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CO-SUSTAIN

Pathways for CO-creation between local authorities and collective actions for a SUSTAINable transition

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Context and Stakeholders Analysis for Historic Examples of Political Participation

Deliverable 1.2.

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DEC	Websites, patents filing, press & media actions, videos, etc.	
DATA	Data sets, microdata, etc.	
DMP	Data management plan	

ETHICS	Deliverables related to ethics issues	
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1. PROJECT ABSTRACT

In Western democracies, traditional institutional participation is on the decline while non-institutional participation has been increasing. Non-institutional participation for the climate transition often relies on a prefigurative approach, thus creating spaces to incubate alternative ideas and novel forms of political participation (niches). Empowering these forms of political participation to encourage niche innovations will provoke radical yet necessary changes in the socio-technical system for a climate transition. The CO-SUSTAIN project seeks to address this opportunity for a democratic climate transition by defining and testing new democratic pathways, enabling local policymakers to support various and novel forms of political participation and empowering citizens to act for a sustainable transition.

To develop a better understanding of political participation linked to environmental, political, and societal imperatives, CO-SUSTAIN will study 18 historic examples (HEs) in 6 different European countries for each of the latent and manifest forms of political participation underlined by Ekman: involvement, civic engagement, formal political participation, and activism. It will use institutional ethnography and system mapping to understand the dynamics of the participation and its management, thus delivering best practices to stimulate and support political participation around these imperatives. These best practices will serve to define interventions for solution co-creation in 4 case studies, one for each form of political participation: involvement through Spanish energy communities, civic engagement through Food Solidarity in Turin (IT), manifest political participation through participatory processes promoted by the government in Northern Europe (EE, FI) and activism through the Lobau Bleibt social movement (AT). The outputs and outcomes of the deliberations will be assessed to draw conclusions for more democratic climate policymaking across Europe.

2. EXECUTIVE SUMMARY

The aim of the context and stakeholder analysis is to gather information and data that will allow to better understand the temporal, social, and spatial scope and circumstances in which Collective Action Initiatives (CAIs) emerged and evolved within the 18 historical case studies (HE) analyzed. These analyses are part of a broader research effort to answer the main research question:

What are the most significant factors and related dynamics influencing the emergence and development of Collective Action Initiatives (CAIs) in the context of the climatic, political and/or social imperatives and what are their implications for democratic transitions towards sustainability?

Context is understood as a complex system where various elements interact and provide the background for the processes analyzed within each HE. This approach implies the need to define the boundaries of the system under study (HE) and identify its key components using a Multi-Level Perspective (MLP) theoretical framework. Thus, context analysis incorporates the use of various methods and data sources to capture the fullest possible overview of the scale, dynamics and relationships between the different elements that constitute a niche in the socio-technical conditions that frame the regime and landscape in which a particular historical example occurred.

Equally important for understanding the determinants and dynamics of the processes in each HE is the identification and definition of the role of individual and collective actors who, in some way, contributed to the emergence or evolution of the CAI.

To identify the stakeholders involved and the factors that create the context for CAI, the project partners carried out research using both secondary data and information from direct contact with informants familiar with the HE. This activity enabled the collection of historical contextual data, as well as the identification of stakeholder profiles, their key characteristics, roles, levels of involvement and degrees of influence on the emergence and development of CAI. The data collected is a key step for the next stages of the research process: social network analysis, system mapping and institutional ethnography research.

3. ABBREVIATIONS

Table 1: List of abbreviations

Abbreviation	Definition
AB	Advisory Board
ACA	The Association of Environmental Sciences
APE	Energy Poverty Alliance
APE	Alliance Against Energy Poverty
AT	Austria
BMK	Bundesministerium für Klimaschutz, Umwelt, Energie, Mobilität, Innovation und Technologie
BSA	Brigate di Solidarietà Attiva
C.A.S.E	Sustainable Eco-Compatible Anti-Seismic Complexes
CA	Context Analysis
CAI	Collective Action Initiatives
CEDAW	Convention on the Elimination of All Forms of Discrimination Against Women
Climate-KIC	Climate Knowledge and Innovation Community
CM	Coronavirus marker network
COP21	Climate Change Conference in Paris in 2015
CO-SUSTAIN	Pathways for CO-creation between local authorities and collective actions for a SUSTAINable transition
CTZ	Clean Transport Zone
DC	Christian Democracy
DIA	The Againsti-Mafia Investigation Directorate

Abbreviation	Definition
EACs	Energy Advisory Centers
EAG	Austria Renewables Expansion Act
EAG	Erneuerbaren-Ausbau-Gesetz und weitere Gesetzesnovellen
EE	Estonia
EEC	European Economic Community
EFTA	the European Free Trade Association
EIT	European Institute of Technology's
EIWOG	Austria Electricity Management and Organization Act
EPAH	Energy Poverty Advisory Hub
ES	Spain
ESF	Engineers Without Borders
EU	European Union
FDI	foreign direct investment
FFF	Fridays For Future
FI	Finland
FPÖ	Freedom Party of Austria
FPPE	Foundation for the Promotion of Electric Vehicles
GDP	Gross domestic product
GHG	Greenhouse gas
HC	Housing Cooperative
HE	Historic Example
ICESCR	International Covenant on Economic, Social, and Cultural Rights
ICT	Communication technology
ILP	Popular Legislative Initiative
IME	Independent Management Entity

Abbreviation	Definition
IT	Italy
IT sector	Information Technology sector
ITAINNOVA	Technological Institute of Aragon
ITI	Integrated Territorial Investments
KSA	Krakow Smog Alert
LG	Local Government
M.A.P	Temporary Housing Modules
MEAE	Minister of Economic Affairs, the Ministry of Economic Affairs and Employment
MLP	Multi-level Perspective
NECP	National Energy and Climate Plan
NEOS	The New Austria and Liberal Forum
NFOŚiGW	The National Fund for Environmental Protection and Water Management in Poland
NPP	Nuclear Power Plant
OECD	Organization for Economic Co-operation and Development
OME	Monachil Town Council
ÖVP	Austrian People's Party
PAH	Plataforma de Afectados por la Hipoteca
PCI	Italian Communist Party
PD	Democratic Party
PL	Poland
PP	Partido Popular
PPS	Purchasing power standards
PSA	Polish Smog Alert PSA
PSC	Catalan Socialist Party

Abbreviation	Definition
PSI	The Italian Socialist Party
PSOE	Spanish Socialist Workers' Party
PSPA	Polish Alternative Fuels Association
REC	Solidarity Renewable Energy Community
SAC	the Supreme Administrative Court
SCE	European Cooperative Society
SEM	Spanish Agency for Medicine and Health
SGAE	Study Society for Atomic Energy
SNS	Spanish National Health System
SSC	Shared service centers
STUK	Finnish Radiation and Nuclear Safety Authority
UDHR	Universal Declaration of Human Rights
UN	United Nation
USRA	Special Offices for Reconstruction, one responsible for the city of L'Aquila
USRC	Special Office for the Reconstruction of the Municipalities of the Crater
VCT	Vienna Climate Team
WFOŚiGW	The Provincial Fund for Environmental Protection and Water Management in Poland
WHO	World Health Organisation
YIT	Youth Intervention Team

4. METHODOLOGY

4.1. Context Analysis

The analysis of the context (CA) for each historical example (HE) serves to better understand the temporal and spatial scope and circumstances under which a given case of political participation occurred and what its course was. **Context is understood as a complex system within the boundaries of which various elements interact and provide the background for the processes being analyzed within each HE.** The systems approach implies the need to define the boundaries of the studied system (HE) and identify its key components using the MLP framework. Recall after Olesson (2019) the MLP establishes that social actors operate in three dimensions: (1) The landscape, in which there may be global trends that influence and pressure the regime, such as environmental, social and economic trends, as shown below. (2) regime, is a mainstream society that is supported by social norms and integrated systems (status quo); Following new research on "deep transitions" (Schot, 2016), the role of the regime in exerting pressure emerges, i.e. how multiple regime shifts can shape landscape developments and thus societies as a whole. (3) niche development in which new ideas can flourish until they have the opportunity to challenge the existing regime.

Context analysis includes in its scope the use of various methods and data sources to capture as complete a picture as possible of the scale, dynamics and relationships between the various elements that constitute the kind of niche in which a particular historical example occurred.

It is assumed that each type of political participation in HE was initiated in specific socio-demographic, political, technical, economic and environmental conditions– they were conditioned by them and, at least to some extent, occurred as a consequence of the processes that were taking place in the aforementioned dimensions. Thus, wishing to understand what factors influenced the emergence of a particular form of political engagement, it is necessary to trace the indicators showing the dynamics of the processes preceding the initiation of the HE. The main research question that will be answered, among other things, on the basis of the context analysis, is:

What are the origins and (evolving) form and content of the CAI, how has the CAI shaped - and been shaped by - regime/ system actors and processes over time and what are the main outcomes in terms of novel democratic pathways?

Concerning the main question, specific research questions were proposed to capture the key dimensions that define the context for CAI, at niche as well as regime and landscape level:

- *What **power regime dynamic** (political system, legal system, related to politicians)was present in the area where HE activities took place?*
- *What was the **population structure and dynamics** in the years prior to the start of HE actions?*
- *What were the characteristics and dynamics of employment, income and industry in the **economy** of the HE action and impact area?*
- *What were the **socio-cultural dynamics** of the HE actions and impact area?*
- *What were the **socio-political dynamics** of the HE actions and impact area?*

- *What were the **socio-technical dynamics** of the HE actions and impact area?*
- *What level of **political and civic participation** and involvement characterized the HE actions and impact area?*
- *What were the **ecological characteristics** and dynamics of the HE activities and impact area?*
- *Did any **other factors** influence the creation and development of the initiative described in HE?*

In practice, not all of these dimensions were relevant to each HE. The decision in this case was up to the leaders of the respective HEs.

4.2. Stakeholder Analysis

Stakeholder Analysis (SA) is a crucial conceptual and methodological component of any research design aimed at investigating dynamics of social change with a long lasting tradition in organizational, business, and policy fields[1,2,3]. **SA's aim is to identify the main actors (individuals, groups and organization) involved in a social process (project, policy, decision, initiative)** and their main **features and relationships**, in order to assess their role in the process, i.e., **the extent to which they are able to affect or be affected by the process**.

To frame the CO-SUSTAIN SA methodology, two preliminary remarks about stakeholder definition and about the implementation of the SA itself might be beneficial.

About definition, it is worth to highlight that while in the policy or business domains it is usually quite easy to identify both the process (e.g., implementation chain or a market strategy) and the expected result (e.g. the policy measure or a specific product/service) and it is therefore relatively easy to understand what is the stake that different actors might hold, in the case of CO-SUSTAIN it is not straight to identify neither the process nor the expected results to be considered as the attractor of actors involvement. It is, in fact, not always clear, and indeed, it's also part of our research questions, the process that brought to life the collective action and initiatives under scrutiny (the Historical Examples) neither their specific objectives and expected results. Therefore, when it comes to define what we mean by stakeholders, we built on the definition by Freeman (1984) reported by Reed[4], and we conceive **stakeholders in CO-SUSTAIN as any individual or collective actor that might be to some extent interested and might directly or indirectly affect or be affected by the establishment and dynamics of evolution of the political participation initiatives.**

About the role of SA in the Historical Example research process, it deserves to be recalled that SA represents a crucial milestone in CO-SUSTAIN as it builds on the results of the Context Analysis and paves the way for the next participatory activities. Building upon the stakeholder analysis and engagement

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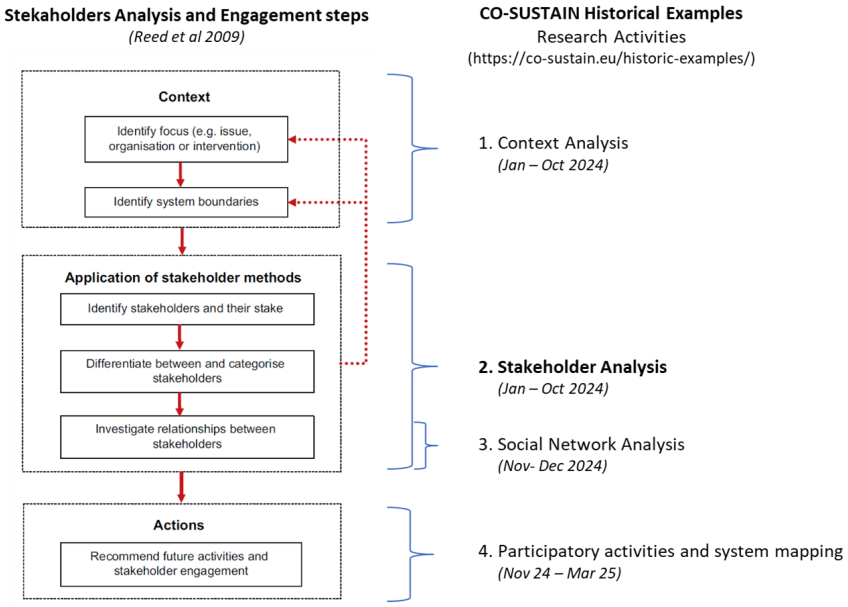
[1] Bryson, J.M., 1995. *Strategic Planning for Public and Nonprofit Organizations*, Jossey-Bass, San Francisco, CA.
[2] Bryson, J.M., 2003. *What To Do When Stakeholders Matter: A Guide to Stakeholder Identification and Analysis Techniques.* Paper presented at LSE, 10 February.
[3] Reed, M.S., Graves, A., Dandy, N., Posthumus, H., Hubacek, K., Morris, J., Prel,l C., Quinn, C.H. and Stringer, L.C., 2009. Who's in and why? A typology of stakeholder analysis methods for natural resource management. *Journal of Environmental Management* 90, 5, 1933-1949.
[4] Ibidem.

process proposed by Reed[5] , figure 4.1 visualizes this strategic position of SA in CO-SUSTAIN research implementation.

Figure 4.1 - CO-SUSTAIN Stakeholder Analysis's role in Historical Examples research process



On these premises, the CO-SUSTAIN's SA methodology develops along **three main steps**: **(1) Identification**, aimed at answering the question '*who are the main actors involved?';* **(2) description**, aimed at answering the question '*why and to what extent they are involved and how and to what extent they are able to affect or be affected by the initiative development?';* **(3) categorization**, based on the description and aimed at clustering the stakeholders in order to assess their relevance and proceed with the engagement.

In the following, a few methodological details are provided for each step.

Step 1) STAKEHOLDERS IDENTIFICATION

This step aims at answering three main questions:

1a. Which actors have a direct influence on the activities of the initiative?

1b. Which actors can be positively/negatively affected by the initiative?

1c. Based on a and b, which role the actors play with respect to the development of the initiative?

In order to facilitate the researchers in answering these questions and in order for the answers to be comparable among the HEs, we asked the researchers to adopt three typologies in the identification process.

Typology 1 - Stakeholders' categories

- *Institutions*: public administration, public agencies…
- *Business & Industry*: industries, SMEs, retailers, banks…

[5] Ibidem.

- *Public services*: mobility, health, education, welfare…
- *Intermediate bodies*: representative Associations, Trade unions…
- *Research*: universities, research institutes…
- *Professionals*: experts, consultants, practitioners…
- *Citizens*: the wide community more or less directly involved
- *NGOs*: associations, no profit bodies, third sectors
- *Civil society organizations*: formal and informal movements…
- *Media*: any type of information channel (no social media)
- *Politicians*: parties' representatives

Typology 2 - Spatial scale

- *Local*: municipal and county level (LAU and NUTS3).
- *Regional*: NUTS 1 and 2.
- *National*: country level (NUTS 0).
- *Supranational*: European Union, Europe, Global (UN, OECD…).

Typology 3 – Role of SH in the process

- *Promoter*: actors that directly push the initiative, identify visions, objectives etc.
- *Target Group*: actors that are expected to directly support initiative development/actions implementation
- *Beneficiary*: actors that are directly affected from the initiative development/actions implementation
- *Third party*: any other actors indirectly involved in initiative development/actions implementation

NOTE: Typologies 1 and 2 are proposed to answer questions 1a and 1b, TYpology 3 to answer question 1c

Step 2) STAKEHOLDERS DESCRIPTION

Once identified the stakeholders, the aim is for each of them to better qualify their role in relation to the initiative, i.e., to find an answer to the following questions

2a To what extent are they actually interested in the initiative? And why?

2b. How much are they concerned about the problem that triggered the initiative and favorable/opposing the initiative itself?

2c. How much power do they have to affect initiatives' development?

2d. What resources can they activate (economic, financial, positional, knowledge…) for this power to be executed?

2e. Which kind of relation and how strong do they have with the initiative?

In order to find answers to these questions, the following **six features** have been analyzed.

1. *Resources*: referred to the 5 types of leverages that the SHs can activate to affect the initiative:
    - Normative: actor is able to affect/decide the policy or the rules for its implementation.
    - Relational: actor is strongly linked with many of the main players in the domains affected.
    - Positional: thanks to its position in the policy implementation chain.
    - Economic: actor is able to provide/complement funds.
    - Knowledge: actor has a deep knowledge about the topic.

    A stakeholder can, of course, count on more than one resource.
2. *Influence*, referred to an assessment of the extent to which actors are able to activate their resources to affect the process, since having a resource is a necessary but not sufficient condition for the resource to be actually used (e.g., having a perfect knowledge of a phenomenon does not make you a powerful actor if you are not required to feed the decision making process...).
3. *Interest*, referred to the analysis of the reasons why the stakeholders should be interested in the initiative and how much interest they have.
4. *Attitude,* referred to the interaction among the specific views and goals of the SHs and the views and goals of the initiatives that could trigger an opposing or favorable attitude.
5. *Impact*, related directly to the mechanisms that might produce an expected/unexpected positive/negative change on the SHs and to the magnitude of this change.
6. *Relationship*, that relates to the nature (neutral, conflictual, cooperative) and intensity (strong vs weak) of the interactions between the SHs and the initiative.

Step 3) STAKEHOLDERS CATEGORIZATION

Based on the results of the description at step 2, the magnitude of a subset of features is then assessed through the application of two quantitative evaluation on two scales:

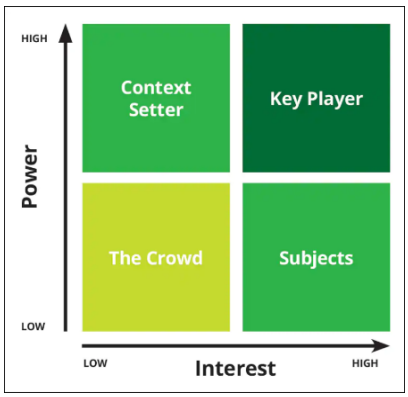
- From *1 = min* to *5 = max* to evaluate the magnitude of attributes “Power” and “ Interest”.
- From *-5 = strong negative* to *+5 =strong positive* to evaluate the magnitude of attributes “Attitude” and “Impact”.

  NOTE: the value ‘0’ was not considered in the 2 scales for two main reasons: (1) as for the 1st scale because for an actor to be considered a stakeholder it is supposed to have a minimum power and interest in the process ; (2) as for the second, in order to avoid central tendency bias

The scores were then combined to produce **two typologies** of stakeholders.

<u>Typology A – Stakeholders by Relevance</u>

Power and Interests scores have been combined to implement the Power X Interest Matrix, the most widely diffused approach in SA to assess the relevance of stakeholders in terms of their capability to affect the process



As reported in the figure, in such a way the stakeholders have been assigned to the following four categories.

Key Players *(values from 3 to 5 for both Interest and Power)*: these are the most relevant actors to be considered, highly interested and powerful.

Context Setters *(values from 3 to 5 for Power, 1 and 2 for Interest)*: these are relevant actors to foster or hamper the process although they are not very interested.

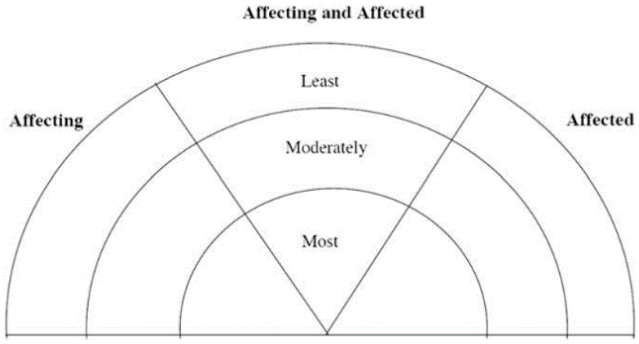
Subjects *(values from 3 to 5 for interest, 1 and 2 for Power)*: these are the most affected actors, highly interested with little power to influence the process.

Crowd *(values below 3 for both Interest and Power)*: these are the 'surrounding' actors, with no interest neither power to affect the process.

Typology B – Stakeholders by Impact

A second typology was built on the combination of the Power and Impact scores, to categorize the stakeholders on the basis of the likelihood of affecting vs being affected by the initiative development. This second typology is a simplified version of the one proposed by Chevalier and Books[6].

Figure 4.3 - The Rainbow diagram : likelihood for SHs to affect/be affected the process



In order to assign the stakeholders to different impact category, a simple ratio has been computed:
R = Power Score / Impact Score

Based on R, the SHs were assigned to the following three categories:

- *Affected* (*R < 0,75)*, that means the actors are affected from the process in a way far greater than the power they have to affect the process.
- *Affecting & Affected* *(0,75<=R<=1,25)* that refers to actors that are able to affect the process more or less to the extent they are likely to be affected.

[6] Chevalier, J.M. and Buckles, D.J., 2008. *SAS2: A Guide to Collaborative Inquiry and Social Engagement*. Sage Publications.

- *Affecting (R > 1,25)*, that refers to actors that are more able to affect the process than likely to be impacted.

NOTE: given that the impact can be positive or negative (i.e. below or above 0) in computing R the absolute value is adopted while the actual values are reported in a dedicated table.

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5. HISTORIC EXAMPLES OF INVOLVEMENT

5.1. OurPower Energy Cooperative (AT)

The energy cooperative OurPower was founded in 2018 by a group of 19 founding members, with the goal of fostering the transition to renewable energy and developing a new model for energy democracy and citizen power[7]. OurPower was the first Austrian company to adopt the legal form of European Cooperative Society (SCE, for Latin societas cooperativa Europaea). The co-founders combined expertise and previous experience with the green energy market with knowledge on stakeholder participation and the design of online platforms. The aim of the energy cooperative is to promote cooperation and relationships between energy producers and consumers, thus sharing risks and responsibilities related to the energy market and ensuring fair prices for both sides[8]. To this end, the cooperative envisaged the development of an online marketplace to connect producers and consumers of regionally produced electricity from renewable sources, including biomass, solar, hydro- and wind power. The implementation of this digital marketplace received funding from the Vienna Business Agency amounting to €150,000 over 21 months[9], from 2018 to 2020. In addition to this funding, the cooperative started out with a founding capital of around €70,000 which corresponds to roughly 700 company shares (à €100 each) purchased by the founders, and an additional 500 shares were agreed to be subscribed to by the founders or their companies in due time[10]. OurPower defined its funding milestones at €300,000 €600,000 and €900,000 respectively, the first of which was reached in 2019 and the second in 2021, while the third goal is still under progress[11].

In addition to financial support, the social networks and contacts of OurPower's founding members constituted key resources that enabled the cooperative's foundation. As a cooperative of electricity producers, OurPower needed strong partners from the practical field of renewable energy generation interested in selling their electricity through the marketplace. To this end, OurPower has been working closely with "Energiebezirk Freistadt"[12], a non-profit organization in the Upper Austrian Region "Mühlviertel". Energiebezirk Freistadt was founded by the municipalities of the Upper Austrian district Freistadt in 2005 and has since implemented many regional and local projects in the areas of renewable energy, sustainable mobility, climate protection and climate change mitigation. Another key practice partner is "Helios Sonnenstrom GmbH"[13], a daughter company of Energiebezirk Freistadt founded in 2012 which has since accumulated over 10 years of experience and knowledge on the planning, financing, construction and operation of over 100 photovoltaic installations. In addition to this practical experience, OurPower is also building on their partners' previous efforts in community building and citizen

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[7] OurPower Energiegenossenschaft SCE mbH, 'Satzung der OurPower Energiegenossenschaft SCE mit beschränkter Haftung', *ourpower.coop*, Vienna, 2018, https://www.ourpower.coop/page/downloads, (accessed 20.10. 2024).
[8] Ibidem.
[9] OurPower Energiegenossenschaft SCE mbH, 'Geschäftsbericht 2018', *ourpower.coop*, Vienna, 2019, https://www.ourpower.coop/page/downloads, (accessed: 20.10.2024).
[10] Ibidem.
[11] See: https://www.ourpower.coop/page/mitglied-werden
[12] See: https://www.energiebezirk.at/
[13] See: https://www.helios-sonnenstrom.at/

participation[14]. Next to these strong local partners, international and EU-level connections also played an important role in bringing larger-scale discourses on energy democracy, independence from fossil energy sources and global energy markets, and "citizen power" to Austria and conceiving of OurPower as an Austrian lighthouse project for these ideas.

OurPower's first year of operations was marked – next to the development of a corporate identity and the recruitment of additional members and supporters – by the development of the online marketplace, which entered its pilot phase in mid-2019[15]. Since April 2020, the marketplace has been fully functional, allowing energy producers to sell their electricity and consumers to choose a personalized mix of energy and specific production facilities[16]. Since then, OurPower has been steadily working on implementing improvements and additional features, such as a personalized electricity bill to foster visibility and relationships between its energy producers and consumers[17]. At the same time, the cooperative has been working on recruiting new members, producers and consumers and securing additional funding through these memberships (where each member must sign at least one company share, adding to the cooperative's capital) as well as through its revenues. At the end of 2023, OurPower counted 833 cooperative members, 292 electricity producers, 1100 electricity customers and a cooperative capital of 843 000 euros[18].

OurPower's development since its foundation was strongly affected by the multiple crises experienced globally in recent years. The onset of the Covid-19 pandemic in early 2020 meant that countless in-person events and workshops aimed at marketing OurPower and increasing its public awareness had to be canceled. A further effect of the global health crisis meant that public awareness shifted away from OurPower's core topics of climate action and renewable energy transition, which made it more difficult to engage people in the cooperative's activities. The team reacted to this by shifting most of their marketing efforts online and developing new digital formats of communicating with members and citizens and forming meaningful relationships in an online environment[19]. As an additional measure, OurPower expanded its scope of action to recruit funding through participation in several scientific research projects[20], which proved to be quite successful and was continued in the following years[21].

Starting in the second half of 2021, the electricity exchange prices rose sharply, a development that was further exacerbated by the onset of the Russo-Ukrainian war in early 2022. While this situation presented

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[14] OurPower Energiegenossenschaft SCE mbH, 'Geschäftsbericht 2019', *ourpower.coop*, Vienna, 2020, https://www.ourpower.coop/page/downloads, (accessed: 20.10. 2024).
[15] Ibidem.
[16] OurPower Energiegenossenschaft SCE mbH, 'Geschäftsbericht 2020', *ourpower.coop*, Vienna, 2021, https://www.ourpower.coop/page/downloads, (accessed: 20.10.2024).
[17] OTS, 'OurPower startet die persönlichste Stromrechnung Europas', *OTS.at*, Vienna, 2021, https://www.ots.at/presseaussendung/OTS_20210319_OTS0155/ourpower-startet-die-persoenlichste-stromrechnung-europas-bild, (accessed: 9.10.2024).
[18] OurPower Energiegenossenschaft SCE mbH, 'Geschäftsbericht 2023', *ourpower.coop*, Vienna, 2024, https://www.ourpower.coop/page/downloads, (accessed: 20.10.2024).
[19] OurPower, 'Geschäftsbericht 2020', 2021, op. cit.
[20] OurPower, 'Geschäftsbericht 2019', 2020, op. cit.
[21] OurPower, 'Geschäftsbericht 2020', 2021, op. cit.

challenges to OurPower's goal of maintaining fair prices for both producers and consumers[22] . It also created opportunities through increased public awareness for the energy system as many countries implemented measures to gain independence from Russian oil and gas. While OurPower is currently operating only in Austria, the initiative's legal status as a European cooperative allows for future expansion to other EU countries, thereby furthering their goal of knowledge distribution and international cooperation. However, the different legal requirements for energy communities across EU countries currently pose a barrier to this expansion.

5.1.1. Context Analysis

While some of OurPower's activities, such as the co-creation and sharing of knowledge and practical experience regarding citizen participation in the renewable energy transition, extend beyond the national scale to encompass scientific and practice partners around Europe, the cooperative's core business activities (i.e. the online marketplace) are currently focused on Austria. Austria is a central European country covering an area of just under 84,000 km^2, characterized by its large share of alpine regions and its diverse landscape[23]. Due to its geographic location at the transition between two climate zones, Austria's west experiences an oceanic climate with more frequent precipitation and westerlies, while the east is characterized by an increasingly dry continental climate with hot summers and cold winters[24].

As detailed in the annual report of the Austrian Federal Institute of Statistics ("Statistik Austria"), Austria's resident population counted 9.1 million people at the beginning of 2023 and is expected to grow to over 10 million in the 2060s[25]. Austria's population is growing exclusively through immigration: Austria's total population growth within a decade (01.01.2013 to 01.01.2023: +652,912 people) was entirely due to the positive migration balance (+654,870), while the balance of births and deaths was negative overall during this period (-5,508 people)[26]. The largest municipality in the country is its capital city Vienna, with around 1.98 million inhabitants on January 1, 2023[27]. Other large cities in descending order of inhabitants include the provincial capitals of Graz (298,000 inhabitants), Linz (210,000 inhabitants), Salzburg (157,000 inhabitants) and Innsbruck (131,000 inhabitants)[28]. Of the 9.1 million people living in Austria, roughly 1.32 million are children under the age of 15, around 6.01 million are aged 15 to 64 and 1.78 million are aged 65 or older[29]. Therefore, around two thirds (66.0%) of the population are of working age between 15 and 64, while 14.4% are children of pre-school or compulsory school age and 19.6% are older people of retirement age[30]. The older population aged 65 and over is growing in absolute numbers and relative share – even more so in the future, as the 'baby boomer' generation born in the late 1950s and early 1960s will reach retirement age in the 2020s – while the labor force is also aging[31].

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[22] OurPower Energiegenossenschaft SCE mbH, 'Geschäftsbericht 2022', *ourpower.coop*, Vienna, 2023, https://www.ourpower.coop/page/downloads, (accessed 20 October 2024).
[23] Statistik Austria, 2024. *Österreich. Zahlen. Daten. Fakten.*, Vienna, Bundesanstalt Statistik Österreich.
[24] Ibidem.
[25] Ibidem.
[26] Ibidem.
[27] Ibidem.
[28] Ibidem.
[29] Ibidem.
[30] Ibidem.
[31] Ibidem.

Regarding educational background, in 2022, 21.7% of the Austrian population aged 25 to 64 had a tertiary-level qualification (i.e. university level or equivalent), 64.9% a secondary-level qualification (including secondary and vocational schools as well as vocational training) and 13.4% a compulsory education qualification (9 years of compulsory education, from age 6-15)[32]. Over the past decades, the share of people with a tertiary qualification has been continuously increasing, while the proportion of those with at most a compulsory school-leaving certificate has been declining (for comparison, in 1971, 57.8% of 25 to 64-year-olds had a compulsory school-leaving qualification and 2.8% had a tertiary qualification)[33]. Secondary-level qualifications have also been on the rise.

The gender-specific differences in educational attainment have narrowed in recent years. In 2020, 15.1% of women and 11.7% of men had at most completed compulsory education, and women have overtaken men with regard to tertiary qualification (23.9% of women compared to 19.5% of men)[34]. However, major gender differences remain with regard to vocational training: 38.3% of men, but only 25.3% of women have completed vocational training[35]. These differences can be attributed to long-standing gender-specific employment patterns, as women are particularly well represented at commercial, business and social vocational secondary schools, while traditionally male-specific vocational qualifications, such as in the skilled trades, are often acquired through vocational training[36].

Concerning the Austrian labor market, in 2022 just over half of the population in private households (4.44 out of 8.9 million people) were in employment[37]. At 3.9 million, almost nine out of ten people in employment (88%) are non-self-employed, while around 543,100 self-employed and contributing family members account for 12% of the workforce[38]. Of the people not in employment, 1.95 million were pensioners, 143,800 people were permanently unable to work, and 230,100 were not in gainful employment as they are housewives or - much less frequently - househusbands who devote themselves exclusively to maintaining the household[39]. 383,900 people aged 15 and over were in education, while 23,000 men were doing military or civilian service[40]. The employment rate among the working-age population (15 to 64 years) was at 74% in 2022, which is above the EU average (70%) and in tenth place among the 27 EU member states[41]. The highest rate (86%) could be observed among 25 to 54-year-olds, while the rate was lower (52%) among teenagers and young adults (15 to 24 years), who are often still in education[42]. Despite an upward trend, Austria's employment rate of 55-64 year-olds (56%) is still below the EU average (62%) in 2022[43]. The proportion of working women aged 25 to 54 is 83%, which is already much closer to that of men (89%) than in previous years[44]. However, large gender differences remain with regard to part-time work: A significant proportion of the workforce – in 2022, 1.36 million or 31% – were

[32] Ibidem.
[33] Ibidem.
[34] Ibidem.
[35] Ibidem.
[36] Ibidem.
[37] Ibidem.
[38] Ibidem.
[39] Ibidem.
[40] Ibidem.
[41] Ibidem.
[42] Ibidem.
[43] Ibidem.
[44] Ibidem.

not in full-time employment[45]. Among these part-time employees, eight out of ten (78%) are women, and of all women in employment, 51% work part-time, while for men, this proportion is just under 13%[46]. At 4.8% in 2022, Austria's unemployment rate (= proportion of unemployed people in the labor force) is at a medium height compared to other EU countries, with the EU average in 2022 being at 6,2%[47].

Austria's economic output increased by 4.8% in 2022, rising above the pre-crisis level of 2019 again after a historic decline of 6.6% in 2020 due to the effects of the Covid-19 pandemic, and a plus of 4.3% in 2021[48]. This puts Austria's economy in the front midfield internationally: Slightly lower growth was recorded both in the European Union as a whole (+3.4%) and in the eurozone (+3.4%)[49]. Austrian GDP rose by 10.4% at current prices to around € 447.22 billion in 2022, while GDP per capita amounted to € 49,400 (+9.1%), or € 44,097 adjusted for purchasing power (in purchasing power standards; PPS), compared to the EU27's average GDP per capita in PPS of € 35,434 (around 80.4 % of the Austrian value)[50].
Like most highly developed, modern economies, the Austrian economy today is dominated by the service sector: Almost 70% of gross value added is generated by the so-called "tertiary" sector, around 29 % by the "secondary" sector - the manufacturing sector - and only 1.5 % by agriculture and forestry (the "primary" sector)[51]. More than one in two men (58%) work in the service sector, and eight in ten women (84%), with the sector providing work for 70% of the workforce overall, while agriculture and forestry, which were historically very important, now only account for 4% of the workforce, and the manufacturing sector (industry and commerce) accounts for around 26% (38% of men work in this sector, but only 13 % of women)[52]. Looking at the individual branches of the economy, the manufacture of goods is the branch with the highest employment, followed by trade[53]. The service sector has grown significantly, especially in the past decade, and employs a particularly large number of women, especially in the health and social services sector and in trade[54]. By contrast, the manufacture of goods is a typically male domain, employing 23% of all employed men[55].

Regarding Austria's climate impact, the country's greenhouse gas (GHG) emissions amounted to 77.5 million tons of carbon dioxide equivalents (CO_2eq) in 2021, an increase of 4.9% or 3.6 million tons compared to 2020 and 1.9% below the 1990 level[56]. The main reason for the relatively low figure were the measures relating to COVID-19 (for comparison, in 2019 GHG emissions were higher at 80.0 million tons)[57]. With 8.8 tons of CO_2eq per capita, Austria is in the European midfield and slightly above the EU average of 7.9 tons of CO_2eq per capita[58]. The main sources of GHG emissions (including emissions

[45] Ibidem.
[46] Ibidem.
[47] Ibidem.
[48] Ibidem.
[49] Ibidem.
[50] Ibidem.
[51] Ibidem.
[52] Ibidem.
[53] Ibidem.
[54] Ibidem.
[55] Ibidem.
[56] Ibidem.
[57] Ibidem.
[58] Ibidem.

trading) in 2021 were the energy and industry sector (44.5%), transport (27.9%), buildings (11.7%) and agriculture (10.6%)[59]. A high proportion of installations in the energy and industry sector (2021: 83.4%) are covered by EU emissions trading, while in terms of total national emissions, the emissions trading sector had a share of 37.0% in 2021[60].

OurPower's niche activities as a renewable energy cooperative are embedded in the Austrian energy system, which has been characterized by a high degree of volatility and change since the initiative's foundation in 2018. This is in part due to political efforts at the national level to increase renewable energy production and energy security – i.e. regime level developments – but also due to landscape level trends of technological innovation, increasing digitalization and democratization, as well as the influence of global events such as the COVID-19 pandemic and the Russo-Ukrainian war.
According to the Austrian Climate and Energy Ministry (BMK)'s annual report on "Austria's Energy"[61] ~35% of Austria's primary energy demand was covered by domestic production in 2023, with energy imports supplying the remaining ~65%. While domestic production is characterized by a high share of renewables (87,6%), energy imports are mainly oil and natural gas. Compared to the previous year, the overall share of renewable energy sources increased in 2023 by ~60% for solar photovoltaics, ~11% for wind, ~17% for hydropower, ~10% for ambient heat, and ~5% for biogenic energy sources[62]. Compared to the EU-27, Austria's gross domestic energy consumption is characterized by a higher share of hydropower and biogenic energy sources[63]. The Austrian government aims to increase the overall share of renewables from the current ~34% to near 100% by 2040[64].
Regarding electricity consumption, the share of renewables is already considerably higher, at ~78% (around 50,4 TWh) in 2022, with over 50% of production originating from hydropower[65]. As outlined in the EAG, the aim is to increase this share to 100% on balance by 2030, which will require a significant expansion of renewable electricity generation, as total electricity consumption is expected to increase further[66].

OurPower was founded with the aim of contributing to this regime-level goal by increasing citizen engagement in renewable energy production. Building on the recent efforts towards democratization through citizen participation in different societal domains (e.g. in policy making), the founding members hold the belief that this citizen involvement is essential to the successful transition to a renewable energy system[67]. As laid out in the cooperative's statute, OurPower aims to promote an energy system that has human wellbeing and sustainability at its core and advocates for transparency with regards to the provenance of renewable electricity and its production conditions. OurPower's core business lies in the development and operation of an online marketplace which enables producers of renewable electricity

[59] Ibidem.
[60] Ibidem.
[61] Bundesministerium für Klimaschutz, 2024. Umwelt, Energie, Mobilität, Innovation und Technologie (BMK), 'Energie in Österreich—Zahlen, Daten, Fakten.', *bmk.gv.at*, Vienna. https://www.bmk.gv.at/themen/energie/publikationen/zahlen.html, (accessed: 9.10.2024).
[62] Ibidem.
[63] Ibidem.
[64] Ibidem.
[65] Ibidem.
[66] Ibidem.
[67] OurPower, 'Satzung der …,2018. op. cit.

to sell their power directly to consumers and allows consumers to choose a specific mix of energy sources and production facilities according to their preference. This innovative idea is embedded in global trends at the landscape level toward increased digitalization in countless societal domains. The establishment of digital platforms as part of existing socio-technical regimes in many different areas, such as Facebook, Airbnb or Uber, as well as their emergence in the energy sector were thus important prerequisites for OurPower's foundation.

As a cooperative undertaking activities in the renewable energy market, OurPower's activities are embedded in the legal frameworks and political discourses around not-for-profit organizations, (sustainable) energy systems and citizen participation in the renewable energy transition. At the EU level, key policies include the 2019 EU Clean Energy for all Europeans package (specifically, the Renewable Energy Directive/EU/2018/2001 and the Internal electricity market Directive/EU/2019/944), which aims to provide a common European framework for the transition to a sustainable energy system[68]. The policy package set a target of at least 32% renewables by 2030 and tasked countries with drafting a National Energy and Climate Plan (NECP) for the timeframe 2021-2030. It also aimed to encourage citizens' active participation in the development of renewables by promoting renewable energy communities and self-consumption of renewable energy. An additional amendment in 2023 (Directive/EU/2023/2413) further increased the renewables target to 42,5% by 2030, with an 18-month period for countries to transpose the directive's provisions into national law[69].

In 2021, Austria implemented the 2019 EU legislation via the new Renewables Expansion Act (EAG) and an amendment to the Electricity Management and Organization Act (EIWOG). The EAG set the goal of increasing Austria's renewable energy production by 27 TWh by 2030, an increase of around 50%[70]. To promote this goal, it introduced a new system of subsidies focusing on market premiums as well as investment subsidies. In addition, it encompassed legislation for the implementation of renewable energy communities, the certification of origin for renewable energy and the development of an integrated Austria-wide grid infrastructure plan[71]. As OurPower had been founded prior to and in anticipation of this national legislation, their experience and expertise in the area of citizen participation in the energy system, as well as their activities between 2018-2021, enabled them to serve as a best-practice example and support the development of the Austrian legislation. Since the national legislation for renewable energy communities was passed, OurPower has started working on expanding its services to provide support for citizens who are interested in founding or participating in such communities themselves[72].

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[68] Directorate-General for Energy (European Commission), 'Clean energy for all Europeans', *data.europa.eu*, Publications Office of the European Union, 2019, https://data.europa.eu/doi/10.2833/9937, (accessed: 9.10.2024).
[69] See: https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive_en
[70] Bundesministerium für Klimaschutz, 2021. Umwelt, Energie, Mobilität, Innovation und Technologie (BMK), 'Vortrag an den Ministerrat: Erneuerbaren-Ausbau-Gesetz und weitere Gesetzesnovellen (EAG-Gesetzespaket)', *bmk.gv.at*, Vienna. https://www.bmk.gv.at/service/presse/gewessler/2021/20210317_eag.html, (accessed: 9.10.2024).
[71] Ibidem.
[72] OurPower, 'Satzung der …,2018. op. cit.

From an MLP perspective, OurPower's online peer-to-peer marketplace and other activities contributing to a sustainable transformation of the energy system constitute niche innovations that challenge the established socio-technical regime and even aspire to contribute to changes at the landscape level. OurPower aims to promote a community-based, decentralized energy system based on 100% renewable energy sources that differs from the current regime in both technical (different energy sources and production facilities) as well as social (promoting collaboration between energy producers and consumers) characteristics. Furthermore, by creating relationships between energy producers and consumers and emphasizing the relevance of the ecological and social effects of energy production, OurPower also challenges dominant landscape-level discourses of profitability and efficiency and contributes to a broader discussion of the values underlying our established energy systems.

As a bottom-up initiated project, OurPower's foundation and development was heavily influenced by niche actors and their available resources, among them the founding members and their pre-existing networks and connections to other niche initiatives that provided valuable knowledge and experience. In addition, OurPower received regime-level funding by the Vienna Business Agency and was – in turn – able to influence regime-level developments by constituting a best-case example of renewable energy shared in peer-to-peer communities during the development of the Austrian laws on Energy Communities. Landscape-level events that impacted OurPower's development include the Covid-19 pandemic, which forced the initiative to test new digital ways of member and customer acquisition as well as funding, and Russia's invasion of Ukraine, which further destabilized the global energy market and raised public awareness of Austria's dependence on Russian gas, at the same time creating momentum for OurPower's activities through public concern and challenging the initiative through high electricity prices and uncertainty.

5.1.2. Stakeholders Analysis

In the OurPower case studies the most represented stakeholders (table 5.1a) are Citizens and Civil Society Organizations at the National Level, the latter being the promoter of the initiative jointly with the Helios Sonnenstrom GmbH, a Professional stakeholder. Overall the vast majority is composed of National stakeholders that show cooperative relationships with the initiative with the relevant exception of the established energy providers and grid operators.

As for the relevance (figure 5.1a), among the *key players* the most powerful are the Founding Members and OurPower's energy producers and consumers but also other energy cooperatives and the scientific community seem to be able to have a major role. Among the *context setters* deserves to be highlighted the role played by the Supporting Members and the professional support provided by EE100% Reallabore while incumbents (energy and electricity providers) seem not to have the power to affect the process. Municipalities are the only stakeholders to which a residual role is assigned.

