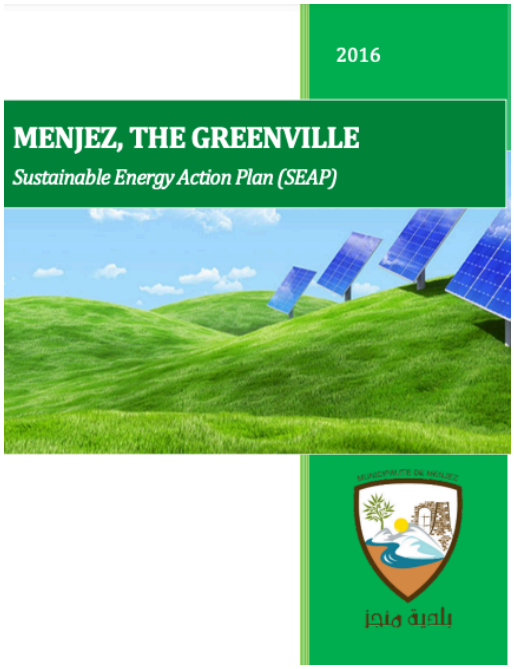
In 2014, through his connections with the European Union's Strategic Hubs for the Analysis and Acceleration of the Mediterranean Solar Sector (SHAAMS) project, the mayor spearheaded the municipality's membership with the Covenant of Mayors (CoM) for the Mediterranean – an EU-funded network that supports Mediterranean local governments in tackling climate change. As part of their membership with the CoM, municipalities are given a one-year period to develop a Sustainable Energy Action Plan (SEAP) for their localities, or else they risk getting their membership revoked. The SEAP provides a comprehensive assessment of the current energy situation in the village (i.e., a Baseline Emission Inventory (BEI)) by identifying existing local energy consumption patterns, sources of emissions as well as potential for establishing renewable energy[42]. It also clearly identifies goals and targets as well as mitigation measures that are planned with time frames, allocated responsibilities, and estimated impacts on emission reduction. As a result of its commitment with the CoM, the municipality of Menjez set a climate target to reduce its local carbon footprint by 28% by the year 2020. The SEAP document, which is around 100 pages is publicly available, and includes tables and figures on energy consumption and GHG emission across priority sectors (buildings, equipment/facilities and industries, transportation, and agriculture)[43]. As such, although the document serves as a comprehensive guide for energy planning and management in the village, it lacks spatial mapping or analysis. Instead, its main output is a detailed list of actionable measures that can be taken in order to reduce energy consumption and emissions.

[42] The later adopted Sustainable Energy Access and Climate Action Plan (SEACAP) further includes a Risk and Vulnerability Assessment that considers adaptation action.
[43] Link to the document: https://www.climamed.eu/wp-content/uploads/files/Lebanon_Menjez_SEAP.pdf

According to the mayor, what is particularly significant about this membership is the recognition (and reputation) the municipality gains, as it positions itself among leader cities in the global movement to limit overall CO_2 emissions[44]. SHAAMS funded the development of the SEAP and commissioned an expert from OTB Consult to draft it. The Chamber of Commerce, Industry and Agriculture of Beirut and Mount Lebanon (CCIABML) also served as implementing partner.

In 2016, the mayor and municipal council re-evaluated their electoral programme in accordance with the Sustainable Development Goals (SDG). They explored opportunities and projects that foster sustainable economic development through proper management of the village's natural resources and cultural heritage. That year, along with the mayor's re-election, Menjez became part of the Akkar El Shamali Union of Municipalities, which is headed by the Mayor of Qoubaiyat[45]. Shortly after winning the elections, the municipality submitted their SEAP, following a year of expert consultations with CES-MED and the CoM. The SEAP marked a big feat for the municipality in terms of its low carbon ambitions and remains to this day the main municipal plan shaping their approach to local projects.

[44] Interview with the mayor of the municipality, 08/09/2022
[45] The union includes the municipalities of: Ouaynat, Machta Hasan, Al Nahriyeh w Bestan Al Hersh, Aandqet, Chadra, Qoubaiyat, Menjez, Machta Hammoud, Rmah, Aaidmoun, Chikhlar,



E-03. Solar PV Power Plant

Sectors: Electricity

Progress Status	
Impact	
Investment	$200,000
MWh Saving	60.0
tCO_2-eq Saving	64.3
Contribution	4.29%
EF (kg/kWh)	1.07
Year	2018

Description

Solar PV is a viable solution to generate electricity. A 50kWp system can save up to 60 MWh per year. The solar PV system would have the best environmental impact if used to reduce energy demand from the backup generation. The solar PV system will be able to provide power and store it in backup batteries for at least 5 years, after which it is expected to connect to the grid and benefit from it as a storage medium.

Baseline

Backup generation is estimated at 348 MWh, emitting a total of 299 tCO_2.

Results & Impact

A 50kWp system would be producing no less than 60 MWh per year, providing electricity in times of when it is highly needed. With no emissions in the process, the PV plant is expected to be reducing CO_2 by more than 64,324 kg per year.

Budget & Financing

The overall budget of the PV plant is 200,000 USD. The funding shall be secured through funds, grants, and other environmental programs. USAID is already approached and a proposal was submitted in 2015.

Timeline

The project is planned to be implemented in 2017 and fully operational by 2018. The major step is to secure funding.

Indicators

kWh produced

Involved Parties

Internal: Municipality of Menjez;

External: External consultant; TBD

2.3 Baseline Emission Inventory

A. FINAL ENERGY CONSUMPTION (MWh)

			FOSSIL FUELS								RENEWABLE ENERGIES					
CATEGORY	ELECTRICITY	HEAT/COLD	Natur. gas	Liq. gas	Heat. oil	Diesel	Gasoline	Lignite	Coal	Other	Plant oil	Biofuel	Biomass	Solar therm.	Geother.	TOTAL
BUILDINGS, EQUIPMENT/FACILITIES AND INDUSTRIES																
Municipal buildings	72.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	72.7
Commercial buildings	298.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	298.3
Residential buildings	499.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	499.6
Public Lighting	88.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	88.8
Industries	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	959.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	959.5
TRANSPORT																
Municipal fleet	0.0	0.0	0.0	0.0	0.0	89.6	3.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	93.5
Private commercial	0.0	0.0	0.0	0.0	0.0	0.0	658.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	658.8
Off-road	0.0	0.0	0.0	0.0	0.0	53.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.3
Subtotal	0.0	0.0	0.0	0.0	0.0	142.8	662.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	805.6
TOTAL	375	0	0	0	0	556	692	0	0	0	0	0	0	0	0	2,016

Figure 9: Pages from the Menjez SEAP document showing the Baseline Emission Inventory and details of one of the proposed measures. Source: Menjez SEAP, 2016

Since then, the municipality developed a number of strategies and action plans that address improvements needed for proper delivery of basic services, promotion of rural tourism and job opportunities, climate resilience and reducing overall carbon footprint. Among such plans is the Fire Wise Action Plan, which was the result of a collaboration between the municipality and a local NGO, Lebanon Reforestation Initiative (LRI) in 2017. The municipality had responded to a call for proposal put out

by LRI at the time, in large effort to protect its existing biodiversity. The action plan outlines fire prevention methods as well as aims to strengthen preparedness to support in the early intervention of firefighting.

Later in 2018, a Black Forest Management Plan was developed for the existing forest cover, through a partnership between the municipality and the University of Balamand (UoB), to ensure the protection of the forest's unique biodiversity as well as to promote sustainable harvesting of laurel leaves and fruits. Indeed, the municipality, and particularly the mayor, had recognized the unique landscape of the Black Forest, and approached the UoB in 2014 in efforts to learn how the municipality can both protect it and leverage its opportunities. As the project lead explained "[the municipality] wanted to see how they can benefit from their resources and how they can look at different opportunities they have in their natural resources sector."[46]

These plans, although independent from the SEAP, attest to the municipality's commitment in advocating for the protection and sustainable management of its natural resources. Consequently, although not explicitly framed under "climate action", these plans advance the municipality's ambition to strengthen climate resilience and reduce its overall emissions by implementing fire prevention measures as well maintaining and expanding its forested areas to act as a carbon sink.

Nevertheless, it is worth mentioning that emissions in the context of a small village such as Menjez are negligeable when compared to large towns and cities, and even more in contrast with the national scale. However, by adopting the SEAP, the municipality managed to frame climate change as a both economically viable and

[46] Interview with ARDAC project lead at UoB, 09/11/2023

environmentally sound in a way to appeal to the local community – who otherwise are less concerned with their carbon footprint than they are in securing their basic needs.

4.6. Overview of Local Projects

Between 2014 and 2021, the municipality managed to secure funds and grants worth over one million dollars to implement key projects that address their local emissions and adaptive capacity of key sectors in the village. Nevertheless, a number of projects that were implemented in Menjez were not initially envisioned during the development of the SEAP and were conceived separately a few years later. These were still aligned with the aim of strengthening local climate resilience. This next section will provide an overview of these different projects.

Table 3: List of some of the projects implemented in Menjez. Projects highlighted in grey are those mentioned as part of the SEAP document. (Sources: Menjez SEAP, Menjez Municipality).