For what refers to the impact, the majority of the most powerful SHs are also the ones able to both affect and be affected by the process while Supporting Members, other Energy cooperatives and also EE100% Reallabore are at the top of the rank of the positively affected SHs. Among the Affecting SHs, the Austrian National government, although with a relatively high power to affect, seems to be also positively impacted by the process while the incumbent energy actors are likely to be only slightly negatively affected with not that high power to affect.

Table 5.1a – Stakeholders: list and main features

Stakeholder		Category	Spatial Scale	Role	Resources	Relationship
SH1	Established energy providers	Business & Industry	National	beneficiary	Normative, Relational, Economic	conflictual
SH2	OurPower's electricity producers	Citizens	National	beneficiary, target	Normative, Economic	cooperative
SH3	OurPower's electricity consumers	Citizens	National	beneficiary	Economic	neutral
SH4	Supporting members	Citizens	National	beneficiary, target	Normative, Economic	cooperative
SH4	Founding members	Civil society organizations	National	promoter	Normative, Relational, Economic, Knowledge	cooperative
SH6	Energiebezirk Freistadt	Civil society organizations	Regional	promoter	Relational, Knowledge	cooperative
SH7	Other energy cooperatives	Civil society organizations	National	beneficiary, target	Knowledge	cooperative
SH8	Austrian national government	Institutions	National	third party	Normative, Relational, Economic	cooperative
SH9	Austrian municipalities	Institutions	Regional	beneficiary, target	Relational, Positional, Economic	neutral
SH10	Helios Sonnenstrom GmbH	Professionals	Regional	promoter	Relational, Knowledge	cooperative
SH11	100% EE Rallabore	Professionals	National	beneficiary, target	Knowledge	cooperative
SH12	Electricity grid operators	Public services	National	beneficiary	Normative, Relational, Positional	conflictual
SH13	Scientific actors	Research	Supranational	beneficiary, target	Knowledge	cooperative

Figure 5.1a – Stakeholders by relevance : the Power-Interest matrix

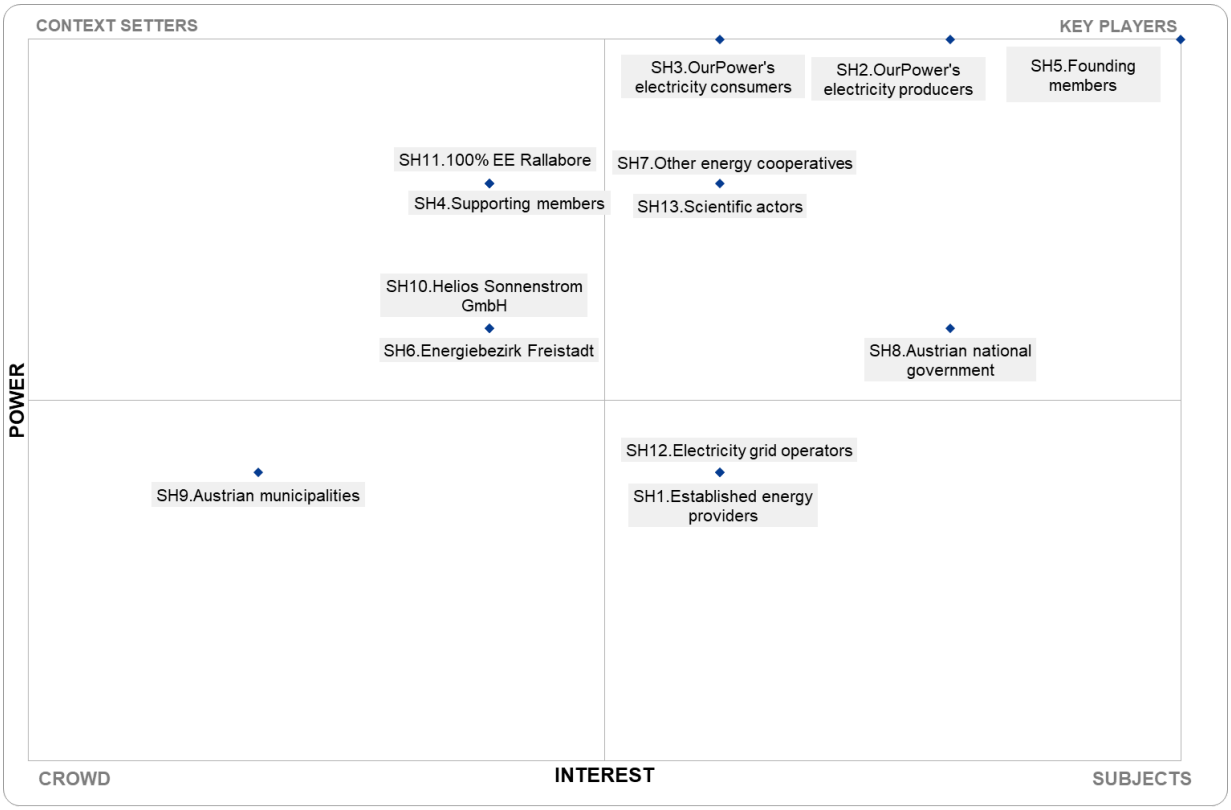

Table 5.1b – Stakeholders by impact

Impact Category	Stakeholder	Power	Impact
Affected	SH4.Supporting members	2	5
	SH11.100% EE Rallabore	2	5
	SH7.Other energy cooperatives	2	5
	SH6.Energiebezirk Freistadt	2	3
	SH10.Helios Sonnenstrom GmbH	2	3
	SH9.Austrian municipalities	1	2
Affected & Affecting	SH5.Founding members	5	5
	SH2.OurPower's electricity producers	4	4
	SH3.OurPower's electricity consumers	3	4
	SH13.Scientific actors	3	4

Impact Category	Stakeholder	Power	Impact
Affecting	SH8.Austrian national government	4	3
	SH1.Established energy providers	3	-1
	SH12.Electricity grid operators	3	-1

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5.2. Energy Community in the Rural Municipality of Monachil (ES)

The process began in 2018 with the establishment of the Municipal Energy Office, spearheaded by the Monachil Town Council in collaboration with the local cooperative Cooperase. The aim was to promote energy savings, efficiency, and renewable self-consumption among local residents. A crucial turning point came in 2019 when a Royal Decree allowed for collective self-consumption, creating a favorable regulatory environment for local energy communities. In 2020, Cooperase and the local association Pasos applied for a grant from SOM Energía, which provided funding and spurred social participation, leading to the formal creation of the Monachil Energy Community in 2022.

Today, the energy community has 55 members, split evenly between men and women aged 30 to 75, primarily of Spanish origin and with educational backgrounds ranging from vocational training to doctorates. This initiative stands out as a successful case of rural community engagement in the energy transition, overcoming challenges such as regulatory uncertainties, limited local resources, and initial low participation. Although still in its early stages, the Monachil Energy Community provides a model for similar initiatives by demonstrating the potential of local networks and participatory processes to establish collective renewable energy projects. Furthermore, the community plans to extend its benefits through "energy solidarity" by eventually sharing surplus renewable energy with vulnerable households in the municipality, thereby addressing issues of energy poverty and social inequality. The case of Monachil offers valuable insights into the barriers and drivers of participation in rural energy communities, emphasizing the importance of bottom-up initiatives and local government support in the broader context of Spain's energy transition.

5.2.1. Context Analysis

5.2.1.1. Geographical and Territorial Characteristics

Monachil is a Spanish municipality located in the southeast of the Iberian Peninsula, within the province of Granada, in the region of Andalusia. As of 2022, Andalusia remains the most populous region in Spain, with 8,500,187 inhabitants[73]. The province of Granada has a population of 921,987, of which 8,182 reside in Monachil, representing less than 1% of the province's total population. Despite its small size, Monachil's geographical location within the Sierra Nevada Mountain range is significant. The municipality's terrain is predominantly mountainous, which greatly influences its climate[74]. Monachil experiences cooler temperatures than much of the surrounding province and higher levels of precipitation, often in the form of snow during the winter. This unique climate sets it apart from other areas in both the province and the broader region.

[73] INE, 2024. Instituto Nacional de Estadística. Municipal Register Demography and population. https://www.ine.es (accessed: 20.6.2024).

[74] Rivas-Martínez S., Penas Á., del Río S., Díaz González T.E., and Rivas-Sáenz S., 2017. Bioclimatology of the Iberian Peninsula and the Balearic Islands. In: Loidi J (eds) Veg Iber Peninsula. Plant and vegetation, vol 12. Springer, Cham, pp 29–80. https://doi.org/10.1007/978-3-319-54784-8_2

Andalusia spans 87,268 km², making it the largest autonomous region in Spain[75]. The region is divided into eight provinces and consists of 785 municipalities. Andalusia's varied topography, climate, and hydrology play critical roles in shaping its socio-economic development. The Betic System, which includes prominent mountain ranges such as the Sierra Nevada, Sierra de los Filabres, and Sierra de Grazalema, dominates much of the region's landscape. The Guadalquivir River basin, running through the region's central areas, supports fertile agricultural land, while the Sierra Morena in the north acts as a natural barrier. The southern part of Andalusia is defined by its extensive coastline, which stretches 917 kilometers along the Mediterranean Sea and the Atlantic Ocean. This diverse landscape creates a wide range of climatic conditions, from the continental climate of its mountainous interior to the Mediterranean climate of its coastal areas.

The province of Granada mirrors this regional diversity, spanning 12,647 km²s with 174 municipalities. It is part of the Betic System, with the Genil River flowing through a portion of the province. Granada's terrain includes 79 kilometers of coastline, further contributing to its geographical variety. Monachil, located at an altitude of approximately 790 meters above sea level and covering 88.85 km²s, lies on the western slopes of the Sierra Nevada[76]. Its proximity to the mountains shapes its climate and landscape, providing it with a unique natural environment. As part of the urban agglomeration of Granada, Monachil has seen increasing integration into the economic and social fabric of the provincial capital. The urban agglomeration itself comprises 30 municipalities and has experienced significant urban expansion since the 1950s. The population of the urban agglomeration is now double that of the city of Granada.

While Monachil has participated in this growth, it has maintained a more moderate pace of development, characterized by its primarily residential and tourist-oriented economy. Over the last decade, Monachil's population has increased by 10%, largely driven by residents of Granada seeking quieter, less densely populated metropolitan areas. This trend is common in metropolitan regions, where rising housing costs in city centers push residents to search for more affordable options in nearby municipalities. Monachil has also been part of this urbanization process as a result of the search for quieter and more affordable areas outside the urban centers.

From an MLP perspective, Monachil´s geographical characteristics and its proximity to Sierra Nevada represent part of the "landscape" level, which is defined by long-term, external trends that shape local activities. The geographical constraints and opportunities provided by the mountainous terrain significantly influence the local socio-technical regime, which is currently dominated by tourism and residential development. These landscape features have historically determined the economic and social structures of Monachil and continue to guide its future developments[77].

5.2.1.2. Demographic Trends, Migration, and Educational Attainment

Andalusia is the most populous region in Spain, but given its large territorial size, its population density is approximately 100 inhabitants per km², slightly above the national average. However, this population density varies locally: while the provincial average is quite low, at 72.9 inhabitants per km² in 2021 (in line

[75] IECA, 2024. Sistema de Información Multiterritorial de Andalucía. https://www.juntadeandalucia.es/institutodeestadisticaycartografia/dega/sistema-de-informacion-multiterritorial-de-andalucia-sima

[76] INE, 2024. op. cit.

[77] Rivas-Martínez et. al., 2017. op. cit

with ongoing rural depopulation), the provincial capital exceeds 2,500 inhabitants per km². Monachil covers just 0.7% of the provincial surface area and its population represents 0.9% of the province's total. These figures are explained by its location within the Sierra Nevada Natural Park. Since much of its land is steep and mountainous, making it uninhabitable, the municipality records a low average population density. In 2021, Monachil had a population density of 93 inhabitants per km²[78].

Population dynamics between 2011 and 2021 reflect two significant socio-economic factors: the effects of the 2008 financial crisis and the COVID-19 pandemic. While a slight increase in population was observed nationally and regionally, the overall population in the province of Granada decreased by 0.28%. However, Monachil experienced a 10% population growth, in line with the expansion of the metropolitan area, particularly impacting Barrio de Monachil.

When analyzing the evolution of the population by major age groups between 2011 and 2021 in both Andalusia and the province of Granada, a clear trend emerges: there has been a relative decline in the number of children and the working-age population, resulting in an overall aging of the population. Monachil is no exception: the population aged over 64 years grew by 17.83%, a rate higher than that of the rest of the province, region, and country. However, despite this trend, the working-age population in Monachil still accounted for 69.33% of the total population in 2021. Additionally, in the same year, the average age of Monachil's population was 41.19 years, lower than the provincial and regional averages[79].

Indeed, Monachil's population growth has significantly outpaced the overall trend in the province of Granada. While the province experienced a slight population decline of 0.28% between 2011 and 2021, Monachil saw a substantial 10% increase during the same period. This divergence can be attributed to the growth of the urban agglomeration of Granada due to the urbanization of the rural areas surrounding the provincial capital, as rising housing costs and the densification of the provincial capital have prompted many residents to seek more affordable and spacious living arrangements in surrounding areas like Monachil.

The growth of the urban agglomeration of Granada has had a profound impact on Monachil, particularly in areas like Barrio de Monachil, which has increasingly become a residential hub for individuals commuting to the city for work or education. As a result, Monachil is no longer just a peripheral rural area but is now actively integrated into the urban agglomeration of Granada, benefiting from improved infrastructure and services, which have made it an attractive alternative for those looking to escape the urban density while still enjoying proximity to Granada's amenities.

Over the past decade, there has been significant growth in the foreign-born population, with rates exceeding 20% across all territories and reaching 75% in Monachil. Despite this increase, the percentage of foreign-born residents in Monachil stood at only 9.72% in 2021, compared to 10.51% in Andalusia and 15.30% nationally. In other words, Monachil is showing convergence with the provincial average regarding the presence of foreign residents.

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[78] INE, 2023. Instituto Nacional de Estadística. Annual Population Census. 2021 & 2011 Retrieved from https://www.ine.es

[79] Entrena, F., 2006. Difusión urbana y cambio social en los territorios rurales. Un estudio de casos en la provincia de Granada. *Revista de estudios regionales*, (77), 179-203.

Granada's university tradition has had a key impact on Monachil's level of human capital. In 2021, 36.08% of Monachil's population over the age of 16 held higher education degrees, compared to the national average of 31.76%. Regionally, Andalusia lagged behind with just 26.83%, while in the province of Granada the figure reached 30.40%. These figures clearly demonstrate the positive externality of the university in its metropolitan area, continually advancing the human capital of its surrounding territory.

The economic transformation of Monachil, particularly the shift from agriculture to tourism, can be understood as part of a regime shift. Tourism, especially the ski resort in Pradollano, represents the dominant socio-technical regime. This regime, however, is vulnerable to landscape-level pressures such as climate change, which threatens the viability of winter tourism. Efforts to diversify Monachil's economy, particularly through niche innovations like active tourism and renewable energy projects, are crucial for increasing local economic resilience.

The rise of year-round tourism initiatives and the development of the Monachil Energy Community represent niche innovations that challenge the existing tourism-dominated regime. These innovations align with broader landscape trends in climate change awareness, sustainability, and decentralized energy production. As these niche innovations mature, they have the potential to influence and transform the existing socio-technical regime, gradually shifting Monachil's economic base toward more sustainable and resilient sectors.

5.2.1.3. Economic Structure and Employment

The economy of Granada and its province reflects a diverse structure, closely resembling that of Spain overall, but with distinct characteristics shaped by its geographical and historical context. Since 2011, economic activity in the region has displayed varying trends, particularly between coastal and inland areas. The service sector, particularly tourism, has been the primary engine of employment growth across the region. Cities such as Seville, Córdoba, Granada, and Málaga have seen significant expansions in their tourism industries, driving job creation in hospitality and related services. Although the COVID-19 pandemic dealt a severe blow to this sector, it has shown a strong recovery in recent years.

As Spain's leading agricultural region, Andalusia has maintained stable levels of employment in agriculture despite challenges such as climate change and fluctuating market prices. Key products, including olive oil, wine, and a variety of crops, continue to be central to the region's economic resilience. However, the industrial sector in Andalusia has seen a relative decline, with the exceptions of agro-industry, renewable energy, and certain clusters such as aerospace and naval industries.

In the province of Granada, the economic structure is somewhat less diversified than the broader region, with a greater reliance on agriculture and agro-industry. Despite challenges like price volatility and the ongoing impact of drought, agriculture remains a crucial sector. Crops such as olives, almonds, and tropical fruits along the coast have shown considerable resilience, supporting the agro-industrial sector. Despite pressures from modernisation and automation, this sector continues to be a major employer, aided by international competitiveness and innovation. While tourism plays a prominent role in the provincial capital, the services sector in the wider province is more varied, with a focus on rural and cultural tourism. Employment in trade and personal services has also grown steadily.

Monachil's socio-economic landscape has evolved significantly over the past century, particularly with its increasing integration into the Granada metropolitan area. Historically, the municipality's economy was rooted in agriculture, especially in the cultivation of olive trees and vegetable crops. Olive oil production once played a central role in Monachil's economy, and while this tradition persists, it now occupies a smaller role. In recent decades, the service sector, particularly tourism, has become the main driver of economic activity. Monachil's natural beauty and proximity to the Sierra Nevada have made it an attractive destination for rural tourism, drawing outdoor enthusiasts for activities such as hiking, birdwatching, and other nature-based tourism. Investments in local guesthouses, restaurants, and tourist services have further supported this shift.

The ski resort in Pradollano remains the largest contributor to Monachil's economy, generating significant employment and attracting large numbers of tourists during the winter months. However, this reliance on seasonal tourism has exposed the municipality's vulnerability to fluctuations in employment and income at the close of the ski season. To mitigate these effects, Monachil has been promoting year-round tourism, particularly through active tourism initiatives, helping to stabilize the local economy and provide more consistent sources of income for residents and businesses.

The economic transformation of Monachil, particularly the shift from agriculture to tourism, can be understood as part of a regime shift. Tourism, especially the ski resort in Pradollano, represents the dominant socio-technical regime. This regime, however, is vulnerable to landscape-level pressures such as climate change, which threatens the viability of winter tourism. Efforts to diversify Monachil's economy, particularly through niche innovations like active tourism and renewable energy projects, are crucial for increasing local economic resilience.

The rise of year-round tourism initiatives and the development of the Monachil Energy Community represent niche innovations that challenge the existing tourism-dominated regime. These innovations align with broader landscape trends in climate change awareness, sustainability, and decentralized energy production. As these niche innovations mature, they have the potential to influence and transform the existing socio-technical regime, gradually shifting Monachil's economic base toward more sustainable and resilient sectors.

In 2021, the percentage of the employment-to-population ratio at the national level was 46.48%. While the regional and provincial figures were lower, at around 43%, Monachil recorded a higher rate of 47.40%, surpassing the average in other areas. This situation coexists with an unemployment rate of 24.21%, higher than that of the province (23.52%), Andalusia (24.01%), and Spain (17.03%).

This apparent contradiction is explained by the high labor force participation rate in Monachil, which reaches 62.54%. This means that a larger proportion of Monachil´s population is either employed or actively seeking work compared to other regions. Many of these individuals are employed in seasonal positions, particularly in the tourism sector, such as the Pradollano ski resort. During the off-season, when tourism demand drops sharply, local businesses may close temporarily or reduce staffing, leading to higher unemployment during this periods To address this issue, expanding Monachil's tourism offerings to include more year-round activities is essential for reducing dependence on winter tourism and fostering greater economic resilience[80].

[80] INE, 2023. op. cit.

The labor market situation is closely tied to the evolution of income levels, measured in terms of per capita income. In 2021, per capita income in Andalusia and the province of Granada stood at approximately €13,000. In Monachil, however, it was 13% higher, reaching €14,837 per person annually. This difference is largely due to Monachil's role as a commuter town within the Granada metropolitan area, closely linked to the service-based activities in the capital. An additional perspective can be gained from analyzing poverty levels, particularly the percentage of the population with an income per consumption unit below €5,000. In this respect, Monachil's figures are similar to those of the province and in line with regional averages. The primary source of economic vulnerability remains the municipality's dependence on tourism, as many families' incomes are tied to this sector, and the seasonality of tourism-related employment can create financial challenges[81].

5.2.1.4. Political and Administrative Structure

Spain is a parliamentary monarchy, established by the 1978 Constitution, which laid the foundation for a democratic system after forty years of Francoist dictatorship. The Constitution defines the political system based on the separation of powers: legislative, executive, and judicial. Legislative authority is vested in the Cortes Generales, comprising the Congress of Deputies and the Senate, while executive power is held by the Government. The judiciary operates independently, ensuring the administration of justice. All central institutions are based in Madrid, the nation's capital.

Spain's territorial organization is divided into regions, provinces, and municipalities. The regions, known as autonomous communities, enjoy a high degree of self-governance. The regional government of Andalusia, headquartered in Seville, administers key decentralized public services such as education, healthcare, social services, and cultural affairs.

At the provincial level, the government of Granada is structured around the Diputación Provincial, which coordinates and supports smaller municipalities. It plays a crucial role in facilitating the delivery of public services across the province and works in collaboration with the regional government to implement both regional and local policies.

Monachil, like other municipalities in Granada with fewer than 20,000 inhabitants, receives support and coordination from the Diputación Provincial de Granada. Locally, Monachil follows a political and administrative structure typical of Spanish municipalities. The Town Council acts as the legislative body responsible for approving the municipal budget, overseeing urban development, and enacting local ordinances. The council members, or councilors, are elected every four years in municipal elections, with the most recent held in 2023. The number of councilors is determined by the size of the population, and in Monachil, as a small municipality, the council consists of 12 representatives. The mayor holds executive power at the local level, managing the day-to-day administration of the municipality and executing the decisions made by the council. Monachil's municipal government is currently led by the center-left Spanish Socialist Workers' Party (PSOE).

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[81] Tax Agency, 2023. Statistics of Personal Income Tax declarers with disability by municipalities https://agenciatributaria.gob.es/Sede/en_gb/datosabiertos/catalogo/hacienda/Estadistica_de_los_declarantes_del_IRPF_por_municipios.shtml

5.2.1.5. Political Participation

Between 2011 and 2023, political participation across various territorial levels followed consistent patterns depending on the type of election. In general elections, voter turnout remained around 70%, while participation in municipal elections was significantly lower, particularly in 2023. This decline in local election turnout may reflect a lack of interest or disengagement from local politics, or the perception that national elections are more impactful. Additionally, social movements, especially those advocating for the defense of public education and healthcare, played a role in mobilizing citizens, although this did not always result in higher electoral participation. In Monachil, the decline in voter turnout was particularly noticeable.

In Andalusia, political participation fluctuated between 2011 and 2023, depending on the election. Turnout in general elections remained high and stable at around 69%, while participation in municipal elections was consistently lower, reaching just 61.36% in 2023.

Within the province of Granada, political participation followed similar trends to those observed in Andalusia, but with variations depending on location. In rural areas, turnout tended to be lower, largely due to factors like youth migration to urban centers and an aging population. In smaller municipalities and rural zones, voter turnout in local and regional elections typically ranged between 50% and 60%, influenced by citizens' connection to political processes and the socio-economic challenges they faced. In contrast, participation rates were generally higher in larger municipalities and areas closer to the provincial capital.

This urban-rural divide is evident in Monachil, where turnout in general elections—both in 2011 and 2023—was around 68%, slightly below the regional and provincial averages. However, participation in local elections was significantly lower than in other territorial levels[82].

Voter turnout in Monachil´s municipal elections saw a notable decline between 2011 and 2023, falling from 61.12% to 56.63%. This drop may reflect a broader trend of disengagement from local politics, or the perception that municipal elections have less direct impact on daily life compared to general elections. Nevertheless, in the case of Monachil, its proximity to the provincial capital and its reliance on tourism may have helped sustain slightly higher voter participation compared to other rural areas.Local residents may perceive that municipal decisions have a more immediate influence on the management of tourism services and local infrastructure, which are crucial to the local economy. This sense of local control and impact may encourage greater voter engagement in municipal elections.

Monachil's political and administrative structure operates within the broader socio-technical regime of Spain's decentralized governance. The municipality's reliance on both local and provincial governments for infrastructure and public services reflects the current regime. However, the involvement of local associations like Cooperase and the Pasos association in the creation of the Monachil Energy Community signifies the rise of niche innovations within the political sphere. These participatory energy projects, supported by bottom-up initiatives and local government support, are reshaping the governance model towards more community-based, decentralized energy management.

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[82] Montiel, C., 2003. Tradición, renovación e innovación de los usos y aprovechamientos en las áreas rurales de montaña. *Cuadernos Geográficos*, (33), 7-26.

This shift is reinforced by landscape-level developments in European and national energy policies, which provide incentives for renewable energy communities. Policies like Spain's RD 244/2019 on collective self-consumption and the European Union's Fit for 55 package create the regulatory framework that enables these niche innovations to flourish. The Monachil Energy Community, therefore, exemplifies how local actions can align with broader political and environmental trends, challenging the dominance of traditional centralized energy systems.

5.2.2. Stakeholder Analysis

The categories of stakeholders (SHs) most represented in the Monachil energy community initiative are local government institutions under the Monachil Town Council (OME), civil society organizations such as Cooperase and PASOS Participación, and community-focused entities such as the Monachil River Energy Community (CERM). These stakeholders operate primarily at the local level, but have wider implications at provincial, regional and national levels, especially as part of the drive for energy community projects and energy autonomy, as they have led the way in these respects alongside other similar initiatives (Table 5.2a).

In terms of impact, many of Monachil's stakeholders affect and are affected (Table 5.2b). For example, Cooperase, PASOS and Monachil Town Council through the OME play a dual role in influencing the direction of CERM while adapting to external constraints such as funding availability and regulatory frameworks. Some stakeholders, such as Endesa and the Ministry for Ecological Transition and Demographic Challenge, are primarily affecting entities, shaping policy and operational conditions, but are less directly influenced by the day-to-day activities of the community.

Key actors in the Monachil energy community are local stakeholders, such as the Monachil Town Council, Cooperase, PASOS and the Rio Monachil Energy Community (CERM) itself, who provide essential resources, technical support and community involvement for the success of the project (Figure 5.2a). Context setters include regional bodies such as the Junta de Andalucía and national institutions such as the Ministry for Ecological Transition, which influence the policy landscape. Endesa, as an energy distributor, also plays an important role in enabling or delaying community access to the grid, which impacts the ability of the initiative to sustainably grow and grow.

Table 5.2a – Stakeholders attributes

Stakeholder		Category	Spatial Scale	Role	Resources	Relationship
SH1	Endesa	Business & Industry	Local-Regional-National	third party	Economic	Neutral
SH2	La Olla del Patio	Civil society organizations	Local	beneficiary	Relational	Cooperative
SH3	Local residents of Monachil	Citizens	Local	beneficiary	Relational	Cooperative
SH4	Junta de Andalucía	Institutions	Regional	third party	Normative, Positional	Cooperative
SH4	Ministry for ecological transition and demographic challenge	Institutions	National	third party	Normative Positional	Cooperative
SH6	Monachil City Council (OME)	Institutions	Local	promoter	Normative, Relational, Positional	Cooperative
SH7	Energy Poverty Advisory Hub (EPAH)	Intermediate Bodies	European	target	Relational	Cooperative
SH8	SOM Energía	NGOs	National	promoter	Relational	Cooperative
SH9	Cooperase	NGOs	Local	promoter	Relational	Cooperative
SH10	PASOS	NGOs	Local	promoter	Relational	Cooperative
SH11	Local Educational Institutions	Public Services	Local	beneficiary	Relational	Cooperative
SH12	University of Granada	Research	Local-International	promoter	Knowledge	Neutral

Figure 5.2a – Stakeholders by relevance: the Power-Interest matrix

Table 5.2b – Stakeholders attributes

Impact Category	Stakeholder	Power	Impact
Affected	SH2. La Olla del Patio	2	3
	SH11. Local Educational Institutions	2	3
	SH8. SOM Energía	2	3
Affected & Affecting	SH9. Cooperase	4	5
	SH10. PASOS	4	5
	SH6. Monachil City Council (OME)	4	4
	SH3. Local residents of Monachil	4	4
	SH12. University of Granada	2	2

Impact Category	Stakeholder	Power	Impact
	SH7. Energy Poverty Advisory Hub (EPAH)	2	2
Affecting	SH1. Endesa	4	2
	SH5. Ministry for ecological transition and demographic challenge	4	2
	SH4. Junta de Andalucía	3	2

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Rivas-Martínez S., Penas Á., del Río S., Díaz González T.E., and Rivas-Sáenz S., 2017. Bioclimatology of the Iberian Peninsula and the Balearic Islands. In: Loidi J (eds) Veg Iber Peninsula. Plant and vegetation, vol 12. Springer, Cham, pp 29–80. https://doi.org/10.1007/978-3-319-54784-8_2

Tax Agency, 2023. Statistics of Personal Income Tax declarers with disability by municipalities https://agenciatributaria.gob.es/Sede/en_gb/datosabiertos/catalogo/hacienda/Estadistica_de_los_declarantes_del_IRPF_por_municipios.shtml (accessed: 5.102024).

5.3. “Przylesie” Housing Community (PL)

The “Przylesie” Community was founded in 1968, with the final multifamily building completed in 1972. Originally managed by the Teachers' Housing Cooperative, the estate became independent in 1990 and now operates under cooperative law. It is governed by a two-member board of directors and a supervisory board, elected for four-year terms, with the residents overseeing the management. The "deep thermal modernization" project, along with several renewable energy investments, serves as an exemplary model of energy transformation in a plattenbau estate. Despite the average income levels of the residents, the “Przylesie” HC has successfully secured significant external funding. The innovative efforts of housing communities like “Przylesie” have led to the development of new legal regulations in Poland’s energy sector, such as the introduction of “collective prosumer” and “tenant prosumer” concepts in 2022. This case is a notable example of public involvement in the energy transition in Eastern Europe, providing insights into the challenges and opportunities for participation in the region.

5.3.1. Context Analysis

Przylesie, as a housing cooperative, operates within a complex power regime that includes political and legal frameworks that requires its operation to be in line with them at regional and national levels. For the renewable projects carried out by Przylesie, the organization is required to submit funding applications. Whether they receive financial support does not depend solely on local authorities but also on national-level authorities, such as the National Fund for Environmental Protection and Water Management (NFOŚiGW), and regional-level authorities, such as the Provincial Fund for Environmental Protection and Water Management (WFOŚiGW).

Przylesie also operates within the power regime of the Tricity (Trójmiasto) area, which encompasses the cities of Gdańsk, Gdynia, and Sopot. This means that Przylesie as a part of Sopot is systemically connected to the political and legal frameworks governing the entire Tricity region. Sopot is currently governed by a municipal structure that does not formally recognize districts as separate administrative units. However, there is ongoing discussion and interest in establishing districts to better address the specific needs of different neighborhoods, including communities like Przylesie. In terms of political context, Sopot is dominated by centrist and liberal parties, with significant community involvement in public consultations, particularly for local projects. Local politicians, particularly the Mayor and City Council members, play a crucial role in advocating for projects and securing funding. This context highlights the relationships between governance structures, political dynamics, and community participation in shaping the development and energy transition efforts in the community “Przylesie”.

Przylesie is located in Sopot, a well-known resort city with a unique demographic structure shaped by its dual nature as a "double city," balancing between permanent residents and seasonal visitors. Covering an area of 2,776 hectares, Sopot has a population of 31,903, resulting in a population density of 1,149 people per km^2[83]. The city experiences a negative natural population growth rate of -314, which

[83] GUS, 2024. Powierzchnia i ludność w przekroju terytorialnym w 2024 roku. Główny Urząd Statystyczny (GUS). https://stat.gov.pl/obszary-tematyczne/ludnosc/ludnosc/powierzchnia-i-ludnosc-w-przekroju-terytorialnym-w-2024-roku,7,21.html (accessed: 7.10. 2024).

corresponds to a natural growth rate of -9.67 per 1,000 inhabitants[84]. Sopot is one of the smallest cities in Poland in terms of area, which makes its population density relatively high compared to many other Polish cities. The majority of Sopot's residents are women[85] , and the average age is higher than the national average, 49.1 for women and 44.9 for men indicating an aging population. This demographic trend suggests that Sopot may need to adopt strategies aimed at attracting younger residents to ensure long-term sustainability.

As mentioned, the average age of Sopot's residents is higher than the national average, reflecting an aging population and the town's appeal as a destination for older individuals seeking a peaceful, resort-like lifestyle. Additionally, the migration balance has been relatively stable, with slight fluctuations, indicating that the number of people moving in and out of the city is almost balanced, further emphasizing the importance of the seasonal influx of visitors to the overall population dynamics. In terms of human migration, Sopot experienced a negative balance, with a decrease of 152 people in 2019 and 188 in 2022[86] [87].

Within the Tricity function as an integrated labor market, cooperating and complementing each other in terms of job opportunities, industries and specializations. Gdansk acts as a major financial and academic center, Gdynia is a key port and shipbuilding center, while Sopot attracts tourists and is known for its service sector. This regional integration allows for better use of resources, mobility of workers and joint solutions to employment and economic development problems. There are 402 people working in Sopot per 1000 inhabitants. This is significantly more than the value for the Pomorskie Voivodeship and significantly more than the value for Poland[88] . 0.3% of the economically active residents of Sopot work in the agricultural sector (agriculture, forestry, hunting and fishing), 14.8% in industry and construction, 29.8% in the service sector (trade, vehicle repair, transport, accommodation and catering, information and communication) and 14.7% work in the financial sector[89] . In Sopot, as in other tourist destinations, some features of a precarious labor market can be observed. The tourism industry is characterized by seasonality, which leads to temporary and unstable forms of employment. Przylesie presents a unique demographic and economic profile that reflects the broader trends of the area, but with some distinct local characteristics. The neighborhood is known for its relatively quiet and suburban atmosphere, contrasting with the more tourist-centric areas of Sopot closer to the coast. The economic dynamics of Przylesie are closely linked to Sopot's broader economy, which is heavily influenced by tourism. However, unlike the central areas of Sopot, Przylesie is less directly impacted by seasonal tourist influxes. Instead, it functions more as a residential and local service economy, with businesses catering primarily to the

[84] Sopot (pomorskie) w liczbach, 2024. Przystępne dane statystyczne (polskawliczbach.pl). https://www.polskawliczbach.pl/Sopot (accessed: 7.10.2024).

[85] GUS, 2023. Rocznik Statystyczny Leśnictwa. Główny Urząd Statystyczny (GUS). https://stat.gov.pl/obszary-tematyczne/roczniki-statystyczne/roczniki-statystyczne/rocznik-demograficzny-2023,3,17.html (accessed: 7.10.2024).

[86] Raport SVS, 2019. https://gdansk.stat.gov.pl/vademecum/vademecum_pomorskie/portrety_miast/sopot.pdf (accessed: 7.10.2024).

[87] GUS-Gdansk, 2024. Dane o województwie pomorskim. Urząd Statystyczny w Gdańsku. Główny Urząd Statystyczny, https://gdansk.stat.gov.pl/zakladka1/ (accessed: 7.10. 2024).

[88] Sopot (pomorskie) w liczbach, 2024. op. cit.

[89] Trojmiasto.pl. https://www.trojmiasto.pl/praca/Dwie-firmy-z-Trojmiasta-wsrod-Najlepszych-Pracodawcow-n95564.html (accessed: 7.10.2024).

needs of residents rather than tourists. The workforce in Przylesie tends to be engaged in various sectors, reflecting the overall economic structure of Sopot. Many residents work in the service industry, which is dominant in Sopot due to its tourism-driven economy. Employment in hospitality, retail, and other services is common, particularly during the peak tourist season. The cost of living in Sopot, including Przylesie, can be higher than in surrounding areas, particularly due to housing costs, which affects disposable income levels. In 2022, Sopot ranked first in Poland for the highest average price per square meter for apartments[90] . Housing accounted for almost 22% of Sopot residents' income in 2019 and the registered unemployment rate is around 1.4%[91] . Additionally, there is a growing trend of remote work.

Sopot is a renowned seaside resort town in Poland, known for its vibrant cultural scene and lively social atmosphere, particularly during the summer months. The socio-cultural dynamics of Sopot are deeply influenced by its status as a holiday destination. In the summer, the town transforms into a bustling hub of activity, attracting tourists and locals alike with its array of music festivals, cultural events, and beachside entertainment. The famous Sopot International Song Festival, for example, draws large crowds and adds to the town's reputation as a cultural hotspot and also Sopot Film Festival. During this period, Sopot becomes a melting pot of different cultures, as visitors from various regions and countries come to enjoy the town's offerings. This influx of people significantly impacts the local economy, with businesses thriving on the seasonal tourism. In contrast, the winter months see a marked decrease in activity.

The Przylesie cooperative is governed by a Chairman of the housing association and a board of directors, who are elected by the cooperative's members. The president of the housing cooperative, who resides in the Przylesie neighborhood, is not only responsible for overseeing the cooperative's operations but is also a member of the Sopot City Council. This dual role allows for a direct connection between the cooperative and municipal governance, facilitating the representation of local housing issues at the city level. In addition, the cooperative operates under Polish housing law, which includes the Cooperative Law and regulations concerning housing communities. This legal framework governs the operations of housing cooperatives and communities, ensuring that they are managed democratically and transparently, with a focus on the collective interests of their members. Sopot is part of the Tricity metropolitan area, the cities collaborate on various regional initiatives, including infrastructure development, transportation, and cultural events. This collaboration extends to socio-political matters, where the three cities often coordinate policies and actions to address shared challenges. The cooperative spirit within Tricity strengthens the overall governance and socio-political dynamics of the region, providing a broader context for local actions in areas like Przylesie.

Sopot, like many other cities in Poland and across Europe, has been actively involved in the transition towards renewable energy sources. In the case of the Przylesie estate, this process included the insulation of buildings, replacement of old windows and doors with energy-efficient alternatives, and modernization of heating systems. The aim of these efforts is to reduce energy consumption, lower heating costs for residents, and decrease the overall environmental impact of the estate. “Deep” thermo-modernization of the buildings on the Przylesie estate has made it possible to significantly reduce energy consumption. The scope of deep thermo-modernization work was the same for all 9 buildings in

[90] Miasta w Polsce z najwyższymi cenami mieszkań (polskawliczbach.pl) https://www.polskawliczbach.pl/miasta_z_najwyzszymi_cenami_mieszkan (accessed: 7.10.2024).
[91] Raport_SVS_2019.rdl. op. cit.

the cooperative's stock and included: insulation of external walls; new balconies with an area 4.5 times larger than the existing balconies taking into account the possibility of installing photovoltaic panels on them and producing approx. 180 MWh; thermo-modernization of the roof ceiling with an area of 369 sq m; insulation of the basement ceiling with an area of 360 sq m; replacement of windows in the basement; modernisation of the central heating system; replacement of hot and cold water pipes; replacement of light sources with energy-saving lamps; replacement of the lightning system. The result of these measures is a reduction in heating costs of around 20-30%, which directly translates into lower charges for residents and a smaller carbon footprint. The cooperative has installed photovoltaic panels on the roofs of the buildings, allowing it to generate its own electricity.

In Przylesie, civic participation is shaped by the cooperative governance system, where voting rights are limited to cooperative members under Polish cooperative law. This means that not all residents have a say in decision-making, leading to a sense of exclusion among non-members, such as tenants or newer residents. Despite this, Sopot as a whole has a strong culture of civic engagement, with residents actively participating in public consultations and community initiatives. The cooperative president in Przylesie, who is also a member of the Sopot City Council, plays a key role in representing the estate's interests at the municipal level, helping to connect the cooperative with broader city politics. However, the limitation of voting rights to cooperative members highlights a challenge in fostering inclusive civic participation. To address this, efforts could be made to encourage broader cooperative membership and to involve all residents in community discussions, ensuring that everyone has a voice in shaping the future of Przylesie. This aspect will require further study.

According to the ranking of the Association of Polish Cities, Sopot took the first place[92]. The Tricity Landscape Park (Trójmiejski Park Krajobrazowy) spans 19,930 hectares, including 18,324 hectares of forest, 1,323 hectares of agricultural land and 145 hectares of water bodies[93]. For most of the year Sopot has a very good Air Quality Index[94]. Additionally, Sopot is one of the most forested cities in Poland, with approximately 60% of the city covered by forests. It was the area of green space that was one of the factors that determined the town's spa status[95]. This makes Sopot not only a renowned seaside resort, but also a place where individuals can benefit from proximity to nature. It is important to note that Sopot's status as a resort city plays a significant role in its environmental policies. Clean air is crucial not only for the health and well-being of residents and visitors but also for preserving the city's ability to levy climate fees. If air quality deteriorates, Sopot could face challenges in collecting these fees, which are vital for the city's revenue and its ability to support tourism-related infrastructure and services.

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[92] Związek Miast Polskich (www.miasta.pl) https://www.miasta.pl/aktualnosci/miasta-w-ktorych-zyje-sie-najlepiej (accessed: 7.10.2024).

[93] GUS, 2023. Rocznik statystyczny 2023. Główny Urząd Statystyczny (GUS). https://stat.gov.pl/obszary-tematyczne/roczniki-statystyczne/roczniki-statystyczne/rocznik-statystyczny-rzeczypospolitej-polskiej-2023,2,23.html (accessed: 7.10.2024).

[94] Ocena jakości powietrza - Bieżące dane pomiarowe - GIOŚ (gios.gov.pl) https://powietrze.gios.gov.pl/pjp/current (accessed: 7.10.2024).

[95] Sopot: atrakcje, wypoczynek, nocleg – przewodnik po kurorcie (wsopocie.eu) https://wsopocie.eu/#:~:text=Ponad%2060%25%20powierzchni%20Sopotu%20stanowi%C4%85%20tereny%20zielone%20%E2%80%93,jako%C5%9B%C4%87%20powietrza%2C%20wyr%C3%B3%C5%BCniaj%C4%85ca%20Sopot%20na%20tle%20innych%20miast. (accessed: 7.10.2024).

Notably, the Przylesie housing cooperative is significantly ahead of other communities in its pro-ecological efforts. This advanced position is largely due to the rare management structure of the cooperative.

By considering Przylesie Housing Cooperative through the lens of MLP, one can gain a deeper understanding of the factors that shape the Przylesie HE and its context. Broader socio-economic context, which is the seaside character of Sopot (a fashionable resort) through its high average residential prices, is a determining factor in residents' investment decisions. These factors shape the conditions for the housing cooperative and provide a landscape for the actors acting in it. The legal framework which consists of both cooperative laws, building standards but also rules for the granting of loans and investment grants can be defined as the regime for this HE. The need to operate under such complex formal conditions requires, on the one hand, appropriate leadership (the Co-operative's long-standing Board) as well as a high acceptance of innovation by a large group of residents. This focus on the unique features and actions of the Przylesie housing cooperative represents the niche level, where innovation and experimentation can occur. The cooperative president's dual role as a cooperative leader and city council member creates a link between the regime and the local political landscape.

5.3.2. Stakeholder Analysis

The Housing Cooperative ‘Przylesie’ in Sopot is developing thanks to the active participation of residents and cooperation with various stakeholders. Residents are key decision-makers, involved through consultation and referenda, facilitated by the cooperative's structure with elected boards. The table below (5.2) offers an insight into the landscape of all stakeholders of the Przylesie Housing Cooperative. The most important categories of stakeholders are citizens and institutions, operating mainly at the local level. This suggests a local context with significant involvement of residents and the decision-making bodies they legitimize (Supervisory Board and General Assembly).

Analyzing the stakeholders of Przylesea HC according to their assessed importance, it can be seen (see Figure 5.3a) that the following three actors have the greatest importance: Provincial Environmental Fund, General Assembly of the Housing Cooperative.

Table 5.3b, which analyzes the influence of stakeholders, shows that most stakeholders have a greater ability to influence the situation than to be influenced by it. This suggests that some stakeholders have a significant influence on the dynamics within the Przylesie HC. For example, the Provincial Environmental Fund, the General Assembly of the Housing Association and older residents (who obtained housing in the 1970s) are classified as having a lot of power and influence. Conversely, new residents are identified as significantly affected, indicating potential weaknesses or lack of influence within the HC. Groups such as the Gdansk District Heating Company and local media show a more balanced influence profile, suggesting that they both influence and are influenced by HC dynamics.

The stakeholder analysis reveals a complex interplay of interests and influences within HC Przylesie. Understanding these dynamics is crucial for effective decision-making and navigating potential conflicts or collaborations, which should be the next step for the COSUSTAIN project.

Table 5.3a - Stakeholders: list and main features

Stakeholder		Category	Spatial Scale	Role	Resources	Relationship
SH1	Groups_of_Residents_(active on social media)	Citizens	Local	beneficiary, target	Relational	conflictual
SH2	New residents of HE - moved in during the last years	Citizens	Local	beneficiary	Relational	cooperative
SH3	Old HE residents - obtained flats in 1970s	Citizens	Local	beneficiary	Relational	conflictual
SH4	Locators_Defence_Council	Civil society organizations	Local	beneficiary, target	Relational	conflictual
SH5	Voivodeship_Fund_of_Environmental_Protection	Institutions	Regional	promoter	Normative, Relational, Positional, Economic, Knowledge	cooperative
SH6	Supervisory_Council_of_Housing Cooperative ‘Przylesie’,	Institutions	Local	third party	Normative, Positional	cooperative
SH7	General_Meeting_of_Social Housing Cooperative ‘Przylesie’,	Institutions	Local	third party	Normative, Positional, Economic	cooperative
SH8	Professional press (Co-operatives and Housing)	Media	National	promoter	Knowledge	cooperative
SH9	Local Media in Sopot and the Tri-City	Media	Regional	target	Relational, Knowledge	neutral
SH10	City_Council_Sopot	Politicians	Local	third party	Normative, Positional, Economic	neutral
SH11	Auditing Company	Professionals	Regional	third party	Knowledge	cooperative
SH12	Historic Monuments Conservator - Sopot	Public services	Local - Regional	third party	Positional	cooperative
SH13	Gdansk_Enterprise_Heat_Power Company	Public services	Regional	third party	Positional	neutral

Figure 5.3a – Stakeholders by relevance: the Power-Interest matrix

Table 5.3b – Stakeholders by impact

Impact Category	Stakeholder	Power	Impact
Affected	SH2.New residents of HE - moved in during the last years	1	3
Affected & Affecting	SH13.Gdansk_Enterprise_Heat_Power Company	2	-2
	SH9.Local Media in Sopot and the Tri-City	1	1
Affecting	SH5.Voivodeship_Fund_of_Environmental_Protection	5	1
	SH7.General_Meeting_of_Social Housing Cooperative 'Przylesie',	5	1
	SH3.Old HE residents - obtained flats in 1970s	4	-2
	SH1.Groups_of_Residents_(active on social media)	3	-2
	SH6.Supervisory_Council_of_Housing Cooperative 'Przylesie',	3	1

Impact Category	Stakeholder	Power	Impact
	SH12.Historic Monuments Conservator - Sopot	2	1
	SH10.City_Council_Sopot	2	1
	SH8.Professional press (Co-operatives and Housing)	2	1
	SH11.Auditing Company	2	1
	SH4.Locators_Defence_Council	2	-1

5.3.3. References

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Miasta w Polsce z najwyższymi cenami mieszkań (polskawliczbach.pl). https://www.polskawliczbach.pl/miasta_z_najwyzszymi_cenami_mieszkan (accessed: 7.10.2024).

Ocena jakości powietrza - Bieżące dane pomiarowe - GIOŚ (gios.gov.pl) https://powietrze.gios.gov.pl/pjp/current (accessed: 7.10.2024).

Raport SVS, 2019. https://gdansk.stat.gov.pl/vademecum/vademecum_pomorskie/portrety_miast/sopot.pdf (accessed: 7.10.2024).

Sopot: atrakcje, wypoczynek, nocleg – przewodnik po kurorcie (wsopocie.eu) https://wsopocie.eu/#:~:text=Ponad%2060%25%20powierzchni%20Sopotu%20stanowi%C4%85%20tereny%20zielone%20%E2%80%93,jako%C5%9B%C4%87%20powietrza%2C%20wyr%C3%B3%C5%BCniaj%C4%85ca%20Sopot%20na%20tle%20innych%20miast. (accessed: 7.10.2024).

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Trójmiasto. https://www.trojmiasto.pl/praca/Dwie-firmy-z-Trojmiasta-wsrod-Najlepszych-Pracodawcow-n95564.html (accessed: 7.10. 2024).

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5.4. Urban gardening communities in the city of Tartu (EE)

Urban gardening initiatives in Tartu are community-based examples of producing urban food - the activities being enabled by the land use regulations in the city. Although the city encompasses 10 such gardens altogether (as of 2024[96]), this analysis focuses on the historic evolution of two examples of urban gardens aiming to produce, provide, and share local organic food (i.e. grown without synthetic herbicides and pesticides, with special attention to looking after soil): Tartu Organic Community Garden (called officially as Linnupargi Garden, but herewith we call it as Organic Garden, started in 2011) and Permaculture Community Garden (Emajõe Garden, started in 2016). The gardens are legally organized as NGOs with small annual membership fees, while a partnership with the local government has enabled them to have favorable conditions in accessing land for rent. Organic Garden is located in a gated area while Emajõe Garden is, by the contract of land lease, a public area. Communities were induced by enthusiastic individuals whose motivation was mainly driven by the idea to provide city residents the opportunity to grow food in order to support a healthy lifestyle as well as to contribute to community building among gardeners. Both initiatives are currently active. Emajõe Garden has around 30 members, whilst the Organic Garden has about 500 gardeners as of 2024. While the Organic Garden has mostly engaged local long-term residents, both Estonian and Russian-speaking as well as other language-groups, and has centered around food production for households' own use with individual garden beds for gardeners to rent, the Emajõe Garden initiative has brought together more foreigners and is centered around community-building. An important aspect for both has also been the spread of information about ecological food production among members, and Emajõe Garden especially stresses the purpose of the garden on enriching the diversity of urban nature and introducing permaculture. The communities have brought together resident groups with different backgrounds in both cases, ethnically, socio-economically, age-wise but Organic Garden with its much larger group of gardeners bound primarily by access to the plots in the same, currently gated territory, has a markedly higher average age and is not functioning as much as a community as Emajõe Garden. Nevertheless, both operate as lifestyle laboratories: in addition to producing food and gardening activities, different educational and training activities are organized to support and advance ecological lifestyle as well as mindset and to support community building as well as social integration. Organic Garden is organizing annual meetings for all gardeners in the city of Tartu for sharing information and experiences. These historical examples will allow CO-SUSTAIN to study the success-factors and failures in community engagement in urban sustainable food production in association with related community development, but also the educational and awareness-raising activities around growing food in the city among the city dwellers and the authorities.

5.4.1. Context Analysis

5.4.1.1. Geographical and Territorial Characteristics

Tartu is the second largest city in Estonia spanning over 154 km^2. As a result of the territorial administrative reform of local governments in 2017, the territory of Tartu increased significantly, including now the agricultural lands beyond the border of the compact city (comprising 47.4 km^2 agricultural land in 2024 in comparison to 0.4km^2 in 2017). Organic Garden has 8.3 ha land currently while Emajõe Garden is located in relatively small territory comprising 6500 m^2. The spatial development

[96] See: https://tartu.ee/et/tartu-linna-ja-kogukonnaaiad

of the City of Tartu follows the master plan[97] of the city (for 2040) indicating the strategic goals of spatial development on one hand and detailed zoning regulations on the other (indicating the different land use functions, e.g. for agricultural, green, recreational and other uses with urban gardens included as a separate planning category).

While the historical city quarters and low-scale suburbs have traditionally provided opportunities to establish gardens and grow food for residents, the socialist-era mass housing construction in the form of multi-apartment buildings halted this tradition. However, through the Soviet era people often had access to plots of land in the so-called 'dacha-settlements', including the use of unconventional spaces, such as under power lines and in other urban wastelands. In essence, allotment gardens enabled people to produce their own food amidst the relative scarcity of variety in Soviet shops.

Allowing this was partly in response to these scarcities; furthermore, the land was not owned by the people tilling it, hence not a challenge to the general socialist principles. These plots were usually organized as cooperatives and located in the suburbs or other areas near the towns and cities. They were especially popular and frequently used by people living in apartments.

In the case of Emajõe Garden, the initiative started with establishing a guerrilla garden and jungle bar established on unused land near a railway station in central Tartu. The initiative has had to relocate three times during its lifetime due to land use changes. Since its beginnings, the Organic Garden initiative has had to move once, but after that, it has grown substantially, in terms of land use and the number of gardeners. Initially, the garden was organized as an allotment garden, gradually expanding its communal spaces. The reallocation has been due to the land issues - expansion of infrastructure and residential building areas. Instead, now, the gardeners have obtained so called wasteland near river Emajõgi which had been considered as unsuitable for a residential building site and other uses by the city government (interview with the main initiator of Organic Garden).

5.4.1.2. Population and residential dynamics

According to the Population Register, Tartu had 98.300 inhabitants in 2024 (population density 631 ppl/km^2). The population has been quite stable over the recent years. Overall, the population of Tartu is aging somewhat - in 2018, the most populous age groups were 30-34 and 25-29 year-olds, whereas in 2024, it was the 35-39 and 40-44 year-olds. Tartu is a university town with many students and the average educational level of the residents is higher than the country's average. In Tartu, the share of population with tertiary education was 40% in 2018 and 44% in 2024 (cf 38% in Estonia as an average in 2024). Ethnically, in 2024, Tartu comprises 78% Estonians, 11% of Russians, and the rest combining Ukrainians (5%), Finns (1%), and other nationalities, a high proportion of those, the foreign students. The proportion of Estonians in the population of Tartu is higher compared to the Tallinn urban region and the North-East region of Estonia. Immigration - mostly steady in the country, with a slight increase in 2020 but a steep growth in 2022 due to the influx of Ukrainian war refugees.

Emajõe Garden is somewhat overrepresented by international background students and younger and middle age groups while Organic Garden is representing the full profile of the residents of Tartu -

[97] Tartu General Plan 2040. https://tartu.ee/et/uldplaneering2040#Tartu-linna-%C3%BCldplaneering (accessed: 10.10.2024).

Estonians as well as long-term Russian-speaking groups and newly arrived migrants, younger age groups as well as older, and people with different socio-economic status - this is a true mix of different population groups living in Tartu (based on the interviews with the leaders of the gardening communities).

In 2021, 84% of residents in Tartu lived in apartment buildings - therefore, community gardens have an important role to enable people who live in apartment buildings to grow their own food.

5.4.1.3. Socio-cultural issues

Estonia has a traditionally strong agricultural background (it became an urbanized country only in the Soviet period after WWII), where farms and rural people have been independent food producers - but agricultural communities have historically been relatively highly educated, in comparison with many other regions of Eastern Europe, and very much part of the processes of nation-building and modernisation[98]. The long-term home grown food tradition is reflected in the rise of urban gardening embedded in the local culture, which is partly driven by people's desire to cultivate their own food and reduce dependence on supermarkets[99] [100].

Estonia is quietly moving towards a post-materialist value space typical of welfare societies, where people care about health, feel responsible for their actions, are politically active, tolerant of differences and aware of nature conservation issues[101]. Starting from the 1990s, the Estonian people have become happier, more trusting and more tolerant; they have attributed increasingly less value on work and more value on free time; achievement and success have become less important to them - these trends are consistent with Inglehart's theory of post-materialistic value shift[102]. Based on the study, the most important values among Estonian people are nature, care, safety and solidarity, and in relation to work values, material benefits[103].

Despite Estonians having a culturally and historically established relationship with growing their own food and agriculture in general, the urban gardening phenomenon, as we understand it today, has gathered new momentum since the first community gardens were planned and established in Tartu in 2010 when Organic Garden was planned. Emajõe Garden has further been inspired by the West-European traditions of urban organic gardening through the individual experiences of the initiators of the garden (interview with the initiators of Emajõe Garden).

Growing food for oneself has been valued in Estonia at different times for different reasons: during the Soviet era, food was grown because of food shortages, and as a result, dacha culture flourished; during the transition in the 1990s, low incomes led to the need to grow food; since the 2000s there is an

[98] Lillak, R., 2003. Eewsti põllumajanduse ajalugu.Tartu: Eesti Põllumajandusülikool.
[99] Pungas, L., 2019. Food self-provisioning as an answer to the metabolic rift: The case of 'Dacha Resilience'in Estonia. *Journal of Rural Studies*, 68, 75-86.
[100] Pungas, L., 2020. Caring dachas: Food self-provisioning in Eastern Europe through the lens of care. [In:] *Food for degrowth* (pp. 59-74). Routledge.
[101] Ainsaar, M. and Strenze, T., 2019. *Values as human capital and a source of societal development*. Arenguseire Keskus.
[102] Ibidem.
[103] Ibidem.

increasing concern regarding the safety and contamination of commercially produced food. Urban gardens' comeback since the 2010s had to happen with a certain distance from its Soviet time context, as such gardens tended to still be seen in a negative light. As a result, the new garden movement appears to have emerged from Western Europe and spread to Estonia. As it is highly likely many who are involved have memories or experiences from the earlier allotment gardening periods, the main actual difference between the gardens of then and now appears to be the foregrounding of environmentally conscious choices[104]. Furthermore, depending on the leading figures, functions of the gardens extend from simple production of food to the engagement of communities and community building. To some degree, the gardens have been used by foreigners to get involved in their new home country, and this has extended to integrating other foreign newcomers (students and professionals) to the host society. This has been particularly clearly the case in Emajõe Garden, but different ethnic groups have also found themselves working side by side in Organic Garden, even if sometimes, cultural and generational clashes have taken place.

5.4.1.4. Power Regime and Governance

Changes in regime level 1990s and 2000s marked the transition from authoritarian to democratic governance practices in Estonia. In this new political context, land reform aimed to restore land ownership of pre-WW2 landowners. Nowadays, land in urban areas is mostly privately owned, while municipally owned land is a scarce resource and difficult decisions have to be made about how to use it - for example, whether it should be used for public recreation areas, green spaces, urban gardens, etc. In reality, private capital interests have been mainly driving the process of land development in cities, while the local government is responsible for providing the public infrastructure. The city of Tartu has been ruled by the Reform Party, which belongs to the European Liberal Democrat and Reform Party Group. Tartu's power regime has remained the same since 1998 and 26 years of government have brought stability, as the strategic development directions have been implemented in both urban and general planning. Within that practical context, in strategic development documents of Tartu - in the Development Strategy "Tartu 2035"[105] and Tartu General Plan 2040[106] environmental concerns and community engagement are central topics, envisioning the city to be climate-neutral by 2050, and including statements about empowering settlements and communities - while maintaining a strong place identity in the city[107]. The same document also highlights that Tartu is a multicultural city, where the integration of new immigrants into the community must be supported. In the new Tartu General Plan 2040, the locations of the urban gardens are determined. However, some of the gardens (including Organic Garden) are currently located in areas which are not specified under this category but fall into a broader category of municipal land where the garden has been assigned the status of intermediate use.

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[104] Pungas, L., Plüschke-Altof, B., Müüripeal, A. and Sooväli-Sepping, H., 2022. Same, same but different? The 'right'kind of gardening and the negotiation of neoliberal urban governance in the post-socialist city. [In:] *Whose Green City? Contested Urban Green Spaces and Environmental Justice in Northern Europe* (pp. 125-144). Cham: Springer International Publishing.

[105] Development Strategy "Tartu 2035. https://arengukava.tartu.ee/ (accessed: 10.10.2024).

[106] Tartu General Plan 2040. op. cit.

[107] Development Strategy "Tartu 2035. op. cit.

In 2017-2018, there were extensive debates and conflicts between the regime and the niche over the inclusion of urban gardens as a separate planning category in the zoning regulations of the city of Tartu, and the partial destruction of dacha gardens (also referred to as the "Chinatown War"). As a result of the discussions, the city granted the use of a new site to Organic Garden and regulated its status and operation. The new land use contract between the city and Emajõe Garden stipulated that the garden area could not be enclosed by a fence. The two initiatives worked together to influence the city administration through a citizens' initiative. Organic Garden has achieved long-term agreements with the City of Tartu, with up to 5-years long rental contracts. The conditions for land use (e.g taxation) have remained sources of conflict areas between the communities and the city. Furthermore, from the point of view of at least some of the gardeners, nothing seems secure with the garden - “one can never know when the next parking lot development plan would override the gardeners’ desire to continue tilling their plots” (interview with the leader of one of the gardens). For both Emajõe Garden and Organic Garden, their initiators have, however, been quite successful in advancing their cooperation with the municipality (i.e. negotiations about the land, receiving operating support grants, overall supportive attitude by the local government).

Cooperation between the regime and the niche has been affected by other events. Firstly, in April 2018, an international conference was held in Tartu in cooperation with the Estonian Association of Landscape Architects and the Transitional Cities Movement 'Living Tartu', focusing on food-urbanism, in which representatives of both gardens and the municipality were involved. Secondly, in 2018, Tartu Municipality took part in the international CRISCO project (Crossroad of the Region – fostering involvement of all citizens in local life to Improve Social Cohesion) and included the Emajõe Garden initiative in the project, with the aim of demonstrating how citizens' initiatives and the municipality work together.

On the broader regime level, “the Estonian Agriculture and Fisheries Development Plan 2030” currently functions as the agricultural bioeconomy strategy in Estonia. Notably, none of the strategic documents mention practices, such as Food Self-Provisioning (or home-gardening, self-produced or self-grown food, or else). This, along with the absence of strategic vision on urban gardening on national level, has left any kind of implementation of urban gardening initiatives to the local municipality level.

5.4.1.5. Public Participation and Community Activism

Regime level changes towards more inclusive governance in the context of urban gardens are signaled by 2 trends in Tartu. Tartu City Government encourages citizens to actively participate in the strategic planning and master planning process, and the annual participatory budgeting practice allows citizens to propose and vote on smaller initiatives (two of which are selected each year from the local budget for implementation). According to research, nearly 80% of residents in Tartu consider community activities important, but in 2023, only 30% of residents participated in those (Development Strategy “Tartu 2035”).

Public participation is analyzed in the document "Civic Space Report 2024. Estonia", which emphasizes that the Rulebook of Good Legislative Practice and the Regulation of Legislative Practice require that stakeholders affected by legislative changes must be involved in the legislative process. Usually, this means that draft laws are sent to interest groups for feedback, and in rare cases the content of the draft

is also discussed with interest groups before drafting the document. Report also says that trust in civil society remains rather high in Estonia, although some parts of the society do not value this. Trust in those in power varies and this affects cooperation and participation. Trust in government institutions (Eurobarometer): local governments 53% (2023); Government of the Republic 38% (2023); Riigikogu 28% (2023). Estonia in general has been described as following the template set by other post-Soviet nations: characteristically low trust of institutions and limited engagement with these institutions on the local or national level.

In general, the Estonian government has not interfered with the activities of civil society. Freedom of peaceful assembly and freedom of expression are also guaranteed in the Constitution. Activism has emerged as part of the broader development of Estonian civil society. In the 1990s, society was shaped by revolutionary reforms in the public sector and widespread lack of regulation regarding both curbing private sector aspirations and organizing stakeholder participation.

The development of the legitimacy of activism begins with activist-led interventions in the public space. If these interventions achieve a real spatial change, this can lead to the recognition of the activists' action and increased legitimacy. One example is Tallinn's community-led urban gardening, which in the early 2000s used to be seen as a temporary, unauthorized community movement (e.g. the roof garden at the Polymer Culture Factory). A project manager role has now been created in Tallinn city government to promote community gardening.

The resources of most of the NGOs are limited and prohibitively project-based, however. Their main support and finances come from participation fees, local government grants and contributions through voluntary work by the local community. This has been repeatedly criticized by both CAIs for the lack of a coordinating position for urban gardening. This does exist in some other cities, such as Tallinn. This lack means that the gardeners' requests for support, cooperation or funding often have no clear addressee, and as a result, the gardeners have to endlessly navigate the corridors of power.

5.4.1.6. Ecological characteristics

Estonia aims to become a climate-neutral country by 2050. To achieve this, the Estonian Climate Ministry has set three goals: 1) reduction of negative environmental impacts; 2) designing a modern and high-quality living environment; 3) contributing to the promotion of competitive and frugal business. Although a sustainable food system and the creation of high-quality (common) space are activities approved by the government of the Republic in 2023 to achieve these goals, the national level framework does not include references to urban gardening as a possible innovative solution for the future.

Through March and April 2024, the public was involved in collecting proposals for the everyday topics prone to be influenced by the Climate Act and the Green Reform. Citizens were also consulted on what activities might already start off these changes. During the collection of feedback, a specific proposal was received regarding the importance of the cultivation of urban gardening. However the Climate ministry did not agree with the value added by the suggested activity and concluded: "permaculture and urban gardening are important, but rather small-scale and horticultural activities that cannot replace agricultural food production".

Following the European Green Deal[108] guidelines, both, the Strategy "Tartu 2035"[109] and "Tartu Energy 2030"[110] emphasize the climate-neutrality aims (climate-neutral city of Tartu by 2050 with the intermediate goal is to reduce CO_2 emissions by 40% by 2030), as well as adapt to climate change. Tartu city also takes part of the international urban nature project urbanLIFEcircles (Tartu ROHEring)[111].

The aim of the urbanLIFEcircles project is to increase the richness of life in the city, create a network of interconnected green areas, mitigate the effects of climate change and create a good living environment for everyone.

The Study of Estonian Environmental Awareness[112] shows that 26% of the people are extremely or very concerned about the state of the environment, and a further 34% somewhat concerned. Only 8% were not at all or very little concerned, and a further 30% not particularly concerned. This study also indicates that the Estonian population's regard for environmental issues, including, for example, biodiversity issues, is about the same as the concern for global climate. Overall, other studies, however, indicate that Estonian population is relatively less concerned about climate issues than other European nations, showing the lowest percentages of those considering climate to be one of the three main issues - 16% on the average in Estonia compared to 39% in Europe[113].

5.4.1.7. Other Important Factors

Dacha gardening in the USSR during the Soviet era was the world's largest urban farming example in contemporary history. Despite equally fostering urban sustainability, dacha gardens are often negatively associated with a (post)socialist 'survival strategy of the poor' while community gardens are embraced for their transformative potential with regard to health, active citizenship, social cohesion, and environmental learning. Dacha gardens rather 'quietly' *maintain* the system, while community gardens contribute to its *thriving* process, by being visible, actively engaging with, and being supported by, the neoliberal urban governance. This preferential treatment, however, comes at a price of higher vulnerability to co-optation attempts and neoliberal control of space, which dacha gardens have hitherto resisted[114].

Growing food and working in gardens were affected by crises: the 2008 economic crisis (the need for food growing due to poverty), the 2019 COVID crisis (the need to keep mentally healthy and to interact

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[108] European Green Deal: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en (accessed: 10.10.2024).

[109] Development Strategy "Tartu 2035". op. cit.

[110] Tartu Energy 2030. Tartu City Energy and Climate Action Plan, Tartu 2021. https://tartu.ee/sites/default/files/uploads/Linnavarad/SECAP/TartuEnergy2030.pdf (accessed: 10.10.2024).

[111] Tartu ROHEring. https://rohering.tartu.ee/ (accessed: 10.10.2024).

[112] Turu--uuringute AS, 2022. Eesti elanike keskkonnateadlikkuse uuring, 2022. https://kliimaministeerium.ee/sites/default/files/documents/2022-11/2022%20Keskkonnateadlikkuse%20uuring.pdf (accessed: 10.10.2024).

[113] EIB, 2023. The EIB Climate Survey: Government action, personal choices and the green transition. European Investment Bank. https://www.eib.org/en/publications/20230098-eib-climate-survey-europe (accessed: 10.10.2024).

[114] Pungas et al. 2022. op. cit.

with people in fresh air whilst engaging in meaningful activities), and the 2020 Ukraine war crisis (mental health care and food security theme, also rising food prices).

The Emajõe Garden has also been affected by the migration crisis 2017-2018 and 2020. The Emajõe Garden community was one of the few to be open and welcoming to newcomers during the Syrian migration crisis and to newcomers from the African continent, at a time when there was criticism among city residents, and the municipality had no measures yet in place for integration.

Looking at the two Tartu gardening initiatives (Emajõgi Garden and Eco Garden) trajectory of action and its impact through the lens of the MLP, it can be seen that they have had an impact on the legislative regulation of urban zoning so that urban gardening land is a separate planning category in Tartu General Plan 2040. On the other hand, garden initiatives have proven to be very useful in times of crises, during the COVID-19 crisis and on the migration crises in Syria and Ukraine, many newcomers and local residents have just sought contact and relationships with fellow human beings in gardens, gardening activities have alleviated the mental health crisis. Residents and city authorities are aware of this and value gardening.

5.4.2. Stakeholder Analysis

The tables and graphs below analyze the stakeholders influencing two urban gardens in Tartu, Estonia: Tartu Eco Garden and Tartu Emajõe Garden. Table 5.4a meticulously lists each garden's stakeholders, categorizing them by their role in the garden's ecosystem. It ranges from "beneficiary," referring to those individuals or groups who will benefit directly from the garden, such as the gardeners themselves, up to "promoter," which refers to those supporting the development of the garden, like civil society organizations and research institutions. The table further distinguishes the field of stakeholders in view of: their spatial scale of influence, ranging from local to national; and resources put in, whether economic, knowledge-based, or normative (related to values and norms). It lastly describes the nature of their relationship with the garden in either cooperative, conflictual, or neutral terms.

Figure 5.4a (The Power-Interest matrix) of the stakeholders in relation to their power and interest in the gardens. This tool represents, in an exciting manner, how stakeholders participate in projects, and helps in the design of an engagement strategy. Those stakeholders that fall within the high-power, high-interest quadrant need most attention and developing specialized means of engaging them. For example, in the Tartu Emajõe Garden, the matrix underlines that "Garden leadership" and "Repair basement activists" are powerful and interested, while CoT planners, though powerful, have lower interest, hence requiring different engagement strategies.

Finally, Table 5.4b classifies the stakeholders according to their impact into "mostly affecting," "mostly affected," or "affected & affecting." Therefore, this can provide insight into the webs of influence that act within the garden ecosystem itself. While "Developers / Land owners" are classified as "mostly affecting" since they have control over land use, "Eco gardeners" are "mostly affected" because their survival directly depends on the garden's existence. This categorization helps understand the vulnerabilities and dependencies within the stakeholder network and can inform strategies to mitigate potential risks and foster collaboration.

Table 5.4a - Stakeholders: list and main features

Tartu Eco Garden

Stakeholder		Category	Spatial Scale	Role	Resources	Relationship
SH1	Developers / Land owners	Business & Industry	Local	third party	Economic (Conflicting land use interests, less crucial in current peri-urban space)	conflictual
SH2	Eco gardeners	Citizens	Local	beneficiary target	Relational, Positional (Growing interest in gardening, little involvement in joint activities)	cooperative
SH3	Neighbors	Citizens	Local	beneficiary	Relational (General support, involvement in gardening, critical voices)	neutral
SH4	Tartu urban garden community	Civil society organizations	Local-Regional	promoter	Normative; Relational, Positional; Knowledge (Networking and knowledge exchange, ad-hoc support in case of need)	cooperative
SH5	Other sustainability networks	Civil society organizations	Regional-national	promoter	Relational (Connecting gardening enthusiast, supporters and like-minded people)	cooperative
SH6	Edible city movement EE	Civil society organizations	Regional-national	promoter	Normative; Relational; Positional; Knowledge (Legitimization for the gardens at early stages, platform for exchanging experiences and good practice models, ad-hoc support and publicity in case of need)	cooperative
SH7	Garden produce buyers	Civil society organizations	Local	beneficiary	Normative; Economic (Equal values, creating demand for AFN)	neutral
SH8	Politicians CoT	Institutions	Local	third party	Positional (Increasingly supportive attitude, unstable commitment)	neutral
SH9	Educational institutions CoT	Institutions	Local	beneficiary	Positional; Economic (Environmental education for kids & students)	cooperative
SH10	"Growing Food as survival art"	Intermediate bodies	Regional	third party	Normative; Relational; Positional; (Visibility, small funding, linking gardens with education institutions)	cooperative
SH11	PR (CoT, South Estonia, EE)	Intermediate bodies	(Inter)national	third party	Normative; Positional; Economic (Visibility, use for own place marketing, promotion of sustainability objectives, creation of green city images)	neutral

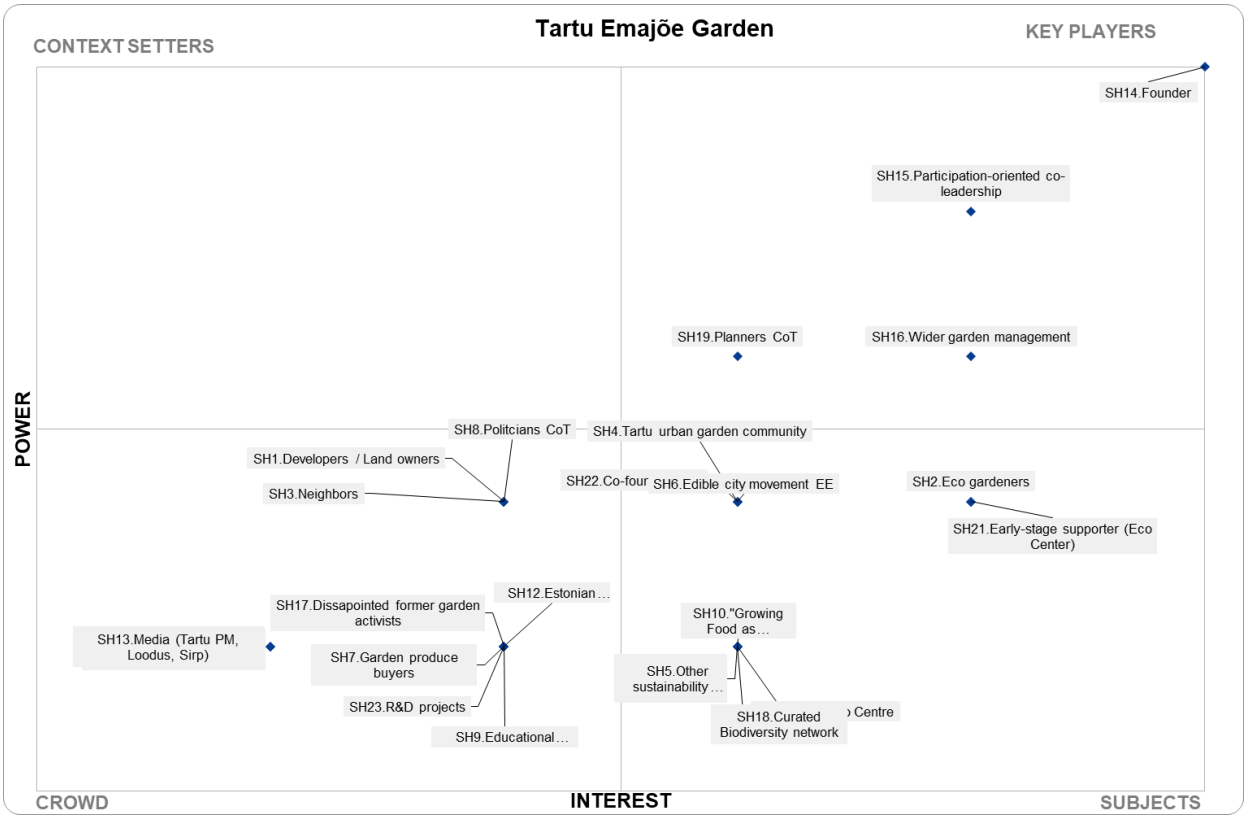
Stakeholder		Category	Spatial Scale	Role	Resources	Relationship
SH12	Estonian Rural Network	Intermediate bodies	Regional-National	0	Economic; Knowledge (Consultation for funding opportunities to support participatory projects)	cooperative
SH13	Media (Tartu PM, Loodus, Sirp)	Media	Regional-national	third party	Positional (Relatively little, but quite positive (or neutral) coverage)	neutral
SH14	Founder	NGOs	Local-Regional	promoter	Relational; Positional; Knowledge (Continuity & long-term view, personal relationships with key players, time resources and devotion, gardening skills)	0
SH15	Participation-oriented co-leadership	NGOs	Local-Regional	promoter	Relational; Knowledge (Vision, project application skills, media skills, gardening skills, networks)	cooperative
SH16	Wider garden management	NGOs	Local	promoter	Relational, Knowledge (Handling of routine tasks for garden management)	cooperative
SH17	Disappointed former garden activists	NGOs	Local	promoter	Normative (Shared values but tiredness and disappointment about ambiguous relationship with CoT)	cooperative
SH18	Curated Biodiversity network	Professionals	Local-Regional	promoter	Normative; Relational (Visibility, mutual favors and support)	cooperative
SH19	Planners CoT	Public services	Local	third party	Positional; Economic (Decision power on land uses (incl. rental contracts, enlargement of garden areas, land taxes, financial support), different phases of conflict and support)	neutral
SH20	EMÜ Eco Centre	Research	Local-Regional	promoter	Positional; Knowledge (Consulting, project-based partners)	cooperative
SH21	Early-stage supporter (Eco Center)	Research	Local	promoter	Normative; Knowledge (Consulting, lectures on ecological gardening, focus on environmental education)	cooperative
SH22	Co-founder (UT)	Research	Local	promoter	Knowledge (Administrative tasks, co-founding, focus on environmental education)	cooperative
SH23	R&D projects	Research	Regional-(inter)national	third party	Relational; Knowledge (Helping to develop, self-reflect, link with different stakeholders)	cooperative

Tartu Emajõe Garden

Stakeholder		Category	Spatial Scale	Role	Resources	Relationship
SH1	Developers / Land owners	Business & Industry	Local	third party	Economic (Conflicting land use interests leading to multiple relocations of the garden)	conflictual
SH2	Place-renters for events	Business & Industry	Local	beneficiary	Economic (Generating small additional income for the garden)	neutral
SH3	Emajõe gardeners	Citizens	Local	beneficiary target	Relational, normative (Growing interest in gardening, involvement in joint activities)	cooperative
SH4	Neighbors	Citizens	Local	beneficiary	Relational (Generally supportive (fostered by pro-active gardeners), critical voices)	neutral
SH5	Tartu urban garden community	Civil society organizations	Local-Regional	promoter	Knowledge, Relational, Positional (Networking and knowledge exchange, ad-hoc support in case of need)	cooperative
SH6	Other sustainability networks	Civil society organizations	Regional-(inter)national	promoter	Normative, Positional, Relational (Connecting gardening enthusiasts, supporters and like-minded people, strong connections)	cooperative
SH7	Edible city movement EE	Civil society organizations	Regional-National	promoter	Normative, Relational, Knowledge, Positional (Legitimization for gardens at early stages, platform for exchanging experiences and good practice models, ad-hoc support and publicity in case of need)	cooperative
SH8	Educational institutions CoT	Institutions	Local	beneficiary	Positional, Economic (Environmental education for kids & students)	cooperative
SH9	Growing Food as Survival Art project	Intermediate bodies	Regional	third party	Knowledge, Positional, Relational (Visibility and legitimacy for the cause of the garden, networking)	cooperative
SH10	PR (CoT, South Estonia, EE)	Intermediate bodies	(Inter)national	third party	Positional, normative, economic (Visibility, use for own place marketing, promotion of sustainability objectives, creation of green city images)	neutral
SH11	Media (Tartu PM, Loodus, Sirp)	Media	Regional-national	third party	Positional (Relatively high visibility but also critical coverage)	neutral

SH12	Garden leadership	NGOs	Local-Regional	promoter	Knowledge, relational, normative, positional (one steady (continuity), one rotating, management skills, ecological knowledge, networks)	cooperative
SH13	Repair basement activists	NGOs	Local-Regional	promoter	Normative, positional (spatial/organizational symbiosis, shared values)	cooperative
SH14	Founders of CAI	NGOs	Local-Regional	promoter	Normative, Relational, Knowledge, Positional (Experience with community gardening abroad, strategic thinking, adaptability to changes, sustainable gardening skills esp. food forests and permaculture, not anymore actively involved)	cooperative
SH15	Boatbuilding Workshop next-door	Professionals	Local	third party	Relational, Normative (Common values, neighborly help, visibility)	cooperative
SH16	Estonian Landscape Architectural Ass.	Professionals	Regional-national	third party	Relational, economic (Platform for local projects & funding, visibility)	cooperative
SH17	Tartu Nature House	Professionals	Local-Regional	third party	Normative, Relational, Economic (Visibility, small funding, linking gardens with education institutions)	0
SH18	Planners CoT	Public services	Local	third party	Positional, Economic (Decision power on land uses (incl. rental contracts, enlargement of garden areas, land taxes, financial support), different phases of conflict and support)	neutral
SH19	Cooperation for Integration CoT	Public services	Local->National	third party	Normative; Economic (Collaboration, garden as integration point for international students, but also for Ukrainian refugees)	cooperative
SH20	R&D projects	Research	Regional-(inter)national	third party	Relational; Knowledge (Helping to develop, self-reflect, link with different stakeholders)	cooperative

Figure 5.4a – Stakeholders by relevance: the Power-Interest matrix



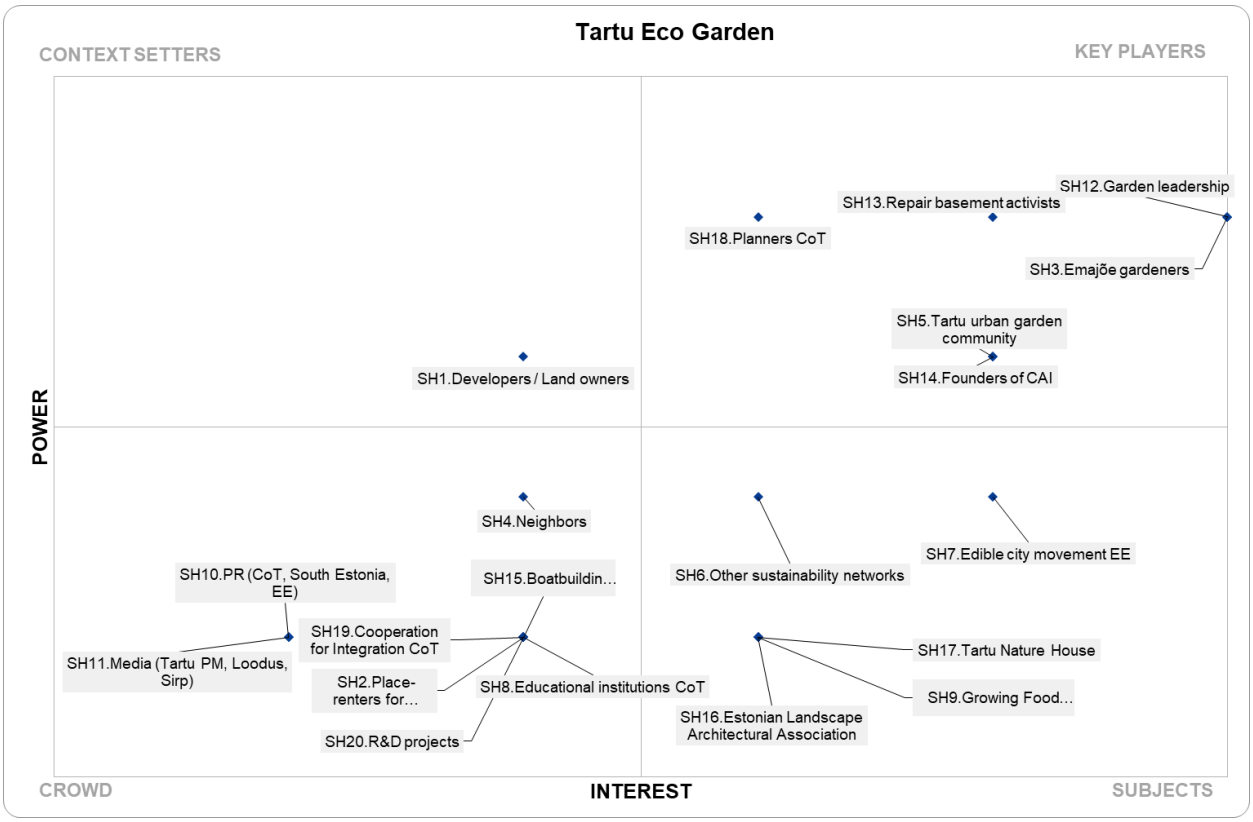


Table 5.4b – Stakeholders by impact

Tartu Eco Garden

Impact Category	Stakeholder	Power	Impact
Affected & Affecting	SH12.Garden leadership	4	5
	SH3.Emajõe gardeners	4	5
	SH13.Repair basement activists	4	4
	SH5.Tartu urban garden community	3	4
	SH14.Founders of CAI	3	3
	SH6.Other sustainability networks	2	3
	SH7.Edible city movement EE	2	3
	SH4.Neighbors	2	3
	SH19.Cooperation for Integration CoT	1	2
	SH15.Boatbuilding Workshop next-door	1	2
	SH8.Educational institutions CoT	1	2
	SH9.Growing Food as Survival Art project	1	2
	SH2.Place-renters for events	1	2
	SH16.Estonian Landscape Architectural Association	1	2
	SH17.Tartu Nature House	1	2
	SH20.R&D projects	1	1
	SH10.PR (CoT, South Estonia, EE)	1	1
	SH11.Media (Tartu PM, Loodus, Sirp)	1	1
Mostly Affecting	SH18.Planners CoT	4	2
	SH1.Developers / Land owners	3	1

Tartu Emajõe Garden

Impact Category	Stakeholder	Power	Impact
Mostly Affected	SH2.Eco gardeners	2	5
	SH18.Curated Biodiversity network	1	3
Affected & Affecting	SH14.Founder	5	5
	SH15.Participation-oriented co-leadership	4	5
	SH16.Wider garden management	3	5
	SH19.Planners CoT	3	3
	SH6.Edible city movement EE	2	4
	SH4.Tartu urban garden community	2	3
	SH8.Politcians CoT	2	2
	SH21.Early-stage supporter (Eco Center)	2	2
	SH22.Co-founder (UT)	2	2
	SH3.Neighbors	2	2
	SH17.Disappointed former garden activists	1	2
	SH20.EMÜ Eco Centre	1	2
	SH9.Educational institutions CoT	1	2
	SH23.R&D projects	1	2
	SH10."Growing Food as survival art" project	1	2
	SH5.Other sustainability networks	1	2
	SH7.Garden produce buyers	1	2
	SH12.Estonian Rural Network	1	2
	SH11.PR (CoT, South Estonia, EE)	1	1
	SH13.Media (Tartu PM, Loodus, Sirp)	1	1
Mostly Affecting	SH1.Developers / Land owners	2	1

The stakeholder analysis differentiates between key players, context setters and crowd of the two gardening initiatives in Tartu (additional information can be found in the Excel table, Matrix and explanatory document). We have taken a rather broad understanding of "power" and "impact", starting from the question of what the individual stakeholders contribute to the existence and persistence of the garden. While e.g. the gardeners or the produce buyers and place renters could alternatively also be considered as "subjects", we considered them as essential to the gardens, as by their membership, purchasing, and renting decisions they contribute to the (non)duration of the garden.

The **key players** are located in (1) the garden itself (founders, gardening leadership and management, close partners i.e. the repair basement) (2) the city government of Tartu (incl the planning, environmental and city economy departments with partly supportive, partly conflictual relationships, politicians) (3) the urban gardening network in Tartu and Estonia (the Eco and Emajõe gardeners, other community gardens in Tartu, the wider Edible City movement), and among those who also have a stake in land use – meaning (4) the neighbors of the garden and potential developers in the neighboring land plots. For Tartu Eco Garden, also (5) early-stage external supporters are crucial.