No	Projects	Budget	Implementing Agency	Funding Agency	Date	Sector	Estimated GHG Emission Reduction (tCO2-eq)	(Estimated)GHG Emission Reduction (%)
1	Back-up Generator Load Shift	$7,000[47]	Municipality	Municipality	2015	Energy	20.8	1.39%
2	Solar PV Power Plant	$200,000[48]	RMF	USAID	2018	Energy	64.32	4.29%
3	Solar-Powered Public Street Lighting	$74,000[49]	Local contractor	UNDP/CEDRO	2014	Energy	11.41	0.76%

[47] Menjez SEAP, 2016
[48] Ibid.
[49] Ibid.

4	Construction of two new roads (Al Harf and Al Rashadieh)	$260,000 [50]	CDR (ADELNORD project)	European Union	2014	Urban Planning	14.2	0.95%
5	Forestation (Forest & Fruit Trees) (Phase 1&2)	$361,551 [51]	Balamand University	European Commission	2014-2018	Agroforestry	153.4	-
6	Rainwater Harvesting	$117,034 (NW: $100,000 Co-financing: $17,034)[52]	G Association	UNDP and Coca Cola Foundation	2015	Agriculture Water Management	0.13	0.01%
7	Menjez Hill Lake (under Green Plan)	$410,000	Ministry of Agriculture	International Fund for Agricultural Development (IFAD)	2015-2020	Agriculture Water Management	-	-
8	Installation of Briquette factory	$130,720 (Grant: $118,220 and Local Contribution: $12,500)[53]	MADA	Embassy of Norway in Beirut	2018-2021	Agriculture Waste Management	-	-

4.6.1. Climate Mitigation Actions

4.6.1.2. Renewable Energy/Energy Efficiency

4.6.1.2.1. Installation of Solar PV Power Plant

Prior to 2013, Menjez had been suffering from a lack of alternative sources of electricity – given the already existing EDL cuts which were said to have reached up to 20 hours per day on some days. At the time, in efforts to compensate for the shortage, residents had the option of connecting to a privately owned generator. However, its low efficiency and increasing tariff (exceeding $100/ month) made it inaccessible for the majority of the residents. Moreover, the fifteen-year-old generator was causing

[50] Ibid.
[51] https://www.balamand.edu.lb/IOE/About/Documents/Projects.pdf
[52]https://www.undp.org/sites/g/files/zskgke326/files/migration/eurasia/NewWorld_FinalBrochure_2017.pdf
[53] https://mada.org.lb/project/protection-of-the-laurel-black-forest-in-menjez-valorization-of-green-waste-and-awareness-campaigns/

increasing air and noise pollution. In 2015, the municipality purchased its own diesel generators, and started selling power at a reduced fee. As a result, a growing number of residents managed to secure electricity access during cutoff periods. Yet, the village still suffered from a 52% shortage of electricity supply, with power cuts reaching up to 12 hours a day. Later that year, and prior to having their SEAP approved, the municipality submitted a request for proposal for a grant to install a Solar PV Power Plant under the USAID-funded project "Building Alliance for Local Advancement, Development, and Investment" (BALADI). The study for the proposal was drafted with the support of the same energy specialist that was developing the municipality's SEAP at the time. The Solar PV Power Plant was designed according as a hybrid system that combines solar energy with diesel generators. This meant that the municipality would be able to ensure electricity supply across the village throughout the year. The system was not installed until 2018 by René Mouawad Foundation (RMF), who acted as implementing partner. The PV-Diesel hybrid system, with a total capacity of 100 kWp, was set to run during EDL cut-off time in sync with the existing diesel generators ensuring that residents get access to electricity 24/7. According to the mayor, profits from the plant are not redistributed to residents; instead, they are reinvested in other developmental projects[54]. The project aimed at benefitting all the residents of the village and was set to avoid more than 80 tons of CO2 emissions, saving more than $20,000 on the overall community per year. This system is said to be run by the municipality's energy committee which is led by a member of the council and headed by the mayor himself.

[54] Interview with the mayor of the municipality, 08/08/2022

Figure 10: PV-Diesel Hybrid System, Menjez. (Source: Katerji, August 2022)

4.6.1.2.2. Installation of Solar-Powered Public Street Lighting

Another initiative aimed at improving energy efficiency in Menjez was the installation of solar power public street lighting. In 2014, the CEDRO project provided eight solar LED street lighting fixtures, as well as new poles to guarantee that the streets are well-lit throughout the night. The Ministry of Energy and Water (MoEW) also contributed to the installation of an additional twenty LED street lighting lamps at different locations within the inner roads of the village. This project intended to reduce the annual electricity bill on the municipality.

4.6.1.3. Construction of Two New Roads

In 2014, the municipality constructed two new roads (Al Harf and Al Rashadieh), in partnership with CDR and with financial support from the EU. These intended to shorten travel distances, which was particularly significant to allow better access to the village as well as facilitate agricultural activities. Moreover, this project was mentioned a sustainability measure under the SEAP as a way to reduce annual GHG emissions. Indeed, by reducing travel distance, which is reported to influence 50

vehicles per day, emissions from vehicle transportation are also reduced (Menjez SEAP, 2016).

4.6.1.4. Reforestation/Afforestation Initiatives

A number of reforestation and afforestation initiatives have been implemented across the village. Among the most significant is one that started in 2014, when the municipality partnered up with the Institute of the Environment at the University of Balamand (UoB) on the Assessing Reforestation and Forest Development Activities (ARDAC) project. In line with the National Afforestation/Reforestation Program (NARP)[55] developed by the Ministry of Agriculture, the project aimed at addressing deforestation and promoting local development through implementing advanced reforestation and sustainable forest management activities. Menjez was selected as a pilot study based on the existence of the Black Forest. The three main outcomes of the project were: (1) the expansion of forest cover in the village by planting 10 ha of land with native productive tree species (Laurel, Carob and Pine); (2) building of local capacity in managing existing forest resources through training on processing laurel crude and essential oils; (3) development of the Black Forest Management Plan. The project, which was implemented in two phases between 2014 and 2018 and financed by the EU, adopted a participatory approach that involved the local community, specifically farmers and agriculture cooperatives. According to the project lead, "[ARDAC] was a very nice project that built on what [Menjez has] and invested in new economic opportunities whilst [simultaneously] sustaining their existing resources"[56]. Moreover, the project contributed to an increase in carbon sequestration, i.e., the ability

[55] Also known as the "40 million trees program"
[56] Interview with ARDAC project lead at UoB, 09/11/2023

to absorb and retain carbon from the atmosphere. Indeed, there was an estimated increase of 12.7% in GHG emission removals between 2014 and 2015 (Mitri and Karam, 2016).

Figure 11: ARDAC project Afforestation Site (Phase 1), Menjez. (Source: Katerji, August 2022)

4.6.2. Strengthening Climate Resilience

4.6.2.1. Upgrading Irrigation Networks

Across the Akkar region, farmers are facing mounting challenges due to reduced rainfall, coupled with the rising costs of diesel and electricity required to pump water to the crops[57]. As a result, some farmers often refrain from cultivating products with high water demands. In this context, the adoption of drip irrigation systems as an alternative to traditional flood irrigation – due to their efficiency and reduced water consumption – has become more prominent in the region. This method also requires lower water pressure, which reduces energy costs associated with pumping water.

[57] Syed, Z. July 08, 2023. Akkar farmers see climate change affect their crops. L'Orient Today. Retrieved from: https://today.lorientlejour.com/article/1342848/akkar-farmers-see-climate-change-affect-their-crops.html

This is no exception in Menjez where, in 2015, the municipality upgraded part of the irrigation systems of the agricultural fields from flood irrigation to drip irrigation. The project was implemented by G Association and funded by UNDP and the Coca Cola Foundation under the Water Wise Village project. The system covers 6 ha of land (2,000 trees) and serves 40 farmers. Two pumps, along with two 2,000-litre capacity pressure tanks, several electrical tablets and filters were also installed. The pumps are operated in coordination between farmers and the municipality to ensure proper access to irrigation water and avoid any leakages.

4.6.2.2. Installation of Menjez Hill Lake

Menjez was also selected as part of the "Climate Smart Agriculture: Enhancing Adaptive Capacity of the Rural Communities in Lebanon (AgriCAL)" project – which includes supporting communities in increasing their adaptive capacities by improving water harvesting and irrigation technologies. IFAD funded the project, and the Ministry of Agriculture (MoA) served as implementing partner for the project, as part of the Green Plan (a government body operating under the MoA). The hill lake was installed in 2020 and aimed to collect 46,000 m^3 of rainwater to irrigate the fields, reportedly benefitting over 85 farmers in the village[58]. An irrigation network was later installed for the lake hill.

[58] According to a Facebook post on the Municipality's page on June 08, 2020.

Figure 12: Menjez Hill Lake, Menjez. (Source: Katerji, August 2022)

4.6.3. Circular Economy

4.6.3.1. Installation of Briquette Factory

According to the municipality of Menjez, an average 3,000 m^2 of Menjez's Laurel Forest is illegally logged annually for heating purposes. As a result of the economic and financial collapse, fuel prices across the country have skyrocketed which has forced residents to sell timber outside Lebanon or cut wood for private use (Chiavaroli, 2023). Consequently, smaller branches are often discarded on the forest floor, increasing the risk of wildfires. In 2018, the municipality partnered up with the local NGO MADA to develop a proposal for a Briquette factory which transforms agricultural waste, and specifically forest waste, into compressed blocks of fuel (or briquettes). The factory serves both as a supply for affordable and high-quality logs, largely used for heating, as well as means to address increasing risks of wildfires in the area. In order to finance the project, the municipality approached the Norwegian Embassy which, at the time were championing projects centered around climate change

and/or sustainability. As such, the factory was installed and became operational in September 2021. The municipality began selling briquettes by November of that year. Through the project, the municipality sought to benefit around 1,000 inhabitants in Menjez, as well as others in neighboring villages[59]. According to the mayor, other than its environmental impact, the project is a significant source of income to the municipality, as it generates around $40,000 per year (briquettes are sold for $100/ton) and provides 4-5 jobs[60]. However, due to increased cost associated with collecting and transporting material from the forest to the factory (labor rent and diesel), as well as the cost of operating the units, the price per ton could reach up to $250. As a result, demand within the village is low. “Residents need at least 4 tons to get through the winter season, and at this rate it would cost them $1,000 […] which is not affordable for most people who would [opt to] collect logs from the land to use for heating”, explained the municipality employee[61].

4.6.3.1. Production of Essential Oils and Crude Oil

The ARDAC project also reintroduced the production of laurel oil, a common historical practice in the area that was ceased in the mid-1970s, by utilizing more advanced methods. Indeed, the fruits of Laurel trees used to be collected for oil extraction, and the leaves were used as cooking spice. As such, with the financial support of USAID, the municipality installed two units to extract essential oil from bay

[59] At the time, the price per ton for residents of Menjez was 2 million Lebanese pounds. As for those outside of the village, the price per ton was set at 2.75 million Lebanese pounds. The cost covers transportation of firewood to the factory, the cost of grinding the wood finely in two stages, setting the moisture level, and the process of molding and pressing by manual labor, as well as electricity and equipment maintenance.
[60] Interview with the mayor of the municipality, 08/09/2022
[61] Informal conversation with municipality employee, 09/09/2022

leaves and the fruit of Laurels. Prospects for such production was said to increase municipal revenue and boost ecotourism.

To conclude this chapter, it is evident that the municipality of Menjez – spearheaded by a pro-active mayor who manages to leverage his connections with international and local multi-scalar networks to secure funding – has demonstrated governance capacity in engaging with sustainability and climate issues. The municipality's membership with the CoM was a fundamental step in this regard. Indeed, the SEAP serves as the main municipal tool used to access funds for sustainable and climate-related projects. In other words, it was a key the municipality, and specifically the mayor, used to unlock opportunities that aim at putting Menjez on track towards becoming a low-carbon resilient village. The key projects and initiatives that have been implemented by the municipality within the village have largely covered three types of climate responses: energy efficiency/renewable energy, water management and sustainable resource management. The SEAP advanced considerable efforts in conceiving some of these projects, calculating their potential emission reduction impacts, proposing the required budget, and financing, as well as a timeline for implementation. As such, it provided the municipality with a framework for structuring municipal climate work. These projects are also largely advocated by the municipality for their capacity to generate combined synergies – achieving common goals across mitigation, adaptation, and socio-economic development.

Yet, there are a number of administrative, institutional, and political constraints that hinder the municipality's effort in implementing and governing climate actions. I will further verify these findings in the next chapter by adopting the framework of analysis, which I developed in Chapter 2, to the case study of Menjez.

CHAPTER 5

EVALUATING MENJEZ MUNICIPALITY

This chapter will evaluate the capacity of the municipality of Menjez in adopting climate policies and actions at the local level. It will do so based on the framework I presented in chapter 2, which identifies four sets of factors from the literature as likely to determine the engagement of municipalities in climate governance (Bulkeley et al., 2009; Hoppe, Van der Vegt and Stegmaier, 2016). These include:

(i) the **motivation or drive of the municipality and its citizens** to engage in climate policy;

(ii) the **national climate governance policy** that can enable or constrain municipal-led climate action;

(iii) the **municipal governance ability** to operate as an effective climate policymaker;

(iv) **membership in transnational municipal networks (TMNs)** which can enable local climate actions.

Finally, the chapter ends with an evaluation table where each indicator was evaluated, based on a three-point scale where: “Strong” represents an indicator demonstrating substantial impact on local climate governance; “Moderate” represents an indicator demonstrating mild impact on local climate governance; and “Weak” represents an indicator demonstrating minor impact on local climate governance.

5.1. Motivation: Municipal Entrepreneurship, Local Networks, Climate Vulnerability

Among the identified factors that drive local climate action are: (1.1) Municipal Entrepreneurship; (1.2) Type of perceived anticipated benefits; (1.3) Existing local networks: public perception of climate crisis; (1.4) Extent of local climate vulnerability**.**

5.1.1. Municipal Entrepreneurship: Mayor and/or Municipal Councilor's perceptions of Climate Crisis and Policy Positions

As per the literature, the engagement of political leadership and their prioritization of climate issues are crucial factors influencing local climate governance (Bulkeley et al., 2009; Liu, Wang, and Thomas, 2022). In this context, the mayor plays a critical role, having the capacity to convey the urgency of the issue and push it up on the local agenda. Moreover, some authors highlight how the role of the mayor becomes instrumental when he/she is well educated and demonstrates an understanding of international issues (Westman et al., 2019) as well as experience in the field of sustainability (Liu, Wang, and Thomas, 2022).

As one of my interviewees mentioned: "The dedication of the mayor, their knowledge, their ability to write proposals and contact donors" all play a role in influencing local development – "[whether] they speak the language, their eloquence and know how to translate the idea in English in a form that can get them some funding – which is not something that all heads of municipalities have. We take this for granted but most of them don't know which doors to knock on, or how to translate their ideas, how to do a budget etc."

Examining the case study of Menjez reveals the fundamental role the mayor plays in shaping local strategies, plans and projects. More importantly, it demonstrates

how, despite not being specialized in the field of sustainability and/or climate change, the mayor managed to establish ambitious climate targets for his locality. A physiotherapist in practice, the mayor received his education in France in the early 90s and currently runs his own clinic in Beirut. Yet, his personal interest in agroforestry attests to his motivation in strengthening climate resilience in his village. During his time abroad, the mayor got introduced to organic farming, which prompted him to establish a small enterprise in 1999 in his hometown Menjez. Inheriting his ancestor's land, which had been abandoned for over fifty years, he began cultivating fruitful trees that require less maintenance and have high productivity and nutritional value. What initially started with the planting of 2,000 endemic carob trees, grew into a small enterprise (Agro Cedrus) with 200,000 m2 of land dedicated to the cultivation of these trees. The mayor has increasingly recognized the significant socio-economic and environmental factors associated with carob trees. In fact, among the carob's noteworthy characteristics is its drought resistance, adaptability to arid and semi-arid areas and minimal agronomic input. This found interest was further developed in 2020 when the enterprise installed a certified organic facility dedicated to producing organic carob molasses from their carobs as well as those of 146 farmers across Akkar. According to the mayor, they plan on producing and exporting new carob-based products before 2025[62]. The small enterprise focuses on exporting organic fresh fruits and vegetables to the GCC and Europe either through local exporters or directly with retail chains abroad[63]. As such, Agro Cedrus grew to become one of the largest organic

[62] Along with carob trees, the enterprise also cultivates other fruitful trees such as olives, pomegranates, almonds, figs, and pine.
[63] https://qoot.org/member/agro-cedrus/

farms in Akkar, positioning the mayor as a key player in agriculture production in the region.

During my interview with the mayor, he expressed that the initial motivation that drove him to initiate a municipality stem from the level of neglect in his hometown and his eagerness to give back to the local community. Despite the fact that he comes from a small, non- "influential" family in the area, he managed to secure his position in the council twice. He demonstrated his eagerness to learn more about the responsibilities and duty of local governments, as he joined the BTVL network early on in the municipality's inception. This network gave the municipality access to potential local and international partnerships. His partnership and commitment with the network matured to a level where he was even asked to run trainings within the network. Several of my expert interviewees who have worked closely with the mayor also attest to his eagerness to "knock on several doors", often referring to him as a *forward-thinker* and *ambitious*. His willingness to research funding/grant opportunities, calls for project proposals, as well as reach out to local and international universities for potential twinning programmes has garnered him an array of partnerships and landed the municipality several prospective projects. "I have sent more than 5,000 emails to municipalities all over France, Germany etc. to build partnerships", adds the mayor[64]. He also notes that he usually prefers partnering up with universities on projects, as it allows the municipality to "borrow" resources that would support in developing project proposals, applying for grants and implementing projects.

That said, the mayor leveraged his local and international networks and partnerships with universities, organizations, and funding agencies, to translate his

[64] Interview with the mayor of the municipality, 08/09/2022

vision for the municipality. Signing with the CoM in 2015 was a big feat for the municipality in its commitment to addressing its local carbon emissions and setting measures to reduce its overall carbon footprint. At the time, CES-MED had already selected three municipalities to support in developing their SEAPs and was unable to take on additional ones. This prompted the mayor to look for other funding opportunities. His dedication to the cause earned him a good reputation within CES-MED and facilitated his partnership with SHAAMS project that ended up financing the SEAP for Menjez. Even more pivotal however was how the mayor's close partnership with CES-MED (and now Clima Med) earned him a position as a member of the Global CoM (GCoM) Board of Mayors and Leaders. Moreover, since 2019, he has been a recurrent panelist in sessions and side events at the Conference of the Parties (COP) to the UNFCCC. As such, the mayor positioned himself in global climate politics, stating his eagerness to "elevat[e] local climate action here in the Middle East and serv[e] as a model for cities around the world at this critical moment in history."[65]

Yet, the mayor's venture into public service carries risks of conflict of interest, given his significant role in the agriculture sector within the area. Indeed, he has recently received backlash due to his position as mayor and CEO of a private company. These were addressed by the municipality in a post on their Facebook page, clarifying that the "[company] owned by the mayor's family, [has] no contracts [with] the municipality, and this will never happen. On the contrary, Agro Cedrus Company provides services to the Municipality of Menjez."