Among the **context setters** are (1) initiatives and organizations who further a common cause with the garden (e.g. sustainability-oriented networks, the "Foods as Art of Survival" project, Tartu's Nature House, the Eco Centre of the Estonian University for Life Sciences, and the "Curated Biodiversity" network) (2) a loose collaboration network (incl. R&D projects with Universities, collaborations with educational institutions and on the field of integration with the city of Tartu, and strategic partnerships with the Estonian Association of Landscape Architecture and the Estonian Rural Network), as well as (3) specific immediate context setters for each garden (garden produce buyers and (critical) former garden members in Eco Garden, and the neighboring boat-building workshop and place-renters for events in Emajõe Garden)

The **crowd** is mainly connected to the (1) media landscape portraying affairs in the gardens. Another important topic is PR (of the city of Tartu, Estonia and tourist platforms), which helps (2) place marketing and the promotion of sustainability objectives and/or the portrayal of a sustainable image, which is especially embraced by the city of Tartu who is discursively very invested in green city developments.

For the Estonian case, it is important to mention that the number of people involved in gardening initiatives in particular and sustainability initiatives in general is rather small (as Estonia as a country is rather small, population size ca 1.3 Million). Hence, despite being organized in different initiatives / organizations, there is often an **overlap of central people**. Deriving from that, some people can potentially create a bigger impact, when supporting the CAI in all their different roles / platforms that they can provide. Moreover, there are often loose networks among these people which are not necessarily formalized.

The stakeholder analyses were written mainly with the current situation of stakeholders in mind. The attitude towards the CAI might have changed over time, especially for the City of Tartu, yet this change has not been linear but rather in **different phases of support and conflict**. While the stakeholder analyses include the current names of organizations, the **collaborations usually go beyond the lifetime of these organizations**, as often the same people have been over time involved in different organizations, hence the circle of people usually stayed but the organizational landscape has often changed over time.

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5.5. Solidarity Renewable Energy Community (REC) Naples Est (IT)

The Solidarity REC Naples EST was founded in 2021 in San Giovanni a Teduccio, a neighborhood of the metropolitan area of Naples characterized by a high level of social and economic vulnerability. The establishment of REC was the result of the joint effort of Legambiente, the biggest environmental movement in Italy, a private enterprise 3E and two foundations: an ethical financial one that funded the projects (South Foundation) and an ecclesiastical one that catalyzed the participation of citizens (Famiglia di Maria). The engagement in the REC building process of local households lasted from 2018 to 2020. Over the last years, there has been a diversification of activities and the number of people benefitting from REC has increased. In 2023, REC counted 40 households experiencing conditions of high deprivation and energy poverty. Over 100 people are benefitting from REC both directly in terms of reduction of the energy bill and indirectly by a huge increase in their energy literacy which enables a shift in energy use and consumption. The initiative aims to increase social inclusion in a socio-economically vulnerable area. It supports low-income households in both directly addressing their energy needs, as well as receiving additional income through government incentives for the self-consumed energy and the sale of energy to the grid. This example will enable CO-SUSTAIN to understand how to include and empower socioeconomically vulnerable and geographically marginalized groups in the energy transition.

5.5.1. Context Analysis

5.5.1.1. Characteristics of the Territory

Naples is located in the southern part of the peninsula. It is the capital of the Campania and the most populous municipality in the region (909,941 residents), the third in Italy after Milan and Rome, and one of Europe's most densely populated cities. The municipality is classified as a coastal hill with an average elevation of 17 meters above sea level. The geology of the entire area is related to the movements of tectonic plates between the Mesozoic and Miocene eras, which shaped the southern Apennine chain[115].

As regards the regional morphological characteristics, the territory covers an area of 13,670.95 km² and is divided into 550 municipalities. Its geographical conformation offers significant landscape variety and high biodiversity. The region includes large structural depressions like the Campanian Plain and the Sele Plain, currently alluvial plains. The countryside is also characterized by important volcanic centers, such as Mount Vesuvius and the Phlegraean Fields in the Naples area. The region is particularly susceptible to hydrogeological instability, related to various types of landslides and flood risks. Specifically, the municipality of Naples is listed among the Italian seismic localities with a seismicity grade of 2, classified as a medium seismic zone[116].

Going more in depth into the regional energy assets, energy production and consumption represent environmental determinants, as they are an anthropogenic factor that exerts pressure on air quality and the climate. The energy production of the Campania region aligns with the goals of national energy planning, which aimed to achieve specific targets related to renewable energy consumption. In 2021,

[115] Città metropolitana di Napoli (2021) Napoli.

[116] Dipartimento della Protezione civile, classificazione sismica aggiornata, settembre 2024. https://rischi.protezionecivile.gov.it/it/sismico/attivita/classificazione-sismica/

regional energy consumption amounted to 16,486.4 GWh, and the production deficit in Campania was -37.7% (-6,941.8 GWh) compared to an energy demand of 18,396.8 GWh. As of 2020, according to the monitoring defined by DM 15/03/12, the gross final energy consumption in the Campania Region (amounting to 5,916 Ktoe) was covered by 19.8% from renewable energy sources. Renewable energy in Campania includes photovoltaic, wind, hydroelectric, and bioenergy, with a total of 49,719 plants and total energy production of 6,007 GWh, where the largest contribution comes from photovoltaic sources, with 1,090 GWh (with 48,922 plants)[117]. Specifically, as of December 31, 2021, the gross efficient power (MW) of electricity production plants in the province of Naples was 392.6[118]. In terms of energy system efficiency, the Region has recently introduced incentives for the creation of energy communities.

The Solidarity REC Naples EST[119] was born in 2021 in the eastern part of Naples city. The Naples East area includes the neighborhoods of Ponticelli, Barra, Poggioreale, and San Giovanni a Teduccio. With more than 200,000 inhabitants, it was the largest industrial zone in the city. Naples East has deep commercial and economic roots in history, but it was during the 19th century that the area transformed into a giant industrial manufacturing hub, benefiting from its strategic city-to-sea location. After an initial boom, the first signs of crisis were recorded during the unification of Italy and continued into the 20th century. Under the fascist regime, chaotic and disordered urbanization led to the annexation of Ponticelli, Barra, and San Giovanni a Teduccio[120]. In the post-World War II period, the area increasingly took on the characteristics of a peripheral territory outside the city center, a feature that still distinguishes the neighborhood today. Currently, Naples East reflects a process of evident decay, seen in the decommissioning of many industrial plants and the presence of vacant urban spaces. The balance between population, mobility, and employment activities has slowly deteriorated, leading to marginal and degraded settlements inhabited mainly by the most vulnerable social class. In 1980, large industries declined due to extensive housing developments (popular districts), high unemployment, low education rates, and the pervasive control of the territory by the Camorra. This coincides with the Irpinia earthquake (1980) and the ensuing emergency, considered one of the most devastating seismic events in recent Italian history (magnitude 6.9 on the Richter scale). The disaster laid the groundwork for the rampant urban development of public housing in the eastern outskirts of Naples through the Extraordinary Residential Building Program (P.S.E.R.), which built upon the "Plan for the Peripheries" approved just a few months before the earthquake[121]. Throughout the 1980s a deregulation approach undermined the credibility of urban planning making industrialization decline and use of prefabrication coincident with poor construction quality. The most controversial example is represented by Taverna del

[117] Data from Regione Campania, 2022. Caratteristiche socio eocnomico terriotriali in Proposta di Aggiornamento del Piano Regionale per la Gestione dei Rifiuti Speciali della Regione Campania.
[118] Gestore dei Servizi Energetici S.p.A (GSE); Arpa Campania RSA data.
[119] Celentano R, Gadagno L, Palescandolo M, Scognamiglio S, Sposito S., 2010. Piccole imprese e tessuto socio-economico di Napoli Est. Palmentieri S. (2016) Innovazione e ridisegno degli spazi urbani: dai “vuoti” ai poli di sviluppo. L’Area Est di Napoli (a cura di) De Falco S. Innovazione, competitività e sviluppo nei territori dell’Unione Europea. Collana Europa Parole.
[120] IPSAR, 2023-2024. Ippolito Cavalcanti, Napoli San Giovanni a Teduccio e il Bronx: un’indagine conoscitiva sullo stato di attuazione degli interventi di riqualificazione territoriale.
[121] Attademo, A., Bassolino, C., Orfeo, L. and Veronese, 2021. La costruzione della periferia: Napoli 1945-1986. CLEAN edizioni.

Ferro, where the Tunnel structure, with the embedding of networks and technological systems in the concrete pour, (referencing the "Vele" of Scampia-Naples) is one of the symbols of the decay in the peripheral area of San Giovanni a Teduccio, which has recently gained media attention for becoming the backdrop of the large mural dedicated to Maradona by the Neapolitan artist Jorit[122]. In the 2000s, the area remained compromised by the presence of popular buildings, asbestos, and polluting industrial plants, such as refineries, which continue to threaten the health conditions of the local population. In the last few years, new funding has initiated significant urban regeneration work that is still ongoing.

From the point of view of MLP about the CAI development, the **niche** corresponds to the Solidarity REC which was born thanks to the collaboration of four major players in the region: Legambiente, Fondazione Famiglie di Maria, Fondazione con il Sud, Impresa 3E. The creation of the CAI followed the **regime** regulatory developments (European and Italian), which led to the formalization of Renewable Energy Communities in the country[123] [124]. At the local level, the regime also includes the technical offices of Naples Municipality, particularly regarding the bureaucratic obstacles to obtaining technical environmental permits for the installation of photovoltaic panels on the roof of Fondazione Famiglie di Maria. The request was passed to the Campania regional offices, which took responsibility for initiating the procedure. From this moment on, CAI's developments followed the integration of European directives within national norms, the most recent are: the CER Decree (January 2024) and the Final transposition and implementation of Legislative Decree 199/2021 (April 2024), which introduces plants with a maximum capacity of 1 MW connected to the same primary transformation substation. In 2024, the Solidarity REC is active and aims at regenerating the social tissue of the district, through social work, environmental education, and training concerning energy produced and consumed by the local families involved in the project. These objectives are consistent with **landscape** developments, such as the global growth of ecological awareness, the energy transition process alongside climate change, and the drastic rise in temperatures (increased CO_2 levels due to the exploitation of fossil fuels). The Russian invasion of Ukraine as well as economic incentives for photovoltaics and the development of the green market have been key elements in supporting the adoption of new energy practices. The industrial decline and the infiltration of organized crime in Eastern Naples have further complicated the social landscape of the area, making urban and social regeneration more urgent.

5.5.1.2. Population and Migration

Campania is the third most populous region in Italy and the second in population density. Population density varies locally, reaching a peak in the city of Naples (7,909 per km²). The metropolitan city of Naples (classified as such in 2015) hosts 53% of the region's population. The population structure in Campania is aging, with a significant increase in the over-65 population. In about 20 years, the average

[122] Ibidem.
[123] De Vidovich, L, Tricarico, L and Zulianello, M., 2023. Modelli organizzativi per le comunità energetiche. Riflessioni dalla ricerca 'Community Energy Map', Impresa Sociale, 1, 122-137.
[124] Leone, MF., Amirante, R. and Sferratore, A., 2023. Comunità energetiche rinnovabili come architetture pubbliche e infrastrutture socio-ecologiche. *Techne*, 26, 173-183..

age of the population has risen by over 5 points, from 37.7 to 43.3 years, with a steady decline in birth rates. The population dynamics in Naples mirror the same regressive trend. In 2019, according to ISTAT data, the population consisted of 47.9% men, 52.1% women, 17% minors, and 5.5% people aged 80 and over. The age group between 55-59 years is the most populous, exceeding 70,000 people. In 2022, the province of Naples recorded the lowest natural balance (-6,284) and internal migration balance (-15,434), contrasted by a high foreign migration balance (+6,172)[125].

This demographic decline seems to have begun in the 1980s, with a gradual process of population aging, a ratio of over-65s (152.6) to under-15s (100). In the same years, migratory flows from non-EU countries, mainly from the Philippines, Cape Verde, Sri Lanka, sub-Saharan Africa, and South America, intensified. In the 2000s, there was an influx of Chinese and Ukrainian communities, especially linked to the war caused by Russia's invasion of Ukraine[126].

In 2019, there were 57,298 foreign residents in Naples municipality, with 51.2% being women and 48.8% men. In 2021, the metropolitan city of Naples had about 53,440 foreign residents, 91% of whom came from non-European countries[127]. The municipality hosts almost half of the non-EU population residing in the metropolitan city but with an incidence of only 5.6% of the resident population. Given the presence of an informal housing market with low housing standards, the presence of these communities is concentrated in the historic center's neighborhoods by about 60%.

Since 1200, Naples has been home to the historic University of Federico II, established by the edict of the King of Sicily. This contributed to urban demographic growth and its prestige as a capital city. The Neapolitan university tradition places the city at the forefront of student resistance, particularly during the fascist era and the Gentile reform of schools (1923). In subsequent years, the university expanded, including new degree programs, structural parts, and student numbers, transforming into a mega-university. Naples historically is also home to the Orientale University, dating back to the 1700s and now specializing in linguistic-literary and historical-artistic teachings related to the East and Africa, without neglecting the cultures of Mediterranean countries, Europe, and the Americas.

The incidence of adults with a diploma/degree increased from 1991 (32.3% - 49.4%) to 2011 by about 17 percentage points. In 2019, people with tertiary education (including PhDs) accounted for 14.6% of the population, of which men constituted 45.5% and women 54.5%. The phenomenon of commuting for study involves about 169,549 people, with 97.1% within the municipality of Naples.

5.5.1.3. Economy and Employment

According to data as of December 31, 2020, the entrepreneurial system of the Campania region reflects a diversification typical of the national production system, but with significant specificities. The

[125] Osservatorio della città di Napoli, 2021. Comune di Napoli.
[126] Città metropolitana di Napoli, 2021. Città metropolitana di Napoli, (2016-2018) Contesto esterno, Analisi del contesto demografico e socio-economico della Città Metropolitana di Napoli. ISTAT censimenti permanenti, popolazione e abitazioni, capoluoghi delle città metropolitane. Napoli.
[127] Ibidem.

predominant sector is “wholesale and retail trade – repair of motor vehicles and motorcycles” (ATECO[128] section G), with 184,726 active businesses, accounting for 37.16% of all companies in Campania. Of these, 61% operate in the retail sector, with over half concentrated in the metropolitan city of Naples. Following at a considerable distance is the construction sector (ATECO section F) with 63,305 active companies (12.73% of the total), operating in the provinces of Naples (48%), Caserta (21%), and Salerno (19%). The “agriculture, forestry, and fishing” sector (ATECO section A) has 59,151 companies (11.9% of the total), with 98.2% specialized in crop and animal production, hunting, and related services[129] [130] [131].

In 2023, the number of local units registered in Naples was 3,799, a decrease of 3.3% from 2019. The active businesses registered in Naples are 80,000, with 30% concentrated in commerce. About 22% of the workforce is employed in commercial production, followed by transport, rental and agencies, and professional activities. These top four sectors account for 55% of the total workforce in the city. The data reflects the erosion of Naples' industrial fabric that began after World War II, leading to a specialization in textiles, agro-food, and tourism. Due to its architectural, monumental, and artistic wealth, Naples's historical city center was inscribed on the UNESCO World Heritage list in 1995[132] [133] [134].

Despite having a high concentration of the active-age population (66.33% of the population is between 15 and 64 years old), Campania has a relatively low participation in the labor market. Gender disaggregation highlights the disparity between males and females, with an average labor participation rate of 65.5% for men and 35.3% for women between 2004 and 2019.

The national economic crisis of 2008 had an even more pronounced impact on the Metropolitan City, as evidenced by the rise in unemployment rates, especially among the youth, and the increase in informal (underground) labor. In 2019, the youth labor force non-participation rate (ages 15-24) was 75.2%, while the employment rate in the 20-64 age group was 42.2%. In 2019, 62.2% of the employed population in Naples were men, while 37.7% were women (people aged 15 and over). The phenomenon of commuting for work affects about 248,010 people, with 86.1% commuting within the municipality of Naples (2019).

The informal economy is widespread, where non-compliance with existing regulations pertains to both workplace safety and environmental standards, as well as wage issues (non-application of collective labor agreements). This is also because the production fabric is predominantly characterized by small enterprises. As noted in the 2018 report by the Ministry of the Interior to Parliament on the activities of the Againsti-Mafia Investigation Directorate (DIA), social hardship and widespread illegality characterize

[128] Ateco is used for the Classification of economic activities adopted by the Italian National Institute of Statistics (ISTAT).

[129] Frascani, P., 1995. La città e la congiuntura. L’economia napoletana nella prima metà del Novecento. *Meridiana*, *22/23*, 223–247.

[130] ISTAT, 2017. il ruolo di napoli e del mezzogiorno, nello sviluppo economico sociale dell’Italia e dell’europa.

[131] Regione Campania, 2022. Caratteristiche socio economico territoriali in Proposta di Aggiornamento del Piano Regionale per la Gestione dei Rifiuti Speciali della Regione Campania.

[132] Frascani, P., 1995. op. cit.

[133] ISTAT, 2017. op. cit.

[134] Regione Campania, 2022. op. cit.

large areas of the metropolitan and, more generally, Campania region. Camorra is a criminal organization based in Naples and the Campania region. It is one of Italy's oldest mafias, with origins dating back to the 19th century. Camorra consists of various independent clans that control illegal activities such as drug trafficking, extortion, smuggling, and money laundering, exerting a persistent influence on the Neapolitan economy and society. This situation is exacerbated by the social, environmental, and economic degradation in many areas, along with high unemployment rates, juvenile delinquency, and school dropout phenomena.

The presence and activity of Camorra[135] clans hinder the path toward a legal economy, promoting money laundering and reinvestment of illicit proceeds through the acquisition of real estate, commercial activities, and public businesses. Camorra also holds power over the administrative life of public entities in Campania, particularly with the aim of controlling large contracts through clientelism and corruption. These activities have negative effects, especially on the social fabric and trust in political institutions, creating a perception of systemic impunity and fostering a climate of mistrust. This situation is also being investigated at the national level. ISTAT 2022 indicators show widespread dissatisfaction among citizens with institutions[136]. Levels of distrust are particularly high toward political parties, the judicial system, and the Italian Parliament.

The data presents a complex picture of the entrepreneurial landscape in Campania and particularly in the Municipality of Naples, marked by significant challenges related to labor market participation, organized crime, and an informal economy. Challenges, for example, are traceable mostly in the erosion of industrial fabric that led to the low involvement in the labor market particularly among women (35.3%) compared to men (65.5%) and to youth unemployment and non-participation (75.2%). The informal economy linked to organized crime, instead, indicates the spreading of underground economies and the significant worsening of socio-economic problems in the communities. Potentials are expressed in new opportunities, especially within the commercial and tertiary sectors with the development of tourism and small enterprises for potential growth and innovation. Moreover, opportunities are traceable to community work and led initiatives to foster resilience against Camorra's infiltration in the social fabric and economy.

5.5.1.4. Political and Administrative Structure

Italy has been a parliamentary republic since June 2, 1946, when the monarchy was abolished through a referendum, and the Constituent Assembly was elected to draft the Constitution, which was promulgated on January 1, 1948. The Italian political system is organized according to the principle of separation of powers: legislative power is attributed to Parliament, the government holds executive power, while the judiciary, independent of the executive and legislative branches, exercises judicial power. Both Parliament and the government are based in Rome, the capital of the Italian state.

[135] Cozzolino A, 2022. Napoli 1982, contro la camorra esplode l'ultimo movimento giovanile di massa. Strisciarossa.
[136] ISTAT 2022; ISTAT 2019 report la partecipazione politica in Italia.

The Republic is composed of Municipalities, Provinces, Metropolitan Cities, and Regions. They are autonomous entities with their statutes, powers, and functions, as established by the Constitution, and promote activities of general interest, based on the principle of subsidiarity.

The municipality of Naples operates under a Mayor-Council form of government, where the mayor is directly elected by residents and responsible for the city's executive functions. The City Council, also elected by residents, is responsible for legislative functions, including budget approval, urban planning, and local ordinances.

The leadership of the municipality of Naples has been predominantly center-left since the 2000s. In 2021, Gaetano Manfredi was elected mayor with 62% of the vote continuing this center-left tradition. However, voter turnout was just under 47%, in some ways reflecting the widespread mistrust of institutions among Neapolitan citizens.

5.5.1.5. Political Participation

Naples has a tradition of informal community resistance particularly in favor of workers' rights and against organized crime, the Camorra, which is deeply entrenched in the city's social and institutional fabric.

The first uprisings were recorded in the spring of 1848 when workers from Naples' textile and metalworking industries joined the protests of glass factory workers in San Giovanni a Teduccio (Eastern Naples)[137]. These workers had no rights under the Kingdom of the Two Sicilies. The French Revolution had somewhat crossed national borders, but class consciousness was still in its infancy in southern Italy and Naples. The Italian Socialist Party (PSI) was the party most workers identified with, but participation was low despite increasing protests and strikes due to worsening working conditions in the industries. A turning point came in 1921 with the birth of the Italian Communist Party (PCI) and the subsequent rise of fascism in Italy. By 1923, nearly twenty thousand people were unemployed in Naples, primarily in the metalworking sector. The situation worsened with the 1929 crisis and continued into World War II. In 1943, the "Four Days of Naples" liberated the city from Nazi Fascism through the self-organization of a military, civic, and collective resistance, which portrayed the southern populations as protagonists in the liberation.

The tradition of Neapolitan workers' movements was revived in the 1970s with the uprisings of university students and organized unemployed people, affected by the cholera epidemic (1973) and the Irpinia earthquake (1980), emergencies that highlighted the already compromised social, economic, and political vulnerabilities of the city[138]. During the same years, the first feminist collectives in Naples began to form, opposing gender-based violence and discrimination and engaging in practices of self-awareness and

[137] Pedìo, T., 1980. Agitazione e scioperi operai a Napoli nella primavera del 1848. Archivio Storico Italiano, 138,4 (506), 577–596.

[138] Le Nove-studi e ricerche, 2013. Casa della cultura delle differenze, donne protagoniste a Napoli, un contributo alla ricostruzione del movimento delle donne dagli anni settanta ad oggi. Dines N. (1999) “Centri sociali: occupazioni autogestite a Napoli negli anni novanta”, *Quaderni di Sociologia*, 21, 90-111.

solidarity against the established capitalist system. The against-Camorra movement emerged in the 1980s when rampant urbanization and land consumption further worsened the already poor hygienic, environmental, and social conditions of the territory[139]. The movement was born out of workers, joined by students, representatives of the Church, and members of the PCI and Christian Democracy (DC) parties. This convergence of political and religious identities united from the grassroots was a sign of new forms of protest, inherited from the workers' tradition, combining the struggles for labor and housing rights with those for environmental, gender, and peace rights. In the same way, in 2001, the anti-globalization movement from Seattle arrived in Naples, giving rise to the No Global Forum Network, which would be present in Genoa against the G8 the same year. The network model reflected the crisis of the party system that began in the 1980s. It was an inclusive model, devoid of defined hierarchies, and sought to connect different perspectives and resources while trying to contain internal conflicts.

Regarding broader participation, the Italian trend (2014-2019) indicates that participation is mainly indirect. In total, around 12 million 200 thousand people, or 23.2% of the population aged 14 and over, do not inform themselves or engage in political life. Nearly two-thirds of these are women (about 7 million 700 thousand, or 28.3% of women aged 14 and over), while men account for approximately 4 million 500 thousand, or 17.7%. This general trend is also locally evident in electoral voting. In Naples, during the 2021 municipal elections that led to the victory of Mayor Gaetano Manfredi with a coalition list of various center-left parties, voter turnout was around 47%. Similarly, turnout for the 2019 European Parliament elections was around 40%, a sharp drop compared to 1999 (51%).

5.5.2. Stakeholder Analysis

In the Solidarity REC case study four features of the SHs arena composition deserve to be mentioned: a wide variety of stakeholders, the lack of actors from the business and scientific field, the local dimension of the vast majority and, the homogeneity of the promoters that, with the exception of Legamebinete are all local actors and, with the exception of Impresa 3E are all NGO. SHs are also almost equally distributed in terms of relationships among the cooperative and neutral approach with also a number of potentially conflictual relationships. Most of the SHs seem to count on relational resources.
As for the relevance (figure 5.2a), the SHs' group is roughly polarized into the two categories of the most (*key players*) and less (*crowd*) relevant. Among the former, we find all and only the promoters, among the latter we find the potential conflictual actors. Institutions, both at the local and regional level, might play a role in setting the context for the development of the initiative.
For what refers to the impact, the most relevant aspect to be reported is that the group of the promoters split into the three categories of Affected and affecting, with Fondazione Figlie di Maria (confirming to be the most involved actor) , the (positively) affected (Legamebiente) and the Affecting (Impresa 3e and Fondazione per il Sud).

[139] Santino, U., 2000. Movimenti sociali e movimento antimafia, Città d'Utopia n. 29, pp 11-21.

Table 5.5a - Stakeholders: list and main features

Stakeholder name		Category	Spatial Scale	Role	Resources	Relationship
SH1	Famiglie CERS	Citizens	Local	beneficiary	Relational;Knowledge	cooperative
SH2	Napoli EST	Citizens	Local	beneficiary	Relational;Knowledge	neutral
SH3	Comitato ex Taverna del Ferro	Civil society organizations	Local	third party	Relational;Knowledge	conflictual
SH4	Libera/Maestri di strada association	Civil society organizations	Local, Regional, National	third party	Relational;knowledge	neutral
SH5	Comune di Napoli	Institutions	Local	target	Normative;Positionall;Economic	neutral
SH6	Regione Campania	Institutions	Regional	target	Normative;Positionall;Economic	neutral
SH7	Casa del Popolo	Intermediate bodies	Local, Regional, National	third party	Relational;Knowledge; Posiitional	conflictual
SH10	Fondazione Con Il Sud	NGOs	Local	promoter	Relational;Economic	cooperative
SH8	Fondazione Famiglie di Maria	NGOs	Local	promoter	Relational;Economic	cooperative
SH9	Legambiente	NGOs	Local, Regional, National	promoter	Knowledge,Economic	cooperative
SH11	Impresa 3E	Professionals	Local	promoter	Economic	cooperative

Figure 5.5a – Stakeholders by relevance: the Power-Interest matrix

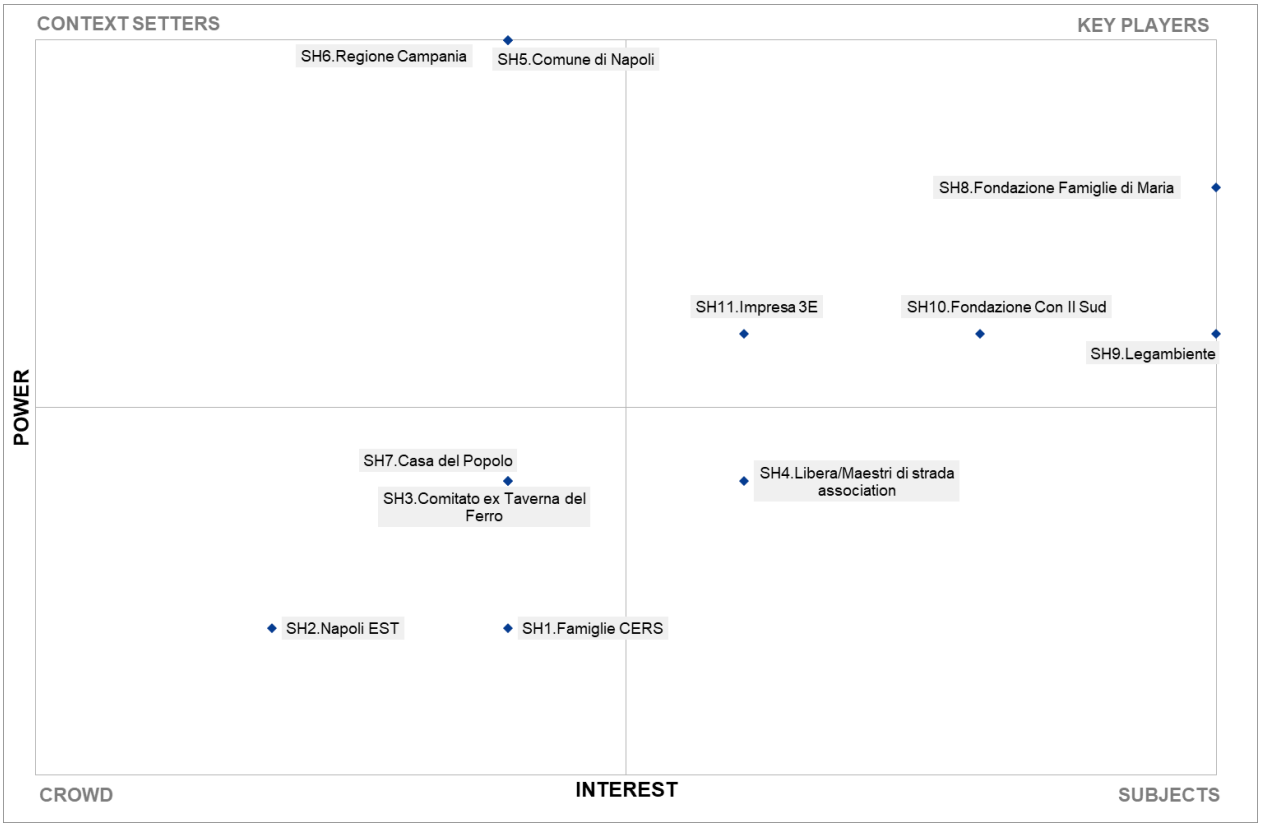

Table 5.5b – Stakeholders by impact

Impact Category	Stakeholder	Power	Impact
Affected	SH9.Legambiente	3	5
	SH1.Famiglie CERS	1	3
Affected & Affecting	SH8.Fondazione Famiglie di Maria	4	5
	SH3.Comitato ex Taverna del Ferro	2	-2
	SH4.Libera/Maestri di strada association	2	-2
	SH7.Casa del Popolo	2	-2
	SH2.Napoli EST	1	-1
Affecting	SH5.Comune di Napoli	5	1
	SH6.Regione Campania	5	1
	SH11.Impresa 3E	3	2
	SH10.Fondazione Con Il Sud	3	2

In 2021, the East Naples Energy (and Solidarity) Community (REC-S) was established through a partnership between key local stakeholders: Legambiente, Fondazione Famiglie di Maria, Fondazione con il Sud, and the company 3E. The local community, not particularly sensitive to energy-environmental issues, directly benefits from the social action and day-to-day support provided by the Famiglie di Maria Foundation, active since the 1800s. The project has two primary objectives: (a) a technical-operational goal, aimed at promoting renewable energy production and consumption for a sustainable transition, and (b) a socio-cultural goal, focusing on environmental education and active citizenship.

Landscape

The landscape is hypothetically tied to the rise of ecological awareness, which grew significantly in the second half of the 20th century, although early expressions of it appeared in the first half with the initial European experiments in renewable energy communities. By the late 20th century, industrial decline, especially in Eastern Naples, compounded with the absence of a concrete industrial conversion plan, led to the infiltration of organized crime. Events such as the 1980 Irpinia earthquake and the ensuing wild urbanization further worsened the ecological, economic, and social conditions of the region's residents. Notably, following the Irpinia earthquake (1980), which displaced large masses of the population to the peripheral areas of the city, the construction of temporary housing blocks became permanent facilities and affected the entire eastern area of Naples. In the 2000s the port and easter cost areas became of increasing national strategic interest that hosts major oil players like Q8 and Darsena Petroli. The industrial decline, the infiltration of organized crime, and the damage to the environment produced by big oil companies have further complicated the social landscape of the area, making urban, social and environment regeneration more urgent. Alongside these developments, there was growing recognition that climate change and rising global temperatures are primarily anthropogenic, spurring efforts to regulate alternative energy production methods aimed at economic and environmental sustainability. Additional driving forces include the growth of a green market and incentives introduced in the 2000s that encouraged the adoption of photovoltaics in Italy. The COVID-19 pandemic and Russia’s invasion of Ukraine have also influenced the green transition and the development of RECs, promoting shared ownership models that enable end-consumers to participate in energy production collectively.

Regime

The regime is hypothetically identified with regulatory developments at global, European, and Italian levels that facilitated the formalization of REC. Locally, the regime includes entities such as the Municipality of Naples and the Campania region. The East Naples REC-S faced significant challenges with the local municipality’s technical offices, which delayed the installation of photovoltaic panels due to landscape restrictions. This impasse led to the involvement of regional offices to initiate the necessary procedures. At the global level, milestones such as the 1992 UN Earth Summit, the 1997 Kyoto Protocol, the 2015 Paris Agreement (COP21), and Agenda 2030 have shaped international guidelines. At the European level, important legislative steps include the 2018/1999/EU regulation on Energy Union governance, the 2019 Green Deal, and the 2019/944/EU regulation on the internal electricity market, which emphasized the role of citizens as active consumers. Italian regulations, such as the Milleproroghe

Decree (2019) and the CER Decree (2024), have also played key roles in the development of energy communities.

Niche

At the niche level, the REC-S has fully evolved in compliance with the last implementation of Legislative Decree 199/2021.

During the REC(S)' implementation, administrative difficulties arose from the technical offices of the Municipality of Naples. The municipality required regional-level environmental authorization for the installation of the photovoltaic system, and therefore the GSE faced challenges in responding to the request for recognition of the energy community. The local government seemed to have hindered the project, accusing the Foundation of alleged building violations due to landscape constraints and fueling a conflictual situation with the municipal offices. The request was then forwarded to the regional offices, which took on the responsibility of initiating the procedure (according to point A6 of the Presidential Decree 31/2017 on simplified authorization regarding landscape, the installation of photovoltaic panels without landscape authorization is possible on flat roofs and not sloped roofs, as is the case with the building housing the Famiglia di Maria Foundation).

By broadening the research field to include other stakeholders present in the area, such as the San Giovanni a Teduccio Civic Committee, the former Taverna del Ferro Committee, and the Libera/Maestri di Strada association, a latent conflict emerges between the Famiglia di Maria Foundation, which holds leadership in the REC(S), and other civic and associative entities active in the area. The latter does not recognize the social innovation brought by the energy community in the neighborhood and views the initiative led by the Famiglie di Maria Foundation unfavorably, considering its close ties with local and national political politicians and institutions and the involvement of only a few families in the project. Global actors, like Q8 and Darsena petrol players, instead, have been a stake in the initiative. They are engaged in the petrol business and natural gas deposits in the port area of East Naples. However, the project represents a valid experiment to understand how to include and empower socioeconomically vulnerable and geographically marginalized groups in the energy transition, and, according to stakeholders interviewed, it represents a precedent to realize subsequent energy and solidarity community projects in the neighborhood.

Interaction between levels

The analysis investigates the stakeholders involved and how the three levels (landscape, regime, and niche) interact with each other. Global developments and regulatory changes (landscape and regime) have opened a "window of opportunity" for the niche, represented by REC-S in Eastern Naples, to emerge and evolve. Understanding this intertwining is consistent with identifying the stakeholders involved and understanding how energy transitions and social regeneration can unfold in complex environments like San Giovanni a Teduccio.

5.5.3. References

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6. HISTORIC EXAMPLES OF CIVIC ENGAGEMENT

6.1. Covid-19: Network of “Makers” (ES)

The Network of “Makers” started spontaneously at the very start of Covid-19 when respirators were scarce in the hospitals. A network of IT-savvy individuals came together to develop and "print" respirators using 3D printers, and they continued until the shortage of respirators ended. Participants were scattered along the Spanish territory and organized themselves through smartphone communication apps (like Telegram), and they went in and out depending on availability. Without any specific or obvious leadership, it organized a quick and effective reaction to a public health emergency using the technological resources available and the knowledge of the participants, and it delivered its outcomes only as a result of effective (online) cooperation between the participants. This example enables CO-SUSTAIN to learn how quickly and effectively civil society can respond to a public emergency, such as the Covid-19 pandemic, by assembling and organizing people with a particular expertise. Although it was outside of their production, a number of industries that started manufacturing respirators during the pandemic may have found use for the ideas.

6.1.1. Context Analysis

On March 12, 2020, the Spanish government declared a State of alarm due to the COVID-19 pandemic. The collapsing healthcare system and shortages of medical equipment made this situation critical. In this context, inspired by the Italian Maker community, the coronavirus maker network (CM from now on) emerged in Spain during the early stages of the COVID-19 crisis: a small group of Spanish makers who quickly organized, creating a Telegram group (@CM) to coordinate efforts at the national level to produce protective equipment. This group's growth was remarkable. Starting with a few and growing to 17,000 participants[140], it mobilized thousands of volunteers across Spain and exemplified an innovative community pursuing the collective good in a global sanitary emergency.

6.1.1.1. The demarcation of the CM in terms of the MLP levels.

The CM aligns with the MLP theory across three layers: the niche level, which primarily focused on the municipality of Barcelona and extended to its metropolitan area for specific data collection; the regime level in Catalonia and Spain; and the landscape level across Europe and globally.

Barcelona's niche level significance stems from its strategic ICTs sector, driving investments, job creation, and competitiveness. In 2017, digital and industry 4.0 sectors in Barcelona and its metropolitan area accounted for 400,000 jobs[141]. The city ranks 2nd in Europe and 9th globally for internet searches related to investments, tourism, and talent, and 13th globally in technological maturity for social cohesion and sustainable development Networked Society City Index 2016. This foundation ensured the availability of highly skilled professionals and technological equipment during the pandemic.

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[140]Arroyo, L., Sanchez-Asin, J. J., Valls-Pasola, J. and Hormiga, E., 2021. The CM network. Understanding the success of an innovation community facing COVID-19 in Spain. In: *Corporate Responsibility and Sustainability during the Coronavirus Crisis: International Case Studies,* edited by Sörensson, A., Tesfaye, B., Lundström, A., Grigore, G., Stancu, A, pp. 15-36. Cham: Springer International Publishing.

[141]Barcelona Matròpolis (19.01.2024). Barcelona en datos: Industria 4.0. In Ciudad Global Dossier. https://www.barcelona.cat/metropolis/es/contenidos/barcelona-en-datos-industria-40.

Catalonia and Spain have been clustered within the regime level acting as intermediaries between local initiatives and broader, global dynamics, due to the specific legal procedures and regulations. Catalonia, with its autonomous legal structure and regulatory environment, provides a unique insight into regional governance, hosting 23% of Spain's tech and digital companies (with 90% located in Barcelona). In 2017, Catalonia ranked 4th in Europe for the highest number of people employed in high and medium-high technology manufacturing sectors[142]. On the other hand, Spain, encompassing the national legal and regulatory framework, investing on R&D and innovation projects and giving support to young entrepreneurs and technological-based companies, helps to understand how national policies and regulations facilitate or hinder innovation and community-driven responses at multiple scales.

In this preliminary phase, the landscape level, framed within the CAI is considered peripherally and briefly outlined, focusing on key factors influencing the initiative across all MLP levels, with further exploration planned on its democratic transition outcomes. The Covid-19 pandemic, with its far-reaching impact, served as a critical juncture between the MLP levels, acting as a critical landscape pressure. As a catalyst, it disrupted indeed, daily life, economic stability, and healthcare systems worldwide, causing major changes across the regime and niche levels. The initial severe impact of Covid-19, led to a robust and centralized government response through the declaration of the state of alarm. This measure resulted in one of the strictest lockdowns in Europe and the consequent restrictions on movements; the quarantines and the closure of industrial facilities and retail premises.

Preceding the pandemic, the capitalist system, and the rise of the Internet of Things (IoT) can be factors that laid the ground for the so-called information society[143], as one in which the creation, distribution, and manipulation of information is central to economic and cultural activities, driven by the pervasive influence of ICTs. The pre-existing makers' network facilitated the rapid CAI during the health crisis[144]. Initially informal, the network's organizational structure varied across Spanish territories but soon reorganized into municipal and regional subgroups, adopting structured governance[145].

The CM exemplifies the principles of an information society[146], as they quickly formed in response to the crisis, using existing and advanced technological skills and a collaborative spirit. Using platforms like Telegram, they efficiently coordinated efforts to share, design, prototype, and produce the essential medical equipment. Through 3D printing, open-source designs they were able to fill critical gaps, demonstrating how niche innovations could transition into mainstream systemic trends, influencing regimes and supporting the central state. Furthermore, the collaborative nature of the CM proves that information societies can foster new forms of social organizations and collective action, enhance community resilience and responsiveness in times of crisis, moved by the willingness to provide mutual support and to foster common good. This framework acknowledges the unique nature of the Makers' initiative as a global movement without geographical boundaries.

As for the availability of economic capital, the CM network didn't receive any grant or direct funding. Existing equipment and infrastructure in Barcelona, though underused due to the economic slowdown

[142] Barcelona Metròpolis, 2024. op. cit.
[143] Martin, W.J., 2017. *The global information society.* London: Routledge.
[144]Conde Melguizo, R., 2020. *Makers y crisis sanitaria en España.* Dataset. Figshare. [https://doi.org/10.6084/m9.figshare.12482678.v1] (accessed: 15.10.2024).
[145] Arroyo et al., 2021. op. cit.
[146] Martin, 2017. op. cit.

and lockdown, were considered "sunk costs". Companies and social entities donated resources and equipment, supporting community projects through employee involvement[147]. Organizations like the Ashoka Foundation at the national level and universities like the Autonomous University of Barcelona gathered donations to create initiatives. The "Makers of Vallès against COVID-19" by UAB Patronage established a solidarity fund to produce protective equipment for hospitals and nursing homes, covering equipment and transportation costs with donations. Open-source designs by makers were adopted by companies to produce personal protective equipment, increasing market availability[148].

From the human capital perspective, the CM comprised diverse profiles with both professional and moral attributes. Professionally, members were highly specialized, passionate about technology and innovation, adaptable, and entrepreneurial. Morally, they were driven by a sense of collective responsibility, altruism, and a desire for social change. The community included individuals who contributed with their knowledge and competences (e.g., doctors, engineers, digital strategists) and those who offered time, supplies, and equipment. From a technological standpoint, the availability of open-source design and 3D printers was a critical enabler for the quick prototyping and production of the needed equipment. As for the social imperative, the strong culture of solidarity in Spain[149] provided the ground support for the network mobilization. Among the political factors, the state of alarm in Spain[150] marked the beginning of force majeure measures aimed at containing the spread of the virus meanwhile, allowing the Spanish government to limit certain freedoms in favor of the crisis. This specific aspect might help understanding the willingness of civil society to act in support of the public authorities, due to their unpreparedness to handle the crisis, boosting the creation and action of CM. The state of alarm, initially set for 15 days, was extended until June 21, 2020. While crucial in reducing Covid-19 transmission, these measures had significant social and economic impacts, such as company shutdowns and increased unemployment. Employment measures like ERE and ERTE[151] expanded though the pool of volunteers contributing their time and skills.

As for possible ecological considerations, the Covid-19 pandemic disrupted the global healthcare supply chain, leading to export bans from major PPE-producing countries like China and international shortages. The lockdown measures caused a significant decrease in transport flows, especially air transport, resulting in a temporary decline in CO_2 emissions. Reducing goods transport by fostering local production can decrease emissions and lower the carbon footprint[152], whilst local production also boosts local

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[147] Forné, L. and Castro, M., 2021. La Hidra Cooperativa. Cómo generar marcos de colaboración con tramas comunitarias desde la Administración Pública2. Resumen de la Investigación. *Bherria Topaketa* 2021. https://bherria.eus/wp-content/uploads/2021/12/Presentacio%CC%81n-investigaciones-La-Hidra.pdf (accessed: 13.11.2024).

[148] Arroyo et al., 2021. op. cit.

[149] Rey-García, M. and Royo, S., 2022. *Strengthening Civil Society in Spain: A Post-COVID-19 Agenda*. Cambridge: Belfer Center for Science and International Affairs.

[150] Enacted by the Royal Decree 463/2020 on March 14, 2020.

[151] Measures taken by companies to temporarily suspend or reduce the contracts of their workers. The reasons for initiating such a regulation can be economic, technical, organizational, productive, or due to force majeure, like during the Covid-19 pandemic.