With that said, municipal entrepreneurship plays a major role in steering the local climate agenda in Menjez, with a pro-active mayor that has garnered local and

[65] https://www.globalcovenantofmayors.org/press/mayors-of-yokohama-despenaderos-and-menjez-join-board-of-the-global-covenant-of-mayors-for-climate-and-energy/

international support to translate climate actions in his locality. As such, there is enough evidence to suggest that the municipality is represented by "Strong" mayoral entrepreneurship, that largely shapes local climate action.

5.1.2. Type of Perceived Anticipated Benefits (Economic, Political, other)

Municipalities are also more likely invest in climate-related policies and actions as a result of anticipated benefits, either economic (cost reduction or employment creation, access to external funding and investment, (Krause 2013) and/or political (involvement of influential politicians or pressure from local actors).

In Menjez, the mayor has an aptitude for entrepreneurship and adopts a "business model" approach to governing local actions, which were largely shaped by his time spent in France. During my interview with him, he insisted on how most of the projects implemented in Menjez are designed to generate income for the municipality and create job opportunities, rather than impose burden on the residents[66]. As the president of BTVL adds: "[The mayor] is a very smart guy. He was also one of the few [mayors] in Lebanon that were able to do projects that generate revenue for the municipality."[67] Even when it comes to projects that are considered climate-related, their appeal is often tied to their potential to generate revenue for the municipality. Chief among these projects was the installation of a hybrid solar power plant, which was meant to reduce electricity costs for residents while addressing air pollution concerns and ultimately contributing to reducing local carbon emissions. The briquette factory was also another local initiative that was conceived as a measure to provide fuel wood for residents who would otherwise resort to illegal logging practices (which

[66] Interview with the Mayor of Menjez, 08/09/2022
[67] Interview with president of BTVL, 13/11/2023

increase the risks of wildfires), as well as serve as a source of income for the municipality. As such, these local projects have been framed as a "win-win" situation (Scanu and Cloutier, 2019; p. 18) generating "co-benefits" beyond environmental ones (Krause, 2013).

As such, there is enough evidence to suggest that the type of perceived benefits of climate responses plays an important role in shaping local climate governance.

5.1.3. Local Networks: Public Perception of Climate Crisis

The motivation to act on the local climate policy level can also be triggered by an active civil society. Indeed, the presence and involvement of local environmental groups can serve as an indicator for "civic capacity" in facilitating local climate action (Hoppe, Van der Vegt and Stegmaier, 2016; p. 5).

In Menjez, the mayor highlighted that there exists a general public perception surrounding climate change, particularly among workers involved in the agriculture sector: "because [Menjez is] a rural village, and most of the residents depend on the agriculture sector for a living, they are struggling a lot. And everyone is aware that this is due to Climate Change."[68] Yet, there is a noticeable absence of drive or motivation within the local community regarding climate-related issues. This could partially be due to the small presence of youth in the overall population (about 18.5% as of 2015), as opposed to the majority representing retired army soldiers. Moreover, the mayor seems to be the only major climate champion within the village and is often criticized by more influential families for his approach in governing.

[68] Interview with mayor of the municipality, 08/09/2022

According to the mayor, villagers often lack time and resources to organize or engage in collective action. This is especially true in the context of the ongoing economic and financial collapse; their primary concerns are centered around securing their basic needs and cutting costs on electricity and water bills[69]. So, what stands out for them when it comes to local projects/initiatives is their influence on cost-reduction rather than their capacity to address the impacts of climate change[70]. As such, there is no local networks dedicated to environmental/climate issues within the village to support or drive the climate agenda with the village. Nonetheless, despite this lack of bottom-up pressure by the local community to push for climate actions, municipal leadership maintained its stance on approaching the climate issue as a "win-win" situation.

5.1.4. Extent of Local Climate Vulnerability

Another factor that has been revealed in the literature to influence municipal intervention in climate policies and actions is the extent to which the city/town is vulnerable to climate impacts (Zahran et al., 2008; Bulkeley, 2010).

As mentioned in the previous chapter, Akkar experiences low-to-moderate resilience to Climate Change. Much like other villages in the region, Menjez heavily relies on agriculture activities as main source of income, which is increasingly subject to impacts of climate change, with unpredictable weather patterns threatening water security and consequently crop production. Moreover, Menjez experiences annual wildfires that destroy an average of 10 ha annually – with the dense oak and laurel

[69] Interview with mayor of the municipality, 08/09/2022
[70] This was evidenced in the community need assessments conducted as part of the development of the SEAP, which revealed the limited attention given to climate issues.

forest designated as “land of high vulnerability” (LRI, 2019; p. 55). These occurrences have prompted the municipality to increase local adaptive capacity, through the installation of the briquette factory, as a well as the hill lake for water harvesting.

That said, Menjez’s engagement in local climate action can strongly be attributed to their exposure to increased risks associated with climate change.

5.2. National Climate Governance Policy

Research has shown that municipalities depend on the support provided by the institutional and financial structures of higher levels of government (provincial, regional, and central government) who play a key role in incentivizing and facilitating local climate actions, through inter-governmental schemes that enable capacity building (Bulkeley et al., 2009; Hoppe, Van der Vegt and Stegmaier, 2016). As such, this section will elaborate on the following indicators: (2.1) Alignment of municipality with national climate framework; (2.2) Availability and type of inter-governmental support schemes.

5.2.1. Alignment of Municipality with National Climate Framework

Some authors have suggested that a supportive institutional and policy environment at the national and international level can facilitate local mitigation and adaptation (Schipper and Pelling, 2006). As demonstrated in Chapter 3, municipalities in Lebanon play a limited role in advancing national climate targets. This is also constrained by how mitigation and adaptation actions are poorly conceived at the central level. Indeed, sectoral strategies and plans are concentrated at the ministerial

level, leaving local and regional governments with little to no authority over decision-making processes related to these sectors (Harb and Atallah, 2015; p. 197).

Moreover, the lack of serious national effort to update existing laws and regulations that could facilitate local climate action fails to equip municipalities with tools that would contribute towards national climate targets, particularly in the context of GHG emission reductions. For instance, municipalities are bound by legislation which restricts their ability to provide financial and regulatory incentives to energy efficient buildings[71]. Similarly, vehicle efficiency standards are determined at the central level. Consequently, in the context of highly centralized decision-making, municipalities are often not empowered to adopt climate change mitigation strategies at the local level and depend on the approval of essential legislation taken at higher levels of government.

Additionally, the prospects for decentralized renewable energy have largely remained theoretical until December 2023, when the parliament passed the Decentralized Renewable Energy (DRE) law. Despite this long-awaited piece of legislation, it is important to keep in mind that there is still a long way before this law can be properly implemented. The DRE law would allow third party power purchase agreements (PPAs) between Renewable Energy generator and consumers who purchase power directly from them. Yet, Law 462/2002, which essentially mandates that an independent electricity regulatory authority (ERA) will be in charge of guiding the country's energy policies, has been stuck in bureaucratic red tape for over two decades[72]. Moreover, there have been attempts by the Ministry of Energy and Water

[71] The current building code only allows them the option to give one limited incentive for buildings for the usage of double wall (https://www.buildings-mena.com/files/BUILD_MECountryReport-Lebanon.pdf)
[72] Interview with energy and legal expert, 17/09/2021

(MoEW) to increase its political dominance over the sector by sidelining the role of the ERA, which would grant the minister exclusive authority to approve or reject any decentralization proposals[73]. Therefore, without the full implementation of Law 462/2002, the DRE law falls short in its goal to incentivize private sector DRE investment[74].

Yet, municipalities' role in advancing national climate targets should not be discounted, especially in the context of adaptation targets. Rural municipalities could play an important role in maintaining and increasing forest cover within their territory as well as advancing effective practices in the agriculture sector. The latter is evidenced by the fact that the municipalities are often crucial in organizing farmers into cooperatives. In Menjez for instance, the mayor spearheaded the municipality's involvement with Fair Trade Lebanon (FTL), making Menjez the first self-proclaimed Fair-Trade Village in Lebanon. As a result, both cooperatives in Menjez became FLOCERT certified, which motivated the uptake of organic and sustainable agriculture practices among local farmers. Moreover, municipalities can be very "powerful" in advancing national climate targets in the forestry sector through reducing forest fires (i.e., encouraging and implementing fire prevention measures), and increasing forest cover.

Nevertheless, it is worth noting that some of the projects implemented in Menjez have been supported by agencies/ministries at higher levels of government. Notably, the installation of the Hill Lake in Menjez, under the AgriCAL project, saw the Ministry of Agriculture act as the implementing agency. Yet, the implementation of

[73] Choucair Vizoso and El Murr (2022). Privatizing the Sun: The Dark Side of Lebanon's "Solar Revolution". The Public Source. Retrieved from: https://thepublicsource.org/lebanon-solar-privatization
[74] Interview with expert at the Ministry of Environment, 31/10/2023

the AgriCal project was reported to have experienced setbacks as a result of cabinet reshuffles in the MoA and Ministry of Finance (MoF) which delayed the approvals of document and transactions[75]. Moreover, delay in the preparation of a Decree required to approve the transfer of funds from the MoF to AgriCAL's designated account also slowed down the progress of the project. Other factors that also challenged project implementation included the impact of COVID-19 pandemic as well as the ongoing economic and financial collapse.

Yet, the lack of existing modality that encourage local climate action challenges coordination between national and local levels of government on issues related to climate governance and reporting, and consequently weakens their alignment with the national climate framework.

5.2.2. Availability and Type of Inter-governmental Support Schemes

There are currently no government subsidies or national facilities targeting climate financing at the subnational level. Yet, a number of avenues have been made available for financing local renewable energy projects across the country. For instance, the National Energy Efficiency and Renewable Energy Action (NEEREA) is a national financing mechanism that was launched by the Central Bank of Lebanon (BDL) in 2010. It aimed at providing subsidized green loans to residential, commercial, non-profit, and industrial firms that target energy efficiency and renewable energy projects for new and existing facilities. Notably, BDL extended the NEEREA financing mechanism to make it more accessible for villages and rural areas by supporting loans

[75] Adaptation Fund (2022). Request for Change of Project Outputs and related Indicators, Budget Revision and Amendment of Disbursement Schedule: IFAD (Lebanon). Retrieved from: https://www.adaptation-fund.org/wp-content/uploads/2022/04/AFB.PPRC_.29-30.1-Request-for-Project-Major-Change-for-Lebanon_IFAD.pdf

in Lebanese Lira (Circular 399, 08/10/2015). This circular was designed to cater for municipal needs (Abi Haidar, 2019). BDL also issued another national financing mechanism, the Lebanese Environmental Action (LEA), which offer subsidized loans for projects related to air quality, water, and the environment.

However, municipalities were unable to access these loans, despite their legal right according to Municipal Act Decree-Law 118. Indeed, by exercising their authority over the management, budget and finances of all municipalities, the Ministry of Interior and Municipalities (MoIM) locks the capacity of municipalities by not giving them permission to access loans (Abi Haidar, 2019). Moreover, as a result of the economic and financial collapse in 2019, NEEREA is no longer financially backed by BDL, and its capacity has substantially been reduced.

On the other hand, Lebanon can benefit from the Subnational Climate Finance initiative (SCF) which is a global blended finance initiative targeting local and subnational institutions through projects in the field of sustainable energy, waste and sanitation, regenerative agriculture, and nature-based solutions. However, as experts from the MoE explained, the conditions for such fund are complex and would require co-financing from municipalities and the private sector, which discourages many to invest[76]. Additionally, Lebanon is considered a high risk for potential investors, which discourages the application of this fund.

Nonetheless, despite the lack of government support, some cities/towns still manage to secure local climate initiatives/projects, largely as a result of financial support from donors and agencies. Indeed, Chaplain (2023) identifies USAID and UNDP as the two major contributors of climate finance for municipalities in Lebanon.

[76] Interview with expert in the Ministry of Environment, 13/10/2023

This is evident in the case of Menjez, where the majority of implemented projects have been funded by donor agencies, most notably USAID and the EU.

5.3. Municipal Governance

5.3.1. Municipal Administrative, Technical, Fiscal, and Financial Capacity, and Existing Assets and Resources

Financial capacity has been mentioned in the literature as key resources for local governments that would allow them to build capacity and develop local climate actions and policies (Bulkeley and Betsill, 2003). Given its limited budget, the municipality of Menjez heavily relies on donor funding to implement projects. However, this reveals shortcomings when it comes to the sustainability and maintenance of such projects. For instance, the municipality retrofitted its existing generators to integrate a hybrid system with solar PV, with the aim to provide residents with uninterrupted access to electricity. Yet, the current hybrid system design and load conditions of the generators limits major energy savings. Generators are usually designed in a way to operate between 30-70% of their load factor - dropping below 30% would risk damaging them. When integrating PV with generators, proper synchronization needs to occur in a way that maintains the load within the acceptable range. However, this is not the case for the system in Menjez where, generators operate at a minimum 30% load even if EDL cut-off is to occur at a time when consumption is low, a significant portion of energy is lost. This is due to the fact that generators operate at a minimum 30% load, even if solar production is enough to cover total consumption. According to the energy specialist, a suggestion would be to disconnect the generators and PVs completely, add batteries and operate an off-grid system. However, this needs a detailed technical design of the system and is still not considered as the “best solution since the municipality will

eventually have to pay the cost of batteries in eight years.", the energy specialist adds "but at least they can benefit from this system which otherwise is only causing a burden to the municipality"[77]. Although the concept note submitted in 2015 for the project intended on installing a system of 70 kWp with batteries, RMF, the implanting agency, declined it on the grounds that batteries are expensive and that municipalities are incapable of replacing them in due time (Chaplain, 2023; p. 371)[78]. This is evident in one of the other initiatives that aimed at improving energy efficiency within Menjez, which involved the installation of public street lighting, with each pole powered by a dedicated solar PV panel. Today, almost nine years since their installation, the need to replace batteries becomes inevitable, with a few streetlights already non-operational[79]. Nevertheless, the hybrid solar power plant allowed the municipality to operate the micro-grid as a tool to "legitimize a newly created municipality through a collaboration with a politicized non-governmental organisation" (Chaplain, 2021; p. 6) [80].

As such, dependence on donor funding for maintenance and operation challenges the sustainability of local projects and weakens the municipality's capacity to carry out local climate action.

5.3.2. Municipal Mandate and Legal Authority that enable Climate Interventions

In Lebanon, there exists a significant disparity between what municipalities are legally mandated to do, and what they are actually able to carry out in their territory. This was evidenced earlier in the chapter through the MoIM control over issues related to municipal budgets, and their capacities to extract loans. This is why most of the

[77] Interview with energy specialist, 13/10/2023
[78] They also cited fears of theft as another reason for their reluctance. Instead, the local NGO pushed a system that does not include batteries but has a more significant PV capacity (Chaplain, 2023; p. 371).
[79] Interview with municipality employee, 09/09/2022
[80] https://thepolicypractice.com/sites/default/files/2021-05/ACE-BriefingPaper-210423-Proof04B.pdf

services provided by municipalities are often restricted to road maintenance, road lighting, and wall supports, which are considered the "most visible goods" (Harb and Atallah, 2015; p. 200). Yet, Menjez leveraged its mandate and legal authority to enable climate interventions. Indeed, the municipality illustrated its ability to conceive, develop and manage energy efficient solutions.

Municipalities can also group in municipal unions which provide financial, developmental, political, and economic incentives and can be regarded as tools to work on climate policy. Menjez is currently part of the UoM of Akkar Al Shemali, which was established in 2016 and covers a territory of 10 municipalities. Given its rural nature, small demographic size and relatively recent establishment, the union lacks administrative units required by law[81]. As a result, the union faces a scarcity in staff members and low recruitment, having only one employee (as of 2018)[82]. Moreover, Menjez's cooperation with the union is limited to waste management services, as this remains the union's only priority. The mayor was critical of the union's approach citing he "would have approached [this issue] differently […] so instead of establishing a landfill, a recycling facility or even raising awareness on sustainable waste management, the union ended up purchasing a few waste trucks for waste collection", adding that this was a costly venture that required additional funding. In other words, with a limited influence at the union level, the mayor was unable to translate sustainable interventions beyond his village. The mayor also expressed his desire to shift away from the union and achieve autonomy in waste management by installing a waste management facility within Menjez. However, the

[81] https://democracyreporting.s3.eu-central-1.amazonaws.com/images/3217DRI_upload-municipal_2018_EN.pdf
[82] https://democracyreporting.s3.eu-central-1.amazonaws.com/images/3217DRI_upload-municipal_2018_EN.pdf

project was halted as a result of public concern over the facility's potential environmental impacts.

To conclude on this indicator, the mandates granted to local governments to oversee various climate-related policy sectors such as transportation, energy, water, and waste services dictates the extent to which they can prompt climate mitigation and adaptation measures across these sectors. Although Lebanese municipalities are endowed with the necessary mandate and legal authority that can enable some climate interventions, their capacities are hindered by weak decentralization. Yet, Menjez leveraged its mandate and legal authority to push for climate interventions.

5.3.3. Municipal Communication Strategy on Climate Policy

In addition to the political mandate and legal authority needed for municipalities to develop and implement climate policies and actions, informing, communicating, or even convincing other local actors of the need for climate change interventions should also be considered as part of local climate capacities (Hoppe et al., 2016; p. 4).

During my interview with the mayor of Menjez, he expressed that he usually prefers keeping details of potential projects confidential, until the needed funding is secured, to avoid building any false promises for the local community[83]. Still, the municipality has an active Facebook page which serves as a platform to disseminate information and updates on different local projects, temporary job opportunities within the village and other activities related to social and public affairs. The page also showcases the different international conferences that the municipality is featured in, which particularly involve the participation of the mayor.

[83] Interview with the mayor of Menjez, 08/09/2022

A number of residents have used this platform to voice their discontent with the municipality. Indeed, public criticism through Facebook comments seem to convey a sentiment that local climate-related projects – deemed by the municipality as important for generating income – lack substantial impact, and hardly represent local interests. Notably, criticism seems to extend beyond discontent with the municipality to even questioning the credibility of the mayor. Some comments allege that the mayor is leveraging his position in power to facilitate contracts between his enterprise and the municipality. It is worth mentioning that these allegations of conflict of interest and mismanagement of municipal funds have only recently surfaced on the social media platform over the course of the summer of 2023. However, political opposition within the village is not new, and has often been an active force stalling the installation of local projects. This is particularly the case of the Hill Lake project, which was put on hold for five years due to conflict between the municipality and major families within the village.