[152] Clarke, D., Flachenecker, F., Guidetti, E. and Pionnier, P., 2022. CO2 Emissions from air transport: A near-real-time global database for policy analysis. *OECD Statistics Working Papers*, No. 2022/04, OECD Publishing Paris. https://doi.org/10.1787/ecc9f16b-en.

economies, creates jobs, and improves the security of essential goods and food[153]. The pandemic highlighted the vulnerability of global supply chains, emphasizing the need for local production to enhance autonomy, self-sufficiency, and resilience. However, the emission decrease was due to the economic slowdown, not systemic change, as emissions rebounded when economies recovered. The CM network can be explored from an ecological perspective to examine how local production capacities might adapt and respond compared to centralized global supply chains, reducing dependencies on international markets, and promoting decarbonization with decentralized solutions[154]. Additionally, the CM network could illustrate a more sustainable supply chain model, fostering resilience against global shocks and reducing long-distance transportation while promoting faster, community-driven responses to supply demands[155].

6.1.1.2. Key context variables and their relationship with the MLP levels as demarcated

Demographic structure: According to the Spanish Institute of Statistics (INE, 2020a), Spain recorded a negative natural population growth rate for a decade, with more deaths than births, resulting in population decline and demographic aging. Especially during the COVID-19 crisis, the mortality rate increased to 17,7%[156]. Today, Spain's birth rate is declining at 24%, compared to the data recorded ten years before and the mortality rate has decreased to 5,8% since 2022[157]. In any case, only 8.6% of the population is between 0 and 14 years old, while 20% are over 65, with an average life expectancy of 83.08 years, a pattern typical of countries with low birth and mortality rates[158]. This demographic structure aligns with the patterns typically observed in countries with similar conditions, featuring low birth and mortality rates alongside a minimal natural population growth. Consequently, Spain can be defined as an aged society with a marked aging trend[159].

As for the economic structure, Spain has been showing a moderate productivity growth with a GDP of €1,119.01 billion, with Catalonia accounting €212.611 billion (19%) and Barcelona €160.180 billion. Catalonia and Barcelona's GDP per capita were €27,505 and €28,133, respectively (INE, 2020c). Unemployment peaked in Q4 2020, reaching 1.88 million inactive individuals[160].

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[153] Liu Z., Ciais, P., Deng, Z., Lei, R., Davis, S. J., Feng, S., et. al., 2020. Near-real-time monitoring of global CO2 emissions reveals the effects of the COVID-19 pandemic. *Nature Communications*, 11, 517. https://doi.org/10.1038/s41467-020-18922-7.

[154] Sigala, I.F., Sirenko, M., Comes, T., and Kovács, G., 2022. Mitigating personal protective equipment (PPE) supply chain disruptions in pandemics – a system dynamics approach. *International Journal of Operations & Production Management 42,* (13), 128-154. https://www.emerald.com/insight/content/doi/10.1108/IJOPM-09-2021-0608/full/html (accessed: 13.11.2024).

[155] Sarkis, J. 2020. Supply chain sustainability: learning from the COVID-19 pandemic. *International Journal of Operations & Production Management 41,*(1), 63-73. https://www.emerald.com/insight/content/doi/10.1108/IJOPM-08-2020-0568/full/html.

[156] INE, 2020a. *Resultados definitivos Resultados Nacionales Población residente por fecha, sexo, grupo de edad y nacionalidad*. Instituto Nacional de Estadística – INE. https://www.ine.es/jaxiT3/Tabla.htm?t=56936 (accessed: 15.11.2024).

[157] INE, 2024. *Ocio y relaciones sociales*. Instituto Nacional de Estadística (INE). https://www.ine.es/jaxi/Datos.htm?path=/t00/ICV/dim5/l0/&file=52501.px#_tabs-tabla (accessed: 1`0.11.2024).

[158] INE, 2020b. *Pirámide de la población empadronada en España*. Instituto Nacional de Estadística – INE. https://www.ine.es/covid/piramides.htm#_ccaaTab (accessed 4.11.2024).

[159] Ibidem.

[160] INE, 2024. op. cit.

In 2020, the Council of Ministers agreed to allocate 173.5 million euros to support measures for the industrial sector to promote its digital transformation and new business models. A first package of measures was equipped with 75 million euros, of which 50 million euros were directed towards industrial R&D and innovation projects in the manufacturing industry, and the remaining 25 million euros were allocated as loans to the financial support program for the Connected Industry 4.0. A second block offered participatory loans, valued at 98.5 million euros, to SMEs, young entrepreneurs, and technology-based companies[161]. The 2021 labor reform market[162] boosted private-sector job creation and reduced temporary employment. In this context, Barcelona has emerged as a digital innovation hub in Europe, hosting major global events such as the Mobile World Congress and The Health Revolution Congress, the largest European summit in digital health, attended by leading corporations. Additionally, the city council has launched various initiatives to promote digital rights and the use of AI for the common good.

The Spanish National Health System (SNS) is based on the principles of universality, free access, equity, and fairness, guaranteeing health coverage and access to medical facilities to all the residents in Spain. As a result of COVID-19 crisis, the Spanish government approved a quite significant investment plan to enhance the healthcare system, correct the existent inequalities among different regions within the healthcare infrastructure and to upgrade the old hospital equipment with advanced high-tech medical devices: the INVEAT Plan.

The analysis of the 2020 European Health Survey reveals some interesting data:

- Spaniards have a strong preference for **public health insurance**, with over 33,700 thousand individuals covered exclusively by public healthcare. Mixed coverage, combining public and private insurance, is also significant, especially among younger demographics[163].
- As for the **hospitalization rate**, 8% of the total surveyed population was hospitalized, with rates increasing with age. The major pick was mainly in the 35-44 years old range, followed by the 65-74 age range. An interesting figure is that men were slightly more hospitalized in the oldest age range, while the highest figure of women hospitalized can be seen in the 35-44 age range[164].
- 11% of approximately 40,000 surveyed individuals, experienced **delays, or inaccessibility to healthcare facilities** due to waiting lists. In general, women reported more issues than men, particularly in the 45-54 age range[165].

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[161] La Moncloa, 2020. *El Gobierno aprueba el Fondo COVID-19 de 16.000 millones de euros para las comunidades autónomas.* Consejo de Ministros. 16.06.2020. https://www.lamoncloa.gob.es/consejodeministros/resumenes/Paginas/2020/160620-cministros.aspx (accessed: 5.11.2024).

[162] Enacted by Royal Decree Law 32/2021, 28 december.

[163] INE, 2020c. *Contabilidad Regional de España*. Instituto Nacional de Estadística – INE. https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736167628&menu=ultiDatos&idp=1254735576581 (accessed: 4.11.2024).

[164] INE, 2020d. *Encuesta Europea de Salud 2020. Asistencia sanitaria: Cifras absolutas COBERTURA SANITARIA. Modalidad de la cobertura sanitaria (Exclusiva) según sexo y grupo de edad. Población de 15 y más años*. Instituto Nacional de Estadística – INE. https://www.ine.es/jaxi/Datos.htm?path=/t15/p420/a2019/p02/l0/&file=06001.px (accessed: 27.10.2024).

[165] INE, 2020e. Encuesta Europea de Salud 2020. Asistencia sanitaria: Cifras absolutas HOSPITALIZACIONES. Hospitalización en los últimos 12 meses según sexo y grupo de edad. Población de 15 y más años. Instituto Nacional

The Ministry of Health identified elderly, individuals with cardiovascular diseases and high blood pressure, diabetes, chronic disease, cancer, immunosuppression, and pregnant women as most vulnerable to severe COVID-19, especially in nursing homes, which had high transmission and mortality rates. The INE official statistics[166] indicate a higher count of Covid-19 fatalities, both at the national and regional level, among age groups starting from 75 years old, primarily women and a significant percentage of COVID-19 cases occurred in lower-income groups, highlighting social disparities and healthcare barriers[167] [168].

Prior to the pandemic, Spain's political landscape was fragmented, as evidenced by the 2019 general elections[169]. This division deepened during the pandemic, affecting public trust in the government. The preliminary results from the CIS survey in 2020, revealed that 45.8% of Spaniards viewed the government's pandemic response negatively, while healthcare, NGOs, and the armed forces improved their image. Less than half of the population approved of the government's management efforts, and 53% found the economic measures insufficient to tackle the financial repercussions of the pandemic. This insight would explain the low trust in government in Spain, that according to the Edelman Trust Barometer[170] is around 36%. Similarly, trust in the media and business sectors is also low at 38% and 49%, respectively. As an opposite trend, NGOs receive a moderately neutral level of trust at 53%. As a comparison, for the year 2020, the OECD[171] reported figure of 38.2% trust in government is aligned with those reported in 2021 by the Edelman Trust Barometer[172] specifically focused on the consequences brought by the pandemic, whereas trust towards the government was still the lowest (34%), towards businesses was higher at 52%, making them the most trusted institutions at that time, closely followed by NGOs at 51%.

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de Estadística – INE. https://www.ine.es/jaxi/Datos.htm?path=/t15/p420/a2019/p02/l0/&file=03001.px (accessed: 10.10.2024).

[166] INE, 2022b. *Defunciones según la Causa de Muerte Resultados por Comunidad autónoma de residencia. Defunciones por causas (lista reducida) por sexo y grupos de edad*. Instituto Nacional de Estadística – INE. https://www.ine.es/jaxiT3/Datos.htm?t=10803#_tabs-grafico (accessed: 15.10.2024).

[167] Barcelona Public Health Agency, 2022. Agencia de Salut Pública de Barcelona. 2022. *Evolució de la infecció per coronavirus SARS-CoV-2 (COVID-19) a Barcelona*. Consorci Sanitari de Barcelona (CSB), 11 april. https://aspb.shinyapps.io/COVID19_BCN/#Evoluci%C3%B3_di%C3%A0ria_dels_casos_acumulats (accessed: 5.11.2024).

[168] Ministry of Health, 2021. Ministerio de Sanidad. 2021. '*INFORMACIÓN CIENTÍFICA-TÉCNICA. COVID-19 en distintos entornos y grupos de personas*. Centro de Coordinación de Alertas y Emergencias Sanitarias'. 25 March. https://www.sanidad.gob.es/profesionales/saludPublica/ccayes/alertasActual/nCov/documentos/Documento_GRUPOS_PERSONAS.pdf (accessed: 15.10.2024).

[169]The first round of elections was on April 28, 2019, and after several months of unsuccessful negotiations and another failed attempt to invest Pedro Sánchez in July, a second round of elections was celebrated on November 10, 2020, with the PSOE as winner party that with Unidas Podemos formed the first coalition government of Spain

[170] Edelman Trust Barometer, 2023. *Informe España*. https://www.edelman.com.es/sites/g/files/aatuss396/files/2023-03/TrustBarometer%20Spain_2023.pdf (accessed: 8.11.2024).

[171] OECD, 2024. How's Life? Well-Being. *OECD Social and Welfare Statistics* (database). https://doi.org/10.1787/b8a8569d-en (accessed: 5.5.2024).

[172] Edelman Trust Barometer, 2021. *La bancarrota de la información*. https://www.edelman.com.es/sites/g/files/aatuss396/files/2021-05/TRUST_SPAIN_2021.%20PRESENTACION.pdf (accessed: 6.6.2024).

Social support[173] is considered a critical factor. The OECD's social trust indicators (2024) highlight that 93.49% of Spaniards have reliable social support, primarily from family, followed by friends and community networks. When dealing with social participation and political involvement, voter turnout is considered a critical indicator. Political engagement also rose, with voter turnout increasing from 66.23% in 2019 to 70.4% in 2023, suggesting growing civic interest. However, local elections, such as those in Catalonia, showed varying turnout levels influenced by regional political climates.

Another key aspect of social involvement is civic engagement, evident through the number of social entities and volunteering activities. Recent news published in Xarxanet[174], analyzed the social fabric stating that CSOs in Catalonia are robust and well-distributed throughout the region[175]. Over the last five years, including during the pandemic, the number of Catalan CSOs has grown by nearly 10%, surpassing the figure of 75,000 associations. Data from the Catalan Department of Justice reported in the news, available up to 2021, shows that every county hosts more associations than they did in 2017. Although the vast majority of CSOs are focused on the cultural field, the most substantial growth over this period (18%), has been seen in entities focused on defending social, civic, personal rights, and health. Data from the Voluntaris platform[176] revealed that 13.4% of Catalans engage in volunteering, with social volunteering being the most common at 58.6%. This is followed by cultural volunteering (18.5%), educational volunteering (18.4%), and health and social care volunteering (16.8%). Social volunteering has seen a higher increase in demand due to Covid-19 related issues for their users. As a general, highlight volunteering is viewed by the individuals who took part in the study as an effective way to tackle social issues (3.8%), closely followed by self-organizing and advocating at (3.7%).

6.1.2. Stakeholder Analysis

The most represented categories of stakeholders are local entities: Taxi's Barcelona, Ateneus de Barcelona and Technological Institute of Aragon. Two stakeholders operated at national level, including SEAT and Spanish Agency for Medicine and Health (SEM). The number of actors identified does not allow a clear indication of the dominance of any category of stakeholder, but it is worth noting the large role of professionals in the group of actors involved in the initiative (Tabel 6.1a). All actors involved were key players in the HE considered (Figure 6.1a) and were simultaneously influenced and affected by the processes and activities of the initiative (Table 6.1b).

[173]Assessed by asking individuals whether they have relatives or friends available to help in times of need. This data is collected through the Gallup World Poll, which surveys about 1,000 people per country each year, ensuring the sample is representative of the population aged 15 and older, including those in rural areas.

[174] See: https: www.xarxanet.org

[175] Escudero Ruiz, I., 2023. L'àmbit associatiu en dades: xifres de rècord. *Notícies. Xarxanet*. (17.02.2023). https://xarxanet.org/projectes/noticies/lambit-associatiu-en-dades-xifres-de-record (accessed: 7.10.2024)

[176] See: https://voluntaris.cat/

Table 6.1a - Stakeholders: list and main features

Stakeholder name	Category	Spatial Scale	Role	Resources	Relationship
SH1.SEAT	Business & Industry	Local-Regional-National	third party	Economic; Knowledge	cooperative
SH2.Spanish Agency for Medicine and Health (SEM)	Institutions	National	beneficiary	Positional, Knowledge, Relational, Normative	cooperative
SH3.Taxi's Barcelona	Intermediate bodies	Local	third party	Relational; Economic	neutral
SH4.La Hora Maker	Media	National	promoter	Relational, Knowledge	cooperative
SH5.Ateneus de Barcelona	Professionals	Local	target	Relational, Positional, Normative and Knowledge	cooperative
SH6.Technological Institute of Aragon	Professionals	Local	promoter	Relational, Knowledge	cooperative

Figure 6.1a – Stakeholders by relevance: the Power-Interest matrix

Table 6.1b – Stakeholders by impact

Impact Category	Stakeholder	Power	Impact
Affected & Affecting	SH1.SEAT	5	-4
	SH5.Ateneus de Barcelona	5	-5
	SH6.Technological Institute of Aragon	5	-5
	SH2.Spanish Agency for Medicine and Health (SEM)	5	-5
	SH4.La Hora Maker	4	-4
	SH3.Taxi's Barcelona	3	-4

The "COVID-19: Network of "Makers" in Spain" emerged at the beginning of the pandemic due to the social media interaction of scientists and entrepreneurs from the Maker community. On March 15, 2020, the Director of the Technological Institute of Aragon (ITAINNOVA), Esther Borao, published on the social media Twitter -now X- two proposals: 1) to create maker respirators from ITAINNOVA to alleviate the shortage of protective materials against Covid-19 in hospitals, nursing homes and social services. 2) Invite to join the Telegram group created with José Borrero from the Cotec Foundation and scientists from the Tecnalia group to collaborate in the design, creation, coordination, preparation and distribution of

medical supplies to face the epidemic. This Telegram group became the first communication channel among the maker community and after 24 hours, more than four hundred makers joined the group, promoting the idea of providing democratized access to modern fabrication technologies and equipping citizens with digital skills. In the end, this project connected more than 17000 volunteers: engineers, doctors, developers, researchers, but also citizens interested in the initiative.

At the same time, David Cuartielles and César García from *LaHora Maker's* podcast created a forum to connect healthcare professionals with makers around the country. They acted as intermediates of the project, providing information about the maker's culture, activities and social mobilization. Raúl Oliván created *Frena La Curva* (Flattening the Curve)*:* a *metalab* fostered by the innovation lab of the regional Government of Aragon to connect "volunteers, entrepreneurs, activist, social organizations and public innovation labs to channel" to provide a "solutions from civil society, complementary to the government and public services".

The implementation of the COVID-19 Network of "Makers", defined by the organization of the community and the production of personal protection equipment, started with the ITA coronavirus Group, created in the Technological Institute of Aragon (ITAINNOVA) to contribute technical solutions. The focus was on the production of visors with 3D printers and the improvement of respirators and ventilators and ITAINNOVA provided the space to volunteers who came to assemble it.

Nevertheless, task coordination was one of the principal challenges due to the size, heterogeneity of the community, and decentralized nature of the project. In this sense, and to manage efforts efficiently, four commissions (Logistics, Communication, Resources, and Manufacturing and Innovation) were created, along with a Coordination Commission that met daily[177].

The manufacturing and distribution nodes were set up according to national coordination and local management structure. In Catalonia, the collaboration between the CM and local governments led to the production and registration of 1,762 machines and the establishment of assembly and distribution nodes[178]. In Catalunya there are more than fifteen nodes: a physical space in which materials are cleaned following a strict protocol, and then prepared for distribution. In Barcelona, this is the case of "FabLabs" or Ateneus manufacturing network (*Xarxa d'Ateneus de Fabricació de Barcelona*): public centers promoted by the City Council, they coordinate the neighborhoods of the city providing digital education, technical, materials and human resources to citizenship and makers. During the pandemic, they became a neuralgic center of the maker community in Catalunya providing over thirty 3D printers, five laser cutters, and a team of 25 workers were available to produce personal protective equipment to people working on the front lines in hospitals, nursing homes, home care services, and social services centers. They managed the supply of health protection materials and manufactured them with their 3D printers and laser cutters. On the other hand, they collected, assembled, disinfected, and distributed the pieces manufactured by the makers in decentralized ways from their homes.

The Barcelona City Council supported these efforts by modifying contracts, repurposing local resources, and using design hubs and the Fablabs and the Escuela Superior de Diseño y Arte "Llotja" as logistics centers for processing and distributing equipment.

[177] Forné, L. and Castro, M. La Hidra Cooperativa, 2021. op. cit.
[178] Ibidem.

The Fablabs in Barcelona hosted three thousand people from the maker community, including health personnel, engineers, taximeters, business people, and teachers. All contributed not just to the production of protective equipment but also to its distribution. This is the case, for example, of Taxi's Barcelona or Leroy Merlin providing free logistics services, while citizens donated resources and volunteered in assembling protective equipment[179]. Private companies like SEAT joined the initiative by using its vehicle production line to manufacture emergency respirators and masks; providing more than 150 vehicles to hospitals and medical centers to facilitate the mobility and transport of personnel and medical supplies; and promoting the #YoMeCorono campaign to raise funds to contribute to the research and development of a vaccine against COVID-19. By mid-2020, the campaign had raised €2.3 million.

In the beginning, the CM seemed to be deeply involved in the co-production process only during the first wave of the pandemic. Although the CM Telegram channel is still active, the CM's dissolution process, as it is studied herein, is not explicitly documented. Hence, it would be desirable to delve into this information during the second phase of the HE development.

6.1.3. References

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[179] Ibidem.

Edelman Trust Barometer, 2023. Informe España. https://www.edelman.com.es/sites/g/files/aatuss396/files/2023-03/TrustBarometer%20Spain_2023.pdf (accessed: 8.11.2024).

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INE, 2020d. *Encuesta Europea de Salud 2020. Asistencia sanitaria: Cifras absolutas COBERTURA SANITARIA. Modalidad de la cobertura sanitaria (Exclusiva) según sexo y grupo de edad. Población de 15 y más años*. Instituto Nacional de Estadística – INE. https://www.ine.es/jaxi/Datos.htm?path=/t15/p420/a2019/p02/l0/&file=06001.px (accessed: 27.10.2024).

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www.xarxanet.org

https://voluntaris.cat/

6.2. Local self-help movement in Kainuu region (FI)

In the winter of 2017-2018, the Finnish Kainuu region experienced widespread power outages due to heavy snow on trees (crown snow). As a result of crown snow many trees fell on power lines, leaving approximately 11 000 households in Eastern Finland (North Karelia and Kainuu) without electricity for several days. The blackouts also affected businesses, agriculture, and public service providers in the regions. The local self-help activism mobilized right after and improved the area's preparedness for similar situations. According to the survey by SPEK (Laurikainen, anon.), neighborly help and support were important and trust grew, especially in the immediate community, but the preparedness of the electricity company and the municipal authorities was seen as inadequate. This example thus enables CO-SUSTAIN to learn how past crises are instrumental to increase the risk resilience and preparedness of the affected territory.

6.2.1. Context Analysis

Large-scale power cuts due to challenging natural circumstances were not an unprecedented situation in Finland. However, what makes the power cuts in Kainuu stand out from the other large scale power cuts, was that they were caused by heavy snow. There had been smaller power cuts in Kainuu throughout December 2017, but the situation escalated on December 29th, when thousands of homes were without electricity. The situation worsened on December 30th, and the whole region of Kainuu was given an emergency warning. The power cuts happened during the Finnish Christmas holiday season, which contributed to the initially slow reaction from the officials responsible for this situation. Therefore, the resilience and self-help of the locals during the power cuts became important.

The niche level in this historical example are the rural areas of Kainuu, especially in the municipalities of Hyrynsalmi and Suomussalmi, where the residents mobilized to help each other during the power cuts. The self-help movement pointed out the need for the crucial stakeholders to improve preparedness and infrastructure for similar occurrences. At the regime level, the power cuts contributed to a cultural shift for improved preparedness for power cuts and similar failures of infrastructure. For example, a preparedness forum of Kainuu was established in 2019. The Forum consists of security authorities, municipalities, the business sector and the third sector in Kainuu. The activities of the cross-sectoral forum enable the implementation of common contingency planning processes. As a result of the power cuts, the electricity companies, Kajave and Loiste, were obligated to conduct a report on the events of the power cuts. At the landscape level, all electricity companies in Finland have been mandated to report the grid development plan biannually and preparedness and development plan every three years.

Kainuu is a 22 687,86 km² region of approximately 70 149 residents in the North-Central part of Finland. It consists of eight municipalities which govern themselves through municipal council and government. The region itself is governed by the regional council of Kainuu. Kainuu is the second most sparsely populated region in Finland and 80% of its area is forest[180] [181] [182]. The population density in Kainuu is

[180] RC Kainuu, 2024. Regional Council of Kainuu, Väestö ja muuttoliike (Population and migration), 2024. https://kainuunliitto.fi/tietopalvelut/tilastot/vaesto-ja-muuttoliike/ (accessed 10.6.2024).

[181] RC Kainuu, 2023. Regional Council of Kainuu, Tilastot (Statistics), 2023. https://kainuunliitto.fi/tietopalvelut/tilastot/ (accessed 23.2.2024).

[182] Mattila et al., 2023 - Mattila, H., Purkarthofer, E. and Humer A., 2023. Governing 'places that don't matter': agonistic spatial planning practices in Finnish peripheral regions, *Territory, Politics and Governance,* 11, 4, 813–832.

approximately 3 people per km², whereas the Finnish average is 18 people per km² [183]. The region has only two cities: Kajaani and Kuhmo. Kajaani is the biggest of the two with 36 500 residents and it is also the provincial center of the Kainuu region. The rest of the municipalities are small and sparsely populated, with 2000 to 10 000 residents. These characteristics are reflected in the infrastructure as well. Distances are long and cars are the most important way of transport. The city of Kajaani is connected to the national railway network, but the smaller towns and municipalities are reachable by car or local buses. Kainuu shares a 406-kilometer-long border with Russia. The border region consists of sparsely populated wilderness, with long distances between villages and houses[184]. The border control monitors the border area and forest periphery surrounding it. In addition to the border control, one of the Finnish Army's brigades is in Kainuu. The proximity of these institutions proved to be important during the power cuts.

In addition to being sparsely populated, the region has been consistently losing residents over the past decades[185]. Reasons for this include the lack of universities or other higher education institutions (excl. Kajaani University of Applied Sciences), which have caused younger people to move to bigger cities in Finland[186]. This development is visible in the region's demographics: the median age for an inhabitant of Kainuu is 47,9 whereas the corresponding number for the entire country is 43,8[187]. Due to the migration away from Kainuu towards other regions in Finland, the municipalities of Kainuu have been struggling to maintain their statutory responsibilities, such as providing healthcare for its residents[188]. Approximately 26,5% of all residents in Kainuu were elderly during the time of the power cuts[189]. In addition, there are more men than women living in the area and the gender division is most visible in the age groups of 20-24[190].

The demographics of Kainuu have been influenced by developments on the landscape and regime level. The main influences have been the severe recession Finland experienced in the early 90s, joining the EU in 1995 and the regional policies adopted as a result. In the early 90s, bursting of the financial bubble in Finland caused the worst recession in Finnish history and households and municipalities' economies were affected until the early 2000s[191]. Before the recession, Finland had focused on keeping the entire country populated by supporting its remote and rural regions. However, priorities shifted after the recession, as more and more people were moving from rural areas to bigger cities in Southern Finland, which had more jobs available. The EU membership in 1995 on the other hand, initially provided positive impacts

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[183] Kuntaliitto, 2022. Kuntaliitto, Kuntien pinta-alat ja asukastiheydet, 2022. https://www.kuntaliitto.fi/kuntaliitto/tietotuotteet-ja-palvelut/kaupunkien-ja-kuntien-lukumaarat-ja-vaestotiedot/kuntien-pinta-alat-ja-asukastiheydet (accessed: 26.9.2024).

[184] RAJA, 2024. The Finnish Border Guard, 2024. Kainuu Border Guard District. https://raja.fi/en/kainuu-border-guard-district (accessed: 26.09.2024).

[185] RC Kainuu, 2024. op. cit.

[186] Mattila, et al., 2023. op. cit.

[187] RC Kainuu, 2024. op. cit.

[188] Mattila, et al., 2023. op. cit.

[189] StatFin, 2024a - Statistics Finland. Väestö alueen, pääasiallisen toiminnan, koulutusasteen, sukupuolen, iän ja vuoden mukaan, 1987-2022. https://pxdata.stat.fi/PxWeb/pxweb/fi/StatFin/StatFin__tyokay/statfin_tyokay_pxt_115d.px/table/tableViewLayout1 (accessed: 26.2.2024).

[190] RC Kainuu, 2024a. op. cit.

[191] Kiander, J. and Vartia, P., 2011. Lessons from the crisis in Finland and Sweden in the 1990s. *Empirica*, vol. 38(1), pages 53-69. DOI: 10.1007/s10663-010-9145-0.

for Kainuu in the form of funding, but the Southern expansion of the EU moved Kainuu to the category of developed regions, thus leading to the end of EU funding to the region[192].

In 2017 and nowadays, the private sector is the biggest employer in Kainuu. The private sector is followed by municipalities as the second largest employer[193]. The biggest employers in the region include administration, construction, industry, agriculture, mining and forestry[194]. Currently in 2024, 10,5% of the residents of Kainuu are unemployed. However, there are vast differences between different municipalities in Kainuu. In Puolanka for instance, unemployment is up to 22,8%, whereas in Kajaani the unemployment percentage is only 6%[195]. Currently the GDP of the region is 36 134 euros per resident[196]. In comparison, the national average is 45 285 € per resident[197]. 10,8% of the population are unemployed[198]. The national average at the time was 7,6%[199].

Kainuu is one of the snowiest regions in Finland during winter. Winter usually starts at the end of October and permanent snow arrives usually in the beginning of November. The amount of snow is at its peak in March, usually between 70-80 centimeters high. During Spring, the snow melts away in the end of April or in the beginning of May[200]. During the power cuts, the temperatures were warmer than average during snowfall, which resulted in the snow getting stuck on trees and causing power cuts.

Kainuu is a mostly Finnish-speaking region. During the time of the power cuts, 97,3% of the population spoke Finnish as their first language[201]. The percentage of people who speak a foreign language as their first language has remained at 2-3% over the past 10 years, except for 2023, when the percentage rose to 5% of the Kainuu population[202].

The Kainuu region consists of eight municipalities. In Finland, municipalities are governed by the municipal council and government. The municipal council is elected through elections every four years. The candidates can be members of political parties or independent candidates. The members of the municipal council then elect the municipal government among themselves. For the historical example analysis, the municipalities of Hyrynsalmi and Suomussalmi were chosen as they were most affected by the power cuts. The municipalities are governed by the municipal council and municipal government. The municipal council is elected every four years, and the council chooses the members of the municipal

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[192] Mattila, et al., 2023. op. cit.

[193] Kainuun litto ,2024. Kainuun liitto, Employment, workforce and jobs (Työllisyys, työvoima ja työpaikat), 2024. https://kainuunliitto.fi/tietopalvelut/tilastot/tyollisyys-tyovoima-ja-tyopaikat/ (accessed: 26.9.2024).

[194] Ibidem.

[195] Ibidem.

[196] StatFin, 2024b. Statistics Finland, National economy, 2024. https://stat.fi/tup/suoluk/suoluk_kansantalous.html (accessed: 10.6.2024).

[197] Ibidem.

[198] RC Kainuu, 2023. op. cit.

[199] StatFin, 2023. Statistics Finland, Employment weakened and unemployment grew in November 2023 from one year ago. 2023. https://stat.fi/julkaisu/cl89xplrstmes0avyn7w0nmwz (accessed 10.6.2024).

[200] Climate guide, Kainuu – typical continental climate (Kainuu – tyypillistä mannerilmastoa), 2022. https://www.ilmasto-opas.fi/artikkelit/kainuu-tyypillista-mannerilmastoa (accessed: 10.06.2024).

[201] StatFin, 2024c. Statistics Finland, Immigrants and integration. 2024. https://pxdata.stat.fi/PxWeb/pxweb/fi/Maahanmuuttajat_ja_kotoutuminen/Maahanmuuttajat_ja_kotoutuminen__Maahanmuuttajat_ja_kotoutuminen/maakoto_pxt_11vu.px/table/tableViewLayout1/ (accessed: 10.6.2024).

[202] Ibidem.

government amongst the council. The number of the council members depends on the size of the municipality. In Suomussalmi the council has 31 seats and Hyrynsalmi council has 21 seats[203] [204].

Hyrynsalmi is population-wise a very small municipality as it has only 2 063 inhabitants. However, the municipality covers a large area: 1 521,37 km². Politically, the Agrarian-Leftist Centre party has been consistently the biggest party in the municipal elections, and they currently take up 13 seats (out of 21 seats) in the council. The difference is notable to the second largest party the Social Democratic Party, who only have four seats in the council. The Left Alliance and the Finns Party have two seats each in the council[205]. The voter turnout was 47,3%. The median age for the council member is currently 55 and in 2017 it was 54. 62% of the elected council members were male and 38% female[206].

Similar to Hyrynsalmi, Suomussalmi is geographically a large municipality (5 857,59 km²), but only has approximately 7 172 residents. Suomussalmi's municipal council has a similar structure to Hyrynsalmi: the Centre Party is the largest party with 14 seats (out of 31 seats), followed by the Left Alliance with eight seats. The Finns Party have five seats and the National Coalition Party has four seats[207]. 58% of the elected council members are men and 42% women. The median age for the council members is like Hyrynsalmi, 54 years. Voter turnout was 48,8%[208]. The results were similar during 2017[209]. Therefore, during the time of the power cuts the Centre Party was the main political party in both municipalities.

Significant factor in this historical example is the power system in Finland. It consists of power plants, the main grid, high-voltage distribution networks, other distribution networks, and electricity consumers. Households are connected to distribution networks, while industry, commerce, services and other demand facilities (such as agriculture) connect either to the main grid or distribution networks, depending on the case[210]. In Finland, distribution networks are operated by electricity network companies. There are just under 80 companies in total. A household can put its electricity supplier out to tender, but the electricity user is tied to the electricity network company in whose jurisdiction the place of use is located. In Kainuu, Loiste Oy is responsible for the distribution network. The electricity service network company Kajave has a total of about 13 800 km of electricity network in Kainuu and North Ostrobothnia. In Finland, electricity network companies have a legal obligation to develop distribution networks. The companies are regulated by the Energy Authority, to which they submit their development plans every two years.

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[203] Hyrysalmi, 2021. Yle, Kuntavaalit tulospalvelu. Hyrynsalmi. (Municipal elections result service: Hyrynsalmi), 2021. https://vaalit.yle.fi/kv2021/fi/regions/12/municipalities/105/ (accessed: 10.6.2024).

[204] Suomussalmi, 2021. Yle, Kuntavaalit tulospalvelu: Suomussalmi (Municipal elections result service: (Suomussalmi), 2021. https://vaalit.yle.fi/kv2021/fi/regions/12/municipalities/777/ (accessed: 10.6.2024).

[205] Ibidem.

[206] Ibidem.

[207] Ibidem.

[208] Ibidem.

[209] Ibidem.

[210] Fingrid, 2024. Electricity system of Finland. 2024. https://www.fingrid.fi/en/grid/development/electricity-system-of-finland/ (accessed: 30.9.2024).

6.2.2. Stakeholder Analysis

Among the stakeholders associated with the initiative, representatives of several categories can be noted. These include three representatives from business and industry related to the provision of electricity. An equal number of representatives of public administration units were identified. Other categories include the media, citizens, NGOs and civil society organizations (Table 6.2a).

Even though the focus of this historical example is on the actions of the local residents of Kainuu during the power cuts, stakeholders from other categories played an important role during the events. The tables above elaborate the characteristics of the stakeholders. Figure 6.2a explains the stakeholders by relevance as a Power-Interest matrix. Table 6.2b explains the impact that the stakeholders had in this historical example. The most represented categories of stakeholders in our analysis are public services and business and industry. However, other categories, such as media outlets, civil society organizations, and NGOs were represented as well.

Most of the stakeholders had an impact on more than one spatial scale: regional, local-regional and regional-national levels. Therefore, even though the focus is on the local level, the events are connected to several spatial scales, as many of the stakeholders operate on different levels (Table 6.2a). The majority of the stakeholders were affecting instead of being affected.

Table 6.2a - Stakeholders: list and main features

Stakeholder name	Category	Spatial Scale	Role	Resources	Relationship
SH1.Loiste Ltd	Business & Industry	Regional	third party	Knowledge, economic	neutral
SH2.Kajave Ltd.	Business & Industry	Regional	third party	Knowledge, economic	neutral
SH3.Fingrid	Business & Industry	National	third party	Positional, normative, economic, knowledge	neutral
SH4.Local Inhabitants	Citizens	Local	promoter	Knowledge	cooperative
SH5.Volunteer fire brigade	Civil society organization	Local	third party	Knowledge, positional	cooperative
SH6.National Defense Forces	Institutions	Local-Regional-National	third party	Normative, Relational, Economic, Knowledge	neutral
SH7.National broadcaster Yle	Media	National	third party	Positional	neutral
SH8.Kainuun sanomat	Media	Local - Regional	third party	Positional	neutral
SH9.The Finnish Red Cross	NGOs	Local-Regional-National	promoter	Positional, knowledge	cooperative
SH10.Kajaani Rescue department	Public services	Local-Regional-National	beneficiary	Normative, Relational, Economic, Knowledge	neutral
SH11.Municipality Suomussalmi	Public services	Local - Regional	beneficiary/target	Positional, knowledge, economic	cooperative
SH12.Municipality of Hyrynsalmi	Public services	Local - Regional	beneficiary/target	Positional, knowledge, economic	cooperative

Figure 6.2a – Stakeholders by relevance: the Power-Interest matrix

Table 6.2b – Stakeholders by impact

Impact Category	Stakeholder	Power	Impact
Affected	SH11.Municipality Suomussalmi	3	3
	SH4.Local Inhabitants	2	5
	SH9.The Finnish Red Cross	2	3
	SH3.Fingrid	1	2
	SH8.Kainuun sanomat	1	2
Affected & Affecting	SH10.Kajaani Rescue department	5	5
	SH1.Loiste Ltd	3	4
	SH2.Kajave Ltd.	3	4
	SH12.Municipality of Hyrynsalmi	3	3
	SH6.National Defense Forces	2	2

Impact Category	Stakeholder	Power	Impact
	SH7.National broadcaster Yle	1	1
	SH5.Volunteer fire brigade	1	1

The residents of Kainuu are the focus of the stakeholder analysis. They had an active role through supporting each other throughout the power cuts. The main actions included sharing food, water and shelter and providing contact information to the rescue department and electric companies. This self-help movement was not official, but rather a product of resilience and willingness to help other community members. The willingness to help reached the stakeholders on the regional and landscape level as well, as many locals wanted to help out the rescue department and electric companies with dealing with the damages of the power cuts. In fact, there was too much help than necessary and some of the stakeholders on the regional and national level had to turn down help from the locals.

In the events of the power cuts, the stakeholders on the regional level played a key role. The most influential of these stakeholders was the Kainuu rescue department. The main rescue department of the region is located in the city of Kajaani, but there are other smaller rescue departments located throughout the region. After the first couple of days of the power cuts, the rescue department took over on January 4th, 2018. As the rescue department was the only stakeholder with the authority to request help from the national defense forces, they immediately requested help in the form of providing vehicles that are designed for the extremely snowy and challenging conditions. The rescue department also took the responsibility of communications to prevent misinformation and mixed information to the residents of Kainuu. Until then, other stakeholders, such as the municipalities and NGOs had posted their own instructions, which had caused confusion among citizens. Therefore, giving the communications responsibility to the rescue department clarified the instruction to the citizens and to other stakeholders. The main task of the rescue department was to help citizens that were in danger due to the power cuts and to help with the fixing of the power lines. Members of the volunteer fire brigades were also participating in this work. In addition to these tasks, the rescue department established a task force to manage everyday operations during the power cuts. The task force had members from the rescue department, electricity companies and municipal officers. This helped the flow of communication between different stakeholders.

The power company Loiste and the electricity network company Kajave which is owned by Loiste also had a strong role during the power cuts. They had the main responsibility to fix the power cuts, as they had the trained personnel that could fix them. The power cuts were caused by heavy snow, which got stuck on power lines and tree branches and even resulted in trees falling on the power lines. Kajave and Loiste collaborated with the rescue department to fix the power lines. Local citizens proved to be helpful in this task, as they could provide the locations where the biggest damages were.

Although not directly involved in the events of the Kainu power cuts, afterwards Fingrid asked Loiste and Kajave for thorough assessments of the events of the power cuts and what can be done in the future to

prevent such events from happening. In addition, similar obligations were extended for all electricity companies in Finland as well.

The municipality personnel, especially the municipality leaders and high-ranking officials were important stakeholders as well. They would communicate the instructions by the rescue department to the locals and also provide places to stay and bathe if necessary. The rescue department had the responsibility for communications and other stakeholders, especially municipalities, would refer to the rescue department's instructions through the municipality's website and their Facebook pages.

The main NGO helping the locals was the Finnish Red Cross, which had its local departments in the municipalities in Kainuu. The local departments, such as the one in Hyrynsalmi, mobilized quickly to help the locals. They would go from door to door and offer water, power banks and blankets and estimated whether the citizens required further assistance.

The media outlets, especially Yle, reported the turn of events nationally. The local newspapers, mainly Kainuun Sanomat, spread instructions on how to survive without electricity and who to contact in case of emergency.

6.2.3. References

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Suomussalmi, 2021. Yle, Kuntavaalit tulospalvelu: Suomussalmi (Municipal elections result service: (Suomussalmi), 2021. https://vaalit.yle.fi/kv2021/fi/regions/12/municipalities/777/ (accessed: 10.6.2024).

6.3. Earthquake in L'Aquila in 2009 (IT)

In 2009, after the earthquake in L'Aquila (Abruzzo, central Italy), many committees of various kinds were formed in the city. Approximately 100 000 people were affected by the tremors. Few committees are still active today, among which the most stable experience is 3.32. The heterogeneity of participants (activists, people who do not come from political circles, and adherents from outside the city) led 3.32 to have fluctuating relations with networks of social centers. With other associations, 3.32 created a self-managed area to support its operations. This area, named Casematte, still exists and provides social help and organizes cultural activities for the city. It organizes women's and feminist assemblies and activities with migrants of different origins, especially Africans. Participants in 3.32 activities are mostly working-class individuals. Several groups have emerged from the post- earthquake popular activation process, such as feminist, recreational and sport groups, as well as groups that created local electoral lists. Several post-earthquake activists from L'Aquila expanded their reach and took action to help people affected by the earthquake in Amatrice (Northern Lazio, central Italy) in 2016. In 2020, they organized the distribution of basic necessities to families during the Covid-19 emergency. This example thus enables CO-SUSTAIN to learn how self-help movements arise in times of crisis, and how they can develop, mutate, and expand.

6.3.1. Context Analysis

6.3.1.1. Characteristics of the Territory

L'Aquila is the capital of the Abruzzo region. It is located in an inland basin of the central Apennines of the Italian peninsula, in an area of moderate seismicity (level 2)[211].

The Apennine chain forms a collision and post-collision system that developed from the Upper Oligocene following the closure (Middle-Upper Eocene) of the Ligurian-Piedmont Ocean. The Aquila basin follows the trend of the mountain groups that enclose it on its two main sides. To the north, there is the Gran Sasso-Monti della Laga massif, which continuously extends beyond 2000 meters. Geographically, the basin coincides with the upper basin of the Aterno River. Enclosed between high mountain chains, the Aquila Basin generally has a continental climate; rainfall is not very abundant and increases as one ascends the slopes[212]. Administratively, the Aquila basin is largely included within the municipality of L'Aquila, which, within its current boundaries, extends beyond the actual basin to the peaks of the Gran Sasso on one side and the northern foothills of the Monte Velino group on the other.

Throughout regional history, the morphological characteristics of the territory have played a decisive role in the interaction between humans and the environment, in defining early agricultural and transhumance activities on usable mountain surfaces, in the creation of the first inhabited centers for connection and trade, and also in response to the seismic activities of the area (significant events recorded in 1349, 1461,

[211] Regione Abruzzo, 2024. Classificazione sismica comuni abruzzesi.

[212] Rosone, S., 2011. Il Clima della Conca Aquilana, Analisi fenomenologica in relazione alle principali configurazioni sinottiche. Meteo Aquilano, Previsioni e Monitoraggio metereologico dell'Aquila e Provincia.

and 1703)[213]. The mountainous land is covered with wooded areas and pastures, characterized by shrub and/or herbaceous vegetation. In contrast, in the coastal area, arable land, heterogeneous agricultural zones, and permanent crops associated with olive, vine, and fruit trees predominate. In the Abruzzo region, the strongest seismic activity is mainly concentrated along the Apennine chain, while the coastal areas experience milder seismicity. Historical studies on local seismology over the last millennium highlight about 300-350 years of seismic cycles. The maximum observed macroseismic intensity in Abruzzo corresponds to level XI on the MCS scale, and level X has been reached and exceeded several times[214].

In 2009, a magnitude 6.3 Mw earthquake (i.e., Paganica fault system) struck the city and 56 other municipalities (54 are considered "internal mountain") in the "seismic crater" (a media term for the area affected by MCS level VI or higher), causing 309 deaths, of which 88% (approximately 272 people) were in the municipality of L'Aquila (50% residing in the southwestern area of the city[215]), with a total of about 70,000 displaced people[216]. The epicenter was located in the area between the towns of Roio, Colle, Genzano, and Collefracido at an estimated depth of 8 km, characteristic of Apennine earthquakes.