Although the municipality has done effort in communicating local achievements and progress related to on-going climate projects, it seems to be "weak" in convincing the local community on the need for climate change interventions.

5.3.4. Existing Knowledgeable Municipal Planning and Policy Staff and Institutions, and Availability of Tools Dedicated to Climate Action

Given its small size, and limited resources, the municipality of Menjez does not have the capacity for a climate change department which, according to the literature could play an important role in strengthening local climate capacity (Yazar and York, 2021). As a result, information related to vulnerability assessments or other climate studies is limited, and the municipality heavily relies on external consultants to develop

proposals, carry out assessments as well as strategies and plans. According to the mayor, he usually prefers partnering up with universities on projects, as it allows them to "borrow" resources which are otherwise absent from the municipality.

The mayor also insisted that all members of the municipal council have a general understanding of the issues associated with climate change and are aligned with the approach of the municipality. However, according to the energy specialist who worked on the SEAP for the municipality, "there is no one in the municipal council that is at [the mayor's] level in terms of governing projects, or even discussing the technical aspects of a project", adding that "Menjez cannot stay a one-man show, […] it is not sustainable."[84] This also raises the question of policy continuity within the municipality, where the current major plays a central role in networking, developing, and pushing for the implementation of local projects. As an expert at the MoE mentioned: "most of [the] mayors have been in office for different terms. But as soon as leadership changes, automatically the person that replaces him/her would want to do something else and would not want to continue what their opponent started", threatening the sustainability of several ongoing/potential projects.

5.4. Membership in TMNs

Transnational Municipal Networks (TMNs) have been noted as significant drivers in the involvement of local governments in climate policies and actions (Bulkeley, 2015). As such, the following indicators will be evaluated in this section: (4.1) Availability of TMN and CoM membership, and perception of this commitment; (4.2) Availability of SE(A)CAP; (4.3) Municipality's progress towards mitigation,

[84] Interview with energy specialist, 13/10/2023

adaptation, and other climate goals; (4.4) Availability and role of municipal expertise regarding TMN/CoM.

5.4.1. Availability of TMN and CoM membership, and Perception of this Commitment

For Menjez, signing with the CoM introduced a climate change agenda to the municipality, and supported them in identifying and measuring key mitigation actions. According to the mayor the guidelines that the CoM provided were the most helpful in reaching the municipality's goals to reduce its emissions, and to tackle climate change-related issues. He adds that "these are known guidelines […] so whatever worked, [we applied] to [our] context."[85]. Moreover, the mayor added that they had benefited from exchanging best practices and ideas through a twinning programme, which took place in Naples, Italy. Yet, chief among the perceived benefits of joining the CoM according to the mayor is the recognition and reputation that it comes – as it positions the municipality among leader cities/towns in the global movement to limit overall CO_2 emissions. Indeed, every local project conceived by the municipality is tied to the SEAP and has been used as a stamp attesting to the credibility and commitment of the municipality in regard to its climate ambitions.

5.4.2. Availability of Action Plan/Strategy outlining Climate Targets, Goals and Measures Developed through the Network

In 2014, after signing with the CoM, Menjez had set a climate target of reducing 28% of its emissions by the year 2020. This target was translated into a set of actionable measures, outlined in the Sustainable Energy Action Plan (SEAP). If implemented all together, these measures were believed to contribute to reaching that 28% reduction

[85] Interview with the Mayor of Menjez, 08/09/2022

target. According to the energy specialist that developed the SEAP, the plan was significant in setting things in motion for the municipality at the time[86]. Eight years later, in 2022, Menjez expressed its commitment to the CoM to increase its emission reduction target to 40% by the year 2030. Although this renewed commitment should be followed by the development of a Sustainable Energy Access and Climate Action Plan (SEACAP), a lack of funding to secure the needed resources and expertise for developing such a plan remains a challenge[87]. Nevertheless, the availability of the SEAP played a major role in facilitating climate action at the local level.

5.4.3. Municipality's Progress Towards Mitigation, Adaptation, and Other Climate Goals

One of the main challenges highlighted by the mayor regarding their commitment with the CoM is the lack of reporting, which is largely due to the municipality's limited human and technical resources. Therefore, a lack of data on the progress of planned measures does not allow for proper assessment of actual emission reductions and carbon stock changes. As a result, it would be difficult to estimate the municipality's actual progress in attaining their reduction target. On this, the mayor expressed that "it's a shame because we did the SEAP, it's available, we implemented the majority of the measures, but we did not report on them to the CoM. Everything like this requires human resources, [which we do not have access to]. This is something that sets us back"[88]. It is worth mentioning that signatories to the CoM risk getting their memberships suspended if they do not submit monitoring reports (within 2 years for their actions, and every 4 years for a full report with at least one Monitoring Emission

[86] Interview with energy specialist, 13/10/2023
[87] Interview with the mayor of the municipality, 08/09/2022
[88] Ibid.

Inventory). Although Menjez has not been able to carry out and submit such reporting, the municipality remains part of the CoM, with the mayor himself having been recently elected as a member of the Global Covenant of Mayors (GCoM) Board of Mayors and Leaders. Moreover, when asked about the risk of getting the municipality suspended, the mayor insisted that the CoM is aware of the shortcomings facing the municipality, specifically in the context of the compounding crises. In this context, although no monitoring reports have been submitted by the municipality to assess its progress, a number of projects from the SEAP have already been implemented.

5.4.4. Availability and Role of Municipal Expertise Regarding TMN/Com and of Specialized Coordinating Staff (e.g., Territorial Coordinators)

As mentioned in previous chapters, the CES-MED project (2013-2018), an EU-funded project, played a major role in supporting signatories of the Covenant of Mayors for the Mediterranean (CoM Med) to develop their SEAPs. Particularly for Menjez, the project played an important role in facilitating the municipality's sign-up process to the CoM. Although they did not develop the SEAP for the municipality, CES-MED provided technical support during the process. In other words, CES-MED was an intermediary between the municipality and the CoM. At the local level, a SEAP committee composed of members of the municipal council, was set up to be in charge of keeping up with the implementation of the plan – acting as a focal point between the CoM and the municipality. Yet, lack of municipal resources hindered the effectiveness of the committee's role, with the mayor assuming the role as focal point to the CoM.

Table 4: Final Evaluation of the Four Identified Indicators Framing Local Climate Governance.

FACTORS	#	INDICATORS	SCALE
1. Motivation: municipal entrepreneurship, local networks, climate vulnerability	1.1	Municipal entrepreneurship: mayor and/or municipal councilors' perceptions of climate crisis and policy positions;	Strong
	1.2	Type of perceived anticipated benefits (economic, political, other)	Strong
	1.3	Local networks: local civil society organizations invested in climate change policy, local climate entrepreneurship, partnerships, and/or public perception of climate crisis	Weak
	1.4	Extent of local climate vulnerability	Strong
2. National climate governance policy	2.1	Availability and type of inter-governmental support schemes	Weak
	2.2	Alignment of municipality with national climate framework	Weak
3. Municipal governance	3.1	Municipal administrative, technical, fiscal, and financial capacity, and existing assets and resources	Weak
	3.2	Municipal mandate and legal authority that enable climate interventions	Strong
	3.3	Municipal communication strategy on climate policy	Weak
	3.4	Existing knowledgeable municipal planning and policy staff and institutions, and availability of tools dedicated to climate action	Weak
4. Membership in TMNs	4.1	Availability of TMN membership, and perception of this commitment	Strong
	4.2	Availability of action plan/strategy outlining climate targets, goals and measures developed through the network	Strong
	4.3	Municipality's progress towards mitigation, adaptation, and other climate goals	Moderate
	4.4	Availability and role of municipal expertise regarding TMN/CoM and of specialized coordinating staff (e.g., Territorial Coordinators)	Weak

Based on the framework developed in Chapter 2, and the data collected, I evaluated municipality of Menjez in terms of its climate governance. As such, I posit that the municipality, particularly through the mayor's entrepreneurial mindset, demonstrates strong political leadership and prioritization of climate and sustainability issues. The increased occurrences of climate-induced events, particularly forest

wildfires and water scarcity seem to also influence municipal motivation in addressing climate change. Moreover, the absence of vertical coordination between national and local levels of government results, national climate governance policy does not seem to influence local governance of climate issues. As for municipal governance, the municipality still lacks the technical expertise when it comes to carrying out local projects, as well as general support of the public who have been critical of the municipality's sustainability efforts. Nevertheless, the municipality's membership with the CoM seems to have been a significant step for advancing the municipality's climate-resilient vision, despite its lack of reporting and technical expertise.

CHAPTER 6

CONCLUSION AND POLICY LESSONS

Consensus in the literature indicates that climate change can, and should, be addressed across different levels of governance: national, regional, and local (Bulkeley et al., 2009). Yet, in the context of a weakly decentralized system, where sectoral decisions remain in the hands of central authorities, local governments are not empowered to reduce their carbon footprint nor in building their resilience to climate change. In Lebanon, there is no modality facilitating vertical coordination between national and local levels of government. As such, municipalities are not encouraged or incentivized to take up local climate policies and actions. Moreover, Lebanese municipalities already struggle with lack of capacities and resources, with their focus limited to basic service provision and/or development needs. They also lack awareness of their full duties and responsibilities vis-à-vis local governance and tend to exhibit a reactive approach to addressing issues, rather than a proactive one – which prevents them from developing long-term plans. Eissa and Essam (2021) stress the drawbacks of this narrow perspective, given that cities and local governments need to instill adaptive measures to be able to avoid severe damage as a result of climate change.