From the perspective of MLP on the development of CAI, the **niche** corresponds to the self-organized community in L'Aquila in response to the post-2009 earthquake emergency, to actively contribute to the city's reconstruction. Informally, 3e32 was the first self-organized committee to take on the role of coordinating other emerging local initiatives following the mismanagement of the emergency by the Civil Protection Department (CPD). In 2010 a draft law of popular initiative was created through participatory tables led by the 3.32 coordination with the subsequent collection of 50,000 signatures. The objectives of the proposed law were a) transparency regarding reconstruction funds and b) a national post-disaster intervention plan. **The regime**, identified with the National regional and local governments, through Art. 5 of Law 225/1992 decreed the state of emergency, introducing a "red zone" in the historic city center and acting in derogation of existing regulations, especially regarding contracting, construction, and restrictions on the rights to mobility, expression, and information (DICOMAC No. 15277/2009). This regime also encompasses European and global regulatory frameworks concerning risk and disaster reduction (UNDRO 1982; INDR 1984; UNISDR 2005; 2015) in contrast with ordinances applied by the Italian government, until the state of the emergency ends. Both the regime and the niche are influenced by **landscape** variables, which include the geomorphological characteristics of the L'Aquila territory and its seismic history. Additionally, the landscape includes economic phenomena such as the industrial decline in L'Aquila in the 1970s, the 2008 global financial crisis, also referring to privatization and market deregulation. In Italy since 1990 scandals of bribery and corruption between the political sphere and the worlds of business, industry, and finance came to surface, penetrating democratic state institutions.

[213] Ciccozzi, E. and Olori, D., 2016. L'Aquila città in frantumi. La ricostruzione come acceleratore delle dinamiche socio-spaziali in sociologia urbana *STAMPA,* pp. 13-33.
[214] Regione Abruzzo, Provincia dell'Aquila, 2013. Relazione geologica.
[215] Calandra, L.M., 2011. Per una geografia sociale dell'Aquila post-sisma: comunicazione visuale e nuove forme di democrazia. Comunicazione al IV Convegno italo-francese di Geografia Sociale (Roma, 30 marzo/1 aprile 2011).
[216] Imperiale, A.J. and Vanclay, F., 2020. Top-down reconstruction and the failure to "build back better" resilient communities after a disaster: lessons from the 2009 L'Aquila Italy earthquake. *Disaster Prevention and Management: An International Journal* 29 (4), 541-555.

6.3.1.2. Population and Migration

The demographic trend shows a significant increase from 2001 to 2008, with a population growth of 82,553 units, equivalent to 6.5%.

Today, according to provisional Istat data, the population of Abruzzo is 1,269,963. Despite having a larger territory, L'Aquila is the least populous province (287,238). It's important to consider the geographical conformation of the Abruzzese capital's territory, entirely classified as mountainous, which is less favorable for settlement choices.

Between 2002 and 2011, the aging index increased from 147 to 163, and this trend is likely to continue in recent years. This increase is due to the faster growth rate of the elderly population (65 years and older) compared to the younger population (0-14 years old). The population structure in Abruzzo is in a regressive phase, with one of the highest aging rates as of 2011.

Before 2009, demographic growth in Abruzzo was attributed to a positive migration flow, particularly due to regularization measures for foreigners (see: decrees on the entry flows of foreign workers 1998-2006). Notably, between 2007 and 2010, L'Aquila experienced a decline in the birth rate (-3%) compared to other provincial capitals (Chieti, Teramo, and Pescara) (Pesaresi 2012). However, the migration rate remained positive at the regional level, driven by the influx of people attracted by job opportunities related to post-earthquake reconstruction. The migration rate in 2010 was +4.4% (ISTAT, data on cancellations and registrations in Abruzzo municipalities). In the same year, excluding provincial capitals, a general demographic decrease was observed in the region, but a positive migration balance (>3%) was noted both internally and from abroad in some of the municipalities in the seismic crater, such as Pizzoli and Cagnano Amiterno (AQ)[217]. Specifically, between 2009 and 2010, the migration performance of municipalities with 1,000 to 5,000 residents was better than those not in the crater area[218].

From 2003 to 2010, the foreign component of the population increased by 50,000 units, from 24,348 to 75,708. At the provincial level, the phenomenon shows concentrations in the inland areas of the Region, specifically in the province of L'Aquila. Therefore, migration is the primary factor driving population growth. This is mainly supported by the influx of foreign citizens, who have constituted between 60% and 80% of the migration balance since 2003. The economic crisis and increased legal barriers to entry have not significantly reduced immigration flows, so by the end of 2009, the migration balance in Abruzzo remained at 2005 and 2006 levels. In 2012, at the provincial level, foreign enterprises showed the greatest increase in L'Aquila (+4.8%) and Chieti (+3.0%), while Pescara and Teramo registered increases

[217] Pesaresi, C., 2012. I comuni del cratere sismico, prima e dopo il terremoto del 2009. Considerazioni sui movimenti demografici in atto. Semestrale di Studi e Ricerche di Geografia Roma - XXIV, Fascicolo 1, gennaio-giugno.

[218] CRESA, 2010. Elaboration on Istat data.

below the regional average (respectively +1.3% and +0.3%). In Abruzzo, enterprises run by foreigners are mainly concentrated in the construction sector (13.0%)[219].

As for the city of L'Aquila, the positive migration rate (internal and external) before the earthquake turned negative in the biennium 2009-2010, indicating that the earthquake contributed to a significant shift in the resident population[220] [221] [222] towards other municipalities in the seismic crater. Similarly, people from Italy and abroad have moved their residence to one of the crater's municipalities. This change in the resident population also reflected a shift in the primary occupation. Those leaving were mainly self-employed workers (professionals, traders, artisans, etc.), while those arriving, besides professionals in the construction sector, were mostly manual laborers[223].

6.3.1.3. Economy and Employment

The increase in industrial development in the 1970s transformed the Abruzzo economy, previously focused mainly on agriculture, livestock, and fishing, towards the industrial sector, and subsequently towards the tertiary sector, including services and tourism. A growing sector is large-scale retail, which has seen a positive increase in structures and shopping centers.

In Abruzzo, the regional employment rate has been declining since the 1990s. Specifically, between 2003 and 2008, L'Aquila recorded an average annual increase lower than the regional average[224]. Since 2008, the stagnation in L'Aquila can be partly attributed to the global economic and financial crisis and the subsequent decline in the industrial sector, leading to a reduction in production and employment rates. The most significant declines were observed in the industrial and agricultural sectors, while the construction sector recorded a regional increase of 4%. In 2009, the decrease in employment rates mainly affected businesses in the historic center, causing significant consequences for the local social fabric[225]. The percentage of NEETs (young people aged 15-29 who are not in education, employment, or training) has increased, from 19.5% in 2009 to 22.7% in 2011. In Abruzzo, the proportion of young people with a university education is 27.6%. Specifically, in L'Aquila in 2011, the ratio of adults with a diploma/degree or middle school certificate from 1991 to 2011 almost doubled, increasing from 172.8 to 355.5 (% incidence of residents aged 25-64 with a diploma or degree compared to those of the same age with a middle school certificate), while the early school leaving rate decreased from 36.9 to 7.3. L'Aquila thus proves to be a city with high educational indicators, particularly linked to the university sector.

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[219] Regione Abruzzo, report informativo, 2009. Dinamiche socio-economiche della regione Abruzzo e delle sue province.

[220] Miccoli, S., Reynaud, C., Ambrosetti, E., and Licari, F., 2023. The impact of the L'Aquila earthquake on demographic changes. Population, Space and Place, 29.

[221] Pesaresi, C., 2012, I comuni del cratere sismico, prima e dopo il terremoto del 2009. Considerazioni sui movimenti demografici in atto. Semestrale di Studi e Ricerche di Geografia Roma - XXIV, Fascicolo 1, gennaio-giugno.

[222] Ambrosetti, E. and Petrillo, E.R., 2016. Environmental disasters, migration and displacement. Insights and developments from L'Aquila's case, Environmental Science & Policy, Vol.56, pp. 80-88.

[223] Centro Regionale di studi e ricerche economico-sociali, Economia e Società in Abruzzo (CRESA), 2010. Elaboration on Istat data.

[224] ISTAT regione Abruzzo, 2020.

[225] Reitano, M. and Centra, M., 2009. Effetti economici del sisma: l'occpuazione nell'area dell'Aquila in Meridiana: rivista di storia e scienze sociali. N. 65-66.

The earthquake had a significant impact on the tourism industry, especially in the municipalities affected by the seismic event. In 2010, tourism experienced a decrease in L'Aquila of about 6,000 beds compared to 2008, partly due to the damage caused by the earthquake. However, tourism is one of the capital and region's economic and productive resources, serving as an income supplement for a significant portion of the population and counterbalancing the depopulation of mountain areas. The Region, known as the "Green Region of Europe," has three national parks (Majella, Gran Sasso-Monti della Laga, and Abruzzo-Lazio-Molise), 24 state reserves, 25 regional reserves, 17 regional parks, and many oases and protected areas.

In 2021, in Abruzzo, the largest number of local units (41,708) operated in the "G - Wholesale and retail trade" sector, followed by the "A - Agriculture, forestry, and fishing" sector (26,982 units), and the "I - Accommodation and food services" sector (20,402 units). According to 2021 data, the majority of Abruzzo companies are concentrated in the province of Chieti (35,868 units), followed by Teramo (32,848), Pescara (27,812), and finally L'Aquila (25,561)[226].

6.3.1.4. Political and Administrative Structure

The Italian political system is organized according to the principle of the separation of powers: legislative power is vested in Parliament, executive power is assigned to the government, while the judiciary, independent from both the executive and legislative branches, exercises judicial power. Parliament and the government are based in Rome, the capital of Italy.

The Republic is composed of Municipalities, Provinces, Metropolitan Cities, Regions, and the State. According to Title V of the Italian Constitution, Municipalities, Provinces, Metropolitan Cities, and Regions are autonomous entities with their statutes, powers, and functions as established by the Constitution. They promote the autonomous initiative of citizens, both individuals and associations, to carry out activities of general interest, based on the principle of subsidiarity.

Historically, the formation of local administrations in Italy dates to the 1800s. At the time, the Papal State dominated most of the central Italian territory, including Abruzzo. Abruzzo was divided into three administrative provinces: Aquila, Teramo, and Chieti, each further divided into districts and municipalities. In 1927, the Fascist government established the province of Pescara. L'Aquila serves as the capital of the Abruzzo region and is home to the regional government. The city is also the provincial capital of L'Aquila, which is the largest of Abruzzo's four provinces. The provincial government, which is responsible for overseeing various administrative functions, including infrastructure, transportation, and local development, is based in the city.

The city of L'Aquila has a Mayor-Council form of government, where the Mayor is elected directly by the residents and is responsible for the executive functions of the city. The City Council, also elected by residents, is responsible for legislative functions, including budget approval, urban planning, and local ordinances.

[226] ISTAT, 2021.

In recent years, political life in L'Aquila and the surrounding areas has been heavily influenced by the aftermath of the 2009 earthquake. The national government has also played a crucial role in providing funding and oversight for the reconstruction process. In the aftermath of the earthquake, the central government established the Commissioner delegate for the reconstruction in Abruzzo, Giovanni Chiodi - president of the region (2009-2014).

In 2009, the local political context was marked by the presence of the fourth Silvio Berlusconi (2008-2011) government, which remained popular despite the global and national economic crisis. Scandals related to the management of the 2009 earthquake emergency and subsequent legal issues involving the Prime Minister were not public knowledge yet. During this period, the regional political scene was dominated by the center-right coalition, while L'Aquila was governed by Mayor Massimo Cialente, a member of the Democratic Party (PD), from 2007 to 2012. Cialente was re-elected for a second term (2012-2017) and then was succeeded by Pierluigi Biondi, a member of the Fratelli d'Italia party (FdI), who is currently serving his second term until 2026.

6.3.1.5. Political participation

L'Aquila does not have a particular tradition of civic activism. Some of the most well-known events traced back to the 1970s. The first is about the riots of L'Aquila, popular uprisings that occurred between February 26 and 28, 1971. The mobilizations began following the decision of the Regional Council of Abruzzo to establish the majority of regional departments (seven out of ten) in Pescara, while still retaining the title of capital region for L'Aquila. At that time, the city lacked significant industrial or commercial activity and the risk was to deprive it of even 70% of the regional offices. Students, workers, employees, and ordinary citizens organized to resist the regime.

The second regards the 1973 workers' struggles, composed of 80% of women from the Sit-Siemens factory, who denounced the industrial sector, the housing crisis and the integration of the female farmers into the working class. In 1975 the city's master plan was introduced and included the urbanization of the historic center as well as of the municipal territory. The development of new social housing and peripheral neighborhoods was at the end the result of unchecked urbanization.

The majority of buildings destroyed in the earthquake had been constructed in the 1980s when urbanization accelerated significantly compared to the 1960s[227]. In particular, significant urban interventions date back to the late 19th century, with the formation of the nation-state and the desire to revitalize the city's administrative and cultural role. It is important to note that the L'Aquila municipality (and the city itself) contains a wide variety of building types and conditions (masonry buildings, stone buildings, brick or concrete block buildings, with floors and roofs made of reinforced concrete, along with

[227] Ciccozzi, E. and Olori, D., 2016. L'Aquila città in frantumi. La ricostruzione come acceleratore delle dinamiche socio-spaziali in sociologia urbana. *STAMPA*, pp. 13-33.

very recent villas or condominiums in reinforced concrete). These varied conditions have generally made it very complex to estimate macroseismic intensity[228].

On April 6, 2009, a 6.3 magnitude earthquake struck the Abruzzo region's capital, L'Aquila, and 56 other municipalities. The historic center of L'Aquila was evacuated and declared a red zone by ordinance no.73 on April 8, 2009, by Mayor Massimo Cialente (PD), and about three months after the earthquake, only 40% of buildings in L'Aquila were deemed habitable[229]. By the end of April, the population that did not find alternative housing was split, with one-third in hotels on the Abruzzo coast and another third in tent camps. New citizen committees emerged in response to the emergency, self-organizing protests and campaigns to actively participate in the reconstruction. The "Popolo delle carriole" is one of these, and it was created by around 6,000 people who, equipped with wheelbarrows, ventured beyond the red zone to collect the debris from their city. From that moment on, a year after the earthquake, the Aquilan community organized several mobilizations between L'Aquila and Rome to seek support for social and economic reconstruction, also developing a popular initiative law for "The Reconstruction of L'Aquila and the Safety of the National Territory." The conflict raises various issues: the lack of seismic prevention (e.g., failure to implement anti-seismic regulations in many buildings), delays in reconstruction work, and the establishment of a logic of commissarial management and derogation contracts post-earthquake, which have reduced the spaces for democracy and participation.

Regarding formal participation, voter turnout in municipal elections has been declining since the post-earthquake period. In 2012, turnout was 77%, in 2017 it dropped to 67%, and in 2022 it further decreased to 64%. In the most recent regional elections of 2024, only 47% of voters went to the polls.

6.3.2. Stakeholder Analysis

Given the spontaneous and strongly bottom-up nature of the Earthquake in L'aquila case study, half of the Stakeholder's share the responsibility of being promoters of the initiative(table 6.3a). Among the promoters, the role is equally distributed between Civil Society Organizations and NGOs. The relationship of the promoters with the initiative are of course cooperative with the exception of Casa delle Donne (neutral) while a relevant number of the others show potential conflictual relationships: institutions, politicians and, surprisingly, private citizens. Except for the Supranational level, the stakeholders represent all the territorial levels.

As for the relevance (figure 6.3a), only two *key players* are detected, characterized by more interest in affecting the process than power to actually affect it. More crowded are the group of the *context setters*, where all the institutions are reported, and the group of the *subjects* which includes some of the promoters.

Finally, as for the impact, it has been not possible to identify SHs that are likely to affect and be affected by the process and the SHs are equally distributed between the group of the Affected (with both the *key players* included) and Affecting actors, the latter composed of the institutions at any territorial level.

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[228] Galli, P. and Camassi, R., 2009. Rapporto sugli effetti del terremoto aquilano del 6 aprile 2009. Rapporto tecnico QUEST, DPC-INGV, Roma, 12 pp.

[229] Calandra, L.M., 2011. op. cit.

Table 6.3a - Stakeholders: list and main features

Stakeholder name	Category	Spatial Scale	Role	Resources	Relationship
SH1. Inhabitants	Citizens	Local	beneficiary	Relational; Knowledge	conflictual
SH2. 3.32/CaseMatte	Civil society organizations	Local	promoter	Relational;Knowledge	cooperative
SH3. Collettivo 99	Civil society organizations	Local	promoter	Relational; Knowledge	cooperative
SH4. Comitato Famiglie delle vittime del terremoto	Civil society organizations	Local-Regional-National	promoter	Relational; Knowledge	cooperative
SH5. Comune de L'Aquila	Institutions	Local	target	Normative; Economic;Positional	neutral
SH6. Civil Protection Department	Institutions	Local-Regional-National	target	Normative;Economic	conflictual
SH7. Regione de L'Aquila	Institutions	Regional	beneficiary/target	Normative;Economic;Positional	neutral
SH8. BSA	NGOs	Local-Regional-National	promoter	Relational;Knowledge	cooperative
SH9. E.V.A./Misa	NGOs	Local	promoter	Relational; Knowledge	cooperative
SH10. Casa delle Donne	NGOs	Local-Regional-National	promoter	Relational; Knowledge	neutral
SH11. Prime Minister	Politicians	National	target	Normative;Economic;Positional	conflictual
SH12. GSSI	Research	Local	third party	Relational;Knowledge;Economic	neutral

Figure 6.3a – Stakeholders by relevance: the Power-Interest matrix

Table 6.3b – Stakeholders by impact

Impact Category	Stakeholder	Power	Impact
Affected	SH2. 3.32/CaseMatte	3	5
	SH4. Comitato Famiglie delle vittime del terremoto	3	5
	SH3. Collettivo 99	2	4
	SH9. E.V.A./Misa	2	3
	SH8. BSA	1	2
	SH10. Casa delle Donne	1	2
Affecting	SH6. Civil Protection Department	5	3
	SH5. Comune de L'Aquila	5	2
	SH11. Prime Minister	5	1

Impact Category	Stakeholder	Power	Impact
	SH7. Regione de L'Aquila	4	-1
	SH12. GSSI	2	-1
	SH1. Inhabitants	2	-1

On the night of April 6, 2009, the tremor at 3:32 AM occurred within a seismic swarm that began on March 30, previously not assessed as a risk variable by the Major Risks Commission. This position seems to imply a logic of prevention and management of technical-political risks that excludes the relationship with the territory and the communities inhabiting it in favor of an objectification of the catastrophe (Art. 11 of the Decree-Law April 28, 2009, No. 39 converted into Law June 24, 2009, No. 77. The National Plan for Seismic Prevention was created precisely after the earthquake of April 6, 2009). The post-earthquake emergency phase was characterized by an immediate intervention from Civil Protection (D.P.C.) through a process of verticalization of the power[230] which consequently led to the outsourcing of reconstruction works to private companies (Filiera Fintenza, Reluis, Cineas) and the derogation of fundamental rights and certain procedures. In particular, the legal instrument of the ordinance has the power to derogate in matters of public contracts, labor law, site safety, environmental directives, property, expropriation procedures, and municipal planning[231] [232].

To address the housing emergency, the government proposed the construction of temporary and long-term settlements M.A.P (Temporary Housing Modules) C.A.S.E (Sustainable Eco-Compatible Anti-Seismic Complexes) in peripheral areas far from the historic center, which would uproot various family units and fragment the city's social fabric. The C.A.S.E. project (Sustainable Eco-Compatible Anti-Seismic Complexes) was applied for the first and last time in L'Aquila in the form of 4,449 apartments distributed across 185 three-story buildings, made of various prefabricated materials (wood, concrete, iron, drywall) on a reinforced concrete base. The project cost over 800 million euros (approximately 180,000 euros per housing unit) and was intended to accommodate 14,000 displaced residents from the city. The MAP units, on the other hand, hosted around 7,000 people from nearby towns for 250 million euros[233] [234].

The grassroots activation in L'Aquila responded by creating committee 3.32, a collective reality coordinating various emerging committees and associative activities, Including E.V.A, Collettivo99,

[230] Forino, G., 2012. Riflessioni geografiche sul disaster management all'Aquila. Semestrale di Studi e Ricerche di Geografia. 1. 85-97.

[231] Bono, I., 2009. Oltre la «mala Protezione civile»: l'emergenza come stile di governo. Meridiana, 65/66, 185–205.

[232] Arcuri, A., 2019. Il governo delle emergenze: i rapporti tra decreti-legge e ordinanze di protezione civile dal terremoto de L'Aquila al crollo del ponte Morandi, in Osservatorio sulle fonti, n. 2/2019.

[233] Imperiale, A.J. and Vanclay, F., 2021. The mechanism of disaster capitalism and the failure to build community resilience: learning from the 2009 earthquake in L' Aquila, Italy. Disasters Vol. 45(3) pp. 555-576.

[234] European Court of Auditors (2013). Special Report No 24/2012 – The European Union Solidarity Fund response to the 2009 Abruzzo earthquake: the relevance and cost of operations. Luxembourg: Publications Office of the European Union.

Comitato delle Famiglie delle Vittime del Terremoto, La Casa delle Donne, Brigate di Solidarietà Attiva (BSA), and others. The resilience process was activated through spontaneous mechanisms of mutual assistance, solidarity, and self-organization to promote direct participation in opposition to vertical management of the emergency and reconstruction that excluded the community. The objectives were a) to recreate a meeting place for the regeneration of the city's social fabric and b) to participate in the reconstruction process as a community. The first collective mobilization was the campaign "100% Reconstruction, Transparency, and Participation," followed by protests in 2009-2012 against the Berlusconi government, the G8 in L'Aquila, the shock economy, and top-down reconstruction, and the red zone of the historic center (the "wheelbarrow movement," where 6,000 residents of L'Aquila broke down the fences of the red zone and began clearing the debris of the buildings in the historic center). In the same year, CaseMatte was born as an operational center of 3.32 within the former abandoned psychiatric hospital of Collemaggio. CaseMatte expanded the proposal for self-organization, becoming a place of aggregation, counter-information, and cultural production with a view toward participatory and social reconstruction of the city.

Landscape

We hypothesize that the MLP background could be defined by three macro-categories: environmental, financial, and cultural phenomena.

The first category is defined by the geomorphological characteristics of the Aquilani territory and its seismic history. Specifically, the diagram references the 1915 Avezzano earthquake (the first earthquake in the Aquilani province in the new century, with approximately 30,000 victims), the L'Aquila earthquake on April 6, 2009, the 2016 Central Italy earthquake, and the 2017 earthquake between the provinces of L'Aquila and Rieti. It is important to note that the L'Aquila area is classified as a second-level seismic zone[235] on a scale of four levels, where zone 1 represents a high risk of strong earthquakes.

The second category includes the industrial decline of the 1970s, which was followed by the rise of the third sector and the 2008 financial crisis, occurring during a period of stagnation for the Aquilani municipality since the early 2000s. In 2007, Naomi Klein's book "The Shock Doctrine" discussed how neoliberal policies of privatization, market deregulation, and public spending cuts also operate in vulnerable and disaster contexts to generate profit (disaster capitalism)[236].

The third category refers to the cultural elements characterizing Italy during the twenty years between 1990 and 2010. In the 1990s privatization and market deregulation infiltrated democratic state institutions, leading to the "Mani Pulite" investigations between the political world and the business, industrial, and financial sectors (this is reflected within the regime level). In 1994, the Second Republic began with the first government of Silvio Berlusconi, who would be in his fourth term during the April 6,

[235] OPCM 3519/2006 - Istituto poligrafico e Zecca dello Stato. Testo dell'Ordinanza PCM 3519 del 28 aprile 2006 dalla G.U. n.108 del 11/05/06 "Criteri generali per l'individuazione delle zone sismiche e per la formazione e l'aggiornamento degli elenchi delle medesime zone. http://zonesismiche.mi.ingv.it/pcm3519.html

[236] Imperiale, A.J. and Vanclay, F., 2021. op. cit

2009, earthquake. In the same year, the Italian Civil Protection Department defined its emergency management plan (1992) known as the "Augustus Method[237]". This method involves a set of systemic "simple and flexible" guidelines (recalling the tradition of Emperor Augustus) necessary for responding to disasters but limited by the identification of the disaster as the cause, the emergency as the consequence, and the community as the victim of the disaster.

Regime

The regime is identified by two conflicting elements: a) global regulatory frameworks related to risk and disaster reduction (UNDRO 1982; INDR 1984; UNISDR 2005; 2015[238]), and b) the state of exception declared in response to the post-earthquake emergency in 2009. In this historical example, the regime operates through command-and-control actions (Augustus method) exerted by the Civil Protection Department[239]. Particularly, the power to issue ordinances (Article 5 of Law 225/1992), introduced the red zone in the historic urban center and operated in derogation of existing regulations, especially concerning contracts and construction, as well as limiting the rights to mobility, expression, and information to the people living in camps[240]. In 2009, 105 ordinances were issued, averaging one every three days.

Niche

The niche is hypothetically defined here as the self-organized L'Aquila community responding to the post-2009 earthquake emergency, aiming to participate in the city's reconstruction. Informally, 3e32 was the first self-organized committee to take on coordinating following the mismanagement of the emergency in a state of exception

Although L'Aquila did not have a particularly active political life, there are several similarities between the "L'Aquila riots of 1973" and the "Popolo delle Carriole" of 2010. The activism of the Aquilana community in the post-earthquake period from 2009 to 2011 represents a moment of intense social and political mobilization, marked by a series of actions aimed at opposing the emergency management and reconstruction efforts, which were seen as inadequate and influenced by economic and political interests. This fervor translated into protest demonstrations, occupations of public spaces, and the formation of civic committees, such as 3e32, which played a central role in coordinating the various facets of citizen resistance[241].

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[237] Alexander, D. E., 2010. The L'Aquila Earthquake of 6 April 2009 and Italian Government Policy on Disaster Response. *Journal of Natural Resources Policy Research* 2, (4), 325–342.

[238] Imperiale, A.J. and Vanclay, F., 2019. op, cit.

[239] Alexander, D., 2010. op. cit.

[240] DICOMAC No. 15277/2009 - Comitato 3e32, Nati alle 3e32. L'Aquila: cronache del dopo-terremoto, Round Robin Edizioni, 2019; Imperiale AJ, F Vanclay (2019) Command-and-control, emergency powers, and the failure to observe United Nations disaster management principles following the 2009 L'Aquila earthquake International Journal of Disaster Risk Reduction 36, 101099.

[241] Comitato 3e32, Nati alle 3e32. L'Aquila: cronache del dopo-terremoto, Round Robin Edizioni, 2019.

For example, the demonstrations in Rome and L'Aquila in June 2009 saw the convergence of numerous groups and associations opposing the centralized and opaque management of the reconstruction. The "Yes we camp!" campaign, organized in conjunction with the G8 summit in July 2009, was a symbolic example of how the Aquilani community sought to promote a participatory reconstruction model based on principles of mutualism and grassroots management. Among the most symbolic actions was the "Popolo delle Carriole" (Wheelbarrow People) in February 2010, where thousands of citizens broke through the red zone, a symbol of exclusion and militarization of the historic center, to reclaim their city symbolically.

On March 21, 2010, a draft law of popular initiative was created through participatory tables led by the 3.32 coordination with the subsequent collection of 50,000 signatures. The objectives of the proposed law were a) transparency regarding reconstruction funds and b) a national post-disaster intervention plan. With Law 134/2012 (commonly referred to as the Barca Law), all delegations for government action in the L'Aquila earthquake were entrusted to Fabrizio Barca, then Minister in the Monti government, which incorporated some requests within the popular legislative initiative. Barca committed to speeding up reconstruction timelines and facilitating a quick return to ordinary management of the post-emergency period, which ended on August 31, 2012. The same law established Special Offices for Reconstruction, one responsible for the city of L'Aquila (USRA) and one for the other municipalities in the crater (Special Office for the Reconstruction of the Municipalities of the Crater - USRC). Following this law was the "Really Safe" campaign, developed nationally with multi-stakeholder tables in fragile territories and already affected by disasters, elaborating broader recommendations than those included and partially incorporated within the Barca law. These recommendations are now included in the Framework Bill, a single law on disasters currently under discussion in Parliament. Furthermore, in 2018, with Legislative Decree No. 1 of January 2, 2018, the Civil Protection Code was revised, ensuring the participation of citizens, whether individuals or associations, in the process of developing civil protection planning. These are considered victories and regimes ‘fractures from the self-organized realities that emerged in the post-earthquake phase.

As of 2024, 3.32 Case/Matte no longer coordinates the popular activation that began in 2009 and remained active until 2012. In particular, the transition from a left-wing majority administration (Massimo Cialente, Democratic Party 2012-2017) to a right-wing majority (Pierluigi Biondi, Brothers of Italy 2017-2027) seems to have removed the apparent attempt at dialogue, participation, and co-design with the citizenship. More broadly, generational changes, emerging distrust, and subsequent marginalization have initiated an ongoing transformation process of the niche still in effect today.

Interaction between levels

The conclusion of the first phase of preliminary research suggests that the clear division of the MLP levels expands through the dynamics that connect them reciprocally. This process is particularly evident through the opening of the window of opportunity where hypothetically the earthquake of April 6, 2009, fractured the regime which declared the emergency state and to which the self-organized groups of the

community responded. It could be argued that the window of opportunity might also be a chance for the regime itself to freely operate through a state of exceptionality outside of the status quo.

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6.4. Flood in Genoa in 2011 (IT)

During the flood in Genoa (Liguria, North-western Italy) people were personally active in assisting the population and cleaning the flooded streets. In Val Bisagno, a spontaneous operational synergy emerged between the president of the local City district and groups of people who intervened as volunteers. These included many groups of social activists from social centers. The self-organized social intervention first focused on self-help and safety of individuals and then evolved into the activity of cleaning flooded houses and streets. Although the network of individuals and groups that formed in those days left no trace in subsequent years, similar networks, often animated by the same groups and individuals, were activated to respond to the socio-economic emergency caused by the Covid-19 pandemic in 2020. In Val Bisagno, autonomous social activation involved several hundred individuals, thousands in the entire city of Genoa. Diversity represents a distinctive trait of the associative groups that first mobilized: they include different genders and sexual orientations and members from local migrant communities. The examples and experiences of civic engagement in the aftermath of the flood in Genoa in 2011 thus increased the resilience and the preparedness of that community to the flood which affected the city again in 2014, as well as to other crises, such as the Covid-19 pandemic.

6.4.1. Context Analysis

6.4.1.1. Characteristics of the territory

The city of Genoa lies by the sea, in the gulf of the same name on the north-west coast of the Italian Peninsula. Its territory extends 240.29 km² along the coast and within two intersecting valleys.[242] The shape of the present settlement therefore has the characteristic “inverted pi” appearance determined by the coastline and the two valleys Polcevera (to the west) and Bisagno (to the east), named after their respective rivers. The latter originate in the Apennine mountain chain, which is on average between 6 and 10 km from the sea. The urban settlement is therefore embedded in a narrow space between the sea and the mountains, and is wedged between the lower reliefs in the direction of the Apennines along the two valleys[243].

This geographical conformation has profound consequences on the ideo-geological characteristics of the territory on which Genoa stands. On an orographic level, the mountainous reliefs do not exceed 1,200 meters in the surrounding Apennines, while the heights within the urban territory - of which there are many - do not usually exceed 500 or 600 meters in height. The mountainous territory is characterized by soil that tends to be impermeable, friable and rocky. The presence of part of the settlement on the Apennine spurs closest to the sea produces a road and district structure characterized by frequent ascents and descents. The proximity of the mountainous peaks of the Ligurian Apennines naturally also causes the presence of a large number of watercourses.

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[242] All quantitative data in the context analysis concerning the Genoa floods historical exemple were collected by the Italian National Institute of Statistics (ISTAT) and can be retrieved from the Institute's website (https://www.istat.it/).

[243] Faccini, F., Paliaga, G., Piana, P., Sacchini, A., & Watkins, C., 2016. The Bisagno stream catchment (Genoa, Italy) and its major floods: Geomorphic and land use variations in the last three centuries. *Geomorphology*, *273*, 14-27.
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The Bisagno and the Polcevera are the two rivers, whose course, however, is different: while the Polvevera flows rather regularly along a north-south axis, the Bisagno has a more tortuous and irregular course, following an initial east-west axis between the districts of Struppa and Molassana, and then turning south towards Staglieno. Due to the irregularity of the rainfall, the beds of the two rivers are often devoid of water. Dozens of torrents cross the Genoese territory from east to west as their tributaries or flowing into the sea. Many of them have been flowing unbridled for decades as a result of the clustering of houses and infrastructure along their course, especially in the center, others have their course totally or partially uncovered in the two valleys, or on the east and west coasts. The main tributary of the Bisagno, the Ferreggiano, is partly unlined and partly uncovered, and flows between the Quezzi and Marassi districts, flowing into the left bank of the river.

The territory of Genoa has a very low seismicity, with the last (minor) episode dating back to the second half of the 19th century. Genoa's climate is Mediterranean along the coast, warm temperate in the more inland areas. Rainfall is moderate throughout the year, and rarer in summer. However, episodes of heavy and persistent rain are not uncommon in the autumn, between September and November, causing even major flooding episodes. The most serious episodes in recent times occurred in 1954, 1970, 1992, 2011 and 2014. Landslide areas cover 8.8% of the municipal territory in Genoa (2.3% active landslides, 4.2% quiescent landslides and 2.3% stabilized landslides) affecting almost 2% of Genoa residents.

From the point of view of MLP regarding the CAI development, the **niche** corresponds to self-organized groups of people based on territorial proximity and the existing collaborations among some of the stakeholders involved, such as lay and religious associations, religious institutions, committees, political and social informal spaces, political party circles and municipalities, who have engaged with the broader mobilization generated by residents, property owners, families, and affinity groups. A specific case identified is that of the Molassana area (Genoa) and the Associazione Amici del Ponte Carrega, which was established after the 2011 flood to strengthen the community and inform citizens about urban and commercial development operations centered on the neighborhood. The **regime** identified with the local government which did not act on the intervention to secure the rivers until the same year. In 2014, when the second flood hit the city in conditions that had not significantly changed in terms of socio-technical innovations, the new mayor showed a similar inability to act. Genoa's **landscape** is characterized by the cultural pre-eminence of secular and center-left forces in the years immediately preceding and following the floods and by the issue of the city's industrial decline. The chaotic urbanism resulted from the immigration of workers after the Second World War and the urbanization of a mountainous territory close to the sea was compounded by urban planning that did not consider the danger of hydrogeological instability which the city is exposed, with large portions of the territory built below river levels and buildings constructed in the stream beds themselves.

6.4.1.2. Population and migration

The first traces of human settlement found on Genoese territory are from the Neolithic age: part of the structure of an agricultural village built using the pile-dwelling technique, dating back to a period between the fifth and fourth millennium B.C., was found near what is now Piazza della Vittoria, opposite

Brignole railway station. Traces of Iron Age terracing were found not far away, along the right bank of the Bisagno, while the first Celtic settlement (of the population known as Liguri) was probably built at the mouth of the Bisagno, now completely underground in the district of the same name in the center. Roman and medieval Genoa grew as a port trade center until it became a world power in the 12th century. A commune and then a republic, Genoa increased its technological and industrial capacity by acquiring the largest and most sophisticated fleet in the Mediterranean, able to compete with that of Venice.

The world trade system that arose at that time, and declined in the 14th century before giving way to the new Atlantic routes in the 15th, saw Genoa as a major political, commercial and financial center. The most significant increase in Genoa's population, however, occurred in the industrial age, and particularly in the 20th century. In 1926, the Fascist regime annexed several surrounding municipalities to the main center, constituting Greater Genoa, then of 600,000 inhabitants, whose territorial extension persists to this day. In addition to maintaining an important port activity, the city became one of Italy's three largest industrial centers with Turin and Milan, specializing in the steel industry. This led to an increasingly significant and chaotic urbanization to make room for the working class (often immigrants from Friuli, Sicily or Sardinia), which led to the saturation of the building area along the center and the coastline, and the increase of settlements in the valleys and hinterland.

Industrialisation transformed the social contrasts within the city, leading to the creation of the first socialist group of workers at the end of the 19th century and to major trade union and partisan mobilisations, socialist and communist, after the First and Second World Wars. This conflict led large industrial estates to close most of their factories at the end of the 20th century, relocating or diversifying production. This led to an employment crisis and a decrease in the population from 816,872 in 1971 to 586,180 (less than in 1926) in 2011 and 565,752 in 2019, of which 47.3% were men and 52.7% women. At the turn of the 20th and 21st centuries, however, the city was hit, like many other Italian centers, by a new immigration phenomenon, this time from foreign countries (primarily Ecuador, Albania and Morocco). Between 2011 and 2019, the share of Genoa's officially registered population of non-Italian origin exceeded 10 per cent, reaching 54,388 in 2019.

6.4.1.3. Economy and Employment

Genoa has a percentage of inhabitants with a tertiary degree (Bachelor, Master or PhD) of 18.1%, higher than the national average of 14.3%. Patent applications submitted by citizens in the province of Genoa between 2004 and 2008 increased by 41.7%, reaching a value of 124.4 applications per million inhabitants, exceeding the value for the North and almost doubling the national value (69.6 per million inhabitants). The daily volume of water supplied in the municipality of Genoa, per inhabitant, went from 303 to 280 liters per inhabitant between 1999 and 2008, decreasing by 7.6% but still remaining above the national average. In 2011, 13 exceedances of the daily air quality limit value for PM10 were recorded. Although higher than the previous year, this value is lower than in 2004. In 2010, urban green space was 41 m2 per inhabitant.

The employed population is 233,977 (a slight increase from 233,193 in 2011), of which 54.2% are women and 45.8% men (a better gender balance than the Italian national average of 57.6% and 42.4%). The employment rate among Italians is in line with the national average (45.6%), as is that of inhabitants of foreign origin (55.5%). The geographical and economic structure of the municipality of Genoa differs widely from the national one in relation to commuting, which is mostly within the municipal territory for both study (96.1%) and work (94.9%) rather than outside (3.9% and 5.1%). In Italy, the average number of commuters, for study or work, who leave the territory of their municipality is 29.3% and 48.7%. The size of the territory, which is among the largest for an Italian municipality, and the characteristic conurbation of several centers with different economic and cultural characteristics since the 20th century, produce considerable movement within the city, both by private and public transport, every day.

In 2010, on the eve of the first flood, the per capita income of households in the province was 20,547 €, higher than the national average (17,029 €). In 2008 and 2012, 67% of the province's inhabitants aged between 20 and 64 were employed, 2.4 lower than in northern Italy and 6 higher than the national average. The female component of the employed workforce showed a positive trend until 2010 and a slight decrease in 2012. In 2011, deaths at work in the province amounted to 3.4 per 100,000 employed. On the eve of the first flood, the Genoese economy was coming out of thirty years of profound transformations. These had affected the agricultural sector as well as industry and services.

Between 1980 and 2010, there had been a decline in agricultural activity in the municipality. The utilized agricultural area of arable land had decreased from 672.89 hectares in 1982 to 122.81 in 2010; that of agricultural wood crops from 765.32 to 185.49. The total area of utilized municipal agricultural land had contracted from 4,164.21 hectares to a total of 1,868.27. The number of farms had decreased from 2,756 to 531, with an impressive drop in the number of farms engaged in the cultivation of woody crops, particularly vines, olives and fruit trees. Cattle breeding had fallen from 1,312 head to 593, with pig, sheep and poultry breeding also dropping significantly.

With regard to industrial activity, the period between the 20th and 21st centuries was characterized by the gradual divestment of large factories and their previous manufacturing activity that had employed tens of thousands of workers, provided a livelihood for hundreds of thousands of Genoese and nurtured an important economic induced activity, mainly for companies acting within the Riva Group and Italsider. As a consequence of this process, even at the turn of the century, there was still a sharp contraction in the city's manufacturing activity: there were 3,565 manufacturing companies in 2001, 2,738 in 2011, although the number of workers had increased considerably, from 34,337 to 44,074.

While the wholesale and retail sector had remained stable over the same decade, an increase in the number of enterprises and employees was evident in health and social care, arts and sports, professions, but especially in tourism-related activities (from 8,991 to 27,887 employees). Between 2016 and 2019, there was a substantial and continuous increase in enterprises whose owners are of foreign origin, both in manufacturing and in the trade, tourism and catering sectors.

6.4.1.4. Political and Administrative structure

The city of Genoa is governed by its mayor, who also presides over the Metropolitan City, comprising a number of neighboring municipalities. Both institutions are part of the Region of Liguria, of which Genoa is the capital, one of the twenty regions of the Italian Republic. The central state, however, has its organs directly in the Ligurian capital, particularly with regard to legislative power (local representatives in the Chamber of Deputies and Senate), executive power (government agencies, schools and universities, army barracks, state-owned or state-owned holdings in enterprises, police forces headed by the local "questura" and placed under the governmental chain of command through the local prefecture) and judicial power (procura della repubblica, criminal and civil courts, local bar).

Genoa is therefore subject, in addition to the rules and measures of the municipality, the metropolitan city and the region concerning its territory, to the set of national regulations, the general principles of which are set out in the Italian Constitution promulgated in 1948.

The Italian republic is also committed to the observance of international norms by numerous agreements and treaties, the most significant of which concern European law and international law. As a member state of the European Union, Italy is bound by the precepts and principles of the European Constitution and by European guidelines and directives in the economic, social, judicial and civil rights fields. Among these is the so-called Floods Directive; of 2007[244], which aims to put in place the preparation of preliminary risk assessments, the elaboration of hazard and risk maps, and the drafting of management plans, and was transposed into Italian law by Legislative Decree 49/2010[245]. Italy is also a member of the United Nations and has ratified the main declarations and conventions on environmental and landscape protection, health protection and promotion of scientific activity, civil and political liberties, and human rights, including those of women, minors, and asylum seekers. The UN has regulated risk and disaster reduction since the 1980[246] [247].

The Italian constitutional system is a representative democracy with universal citizen suffrage. However, as of today, just under 59 million people reside in Italy, of whom almost five and a half million are foreign citizens, or 8.7% of the resident population, including 3,727,000 from non- EU countries. A large proportion of workers and residents are therefore excluded from political rights.

The Italian democratic system provides for the strict division of legislative, executive and judicial powers and the protection of freedom of opinion, scientific research and religious faith. However, social mobilisations and public debates within the country, as well as news and reports from abroad, have for decades continued to highlight a lack of freedom of information, the centralisation of media powers with

[244] Directive/2007/60/EC, Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks.
[245] Legislative Decree 49/2010, Attuazione della direttiva 2007/60/CE relativa alla valutazione e alla gestione dei rischi di alluvioni. (10G0071) (GU Serie Generale n.77 del 02-04-2010) note: Entrata in vigore del provvedimento: 17/04/2010.
[246] UNDRO, 1982. Shelter after disaster: guidelines for assistance, Office of the United Nations Disaster Relief Coordinator.
[247] UNISDR, 2015. Sendai Framework for Disaster Risk Reduction 2015-2030.

regard to public and private broadcasters, the overcrowding of the prison system and the absence of adequate legislation against torture. Added to this is the presence on Italian territory of widespread illegal business powers with their own extra-legal agencies for adding the use of physical force to political or economic negotiations with public or private institutions.

The Italian political regime is therefore characterized by an overlapping of de facto and de jure powers over the territory, especially in economic and labor exploitation matters, which also concerns the infrastructure, town planning and public and private building sectors. The latter is one of the most significant capital investment sectors in the history of the republic, which has led to the most significant environmental disfigurement and impoverishment of biodiversity and landscape diversity in the natural and social history of the peninsula since the mid-20th century. Both social and political opposition to the resulting exploitation of labor and environmental resources were partly legitimized as internal instances of the constitutional system, and partly repressed through laws and institutions of law and order. Added to this is the covert activity of sectors of the public administration, which have been involved in various forms since the Second World War in explosive attacks against civilians that have caused hundreds of deaths. Although Genoa has never suffered such massacres in its recent history, it was the scene, in 2001, of one of the largest campaigns of political repression in 21st century Europe, with hundreds of people injured, arrested or tortured.

The years immediately preceding the two floods of 2011 and 2014 saw the city of Genoa governed by political forces that were predominantly in opposition to national governments. From 2001 to 2013, political and often governmental life was dominated by the figure of the conservative businessman Silvio Berlusconi, who was repeatedly accused by the judiciary of financing urban investments with money from mafia organizations. The political alliance he promoted was in government in 2011, and included politicians from the fascist tradition (in the Popolo delle Libertà) and of xenophobic extraction (in the Lega Nord). In 2011 Berlusconi was Prime Minister. Minister of the Environment, Sea and Territory was Stefania Prestigiacomo, and Minister of the Interior was Roberto Maroni. Since 2007, Genoa was instead governed by the Left Democrats in alliance with the Communist Refoundation Party. The mayor was Marta Vincenzi, while Roberta Morgano (DS) was councilor for the Extraordinary Plan for Maintenance, Green Areas and the City of the Sea, and Carlo Senesi (Italian Communists) was councilor for Sustainable City, Energy, Waste Cycle.

6.4.1.5. Political Participation

In 1892, the city of Genoa saw the birth of the first city workers' association, which would play a role in the national affirmation of the first socialist organizations. Until the late 1970s, much of the city's political and civic participation found expression through the countless workers'; organizations that arose, sometimes in contrast and sometimes in cooperation with each other. In addition to considerable social, civic and political activation during the resistance against the Republic of Salò and the Nazi occupation in the 1940s, the post-World War II period saw an increase in both the social weight of the higher and university student body and its political participation in organized activities. The latter attempted in various ways to insert themselves originally in the furrow initiated by workers' mobilisations, and to merge with them, even if this led mainly to forms of antagonism with the existing workers' organizations.

The repression of the subversive movements that arose from this clash between the late 1970s and the 1980s completely changed the scenario of civic and political participation in Genoa. Rapid was the decline of student and workers'; organizations of socialist and communist inspiration. Catholic aggregations, which had always been present, remained in the area, while student and workers' organizations played a marginal role and changed. Trade union organizations retreated into specific bargaining, trying to avoid resorting to strikes, and abandoned references to broader forms of social transformation. Student realities linked up with groups of young people from outside the world of higher education in various neighborhoods, occupying disused buildings and building centers for social aggregation animated by reference to the traditions and struggles carried out in Italy and elsewhere in the name of communism, anarchism, decolonisation, women's liberation, and respect for human rights.

Progressive Catholic associations as well as social centers and post-communist groups came together in 2001 in the Genoa Social Forum, the assembly of opposition and criticism of the G8 planned in the city in June of that year. The mass participation in the protests, also from outside Genoa and from foreign countries, largely caught the local realities off guard, which were often directed by groups from outside the city. The devastation left by the serious violence of July 2001 thus did not lead to greater civic and political activation on the ground, but rather to a wounded memory and a sense of humiliation and defeat on the part of a generation of activists from different backgrounds. The latter felt that they had seen the city go through a phenomenon that largely transcended it, and from which the city suffered, without having been able to play a major role in directing and organizing events. In the following years, however, politically motivated building occupations in the city increased from three in 2001 to five in 2011. As far as more general civic activation is concerned, one of the most significant episodes in the post- war history of Genoa is precisely the popular participation in the activities to clean up the damage caused by the flood of 1970, along the lines of the (in that case national) mobilization for Florence in similar circumstances in 1966. The city of Genoa, like all Italian cities, has a capillary network of parishes and social activities collateral to Church action throughout the territory. The parishes and the youth and residents' groups that form within them are often active in voluntary work. On the aggregative level, an entirely different reality, but in turn important for the city, are both the sports associations and the supporters groups of the two main local football teams, Genoa and Sampdoria, which also have thousands of adherents and were also protagonists in the mobilisations against the G8 in 2001. Various groups linked to anarchist and post-communist politics animate, together with individuals from the ecological culture, territorial activations such as the No Gronda Committee, the movement against the Terzo Valico and the No Skymetro Committee.

In terms of formal political participation, the inhabitants of the municipality of Genoa have shown over the years less participation in elections, e.g. for the European Parliament. In 2009, 59% of those eligible to vote were over 18 years old, which is lower than in the North and nationally, a decrease of 9.4% compared to the 2004 elections and as much as 24.8% compared to the 1979 elections. Until 2011, local political representation was older than the national average; in 2012, however, the average age of municipal councilors became 50.4 years, significantly reducing the gap with the rest of the country. The presence of women in the municipal council followed a rather irregular trend until 2011, remaining almost always below the national value. In 2012, however, it recorded a value of 20.7%, catching up with

the figures for the rest of the country. Turnout in local elections fell steadily from 94% in 1976 to 55.5% in 2012, to 48.4% in 2017. While national general elections saw a drop of almost five points in turnout in 2017, but remained attended by 70% of eligible voters, regional elections saw a drop from 69.9% in 2005 to 53.7% in 2020 (in 1975, turnout was 92.3%).

6.4.2. Stakeholder Analysis

As in the case study of the Earthquake in L'aquila (see 6.3) also in the Genoa case study the strong self-organizing nature of the initiative determines a weird distribution of the SHs with the majority being promoters of the initiative (11 out of 18, table 6.4). Again, as in the L'Aquila case, the group of promoters is mostly composed of NGOs and Civil Society Organizations with the Citizens and Institutions (at both Local and national level) being the main target of the process. With a few exceptions the SHs group is composed of Local actors counting on primarily Relational resources. The relationships among the stakeholders are, not surprisingly, cooperative or neutral with the only exception of the conflictual relationship detected in the case of the Genoa municipality.

As for the relevance (figure 6.4a), not any *key player* can actually be detected, meaning that although being promoted by a large number of local associations not any of them seems to have enough power and/or enough interest to actually play a major role in affecting the process. The promoters are in fact mostly distributed among the *Subjects* and the Crowd while all the Institutions are included in the group of the *Context Setters.*

Lastly, when it comes to the relation with the impact a few remarks might deserve to be reported. First, the category of the Affecting and Affected include only SHs that do not seem to have enough power to affect the process nor are expected to be highly impacted. All the institutions are not surprisingly included in the group of the Affecting stakeholder with the National Civil Protection Department being a particularly powerful actor (also positively affected) followed by the Municipality which seems instead to be slightly negatively affected. Among the SHs included in the group of the primarily affected actors is the rest of the promoters (both from NGOs and Civil Society Organizations) and the local residents.

Table 6.4a - Stakeholders: list and main features

Stakeholder name	Category	Spatial Scale	Role	Resources	Relationship
SH1. Municipio Val Bisagno	Citizens	Local	target	Normative; Relational;Economic	neutral
SH2. Inhabitants, volunteers	Citizens	Local	beneficiary	Relational;Knowledge	neutral
SH3. Centro documentazione Archivio Libertario	Civil society organizations	Local	promoter	Relational;Knowledge	cooperative
SH4. Comitato Piazza Adriatico	Civil society organizations	Local	promoter	Relational;Knowledge	cooperative
SH5. Autaut	Civil society organizations	Local	promoter	Relational;Knowledge	cooperative
SH6. Pinelli	Civil society organizations	Local	promoter	Relational;Knowledge	cooperative
SH7. Buridda	Civil society organizations	Local	promoter	Relational;Knowledge	cooperative
SH8. No sky metro	Civil society organizations	Local	promoter	Relational; Knowledge	cooperative
SH9. Municipio Media Val Bisagno	Institutions	Local	target	Normative; Relational; Economic	neutral
SH10. Comune di Genova	Institutions	Local	target	Normative; Economic	conflictual
SH11. Chiesa di S.Margherita	Institutions	Local	target	Economic;Relational;Knowledge	neutral
SH12. Civil Protection Department	Institutions	National	target	Normative;Positional;Knowledge	neutral
SH13. Circolo La Bianchini PRC	Intermediate bodies	Local-Regional-National	promoter	Knowledge;Relational;Positional	cooperative
SH14. Associazione Amici Ponte Carrega	NGOs	Local	promoter	Relational;Positional;Knowledge	cooperative

SH15. Scout Agesci	NGOs	Local	promoter	Relational;Knowledge	neutral
SH16. San Benedetto Don Gallo	NGOs	Local	promoter	Relational;Knowledge	neutral
SH17. 15 Arci	NGOs	Local-Regional-National	promoter	Relational; Knowledge	cooperative
SH18. Università di Genova	Research	Local	third party	Relational;Knowledge; Economic	neutral

Figure 6.4a – Stakeholders by relevance: the Power-Interest matrix

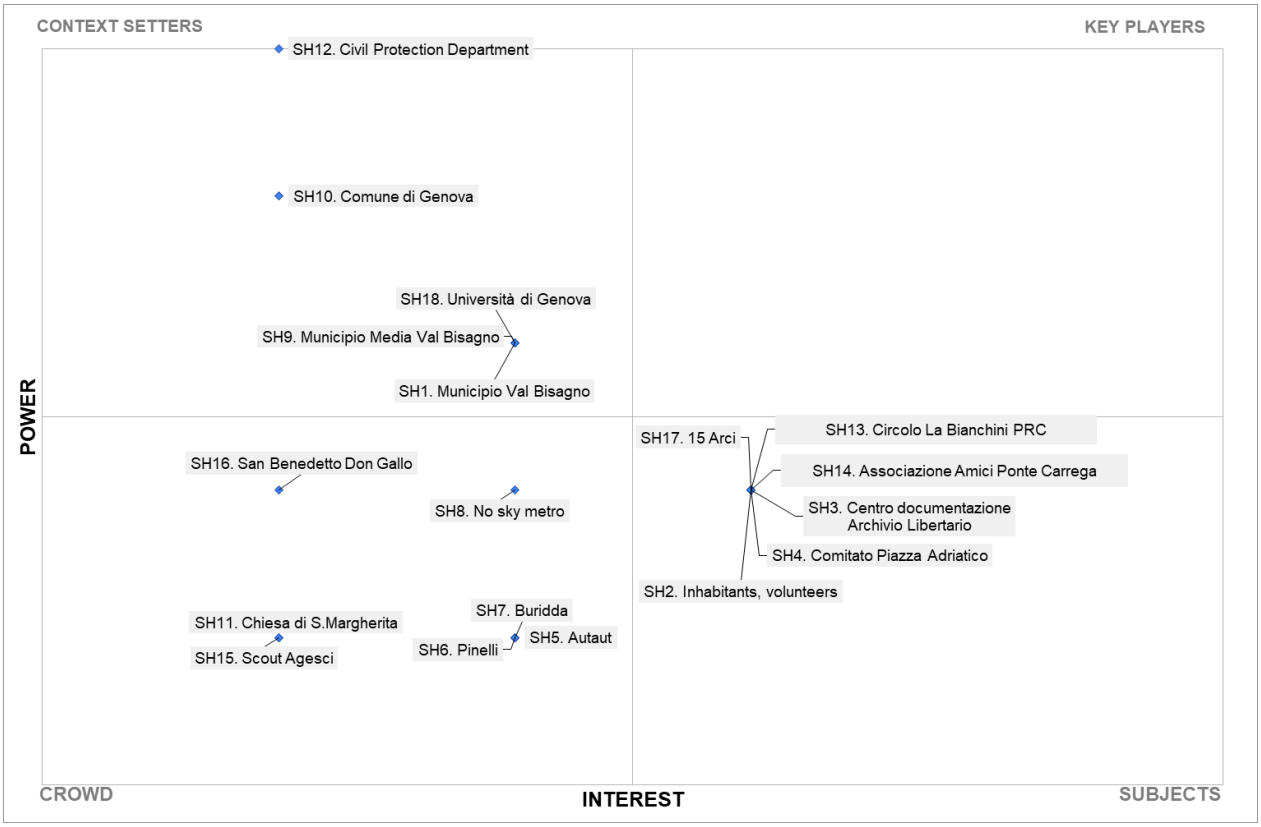

Table 6.4b – Stakeholders by impact

Impact Category	Stakeholder	Power	Impact
Affected	SH14. Associazione Amici Ponte Carrega	2	5
	SH3. Centro documentazione Archivio Libertario	2	5
	SH4. Comitato Piazza Adriatico	2	5
	SH17. 15 Arci	2	4
	SH2. Inhabitants, volunteers	2	3
Affected & Affecting	SH5. Autaut	1	1
	SH6. Pinelli	1	1
	SH7. Buridda	1	1

Impact Category	Stakeholder	Power	Impact
	SH15. Scout Agesci	1	1
	SH11. Chiesa di S.Margherita	1	1
Affecting	SH12. Civil Protection Department	5	2
	SH10. Comune di Genova	4	-1
	SH18. Università di Genova	3	1
	SH1. Municipio Val Bisagno	3	-1
	SH9. Municipio Media Val Bisagno	3	-1
	SH13. Circolo La Bianchini PRC	2	1
	SH16. San Benedetto Don Gallo	2	1
	SH8. No sky metro	2	1

The floods in Genoa in 2011 and 2014 saw the spontaneous activation of various formal and informal groups of citizens, associations, and local institutions throughout the emergency. Self-organization and solidarity in the aftermath of the 2011 flood were also activated in the 2014 flood, only to dissolve shortly after.

The November 4, 2011, event was characterized by intense precipitation over restricted areas, with about 500 mm of rain falling on the city in just a few hours. There were 6 victims from the flooding of the Bisagno River and the Rio Fereggiano. Following the tragedy, then-mayor Marta Vincenzi (PD) was condemned for a distorted reconstruction of the coordination events in collaboration with civil protection. The levels of the rivers were not properly monitored, schools were not closed, and civil protection arrived late at the emergency site. In the event of October 9, 2014, very intense rains of about 395 mm were recorded in just a few hours, resulting in floods mainly from the Bisagno River and the Rio Fereggiano, causing one death and flooding large areas of the city, particularly between the lower and mid-Val Bisagno. In this second event, no condemnation was issued for Mayor Doria (PD) and former regional civil protection councilor Raffaella Paita, who was accused of failing to issue the emergency alert in time. In 2015, following the two dramatic flooding events, work began on the spillways for the Rio Fereggiano, which were later completed in 2019 with the approval of a decree from the Renzi government. The spillway for the Bisagno River, instead, was initiated in 2017 under a second ministerial decree from the Gentiloni government and it is today under construction due to a mafia interdiction on the consortium Research

From this preliminary phase, it emerges that the civic engagement process has self-organized based on territorial proximity and the existing collaborations among some of the stakeholders involved, such as lay and religious associations (Arci; San Benedetto Don Gallo, Amici di Ponte Carrega Association; Agesci

Scout), religious institutions (Church of S.Margherita), Committees (Piazza Adriatico Committee) political and social informal spaces (Centro documentazione Archivio Libertario, Buridda, Pinelli, AutAut), political party circles (Circolo La Bianchini PRC), and municipalities (Val Bisagno, Media Val Bisagno municipalities), who have engaged with the broader mobilization generated by residents, property owners, families, and affinity groups. These actors facilitated coordination and the division of tasks among volunteers in the post-emergency phase before the intervention of civil protection. The latter had a containing effect on the self-organized process, but was controversial in its implementation depending on testimonies and locations, viewed by some stakeholders as a measure of discipline and rationalization, and by others as one of containment and control. Between 2011 and 2014, and subsequently after 2014, a popular network did not consolidate, but collective initiatives among some stakeholders emerged in response to subsequent emergencies, such as the collapse of the Morandi Bridge (2018) and the COVID-19 pandemic (2019). Furthermore, some of the demands and values contained in the self-organization process after the floods (solidarity, sustainability, participation) seem to have converged today into various committees against the logic of land exploitation and unrestrained urbanization, such as the committee "No-Skymetro for a Sustainable Val Bisagno," opposing the construction of the elevated subway extension based on the "banks" of the Bisagno River. The process of popular activation, reciprocally in 2011 and 2014, took on different forms and continuity based on the history and culture of the local territory affected by the flood in the city.

A specific case identified is that of the Molassana area (Genoa) and Piazza Adriatico, a neighborhood with a significant working-class history where unrestrained urbanization of social housing began in the 1960s below the level of the Bisagno river. Molassana was an autonomous municipality until 1926 when it was incorporated into the municipality of Genoa. The central area of Molassana includes a lower part along the riverbank, with predominantly working-class neighborhoods, and an upper hilly part that constitutes the oldest core of the town. Piazza Adriatico was particularly affected by the flood in 2011 when the water reached a height of 4 meters.

In 2024, Arci, the Piazza Adriatico Committee, the Documentation Center of the Libertarian Archive, and the Friends of Ponte Carrega Association collaborated for the common goal of regenerating the social fabric of the neighborhood that existed until the second half of the 20th century, not without disagreements and internal conflicts. In particular, the Friends of Ponte Carrega Association was established in 2012 to strengthen the community and inform citizens about urban and commercial development operations centered on the neighborhood. The idea matured during the days of the 2011 flood when driven by a spirit of collaboration and solidarity, the founders of the Friends of Ponte Carrega Association rediscovered a lively and pulsating community in the neighborhood. They found themselves embarking on a common path that brought together people with different stories and traditions to create an association aimed at building community. The association, therefore, seeks to promote another "model of life and development" defined as "human-scaled" to take care of the territory in dialogue with the community that inhabits and experiences it. From this, a series of informative conferences succeeded to inform people about the hydrogeological instability of the territory, and new collaborations began with different actors such as WWF, Legambiente, the University of Genoa, and others. In 2012, the recovery operation for Ponte Carrega commenced as part of a contentious demolition project aimed at building a

roadway bridge to serve the commercial centers being developed. Thanks also to the pressure from the association, in 2015, the city council unanimously passed a motion with 28 votes in favor, proposed by Francesco De Benedictis (Fratelli d'Italia party), to preserve the 18th-century Ponte Carrega and prevent its demolition.

The historical case of the floods that hit Genoa between 2011 and 2014 lends itself well to a reading framed in a multi-level perspective, but it must be considered that the social activation from below and the formation of socio-political innovation niches had a very limited impact on the regime between 2013 and 2015, seeing even this impact fade in the following years. As of today, the political authorities and electoral dynamics in Genoa and Liguria are moving in the opposite direction to that urged by the most advanced activations in the immediate post-flood period. In accordance with the categorisation in use in the interpretation of socio-technical transitions, readapted to the more or less radical transitions in the geopolitical sphere, we identify the following elements of analysis, at the current state of research.

Landscape

Genoa's socio-political landscape is characterized, in the years immediately preceding and following the floods of 2011[248] [249] and 2014[250] [251], by the cultural pre-eminence of secular and center-left forces (in particular the Democratic Party) and by the issue of the city's industrial decline inherited from the latter part of the 20th century, to which the major events that the city hosted (the Colombiadi in 1992, the G8 in 2001) had only partly responded, failing to keep pace with Turin as consumption pole in the north. Even the tourist industry, prominent in the Levante and Ponente regions of Liguria, is less developed, in relative terms, in Genoa. The main resisting legacy of Genoa's industrial phase is the chaotic urbanism resulting from the immigration of workers, first from the eastern Italian regions affected by the Second World War, then from the south. The urbanization of a mountainous territory close to the sea and subject to sudden heavy rainfalls[252] [253] crossed by two large streams and hundreds of rivulets, meant that much

[248] Pirlone, F., 2012, Rischi naturali e sostenibilità territoriale. L'esperienza dell'alluvione di Genova.

[249] Fiori, E., Comellas, A., Molini, L., Rebora, N., Siccardi, F., Gochis, D. J., ... and Parodi, A., 2014. Analysis and hindcast simulations of an extreme rainfall event in the Mediterranean area: The Genoa 2011 case. *Atmospheric Research*, *138*, 13-29.

[250] Faccini et al. 2015a - Faccini, F., Luino, F., Sacchini, A. and Turconi, L., 2015a. Flash flood events and urban development in Genoa (Italy): Lost in translation. In *Engineering Geology for Society and Territory-Volume 5: Urban Geology, Sustainable Planning and Landscape Exploitation* (pp. 797-801). Springer International Publishing.

[251] Faccini, F., Luino, F., Paliaga, G., Sacchini, A., Turconi, L., and de Jong, C., 2018. Role of rainfall intensity and urban sprawl in the 2014 flash flood in Genoa City, Bisagno catchment (Liguria, Italy). *Applied Geography*, *98*, 224-241.

[252] Acquaotta, F., Faccini, F., Fratianni, S., Paliaga, G. and Sacchini, A., 2018. Rainfall intensity in the Genoa Metropolitan Area: secular variations and consequences. *Weather*, *73*(11), 356-362.

[253] Acquaotta, F., Faccini, F., Fratianni, S., Paliaga, G., Sacchini, A. and Vilímek, V., 2019. Increased flash flooding in Genoa Metropolitan Area: a combination of climate changes and soil consumption?. *Meteorology and Atmospheric Physics*, *131*, 1099-1110.

of Genoa's orography was obstructed[254][255]. This was compounded by urban planning that did not take into account the danger of hydrogeological instability to which the city is exposed, with large portions of the territory built below river level and buildings constructed in the stream beds themselves[256].

Regime

Although in 2008 the Civil Protection Department had approved an intervention to secure the Ferreggiano river, between the Quezzi and Marassi districts, the PD-led local administration and the center-left and center-right 2008-2011 governments had not taken action on the matter until the 2011 flood. The latter led to the investigation against the mayor Marta Vincenzi (PD) and her conviction, and to the victory of a left-wing civic list in the subsequent elections. In 2014, when the second flood hit the city in conditions that had not significantly changed in terms of socio-technical innovations, the new mayor Marco Doria showed a similar inability to act. His administration remained indifferent to pressure from below for alternative solutions to the spillway as a technical solution to torrential flooding. The technicians in his administration decided to hold a fruitful dialogue with pieces of the Italian academic world (town planning, geognostics, architecture) through the mediation of committees that had sprung up in the area, but without this having any real impact on the administration's choices. The 2017 and 2022 elections, however, would by then have led to a victory for the center-right, which bases its vision of urban development on even more invasive works such as the new cable car, the Gronda highway project and the sky-metro.

Niches

In addition to families, residents and individuals, in 2011[257] and 2014[258] several organized groups took action to relieve homes and businesses from the pressure of the water, mud and debris accumulated during the floods, which had claimed a total of 6 lives. These included Catholic organizations such as Agesci (scout movement), which acted in close contact with the civil protection department of the government, or parishes such as the one in Marassi, which collected considerable sums for the affected businesses in the district in cooperation with the Carabinieri and the Guardia di Finanza (military and police forces). Then there were sport and para-sporting groups, such as the organized fans of the two

[254] Faccini et al. 2015b - Faccini, F., Luino, F., Paliaga, G., Sacchini, A. and Turconi, L., 2015b. Yet another disaster flood of the Bisagno stream in Genoa (Liguria, Italy): October the 9th-10th 2014 event. *Rendiconti Online Della Società Geologica Italiana*, *35*, 128-131.

[255] Faccini, F., Paliaga, G., Piana, P., Sacchini, A., & Watkins, C. (2016). The Bisagno stream catchment (Genoa, Italy) and its major floods: Geomorphic and land use variations in the last three centuries. *Geomorphology*, *273*, 14-27.

[256] Castelnovi, M. (2015). Fiume Doppio e Pugnalatore: considerazioni storico-geografiche sulle alluvioni a Genova. *Collana" Dalla mappa al GIS"(Labgeo Caraci editore, 2016-)*, 35-50.

[257] Rizza, C. and Pereira, Â.G., 2014. Building a resilient community through social network: Ethical considerations about the 2011 Genoa floods. In *ISCRAM, May.*

[258] Zamarian, M., 2022. Noi per Genova. The coordination of volunteers in the Genoa flood of 2014/Noi per Genova. Il coordinamento dei volontari durante l'alluvione di Genova del 2014.

rival city teams, Genoa and Sampdoria, who did not hesitate to collaborate on the occasion. Finally, a series of small groups linked to anti-capitalist left-wing ideologies, such as the Communist Refoundation Party and the Active Solidarity Brigades, the social centers (Buridda, Aut-Aut, Pinelli, and others), and informal collectives such as Vivere in collina in the Quezzi district.

However, the activation that appears, as a result of the research, to be the most original (and to have expressed the greatest potential and impact in the direction of a concrete proposal for socio-technical innovation) is the Molassana committee 'Amici di Ponte Carrega'. After the flood of 2011, the committee was built around a limited number of citizens in the neighborhood. They have, however, managed to independently study the possible causes of Genoa's hydrogeological disruption, to share alternative projects with urban experts, and to organize conferences and debates involving some of the technical staff of Genoa's administration. Only some of the committee's proposals were then taken up by the municipality, sometimes because they were pushed by the right-wing opposition against the left-wing mayor. On the whole, the committee, which still exists today, considers that the socio-political and socio-technical regime, as far as land management is concerned, has not been impacted by the more innovative ideas proposed: uncovering of rivers, widening of river beds, upland lamination, reforestation, restriction of major impact urban interventions, even underground such as spillways (the only solution instead adopted by the municipality).

Interaction between levels

After the floods of 2011 and 2014, in Genoa there is a debate on the solutions (not) to be adopted, and on a minimal approach to interventions or a rethinking of the overall logic of urbanization[259] [260]. The latter should include upstream interventions with a reforestation and lamination around the terraces, and the renunciation of the construction of further highways along the mountain slopes. Downstream, the uncovering of streams, their securing, the demolition of buildings too close to water flows and the renunciation of projects built along watercourses (such as the sky-meter). On the function, usefulness and urban or hydro-geological significance of the spillways on the Ferreggiano (built) and Bisagno (planned) the positions are further divided. Bibliographic and documentary research, together with interviews with 22 individuals involved in local institutions or social activism, have shown how the niche has arisen in certain groups of citizens who come from an overall logic or a local memory linked to the Marxist or libertarian left[261] that had established itself in Genoa in the 20th century (and in particular to the history of the PCI or minor communist formations of the 1970s).

Although the various committees that emerged from this cultural sphere showed very different levels of activation and analytical elaboration, some of them, such as the Amici di Ponte Carrega or Vivere in

[259] Bracco, F., Modafferi, C., and Ferraris, L., 2017. Piove, governo ladro. Emozioni e cognizione nell'analisi dei rischi a seguito di un evento alluvionale. *Sistemi intelligenti*, *29*(2), 351-370.
[260] Bonati, S., 2022. Contested flood risk reduction: An analysis of environmental and social claims in the city of Genoa. *International Journal of Disaster Risk Reduction*, *67*, 102637.
[261] Leiss, A., 2011. GENOVA, OLTRE L'ALLUVIONE. Critica marxista: analisi e contributi per ripensare la sinistra, (5), 17-22.

collina, were able to promote a debate by fruitfully interfacing with the university world, associations and politics, and the world of technicians serving local institutions[262]. The substantial failure of these alternative radical elaborations, which found no audience in either the center-left or center-right top administration officers, shows how much the relative strength of the Genoese niche was inferior, in socio-political terms, to that of other stakeholders involved : several interviewees identify the latter with the large Italian and Genoese construction companies, specialized in traditional ways of conceiving the transformation of the territory and little inclined to question the direction of their capital investments.

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7. HISTORIC EXAMPLES OF FORMAL POLITICAL PARTICIPATION

7.1. Vienna Climate Team, participatory budgeting (AT)

Vienna Climate Team (VCT) is a project established, coordinated and financed by the Vienna city government using the method of participatory budgeting in the field of climate mitigation and adaptation. Participatory budgeting enables the participation of citizens in the organization and allocation of public funds, it can be defined as "a budgeting practice built on the active participation of citizens in budgetary decisions with the aim of influencing resource allocation"[263]. In the case of the Vienna Climate Team it is implemented on a district level, with three different Viennese districts participating per year-long cycle rather than implementing the process city-wide each year. The project started in 2022 with a two year pilot phase, which served to test and evaluate the process design and its impacts[264]. After the end of the pilot phase and its evaluation, the city government decided to continue the initiative, with some procedural adjustments to further improve the process[265]. To date, VCT's participatory budgeting process has been completed in six of Vienna's 23 districts, and the third iteration of the project began in September 2024 with an additional three districts who will finish the cycle in spring 2025[266].

The idea for the Vienna Climate Team was created in 2020, when the city of Vienna participated in the "Deep Demonstrations" project organized by the European Institute of Technology's (EIT) Climate Knowledge and Innovation Community (Climate-KIC). Collaborating with the international non-profit organization "Democratic Society"[267] the city of Vienna developed a first concept for a participatory budgeting project based on preliminary research, such as an analysis of existing participatory budgeting processes in Vienna through expert interviews and several case studies. Together with stakeholders from the EIT Climate-KIC network, a first concept was developed and discussed in the 2020 post-election negotiations between the Social Democratic Party (SPÖ) and The New Austria and Liberal Forum (NEOS). The concept thus became part of the two parties' coalition agreement for the new municipal government. In 2021, a detailed implementation plan was co-developed with city stakeholders. Five stakeholder workshops were organized, and an Advisory Group with scientists, civil society groups and multipliers provided feedback on the concept and additional inputs[268]. In January 2022, Vienna's municipal council approved the project and allocated a budget of 6.5 million euros per year for two consecutive years to the pilot phase[269]. The overall responsibility for the project lies with the city

[263] Bartocci, L., Grossi, G., Mauro, S,G, *et al., 2023.* The journey of participatory budgeting: a systematic literature review and future research directions. *International Review of Administrative Sciences*, vol. 89, no. 3, 2023, p. 758.
[264] OTS, 2024. Nach erfolgreicher Pilotphase startet das Wiener Klimateam 2024 in drei neuen Bezirken. *OTS.at*, https://www.ots.at/presseaussendung/OTS_20240510_OTS0034/nach-erfolgreicher-pilotphase-startet-das-wiener-klimateam-2024-in-drei-neuen-bezirken, (accessed: 6.10.2024).
[265] Ibidem.
[266] See: https://klimateam.wien.gv.at/
[267] See: https://www.demsoc.org/projects/vienna-climate-team-wiener-klimateam-vienna-participatory-budget-on-climate-action for a description of the concept development.
[268] Democratic Society, 2022. Wiener Klimateam - Concept Development, https://www.demsoc.org/projects/vienna-climate-team-wiener-klimateam-vienna-participatory-budget-on-climate-action, (accessed: 6.10.2024).
[269] Presseservice der Stadt Wien, 2022. Archivmeldung: Stadt Wien startet „Wiener Klimateam"', Wien, Rathauskorrespondenz. https://presse.wien.gv.at/presse/2022/01/16/stadt-wien-startet-wiener-klimateam, (accessed: 14.10.2024).

administration's department for energy planning (MA 20), where a new unit and new positions have been implemented. However, up to 100% of the allocated budget can be transferred to the participating districts' councils, as the money is intended to finance the implementation of project ideas developed and chosen by citizens during the participatory budgeting process.

During the pilot phase, each year-long project cycle consisted of five distinct steps[270]. During the first phase of idea submission, anyone living in Vienna could submit their ideas for the participating districts, in line with following seven criteria: i) Positive impact on the climate, ii) social justice and community building, iii) realizable in 2 years, iv) possible under public law, v) complies with the objectives and plans of the City of Vienna, vi) ensures ongoing operation, vii) falls within the remit of the City of Vienna. During step two, these ideas were assessed by experts from the public administration for effectiveness and feasibility.
After this initial assessment, ideas that fulfilled the criteria were further developed in project and neighborhood workshops with support from city administration staff and other experts. Step four involved the formation of Citizens' Juries to decide on the project ideas to be implemented: For each district a representative group of citizens was drawn by lot and tasked to decide which ideas should be implemented with the available financial resources. During the final phase of the cycle, the chosen project ideas were implemented by the responsible city or district departments.
In 2022, the first districts to participate in the project were Margareten, Simmering and Ottakring. Some 1,100 ideas were submitted by citizens, of which around 100 were developed into project drafts, and finally 19 projects were chosen by the Citizens' Juries[271]. In 2023, the process was implemented in the districts Mariahilf, Währing and Floridsdorf, and a total of 34 projects (out of over 1,300 initial suggestions and almost 100 project drafts assessed as feasible) were chosen for implementation[272], bringing the total of projects to be implemented from the two year pilot phase up to 53. In 2024, the project cycle has been shifted to run from September to May, taking place in the districts Alsergrund, Meidling and Rudolfsheim-Fünfhaus[273].

7.1.1. Context Analysis

The initiative is situated in the city of Vienna, Austria's capital and largest city with just over 2 million inhabitants in 2023 – a fifth of the Austrian population[274]. Population development in Vienna has been characterized by strong growth in the recent past, making the federal capital one of Austria's "demographic centers". The considerable influence of international migration on Vienna's population development is evident from the population figures, which stagnate in times of low migration gains, but show strong growth in times of high net immigration from abroad[275]. Consequently, the proportion of inhabitants with non-Austrian citizenship is relatively high at 35.4%. Since the 1990s, the federal capital has grown by almost 500,000 inhabitants, which is roughly equivalent to the population of Graz and Linz

[270] See: https://klimateam.wien.gv.at/projektablauf
[271] See: (https://klimateam.wien.gv.at/klimateam-2022
[272] Krutzler, D. and Rachbauer, S., 2023. 34 Bürger-Klimaschutzprojekte werden in Wien nun umgesetzt. *DER STANDARD*, 18 December.
[273] Rachbauer, S., 2024. Das Wiener Klimateam wandelt sich. *DER STANDARD*, 10 May.
[274] MA, 2023b. Magistratsabteilung 23. *Statistisches Jahrbuch der Stadt Wien 2023.* Wirtschaft, Arbeit und Statistik. Vienna, Magistrat der Stadt Wien.
[275] Ibidem.

(Austria's second and third largest cities) combined[276]. Current population forecasts by the Vienna State Statistics Office (MA 23) expect population growth over the next three decades to be moderate compared to previous years, arriving at around 2.3 million inhabitants by 2053[277]. In terms of age structure, at the end of 2022, 19.4% of the population in Vienna was under 20 years old, 64.3% between 20 and 64 years old and 16.4% were 65 years and older[278]. Analogous to the population dynamics in Austria overall, the proportion of citizens in the 65+ age group has been rising continuously in the city, but Vienna still retains the lowest proportion of senior citizens compared to the other Austrian federal states[279].

With regard to educational background, the proportion of people in higher education (beyond A-levels) has been steadily increasing over the past years, while the proportion of people with at most a compulsory school leaving certificate and those with an apprenticeship or intermediate vocational training is falling[280]. The proportion of people who have at most a compulsory school leaving certificate and are no longer in further education remains the highest among Viennese inhabitants with non-Austrian educational qualification and a migration background from a non-EU country. However, there has been a significant decline from 47% in the first reporting period 2007-2010 to 37% in the most recent 2019-2022 period[281]. Since the 2011-2014 period, the proportion of people with intermediate vocational training such as apprenticeships in Vienna has decreased for all surveyed population groups[282]. Among other factors, this development reflects a continuing trend of children moving towards higher education: Increases can be observed in the proportion of people with higher education (A-levels or above) in almost all sections of the Viennese population. In the 2019-2022 period, the proportion of higher education among people with foreign educational qualifications who immigrated from a non-EU country was 43%, which was 13% more than in the first reporting period 2007-2010[283]. There was also a significant increase in the frequency of higher education among the Viennese population with education from Austria and a migrant background from a non-EU country: most recently, 43% had completed A-levels or further education, compared to 37% in 2007-2010[284]. A noticeable increase in higher education can also be seen among the population without a migrant background: Since the first reporting period, the proportion of higher education among this section of the population has risen from initially 50% to 60% from the 2016-2019 period and has remained at this level to date[285].

Regarding employment, since the late 2010s, Vienna's economy has been characterized by above-average employment growth, with the exception of the crisis year 2020. In 2023, Vienna's (active) employment grew by 1.8% and thus faster than the Austrian average (+1.2%): On an annual average, Vienna recorded around 903,800 active dependent employment relationships (excluding people in a valid employment

[276] Ibidem.
[277] Ibidem.
[278] https://de.statista.com/statistik/daten/studie/685349/umfrage/bevoelkerung-von-wien-nach-alter/
[279] Ibidem.
[280] MA 2023a. Magistratsabteilung 17 - Integration und Diversität, *Integrationsmonitor 2023*, Vienna, Magistrat der Stadt Wien.
[281] Ibidem.
[282] Ibidem.
[283] Ibidem.
[284] Ibidem.
[285] Ibidem.

relationship who receive childcare allowance or are doing military service)[286]. The sectors driving this growth are tourism, information and communication technologies as well as business-related and public services. In line with demographic trends, foreign nationals and older workers benefited particularly from the increase in employment. However, as labor supply grew as well, the number of unemployed persons and participants in job trainings rose by 3.0% in Vienna in 2023, the most recent unemployment rate (in the fourth quarter of 2023) being 11.0%[287].

The city of Vienna covers an area of 415 km^2 and stretches from the foothills of the Vienna Woods in the west and the Danube's water gap in the north to the edge of the flat regions of the Marchfeld, the Danube's floodplains and the Vienna Basin in the east and south. The city has a large proportion of green spaces (including parks, agricultural areas and forests), which make up almost half of its area, although the proportions within the districts vary from only ~2-15% in the inner-city regions up to 70% in the western districts[288]. Vienna's climate is characterized by its location at the transitional zone between oceanic influences from the west and continental effects from the east. Winters are relatively mild compared to other Austrian regions, which is evident in lower amounts of precipitation and longer dry periods. 2023 was the warmest year in Vienna since measurements began in 1777, with an average of 12.4°C and an associated temperature deviation from the 1961-1990 climate average of +2.7°C[289]. March, July and September were very dry, while frequent events of heavy summer rainfall and the exceptionally rainy months of April, November and December resulted in a significant increase in precipitation of 23%.

As a densely populated urban space, Vienna's per capita greenhouse gas (GHG) emissions are lower than in other Austrian regions, at ~2.7t CO_2 equivalents (CO_2-eq) in 2019 compared to ~4.5t CO_2-eq on average in the other Austrian federal states[290]. The city's efforts to further reduce its climate impact are laid out in the "Wiener Klimafahrplan"[291] (Viennese climate roadmap) which was adopted by the Vienna city council in February 2022. As described in this document, the annual GHG emissions that fall within the scope of the policy amount to around five million tons of CO_2-eq in recent years. Averaged out over a five-year period from 2016-2021, around 43% of GHG came from combustion engines in motor vehicles, just under 30% from heating systems in buildings and 10% from waste management. Around 7% each result from the use of fossil fuels for production in companies and fluorinated greenhouse gasses (F-gasses), which are used in cooling systems, for example. The remaining 3% originate from small electricity and district heating generation plants that are not subject to EU emissions trading. The share of agriculture in Vienna is minimal at 0.5%. Around 90% of the GHG emissions are in the form of CO_2 and come from the combustion of petroleum products or natural gas. According to the Vienna city government's goals, Vienna's GHG emissions are to be reduced to net-zero by 2040[292]. The Viennese climate roadmap therefore defines the following core priorities for Vienna's climate policy: (1) Reduction of GHG emissions from fossil combustion engines and gas heating systems will be prioritized; (2) phase-out of fossil fuels in

[286] Daminger, A., Huber, P. and Piribauer, P., 2024. *Bericht zur Wiener Wirtschaft - Konjunktur und Arbeitsmarkt 2023*, Wien, Österreichisches Institut für Wirtschaftsforschung.
[287] Ibidem.
[288] MA, 2023b. op. cit.
[289] Ibidem.
[290] MA, 2022. Magistratsabteilung 20 – Energieplanung der Stadt Wien, *Wiener Klimafahrplan*, Vienna, Magistrat der Stadt Wien, 2022.
[291] Ibidem.
[292] Ibidem.

the transport sector by switching to electric vehicles and by changing mobility behavior, expanding public transport and infrastructure for cycling and walking; (3) reduce heat consumption in buildings and convert to district heating and use of ambient heat plus heat pumps wherever possible. In addition, Vienna also promotes the decarbonization of city-related or city-owned infrastructure[293]: The decarbonization of electricity and district heating generation is fostered through the expansion of renewable energies in Vienna and Austria. Green gas will be utilized in future for combined heat and power plants or other high-energy uses, but not for heating and hot water, while nuclear energy is still not seen as part of the solution.

Over the course of the next few years, these ambitious goals will need to be translated into concrete steps and measures to be implemented in the city of Vienna. While the climate roadmap and other key policy documents (e.g. the Viennese "Smart City Strategy") outline many concrete steps and actions to be taken, their successful implementation will require the involvement of Vienna's citizens to ensure inclusive and sustained change. The Vienna Climate Team thus addresses two important challenges Vienna is facing. First, top-down implementation of climate change mitigation and adaptation measures without adequate inclusion of citizens often lacks the necessary speed and ambition, as political representatives fear citizens' resistance to such measures. Ensuring citizens' ongoing participation in the design and implementation of mitigation and adaptation measures can greatly speed up the process, improve the quality of decisions and empower people to become active democratic citizens. Second, while the city has implemented participatory processes before, the majority of these processes has been limited to different forms of information and consultation[294] rather than transferring actual decision-making power to citizens. Additionally, an increasing number of Viennese residents who are of voting age are not allowed to participate in national, regional or local elections: In 2023, of a total of 1,982,097 inhabitants, 560,550 (33.4%) did not have the right to elect their representatives, resulting in a considerable democratic deficit which is especially pronounced among younger people, in the age-group of 25-44[295]. VCT's participatory budgeting process, which allows all of Vienna's inhabitants to participate indiscriminately and specifically aims to involve underrepresented groups, therefore represents an important countermeasure to this increasing lack of representation and democratic participation.

From an MLP perspective, the development of VCT as a niche innovation involved and was strongly influenced by many regime level actors and events, which is unsurprising given that the CAI constitutes an example of formal political participation and is therefore strongly linked to the political regime level. The idea for VCT was conceived and developed within the framework of an EU innovation program (EIT Climate-KIC's 'Deep Demonstrations' program), which, while funded and institutionalized at the (EU) regime level, is specifically designed to foster niche innovations. During the early stages of the project, the exploration and development of the participatory budgeting idea in the Viennese context fell mainly to niche actors specializing in the fields of citizen participation and climate action, such as (non-profit) consultancies and local actors in Vienna who had previous experience with and expertise in these fields. However, for the idea to become more concrete, enter conceptual development and finally receive funding for implementation, the support of key regime actors from the Vienna municipal government and the city administration was essential. On the landscape level, this support was facilitated by the

[293] Ibidem.
[294] cf.: Arnstein, S.R., 1969. A ladder of citizen participation. *Journal of the American Institute of planners*, vol. 35, no. 4, p. 216–224.
[295] MA, 2023a. op. cit.

global “Fridays for Future” movement gaining momentum during 2019, which resulted in societal pressure on policy makers to take meaningful actions against the climate crisis. In the same vein, landscape level trends towards increased citizen participation in policy making and democratic innovation contributed to the appeal of the VCT project idea.
During the process design stage, the niche actors worked closely together with regime actors such as administrative staff and department heads, identifying challenges to the implementation of VCT’s innovative concept within the framework of Vienna’s existing political, legal and administrative structures and jointly developing solutions. Ultimately, the collaboration between niche and regime actors was incorporated into the process design itself, as citizens’ ideas are assessed by experts and administrative staff from the city of Vienna and are then co-developed together with VCT’s participants to ensure their practical feasibility and effectiveness, while the final decision-making power remains, again, with niche actors (i.e. with the respective district’s citizens, via the Citizens’ Jury drawn by lot).

7.1.2. Stakeholder Analysis

Table 7.1a provides a deeper breakdown of the stakeholders for the Vienna Climate Team initiative. The stakeholder categories that are best represented include Professionals and Institutions, showing how well-developed the involvement of specific professions and government bodies is in taking the initiative forward. A majority of these work at the local level, illustrating how the initiative is firmly anchored within the Vienna context. However, the stakeholder involvement at the supranational, namely EU, level-such as "EIT Climate-KIC" and "Democratic Society"-holds great potential for wider outcomes and interlinkages with European climate action networks.

The Power-Interest matrix in Figure 7.1a gives the stakeholders' influence and levels of engagement. Being key players, Ideator 1 (climate angle) and Ideator 2 (participation angle) have high power and interest. These could be persons or groups specializing in climate action and participative processes, respectively. With their active participation and influence, they are identified to be in the driver's seat of the process. On the other hand, context setters such as the Department for energy planning (MA 20) may have low interest despite possessing a high power and thus should be strategically challenged for assurance of support and comprehension of the goals.

Table 7.1b names stakeholders according to their influence on the initiative. What can be striking to note is that a big batch of the stakeholders are "Affected & Affecting." By this, it shows that so many of those stakeholders, such as "District councils" and "Participating citizens," are not just passively affected by the outcomes of the initiative. Instead, they are active contributors to its course and, at the same time, influenced by the developments of the course. This also evidences the collaborative and participatory dimensions of the Vienna Climate Team initiative, wherein stakeholders actively take part in shaping its track while at the same time being influenced by its output.