This thesis assessed the municipality of Menjez in terms of its climate governance, using a framework based on four factors (motivation, national climate governance, municipal governance, membership in TMNs) that were identified in the literature to influence local climate policymaking. The case study clearly demonstrates the strong influence of political champions in institutionalizing the climate change agenda, which largely frames local governance capacity (Bulkeley et al., 2009). This

seems to be applied particularly in the case of rural municipalities where the mayors are closer to their constituencies and directly held accountable for strategy implementation (Bausch and Koziol, 2020). Moreover, the thesis showed how, in the absence of vertical coordination between national and local levels of government, municipalities can emerge as powerful players in global climate politics. Indeed, by joining the Covenant of Mayors and developing a Sustainable Energy Action Plan (SEAP), the municipality of Menjez elaborated and implemented incremental policy actions that helped advance a climate change agenda. These actions materialized in sectoral pilot projects and business models that tackled the energy, water, and agroforestry sectors.

The thesis argued that, even in contexts where national climate policy is constrained, Transnational Municipal Networks (TMNs) are a promising tool that provides significant opportunities for climate experiments at the local level. Moreover, the commitment to elaborate the SEAP commits the municipality to climate action policies, which also allows the mayor to leverage the plan for unlocking donor funding for implementing bankable projects. The thesis also underscores how, despite these favorable conditions, namely a strong local champion, effective partnerships with donors and TMN membership, national-level political, administrative, and financial barriers significantly restrict climate change implementation at the local level. Yet, the thesis also highlights the efforts of some public servants and international staff to advance municipal climate governance – such is the case with the Ministry of Agriculture (MoA), the Ministry of Energy and Water (MoEW) and the UNDP. However, these efforts also appear challenged by national governance constraints related to power conflicts at multiple scales.

The thesis findings are significant in so far as they provide evidence-based knowledge on local climate action in practice. They additionally inform future climate action policy about the effective ingredients and modalities for advancing local climate agendas – especially in contexts where national climate governance policy is constrained by multiple crises. Nevertheless, the thesis faced several challenges and had a number of limitations, which prevented me from enriching prompted me to narrow my scope of research and prevented me from carrying out additional field visits, interviews, and discussions with other local actors – which otherwise would have enriched my analysis of the case study. Moreover, the literature could have benefited from a more thorough review of other evaluation frameworks. However, the challenges faced throughout the research restricted me from doing so.

Several policy lessons can be derived regarding the potential of local climate governance in Lebanese municipalities. As posited in the literature, local governments often fail to recognize the interconnectedness of climate issues, where priorities are focused on exclusively improving basic service provision (Stehle, Höne, Hickmann and Lederer, 2019). This influences the prospects of embedding climate considerations into urban policies, and the logic that shapes the way these policies are conceived and implemented. As demonstrated through this thesis, membership in TMNs play a significant role in enabling access to resources, which can benefit municipalities in integrating climate change in their local agendas. A key factor in making this happen involves high political motivation to intervene in climate action and effective municipal governance – especially in the absence of proper national climate governance. Indeed, strong mayoral leadership who is well-aware about municipal legal rights and duties, combined with the motivation and ability to develop a clear vision for their locality, and

translate this drive into effective and productive networks and partnerships, are crucial ingredients for translating climate responses locally. Moreover, framing climate-responsive solutions as “co-benefits” to addressing the pressing local issues related to electricity and water provision as well as waste management represents viable and efficient means to champion and advance local climate agendas.

Future research areas that can be derived from this thesis relate to engaging in comparative analysis of other municipalities in Lebanon advocating for local climate action. This would test the framework developed in this thesis, validate, and enrich it across different cases. Moreover, it would also be interesting to take case studies of municipalities that are members of different TMNs – such as Byblos that is a member of the 100 Resilient Cities – to assess the different mechanisms under which these networks operate and whether or not they advance local policy changes.

BIBLIOGRAPHY

Abi Haidar, C. (2019). Public Private Partnerships in Lebanon, Municipalities. Copenhagen Centre on Energy Efficiency. Retrieved from: https://c2e2.unepccc.org/wp-content/uploads/sites/3/2019/01/public-private-partnerships-in-lebanon-municipalities.pdf

Abdullah, H., Elgendy, K., & Knaepen, H. (2021). Climate Resilience in Cities of the EU's Southern Neighbourhood: Opportunities for the EU Green Deal. Cascading Climate Impacts (CASCADES) Project (2019–2023), funded through the European Commission's Horizon 2020 program.

Ahmad A., 2020, Distributed power generation for Lebanon. Market Assessment and Policy Pathways, Washington: The World Bank

Bäckstrand, K., Kuyper, J. W., Linnér, B.-O., & Lövbrand, E. (2017). Non-state actors in global climate governance: from Copenhagen to Paris and beyond. Environmental Politics, 26(4), 561-579. doi:10.1080/09644016.2017.1327485

Bansard, J. S., Pattberg, P. H., & Widerberg, O. (2017). Cities to the rescue? Assessing the performance of transnational municipal networks in global climate governance. *International Environmental Agreements: Politics, Law and Economics, 17*(2), 229-246. doi:10.1007/s10784-016-9318-9

Bahout, J. (2016). The Unraveling of Lebanon's Taif Agreement - Limits of Sect-Based Power Sharing. Carnegie Endowment for International Peace. Retrieved from: https://carnegieendowment.org/files/CP_271_Bahout_Taif_Final.pdf

Basso, M., & Tonin, S. (2022). The implementation of the Covenant of Mayors initiative in European cities: A policy perspective. Sustainable Cities and Society, 78, 103596. doi:https://doi.org/10.1016/j.scs.2021.103596

Bausch, T., & Koziol, K. (2020). New Policy Approaches for Increasing Response to Climate Change in Small Rural Municipalities. Sustainability, 12(5), 1894.

Bulkeley, H. (2010). Cities and the Governing of Climate Change. *Annual Review of Environment and Resources, 35*(1), 229-253. doi:10.1146/annurev-environ-072809-101747

Bulkeley, H., & Betsill, M. (2003). Cities and Climate Change: Urban Sustainability and Global Environmental Governance. *Cities and Climate Change: Urban Sustainability And Global Environmental Governance*, 1-237. doi:10.4324/9780203219256

Bulkeley, H., & Betsill, M. (2005). Rethinking Sustainable Cities: Multilevel Governance and the 'Urban' Politics of Climate Change. *Environmental Politics, 14*(1), 42-63. doi:10.1080/0964401042000310178

Bulkeley, H., & Kern, K. (2006). Local Government and the Governing of Climate Change in Germany and the UK. Urban Studies, 43(12), 2237-2259. https://doi.org/10.1080/00420980600936491

Bulkeley, H., Schroeder, H., Janda, K., & Zhao, J. (2009). Cities and Climate Change: The role of institutions, governance and urban planning.

Castán Broto, V. (2017). "Urban Governance and the Politics of Climate change," World Development, Elsevier, vol. 93(C), pages 1-15. http://dx.doi.org/10.1016/j.worlddev.2016.12.031

Castán Broto, V. (2020). Climate change politics and the urban contexts of messy governmentalities. Territory, Politics, Governance, 8(2), 241-258. doi:10.1080/21622671.2019.1632220

Corfee-Morlot, J., Lamia Kamal-Chaoui, Michael G. Donovan, Ian Cochran, Alexis Robert and Pierre-Jonathan Teasdale (2009). *Cities, Climate Change and Multilevel Governance*.

Dubash, N. K. (2021). Varieties of climate governance: the emergence and functioning of climate institutions. Environmental Politics, 30(sup1), 1-25. doi:10.1080/09644016.2021.1979775

Eissa, Y., & Khalil, H. A. E. E. (2022). Urban Climate Change Governance within Centralised Governments: a Case Study of Giza, Egypt. Urban Forum, 33(2), 197–221. https://doi.org/10.1007/s12132-021-09441-9

Food and Agriculture Organization of the United Nations (FAO) (2016). Non-Wood Forest Product: Value Chains in Lebanon. Retrieved from: https://www.fao.org/3/i6506e/i6506e.pdf

Farajalla, N., Zgheib, L., Korbane, K. & Zaghbour, M. (2022). Climate Change, Agriculture, & Livelihoods in Lebanon: Consolidated Livelihoods Exercise for Analyzing Resilience. Issam Fares Institute for Publi Policy and Inernational Affairs (IFI). Retrieved from: https://www.aub.edu.lb/ifi/Documents/programs/climate_change_and_environment/publications/20220426_lebanon_clear_study_climate_change_and_livelihoods.pdf

Falkner, R. (2016), The Paris Agreement and the new logic of international climate politics. International Affairs, 92: 1107-1125. https://doi.org/10.1111/1468-2346.12708

Fünfgeld, H. (2015). Facilitating local climate change adaptation through transnational municipal networks. *Current Opinion in Environmental Sustainability, 12*, 67-73. doi:https://doi.org/10.1016/j.cosust.2014.10.011

Gupta, J. (2007). The multi-level governance challenge of climate change. *Environmental Sciences, 4*(3), 131-137. doi:10.1080/15693430701742669

Harb, M., & Atallah, S. (2015). An Assessment of decentralization and service delivery in the Arab world. Local governments and public goods: Assessing decentralization in the Arab world, 229-234.

Haupt W. and Coppola A. (2019). Climate governance in transnational municipal networks: advancing a potential agenda for analysis and typology, International Journal of Urban Sustainable Development, 11:2, 123-140, DOI: 10.1080/19463138.2019.1583235

Heinrichs, D., Krellenberg, K., & Fragkias, M. (2013). Urban Responses to Climate Change: Theories and Governance Practice in Cities of the Global South. *International Journal of Urban and Regional Research, 37*(6), 1865-1878. doi:https://doi.org/10.1111/1468-2427.12031

Hoppe, T., Van der Vegt, A., & Stegmaier, P. (2016). Presenting a Framework to Analyze Local Climate Policy and Action in Small and Medium-Sized Cities. Sustainability, 8(9). doi:10.3390/su8090847

Johnson, C. A. (2018). Cities as Saviours? The Global Politics of Urban Climate MitigationMitigation. In C. A. Johnson (Ed.), *The Power of Cities in Global Climate Politics: Saviours, Supplicants or Agents of Change?* (pp. 49-90). London: Palgrave Macmillan UK.

Karhinen, S., Peltomaa, J., Riekkinen, V., & Saikku, L. (2021). Impact of a climate network: The role of intermediaries in local level climate action. Global Environmental Change, 67, 102225. doi:10.1016/j.gloenvcha.2021.102225

Khechen M. & Samaha P. (2022). Land Governance, Natural Resources and Climate Change in the Arab Region. 5, UN-Habitat. 2022, 136 p. ffhal-03981166f
Kemmerzell, J. (2018). Innovations in European climate governance and their impact on local climate policy: An analysis of German major cities. In S. Hughes, E. K. Chu, & S. G. Mason (Eds.), Climate change in cities. Innovations in multi-level governance (pp. 39–57). Springer International Publishing.
Kern, K., & Alber, G. (2009). Governing Climate Change in Cities: Modes of Urban Climate Governance in Multi-Level Systems.
Kern, K. and Bulkeley, H. (2009), Cities, Europeanization and Multi-level Governance: Governing Climate Change through Transnational Municipal Networks. JCMS: Journal of Common Market Studies, 47: 309-332. https://doi.org/10.1111/j.1468-5965.2009.00806.x
Kingston, P. (2001). Patrons, Clients and Civil Society: A Case Study of Environmental Politics in Postwar Lebanon. Arab Studies Quarterly, 23(1), 55-72.
Krause, R. M. (2011). "Symbolic or substantive policy ? Measuring the extent of local commitment to climate protection". Environment and Planning C, vol. 29, p. 46-62.
Krause, R. M. (2013). The motivations behind municipal climate engagement: An empirical assessment of how local objectives shape the production of a public good. City, 15(1), 125–141.
Lebanon Reforestation Initiative (LRI) (2019). Fire Risk Assessment for Eight Lebanese Villages and their Surrounding. Brief Assessment Report. USAID. Retrieved from: https://pdf.usaid.gov/pdf_docs/PA00ZHBV.pdf
Lebanon State of the Environment and Future Outlook: Turning the Crises into Opportunities
Liu, Z., Wang, J., & Thomas, C. W. (2022). What Motivates Local Sustainability Policy Action in China? The Case of Low-Carbon City Pilot Program. Urban Affairs Review, 58(3), 767-798. https://doi.org/10.1177/1078087421995241
Mahmalat, M., & Zoughaib, S. (2022). Breaking the mold? Ministerial rotations, legislative production and political strategies in Lebanon. Governance, 35(4), 1029–1048. https://doi.org/10.1111/gove.12644
Makdisi, K. (2012). The Rise and Decline of Environmentalism in Lebanon. In Water on Sand: Environmental Histories of the Middle East and North Africa (pp. 0): Oxford University Press. Retrieved from https://doi.org/10.1093/acprof:oso/9780199768677.003.0009. doi:10.1093/acprof:oso/9780199768677.003.0009
Menjez SEAP (2016). Menjez, The Greenville. Sustainable Energy Action Plan. Retrieved from: https://www.climamed.eu/wp-content/uploads/files/Lebanon_Menjez_SEAP.pdf
Michaelowa, K., & Michaelowa, A. (2017). Transnational Climate Governance Initiatives: Designed for Effective Climate Change Mitigation? International interactions, 43(1), 129-155. doi:10.1080/03050629.2017.1256110
MERP/UNDP/UN-Haabitat (2022). Unions of Municipalities as Enablers of Local Economic Development – Union of Tyre Municipalities. Assessment Report. Retrieved from: https://unhabitat.org/sites/default/files/2022/12/unions_of_municipalities_as_enablers_of_local_economic_development_2022_tyre_en_1.pdf

Melica, G., Bertoldi, P., Kona, A., Iancu, A., Rivas, S., & Zancanella, P. (2018). Multilevel governance of sustainable energy policies: The role of regions and provinces to support the participation of small local authorities in the Covenant of Mayors. Sustainable Cities and Society, 39, 729-739. doi:https://doi.org/10.1016/j.scs.2018.01.013

MoA (2020). Lebanon National Agriculture Strategy 2020-2025. Retrieved from: http://www.agriculture.gov.lb/getattachment/Ministry/Ministry-Strategy/strategy-2020-2025/NAS-web-Eng-7Sep2020.pdf?lang=ar-LB

MoE/UNDP/GEF (2022). Lebanon's Fourth National Communication to the UNFCCC. Beirut, Lebanon.

Nagel, C., & Staeheli, L. (2016). Nature, environmentalism, and the politics of citizenship in post-civil war Lebanon. Cultural Geographies, 23(2), 247-263. https://doi.org/10.1177/1474474015572304

Papin, M. (2020). Where do novelties come from? A social network analysis of Transnational Municipal Networks in global climate governance. Earth System Governance, 4, 100064. doi:10.1016/j.esg.2020.100064

Rivas, S., Urraca, R., Palermo, V., & Bertoldi, P. (2022). Covenant of Mayors 2020: Drivers and barriers for monitoring climate action plans. Journal of cleaner production, 332, 130029. doi:10.1016/j.jclepro.2021.130029

Romero-Lankao, P. (2007). How do Local Governments in Mexico City Manage Global Warming? Local Environment, 12, 519-535. doi:10.1080/13549830701656887

Eid-Sabbagh, K. & Ray A. (2021). Breaking Point: The Collapse of Lebanon's Water Sector. Policy paper. Retrieved from: https://www.asasmedia.com/upload_files/Breaking-Point-The-Collapse-of-Lebanons-Water-Sector-1.pdf

Sassen, S. (2015). Bringing Cities into the Global Climate Framework. In C. Johnson, Toly, N., & Schroeder, H. (Ed.), *The Urban Climate Challenge: Rethinking the Role of Cities in the Global Climate Regime* (1st ed., pp. 24-36): Routledge.

Scanu, E. & Cloutier, G. (2015). Why do cities get involved in climate governance? Insights from Canada and Italy. Environnement Urbain, 9. doi:https://doi.org/10.7202/1036221ar

Schimschar S., Schröder J., Bhar R., Comaty F., Petersdorff C., Pohl A., Schäfer M., Steinbacher K. (2020). Accelerating Zero-Emission Building Sector Ambitions in the MENA Region (BUILD_ME). Navigant Energy Germany GmbH. Retrieved: https://www.buildings-mena.com/files/BUILD_MECountryReport-Lebanon.pdf

State of the Environment and Future Outlook: Turning the Crises into Opportunities (SOER, 2020). Retrieved from: https://www.unicef.org/lebanon/media/7161/file/SOER_Report_EN.pdf

Stehle, F., Höhne, C., Hickmann, T., & Lederer, M. (2019). The Effects of Transnational Municipal Networks on Urban Climate Politics in the Global South. In (pp. 210-230).

Talhouk, S.N., Itani, M., El Zein, H., Al Malti, R., & Al-Zein, M. (2017). Important Plant Areas in Lebanon. Nature Conservation Center at the American University of Beirut. Retrieved from: https://website.aub.edu.lb/units/natureconservation/Pages/index.aspx

Van der Heijden, J. (2019). Studying urban climate governance: Where to begin, what to look for, and how to make a meaningful contribution to scholarship and

practice. *Earth System Governance, 1*, 100005. doi:https://doi.org/10.1016/j.esg.2019.100005

Verner, D., Saade, M., Canli, F., Zgheib, S., Caroletti, G., Bergaoui, K., Fraj, M.B., Fragszy, S., Jedd, T., & Zaaboul, R. (2018). Droughts and Agriculture in Lebanon: Causes, Consequences, and Risk Management. World Bank Group. Retrieved from: https://openknowledge.worldbank.org/bitstream/handle/10986/30595/130405-WP-P160212-LebanonWEB.pdf?sequence=1

Westman, L. K., Castán Broto, V., & Huang, P. (2019). Revisiting multi-level governance theory: Politics and innovation in the urban climate transition in Rizhao, China. *Political Geography, 70*, 14-23. doi:https://doi.org/10.1016/j.polgeo.2019.01.002

Yazar, M., & York, A. (2021). Urban climate governance under the national government shadow: Evidence from Istanbul. *Journal of Urban Affairs*, 1-17. doi:10.1080/07352166.2021.1915151

Zahran, S., S. D. Brody, A. Vedlitz, H. Grover & C. Miller (2008b). "Vulnerability and capacity: Explaining local commitment to climate-change policy", Environment and Planning C, vol. 26, p. 544-562.

Zea-Reyes, L., Olivotto, V., & Bergh, S. I. (2021). Understanding institutional barriers in the climate change adaptation planning process of the city of Beirut: vicious cycles and opportunities. *Mitigation and Adaptation Strategies for Global Change, 26*(6), 26. doi:10.1007/s11027-021-09961-6