Table 7.1a - Stakeholders: list and main features

Stakeholder name	Category	Spatial Scale	Role	Resources	Relationship
SH1. Participating citizens	Citizens	Local	beneficiary	Knowledge	cooperative
SH2. Department for energy planning (MA 20)	Institutions	Local	target	Normative;Positional;	neutral
SH3. District councils	Institutions	Local	beneficiary, target	Positional;	neutral
SH4. EIT Climate-KIC	Intermediate bodies	Supranational (EU)	promoter	Normative;Relational;Positional;Economic;Knowledge	cooperative
SH5. Lokale Agenda 21	NGOs	Local	target	Knowledge	neutral
SH6. City councilor for climate, environment, democracy and personnel	Politicians	Local	promoter	Relational;Positional	cooperative
SH7. Political parties (city level)	Politicians	Local	third party	Positional;Economic	cooperative
SH8. Ideator 1 (climate angle)	Professionals	Local	promoter	Normative;Positional;Knowledge	cooperative
SH9. Ideator 2 (participation angle)	Professionals	Local	promoter	Normative;Relational;Knowledge	cooperative
SH10. Head of MA 20	Professionals	Local	target	Positional;	cooperative
SH11. Democratic Society	Professionals	Supranational (EU)	target	Normative;Relational;Knowledge	cooperative
SH12. Dark Matter Labs	Professionals	Supranational (global)	target	Normative;Knowledge	cooperative
SH13. Klimapuzzle	Professionals	Global/local adaptation	target	Knowledge	cooperative
SH14. Administrative staff (city level)	Professionals	Local	beneficiary/target	Positional;Knowledge	neutral
SH15. Agencies for participation and communication	Professionals	Local-national	target	Normative;Knowledge	cooperative
SH16. Steering group	Professionals	Local	third party	Normative;Positional;	neutral
SH17. Board of experts	Professionals	-	third party	Positional;Knowledge	cooperative
SH18. Brainbows	Professionals	Local	target	Knowledge	cooperative

SH19. Expert for law and budget	Professionals	Local	target	Knowledge	cooperative
SH20. GB* urban renewal city area management	Public services	Local	target	Knowledge	neutral

Figure 7.1a – Stakeholders by relevance: the Power-Interest matrix

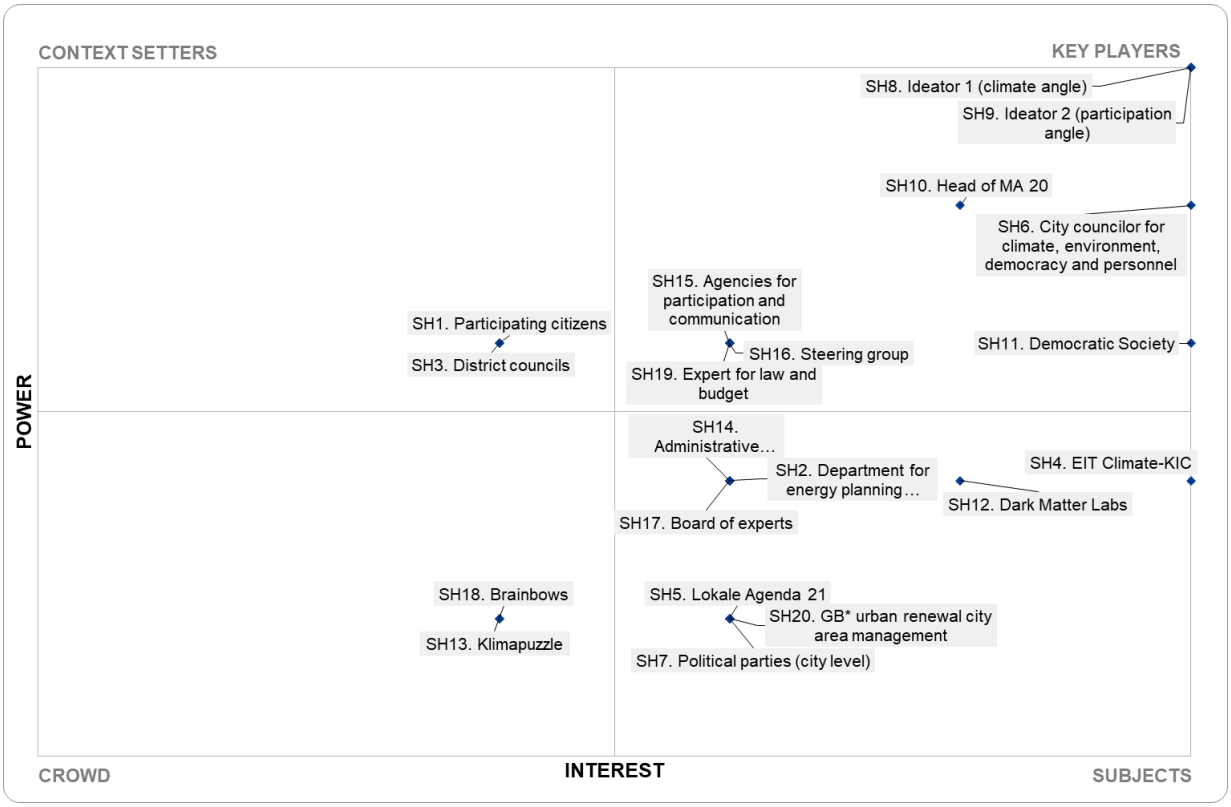

Table 7.1b – Stakeholders by impact

Impact Category	Stakeholder	Power	Impact
Affected	SH2. Department for energy planning (MA 20)	2	3
	SH12. Dark Matter Labs	2	3
	SH4. EIT Climate-KIC	2	3
	SH13. Klimapuzzle	1	2
	SH14. Administrative staff (city level)	2	3
	SH20. GB* urban renewal city area management	1	2
	SH5. Lokale Agenda 21	1	2
	SH1. Participating citizens	3	5
Affected & Affecting	SH8. Ideator 1 (climate angle)	5	5
	SH9. Ideator 2 (participation angle)	5	5
	SH10. Head of MA 20	4	4

Impact Category	Stakeholder	Power	Impact
	SH6. City councilor for climate, environment, democracy and personnel	4	5
	SH3. District councils	3	3
	SH11. Democratic Society	3	4
	SH15. Agencies for participation and communication	3	3
	SH18. Brainbows	1	1
	SH7. Political parties (city level)	1	1
Affecting	SH16. Steering group	3	2
	SH17. Board of experts	2	1
	SH19. Expert for law and budget	3	2

The key players of the VCT project can be tentatively sorted into two categories, namely, (1) (mainly) niche actors who had significant influence on the form and content of the project during ideation and conceptualization, and (2) (mainly) regime actors who were in key political or administrative positions at the time of project development to ensure the political and administrative support as well as funding of the project. Within the first group, the most significant actors are **ideator 1** and **ideator 2**, who conceived of the idea for a participatory budgeting process in Vienna within the frame of EIT Climate-KIC's "Deep Demonstrations" program. The idea development and early conceptual work were carried out with strong support from the international non-profit organization **Democratic Society**, who had a significant influence in the early phase of the project. As for the second group, invaluable political support came from **Vienna's city councilor for climate, environment, democracy and personnel**, who was newly appointed after the 2020 city elections and brought the project idea into the new city government. In addition, the **head of the department for energy planning (MA 20)**, where the "Deep Demonstrations" project was located, provided strong institutional support for the project idea, after an initial phase of skepticism due to being relatively new to the subject of citizen participation.
During the second phase of developing an implementation plan for the project, additional key actors included the agencies for participation and communication who were tasked with co-designing the participatory budgeting process and provided invaluable expertise and experience. With regard to the major challenge of bridging the gap between the (rather innovative) niche idea and its implementation within the existing regime, an important role fell to the steering group comprised of the city administration's department heads, who pointed out potential hurdles in the implementation of the project, as well as to the legal expert who supported the development of solutions to many of these challenges.

Additional high-influence stakeholders include many of the experts and professionals involved in the development of the implementation plan and the design of the participatory budgeting process. **EIT Climate-KIC** provided the funding, while the consultancy **Dark Matter Labs** contributed important

expertise, as did the board of experts, GB* and Lokale Agenda 21, the latter two providing practical experience with participatory processes in Vienna. The political parties of Vienna's city government, though not actively involved in the design phase of the project, provided political support for VCT and granted funding, while the department for energy planning constituted the project's institutional base. **Members of the administrative staff**, on the other hand, acted as important bridge-builders between the niche and regime level, as well as contributing key insights to the project development and process design.

Stakeholders who were less powerful to influence the development and design of the process, but are rather strongly influenced by it, include the **participating district councils and citizens**. Of the two, the district councils had more power and opportunity to influence the process design, but citizens can also be characterized as having a certain amount of power, as they can choose whether or not to participate in the project and contribute their ideas.

7.1.3. References

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7.2. Youth Climate Group, city of Granollers (ES)

The EYES initiative, an Erasmus + project co-funded by the European Union, started in 2019 and lasted for 2 years. It was implemented in different cities in Italy, Bulgaria, Denmark, France, and Spain. The pilot in Spain was the municipality of Granollers. The project was conceived as an opportunity to bring youth and local public administration closer in the field of energy and climate change. The purpose of the project was to empower young generations, especially those between 18 and 29 years of age, to have an active role in the local decision-making regarding climate change. In other words, it attempted to create generational justice in the environmental field. Apart from targeting younger generations, which are the ones that will be suffering the direct consequences of climate emergency, EYES had a focus on vulnerable communities. When the aim is to apply measures to fight climate change, especially on the local level, it is important to have an inclusive mindset and make decisions that will leave no one behind.

However, the participation of youth in today's decision-making is not that obvious, either because they cannot vote or because they are not aware of the mechanisms for citizen participation[296]. The EYES project wanted to mitigate this by providing specific training and skills to youngsters, so they were able to take a stand on the policies being enforced in their territories. The whole project was organized with a top-bottom approach, led by the city council. On one side, there was an Advisory Board (AB) group, made of experts, who taught young participants to gain skills and knowledge on local participation processes, soft skills, Sustainable Energy and Climate Action Plans (SECAP) objectives, climate action, among others. On the other side, the young volunteers who received the training were grouped in Youth Intervention Teams (YIT). With the gained knowledge and the guidance received, the YIT managed to write and present policy recommendations to the mayor. On 31 January 2021, the project finished. It did not have a continuity itself, but it did imply several outcomes like the project Climatubers.

It is important to mention the COVID-19 context that Spain was living at that time, which limited many outcomes of the project, for instance, to facilitate the participation of youth involved in the project in a European youth event, which could not be possible due to the pandemic.

7.2.1.Context Analysis

The **niche level** and the focus for the historical example of Co-Sustain is the case of Granollers, the Spanish city chosen to implement the project. Its objective was to implicate youth (16-29) in local climate issues, promoting the development of certain skills and knowledge through a training program led by a group of experts called Advisory Board (AB). The youth groups were called Youth Intervention Teams (YIT) and were made of 10-15 people, including vulnerable profiles and/or people from different cultural backgrounds[297]. Although in Granollers there is an initiative called Roots Forum (*Fòrum Arrel* in Catalan), which started in 2018 and focuses on environmental and local climate action for youngsters aged 12 to 16, it was the first time that the city experienced a youth collective action like the one of EYES, involving individuals between 16 and 29 years of age. Although it was a top-down approach, youth saw the opportunity to get informed on the topic and channel their motivation to mitigate climate change at the local level. Following the input received during the interview with SH7, expert with knowledge on

[296] ANEA, 2020. Ecoserveis and other partners, *Deliverable O4.1: Guidelines for Municipalities to Use Youth Participation for Improving Local Policies and Enhance Youth Engagement in Climate Action*, EYES Project.
[297] Granollers City Council, *EYES Project,* 2019. https://wp.granollers.cat/eyes/.

environment in Granollers, EYES was born with the objective to introduce the SECAP (Sustainable Energy and Climate Adaptation Plan)[298] to younger generations, as the City Council realized they were the ones less informed on the topic but, at the same time, the ones that will be living first-hand the consequences of climate change in the city. As SH7 stated during the interview, as youngsters received more information, their motivation to be part of the change increased exponentially, directly being translated into an eagerness to do as many actions as possible. Most of this desire to undertake action for the future is motivated by the fact that climate change is a specifically catastrophic matter for youngsters. This is due to its multiple negative consequences, for instance, in the human and social field (conflicts, migrations, degradation of quality life), catastrophes due to extreme weather events, scarcity of resources, etc.

Therefore, "recent studies have shown how climate change and extreme weather events have negatively affected the physical and mental health conditions of young people, including children"[299]. This is how youngsters started talking about *ecoanxiety*, a term that can be defined as the intrinsic relationship between the ecological crisis and the anxiety it created, especially to those who are informed and up to date on the matter.

The **regime layer** in the EYES initiative is Catalonia. There is some context regarding youth movements in Catalonia that should be considered. A great example is the Children and Teenagers' Council that Catalonia has since 1997. It shows the Catalan tradition and willingness to involve the voice of the youngest ones in the civic agenda. It is an initiative instigated by municipalities, where children can choose the other children who will represent them in the Council to defend their interests[300]. Regarding movements, there were specific landmarks in Catalan history, particularly from 2008 to 2015, that encouraged youth engagement in movements and protests, all of which were also part of the broader Spanish context. Examples include student protests, the feminist movement, and the *okupa* movement, although only the first type of protest will be mentioned here. The Bologna Plan in 2009 triggered significant student protests against the new education framework that the plan was proposing, which aimed to create a new structure for higher education adapted to the labor market needs, reducing the contents of university degrees[301]. Another relevant movement in Catalonia led by youth was the *Indignados* 15M protests that emerged in 2011. Although these protests were not directly related to climate issues, they highlight the robust social fabric in Catalonia, particularly among youth and students advocating for their rights. Whether addressing educational concerns or climate issues, as seen with the EYES project, Catalan youth have shown a strong commitment to activism.

The **landscape layer** in EYES is the Spanish scenario but also the European one, due to the relevance that considering the European framework has in our initiative. Therefore, both geographical spaces will be

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[298] It was approved in 2016. The plan can be accessed through the following link https://cloud.granollers.cat/index.php/s/BRZZkcluzaS6l2v.

[299] Han, H., and Ahn, S., 2020. *Youth Mobilization to Stop Global Climate Change: Narratives and Impact*, MDPI, p.2, https://www.mdpi.com/2071-1050/12/10/4127.

[300] CNIAC, 2024. *Consells locals d'infància amb representació al CNIAC.* Consell Nacional dels Infants i els Adolescents de Catalunya (CNIAC). https://pdia.blog.gencat.cat/consells-locals-infancia/.

[301] Garcia, C., 2017. *Anàlisi del moviment estudiantil a Catalunya (2011-2016). https://diposit.ub.edu/dspace/bitstream/2445/108552/1/TFG-SOC-Garcia-Carla-febrer17.pdf* .

considered in the following lines, trying to merge what happened at the Spanish and the European level. In Spain, youth movements have been numerous. Many protests that occurred at the regime level also took place across Spain. For instance, the anti-Bologna Plan protests led by university students happened simultaneously in Madrid, Andalusia, Extremadura, and Asturias[302]. Another notable example is the 15M movement in 2011, which actually began in Madrid. Talking about the culture of protests at the European level, it must be considered the history of this field. During the 80s and the 90s, in Western Europe many popular demonstrations took place in Greece, France, Italy, and Spain. In Spain, according to Jiménez, environmental protests were very popular from 1996 till 2004[303]. Several mobilizations in the 2000s pointing to the National Hydrological Plan[304] and the Prestige oil spill in Galicia were key moments when Spain saw masses of people mobilized for environmental wellbeing and protection. Sooner, in 2003, anti-war protests against the Iraq war due to the Spanish government support (led by President Aznar) were raised. Although it had a more political view, environmental organizations provided important support regarding mobilization duties[305]. More recent groups committed to take environmental action and especially meaningful for EYES are Extinction Rebellion and Climate Justice Now. At the European level, environmentalism started to gain power when international organizations like the UN adopted the climate change discourse as part of their commitment. In 1987, the Brundtland report was published by the UN, being the first-time report that declared the interdependence that nations had regarding environmental concerns and the need to work together for climate strategies and sustainable development[306]. After the Kyoto Protocol, during the UN Climate Change Conference in Paris in 2015 (COP21), the Paris Agreement was signed by 196 parties. It is a binding international treaty addressed to fight climate change and focuses on limiting global warming to 1.5ºC, as well as adapting nations to this new dangerous reality[307]

At the local level, usually young people's voices are not considered in decision-making, but a great example of youth participation in local climate strategies is the Danish Youth Climate Council. This Council consists of 14 members aged 18 to 28 and it is committed to develop recommendations that are delivered to the Minister of Future Climate Solutions twice a year[308]. In 2017, the Danish Youth Council

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[302] Eldia, 2009. *Miles de estudiantes se manifiestan contra el plan Bolonia en toda España*, El Día, 2009. https://www.eldia.es/2009-03-12/SOCIEDAD/8-Miles-estudiantes-manifiestan-plan-Bolonia-toda-Espana.htm .

[303] Rootes, C., 2004. *Environmental Protest in Western Europe. DOI:* 10.1093/0199252068.001.0001. https://www.researchgate.net/publication/287638758_Environmental_Protest_in_Western_Europe.

[304] More information available here: https://www.miteco.gob.es/es/agua/temas/planificacion-hidrologica/planificacion-hidrologica/plan-hidrologico-nacional.html.

[305] Rootes, C., 2004. op. cit.

[306] WCED, 1987. *Our Common Future (Brundtland Report).* World Commission on Environment and Development (WCED), United Nations. https://gat04-live-1517c8a4486c41609369c68f30c8-aa81074.divio-media.org/filer_public/6f/85/6f854236-56ab-4b42-810f-606d215c0499/cd_9127_extract_from_our_common_future_brundtland_report_1987_foreword_chpt_2.pdf.

[307] UNFCCC, 2015. *The Paris Agreement.* United Nations Framework Convention on Climate Change, (UNFCCC). https://unfccc.int/process-and-meetings/the-paris-agreement.

[308] EC, 2024. *Exchanges between Young People and Policy Makers on Global Issues (Denmark).* European Commission (EC). https://national-policies.eacea.ec.europa.eu/youthwiki/chapters/denmark/93-exchanges-between-young-people-and-policy-makers-on-global-issues.

was offered a seat in the Minister for Development Cooperation and Global Climate Policy, as it was considered a key actor to tackle climate issues in the country. Following these lines, it is also relevant to mention that in 2019 the UN adopted the Youth Climate Council as a partnership of the Sustainable Development Goals, and in 2019 the first Youth Climate Summit took place in New York with the aim to gather all young leaders committed with climate activism following the United Nations Secretary-General's Climate Action Summit[309]. However, as said before, usually young people's voices are excluded from the dialogues targeting climate change, mainly due to their age. This is why a new movement was born in 2018 led by Swedish activist Greta Thunberg, creating the worldwide known initiative called "Fridays For Future[310] (FFF)".

Regarding **demographic indicators,** when the project started in 2019, Granollers had a population of 61,448 inhabitants, consisting of 30,287 men and 31,161 women. That same year, Catalonia had a population of 7,681,327 inhabitants, with 3,776,171 men and 3,905,156 women[311]. Spain's total population in 2019 was 47,087,778, including 23,100,826 men and 23,986,952 women[312] [313]. It can be said that the EYES initiative is focused on Gen Z participants, as the most predominant ages in the initiatives are between 18 and 29. Following what is available in INE, in Granollers, in 2019, those between 15 and 29 were 10,413 people. So, 5.90% of the population could be classified as Gen Z, approximately, as we are also considering those between 26 and 29. Regarding the ethnic origin and foreign nationals in Granollers in 2019, there were 6,709 foreigners aged 16-64. This group comprised 3,754 men and 2,955 women[314]. According to Virgina Domingo, environmental technician at the City Council, Granollers is a city with a very rich social fabric, where at least 5% of the YIT's youngsters had a diverse cultural background. For **economic indicators,** in 2019, Granollers had a GDP per capita of 39,300 euros, according to IDESCAT. That same year, Catalonia's gross GDP amounted to 251,556.5 million euros, with a GDP per capita of 32,800 euros[315]. In comparison, Spain's GDP per capita was 26,440 euros[316]. Additionally, the disposable household income in Granollers in 2019 was recorded at 17,946 euros by IDESCAT. Regarding the **budget allocated to environmental or climate issues** in Granollers, the most relevant information we have in this sense is regarding green spaces and SECAP, the last one following the Covenant of Mayors Pact, which was accepted in 2015 with a timeframe of implementation from 2015 till 2030. SECAP is a document arranged by the municipality focused on implementing efficient measures to mitigate and adapt to climate change. One of the objectives was to reduce by 40% the greenhouse gas emissions by 2030. After the interview with SH7, it can be said that the amount of public budget dedicated to environmental issues in the city is between 1 and 2 million euros per year, with a 70%

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[309]UNEP, 2019. *Youth Climate Summit.* United Nations Environment Programme (UNEP). https://www.unep.org/events/summit/youth-climate-summit.

[310] Fridays For Future, 2019, https://fridaysforfuture.org/.

[311] IDESCAT, 2024a. *Estimacions de població.* Institut Català d'Estadística. https://www.idescat.cat/dades/obertes/ep.

[312] INE, 2024. *Población residente por fecha, sexo, grupos de edad y nacionalidad.* Instituto Nacional de Estadística (INE). *https://www.ine.es/jaxiT3/Tabla.htm?t=56936*.

[313] This data is based on the second semester of the year, starting on July 1, 2019.

[314] IDESCAT, 2024a. op. cit.

[315] IDESCAT, 2024b*. Indicadores de actividad económica: Producto Interior Bruto por municipios.* Institut d'Estadística de Catalunya. *https://www.idescat.cat/indicadors/?id=aec&n=15743&fil=43*.

[316] Expansión Datosmacro, 2019. *PIB de España.* https://datosmacro.expansion.com/pib/espana?anio=2019.

allocated to green spaces and the remaining 30% to other issues, for instance SECAP measures. SECAP investment along the years has been maintained, with no major cash flows being invested. In the whole environmental budget, however, there is no budget dedicated to mitigation and adaptation to climate change. There are, though, 3 million euros received from European projects that are dedicated to adaptation to climate change.

In this context, as a general overview of the Spanish landscape scenario, it is important to note that the economic costs of climate change in the following years are expected to be substantial but uncertain. According to the Lancet 2024 report, some scenarios predict significant expenses, including higher healthcare costs and reduced labor productivity due to heat stress. However, transitioning to low-carbon economies is likely to yield immediate economic, social, and health benefits which will outweigh the costs of inaction[317].

For **social participation** and the political turnout, in Granollers the dominant ruling party tends to be the Catalan Socialist Party (PSC). During the EYES initiative, Josep Mayoral won with absolute majority[318]and had been the mayor of the city for 17 years at the time. However, in Catalonia, the ruling party at the time was Junts per Catalunya, a pro-independence right-wing party. Its president, Quim Torra, ruled from 2018 till 2020[319]. In Spain the president in 2019 was Pedro Sánchez, from PSOE, the socialist party[320].

On the other hand, Granollers is a city with a rich social fabric, boasting numerous foundations, associations, and other social organisations. There is a strong culture of voluntary work, encompassing both social and environmental causes. Notable environmental organisations include *Granollers Pedala, Granollers en Transició, la XES, Servei Català del Voluntariat a Granollers,* and others. Additionally, *the Federació D'Associacions de Veïns i Veïnes de Granollers* participates in the European initiative *Let's Clean Up Europe*[321].

Finally, in the **ecological field**, the law that acknowledges and sets a legal framework to act towards climate emergency in Catalonia is Law 16/2017, dated August 1, of climate change[322]. Some years later, it was approved at the national level the Law 7/2021, dated May 20, of climate change and energy transition[323]. Finally, the EU regulatory framework by excellence is the European Green Deal. Focusing on temperatures and how they have risen in recent years due to global warming, it can be acknowledged

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[317] The Lancet, 2024. *The 2024 Europe Report of the Lancet Countdown on Health and Climate Change: Unprecedented Warming Demands Unprecedented Action.* https://www.thelancet.com/action/showPdf?pii=S2468-2667%2824%2900055-0.

[318] CCMA, 2019. *Eleccions municipals Granollers.* Corporació Catalana de Mitjans (CCMA). Audiovisuals. https://www.ccma.cat/324/eleccions-26m-2019/municipals/granollers/municipi/09084109600/.

[319] Generalitat de Catalunya, 2024. *Història de la presidència de la Generalitat de Catalunya.* https://president.cat/president/historia-presidencia/galeria-presidents.

[320] El País, 2019. *Resultados de las elecciones generales de 2019.* https://resultados.elpais.com/elecciones/2019/generales/congreso/.

[321] Ajuntament de Granollers, 2024. *Entitats i associacions culturals a Granollers.* https://www.granollers.cat/adreces/cultura/entitats-associacions.

[322] *Llei 16/2017,1 d'agost, de canvi climàtic.* https://portaljuridic.gencat.cat/eli/es-ct/l/2017/08/01/16.

[323] *Ley 7/2021, de 20 de mayo, de cambio climático y transición energética*. Jefatura del Estado. https://www.boe.es/buscar/act.php?id=BOE-A-2021-8447.

that in Vallès Oriental, where Granollers is classified, the annual average in 2019 was of 22,3 degrees, while in 2018 it was of 21,8 degrees[324]. In just a year, the temperature rose 0.5 degrees. Something similar happened at the Catalan level, when the highest average annual temperature recorded that year was in Ribera d'Ebre, with a temperature of 24,1 degrees[325]. Extreme meteorological weather events like the Gloria storm in 2020 have been on the rise in Catalonia, alongside severe droughts. In 2019, Spain experienced a very warm year, with an average temperature of 15.9ºC, which is 0.8ºC higher than the annual average (reference period 1981-2010)[326]. It was the sixth warmest year since records began in 1965 and the sixth warmest in the 21st century. Of the ten warmest years on record, eight have occurred in the 21st century, and six of them were in the decade 2011-2020[327]. In 2018, the annual temperature for Europe was one of the three highest on record. Summer 2018 was the warmest on record, exceeding the average by over 1.3°C, and autumn was one of the two warmest ever recorded[328]

7.2.2. Stakeholder Analysis

Table 7.2a, showing the stakeholders involved in the Youth Climate Group in Granollers, indicates that the categories of Citizens and Institutions are the most represented. This underlines the core relevance of the membership from the community and the local government bodies within the initiative. The majority of these stakeholders are also active at the local level, emphasizing the group's anchorage to Granollers.

Figure 7.2a: The key drivers of the initiative are those that have high power and high interest: YIT, Departments in the Municipality of Granollers and the Policymaker. They can probably drive the initiative as they can influence a decision and may also have an interest in its aims. On the other hand, context setters are those with moderate power and interest, such as the Advisory Board. They might not be actively involved in the day-to-day operations but have their importance in providing inputs for shaping the direction of the initiative.

In table 7.2b we observe that most of the stakeholders in the Youth Climate Group are "Affected & Affecting." There is an interplay of influence from the stakeholders to the initiative itself and vice versa; for instance, the Youth Intervention Team, Departments in the Municipality of Granollers, and EYES pilots are those influencing but at the same time being influenced by the initiative. This would point to a collaborative environment where the stakeholders, through common drives towards an objective, are at the same time influenced by its outcomes.

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[324] IDESCAT, 2019. *Termometría. Temperaturas Máximas. Comarcas y Arán.* Institut d'Estadística de Catalunya (IDESCAT). *https://www.idescat.cat/indicadors/?id=aec&n=15193&lang=es&t=201900*.

[325] Ibidem

[326] AEMET, 2019. *Resumen anual del clima en España 2019.* Agencia Estatal de Meteorología (AEMET). https://www.aemet.es/documentos/es/serviciosclimaticos/vigilancia_clima/resumenes_climat/anuales/res_anual_clim_2019.pdf.

[327] Ibidem.

[328] Copernicus CCS, 2019. *Copernicus Climate Change Service: Summary of Activities.* Copernicus Climate Change Service. https://climate.copernicus.eu/sites/default/files/2019-04/Brochure_Final_Interactive.pdf.

Table 7.2a - Stakeholders: list and main features

Stakeholder name	Category	Spatial Scale	Role	Resources	Relationship
SH1.Youth Intervention Team (YIT)	Citizens	Local	target	Normative, Relational	cooperative
SH2.General Citizens	Citizens	Local	beneficiary	Relational	neutral
SH3.EYES pilots	Citizens	Supranational (EU, world)	target	Relational	cooperative
SH4.Departments in the Municipality of Granollers	Institutions	Local	promoter	Relational, Positional, Economic	cooperative
SH5. Granollers Policymaker	Institutions	Local	third party	Normative. Positional. Economic	neutral
SH6.Advisory Board (AB)	Professionals	Local	promoter	Knowledge	cooperative
SH7. Professional with knowledge	Professionals	Local	Promoter	Relational, Knowledge	Cooperative

Figure 7.2a – Stakeholders by relevance: the Power-Interest matrix

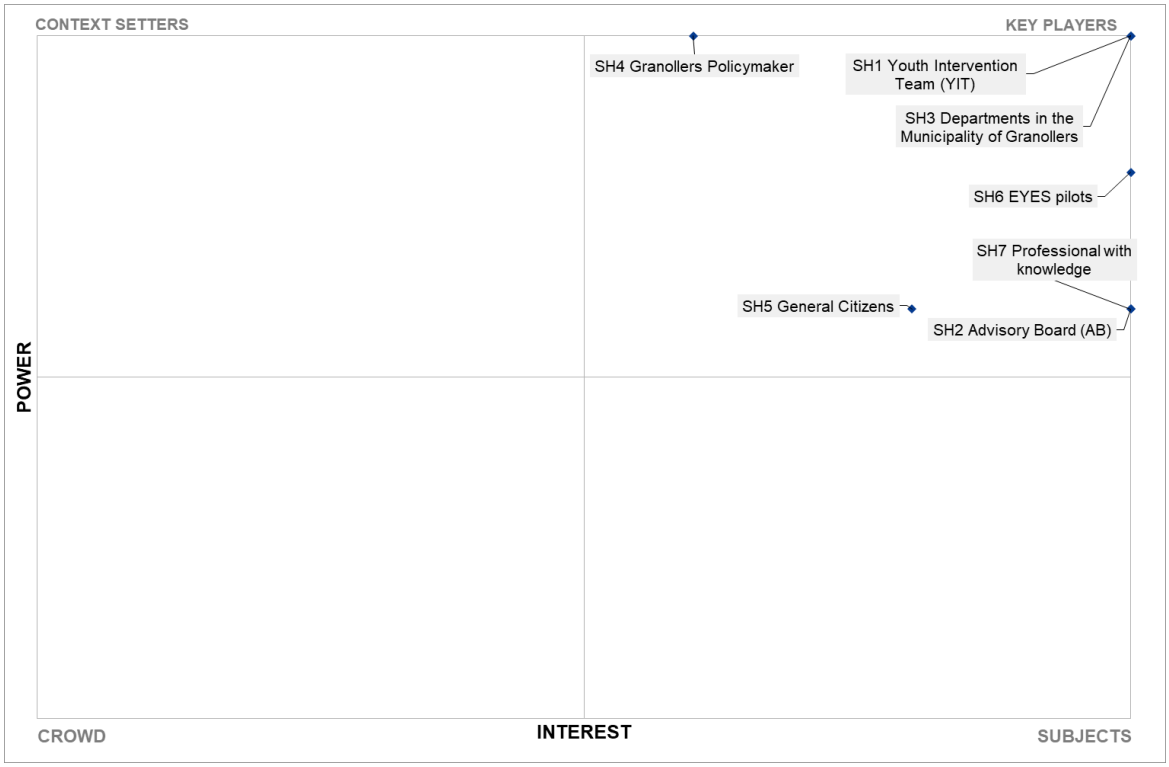

Table 7.2b – Stakeholders by impact

Impact Category	Stakeholder	Power	Impact
Affected	SH6. Advisory Board (AB)	3	3
	SH5. Granollers Policymaker	5	4
Affected & Affecting	SH1.Youth Intervention Team (YIT)	5	5
	SH2. General Citizens	3	5
	SH7. Professional with knowledge	3	3
Affecting	SH3. EYES pilots	4	5
	SH4. Departments in the Municipality of Granollers	5	4

Among all stakeholders involved in the EYES project in Granollers, seven of them have been picked, the most relevant ones for the creation and the development of the initiative.

The first four key stakeholders worth mentioning are the **Youth Intervention Team (YIT),** the **Advisory Board (AB),** the **Departments in the Municipality of Granollers**, and the **Professional** with expert knowledge, which without them, the project would not have existed or been developed. YIT members are the main target, they are youngsters (including vulnerable collectives) who formed the Youth Climate Group in Granollers and who received a dedicated training to elaborate climate recommendations to be presented to the city mayor. The AB, in turn, was a group of experts in different fields that offered a training program on climate change, climate vulnerability, local participation processes, communication abilities, etc. Finally, the Departments in the Municipality of Granollers and the Professional, inside the City Council, were key promoters and strong believers in the impact that a Youth Climate Group could have in Granollers, empowering youth to assert their rights in the fight for climate change. All four stakeholders, who had a strong power in the implementation of the project, showed a very cooperative attitude month by month due to their high interest in the project being successful, thanks to the positive impact that it would have in the local community.

On the other hand, the **policymaker** is another key stakeholder, a third party in this case. He received the YIT with the aim to hear their recommendations and acknowledge their job. Many of their recommendations were already included in the Sustainable Energy and Climate Action Plan (SECAP) that Granollers had already approved. Policymaker's attitude towards the project was good and neutral, but a position like this in local public administration represented a high power inside the project, due to its role in local decision making and the capacity to interfere with current policies. **General citizens** were clearly beneficiaries of the project and the final recommendations, because they would benefit from every climate change mitigation measure put in place in the city, reducing overall climate vulnerability and improving living conditions in the area in the short and long term. Granollers is a city with a rich social fabric, where many social initiatives and organizations are present, so it is not surprising that a project like EYES, that has a strong social component, was well received and supported within the community. As the last stakeholder there are other **EYES pilots** throughout Europe, which applied the same methodology in other European countries (Italy, France, Bulgaria and Denmark). The attitude towards all pilots was very cooperative, and the impact they had on the Catalan pilot was medium-high, providing support and sharing good practices along the project duration. The interest was very high because if the project succeeded it meant a big step and a positive impact for the overall initiative.

Overall, regarding stakeholders by impact, it can be appreciated that there is an overall balance among the three categories: affected, affected & affecting, and affecting. In each impact there are two stakeholders, unless in the impact that measures both relations, affected & affecting, where there are three stakeholders, outstanding a bit.

7.2.3. References

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7.3. Resource wise municipality (FI)

Since 2012, the municipality of Ii (North Ostrobothnia, Finland), counting roughly 10 000 residents, has been working together with local citizens, businesses, and associations to find solutions to combat climate change. The Municipal Council of Ii has decided that the objectives (linked to the carbon neutral operation of the municipality, circular economy, natural resources) and actions of the Resource-Wise Ii Roadmap will be included in the municipal budget every year. The fulfillment of these objectives is monitored, while the activities are guided by a practical workbook, the "Resource-wise Ii Roadmap". Within the municipality, the InnoHiili - Innovative low- carbon services" has been put in place with great enthusiasm and has included very diverse groups of people in the planning process. Its aim is to find new solutions that are suitable for the everyday lives of residents, reduce the carbon dioxide emissions caused by everyday transportation and support the participation of residents in planning their own services. The municipality also participated in the Climate Leaders project which, through self- assessment and peer learning, helped the participating municipalities identify concrete developments and initiated reforms in the management of climate work. The project was also helpful to clarify the roles and responsibilities of institutions, support the development of cross-sectoral cooperation, engage local actors in climate action, and plan the new strategic period. This example represents a successful process of solution co-creation between local authorities, citizens, and a wide range of stakeholders.

7.3.1. Context Analysis

The municipality of Ii in Northern Ostrobothnia was among the first municipalities in Finland to profile itself as a sustainable municipality and pursue a circular economy. Since the beginning of the efforts in 2012, the municipality has managed to cut its emissions by 14% in total compared to the year 1990 and 28% per person compared to the year 1990[329]. The current goals for the municipality are to decrease CO2 emissions 80% compared to year 2007 by the year 2030, increase recycling rate to 65%, and halving the consumption-based carbon footprint from the 2005 level[330]. The municipality has introduced a plethora of measures to involve local citizens in collective efforts to increase sustainability in the municipality. The evolution towards these efforts has its roots in the rise of awareness regarding climate change, collective climate efforts, and the financial imperatives caused by the recessions in Finland in the 1990s and again in 2008.

An important step towards raising awareness on climate change was the Kyoto Protocol, which marked the first collective international effort to reduce gas emissions in order to mitigate climate change. The protocol committed the participating countries to reduce their greenhouse gas emissions on average by 5% compared to the year 1990[331]. In addition to obligating countries to collective climate efforts, the protocol also raised international awareness about climate change. Due to the Kyoto protocol, Finland published its first climate strategy in 2001, which included ambitions to reduce carbon emissions and

[329] SYKE, 2024. GHG Emissions of Finnish municipalities and regions. https://paastot.hiilineutraalisuomi.fi/#en_kunta139 (accessed: 16.11.2024).

[330] Municipality of Ii, 2022. Resurssiviisas Ii tiekartta: Tavoitteet ja toteutuma. https://ii.fi/sites/ii.fi/files/TIEDOSTOT/ASUMINEN_YMPARISTO/ilmastotoimet/Resurssiviisas%20ii%20tiekartta%20tavoitteet%20ja%20toteuma_2022.pdf (accessed: 16.11.2024).

[331] EURLex. Kyoto Protocol. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM%3Akyoto_protocol (accessed: 15.11.2024)

developing renewable energy production[332]. Since 2001, it has become a practice for every government to make an energy and climate policy strategy during its term. In addition to climate action becoming a part of national strategies, climate change became an increasingly visible topic on the Finnish national media, thus increasing public awareness about climate change and sustainability[333]. Later in 2015, Finland passed its first climate law, which included the long-term greenhouse gas emission target of 80% by 2050 compared to 1990 levels[334]. In 2022 prime minister Sanna Marin's government updated the law and the new goal now was for Finland to be carbon neutral by the year 2035[335]. The law included the obligation for municipalities to prepare a climate plan for every council term[336] [337].

In addition to the introduction of the national climate strategy and rise in awareness regarding climate change, external financial shocks influenced the development of the historical example by creating a financial imperative to find new ways to attract businesses and make savings. Finland has experienced two major recessions since the 1990s, which both influenced the municipalities' economies and their abilities to cover the costs of mandatory expenses, such as healthcare and education. The recession in the early 1990s, which was caused by a bursting of a financial bubble[338] [339], affected the municipalities' economies and the need to make savings in mandatory costs became increasingly important. Another financial shock occurred again in 2008, when the international market crash caused a severe recession in Finland[340], thus causing significant strains to the public economy and to municipalities due to rising unemployment and decreased economic activity.

Therefore, the main developments on the international (landscape) and the national (regime) levels in this historical example were the raised awareness of climate change and national efforts to curb carbon emissions and the shocks to the Finnish economy caused by the recession in the early 1990s and again in 2008. At the niche level, these developments manifested as sustainability becoming an innovative way to combine climate mitigation, attracting businesses to the municipality and making savings by switching to renewable energy. The planning of the sustainability work has its roots already in the late 90s and early 2000s, even though the municipality started to strongly profile itself in sustainability when it joined the Finnish network of carbon neutral municipalities (HINKU) in 2012. The main motivations behind the

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[332] The Finnish Government. 2001. The National Climate Strategy 2001, p.9,11. https://tem.fi/documents/1410877/2628005/Selonteko.pdf/a0b41756-6f0f-4007-9f0a-3ee350d4a266/Selonteko.pdf.pdf (accessed: 12.11.2024).

[333] Lyytimäki, J., 2011. Mainstreaming Climate Policy: The Role of Media Coverage in Finland. *Mitigation and Adaptation Strategies for Global Change*, vol. 16, no. 6, 2011, pp. 653 – 654.

[334] Climate Law 609/2015. https://www.finlex.fi/fi/laki/alkup/2015/20150609. (accessed: 12.11.2024).

[335] Ministry of Economic Affairs and Employment, 2022, 12. https://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/164321/TEM_2022_53.pdf?sequence=1&isAllowed=y (accessed: 12.11.2024).

[336] Climate Law 10.6.2022/423. https://www.finlex.fi/fi/laki/ajantasa/2022/20220423 (accessed: 12.11.2024).

[337] However, this obligation is being revoked by Prime Minister Orpo's government in 2024 (see Ministry of the Environment 2024. https://ym.fi/kuntien-ilmastosuunnitelmat).

[338]Kiander, J. and Vartia, P., 2011. Lessons from the crisis in Finland and Sweden in the 1990s. *Empirica* 38, 53–69 (2011) p.54. https://doi.org/10.1007/s10663-010-9145-0.

[339] Jutila, M., 2011. Narrowing of Public Responsibility in Finland, 1990-2010. *Social Policy & Administration*, *45*(2), 194–205. https://doi.org/10.1111/j.1467-9515.2010.00764.x.

[340] Freystätter, H. and Mattila V., 2011. Finanssikriisin vaikutuksista Suomen talouteen , p.4. https://publications.bof.fi/bitstream/handle/10024/43466/167911.pdf?sequence=1&isAllowed=y (accessed: 12.11.2024).

beginning of the sustainability work were attracting businesses into the municipality and making savings regarding energy costs. Before the sustainability work and focus on renewable energy, the municipality's economy was in deficit for a long time. In the 2000s, Ii was among the municipalities with the biggest amount of debt[341]. In addition to attracting new businesses to the region, the municipality needed to make savings in energy costs. Ii is located on the border of Lapland in North Ostrobothnia in the Mid-Boreal zone, meaning that the summers are warm but winters cold. In this region, thermal winter (temperature is below 0 celcius) lasts from mid-November to mid-April[342]. Therefore, the costs of heating are high for the municipality. Thus, carbon neutrality and profiling as climate friendly represented a possibility to combine motivations to reduce energy costs and find a new way to stand out from other municipalities in the area. As a result, initiatives have included promoting circular economy, renewable energy use, waste reduction and advancing sustainability goals collectively.

The municipal officials, especially the municipal council and government oversaw the planning and beginning of the sustainability programme. In Finland, municipalities are governed by the municipal council and government. The implementation of the decisions is led by the hired municipal manager. The municipal council is elected through elections every four years. The candidates can be members of political parties or independent candidates. The members of the municipal council then elect the municipal government among themselves[343]. Traditionally the biggest political parties in the Ii municipal council have been the Centre Party and the Left Alliance. The Centre Party of Finland is an Agrarian-Leftist political party, and the Left Alliance is a socialist political party. On the national parliamentary level, the Left Alliance is one of the smallest parties. In the latest parliamentary elections, the Centre Party has lost a significant number of voters. However, on the municipal level they have strong support especially in the Northern rural areas of Finland. The number of women in the municipal council has been increasing over the past 15 years. Currently, 55% of the elected representatives are men and 45% women (YLE 2021). The collaboration between political groups was a vital factor in the planning, development and implementation of the sustainability measures. In the early days of the planning of the sustainability program, a steering group for sustainability was formed by the municipal council. The group has one member from each political group to make sure that the group's decisions would have the backing from all the political parties. The planning phase of the sustainability measures included visits to cities and regions in Finland where similar activities had been undertaken before. The sustainability measures started with the increasing use of renewable energy sources. Before the commitment towards sustainability, some introduction of renewable energy sources had already taken place. In the mid 90s, the first wind farms were built in Ii and the number increased quickly in the 2010s. Currently, Ii is a major provider of wind power and receives significant tax revenue from wind power companies[344], therefore

[341] Yle, 2017. Suomen lyhimmässä kunnassa ollaan yksimielisiä ja keskustellaan paljon. "Eihän täällä ole oikeastaan kuin yksi Ii-puolue 2017. https://yle.fi/a/3-9509722 (accessed: 24.9.2024).

[342] Climateguide, 2022. West of North Ostrobothnia In the Bay of Bothnia (Pohjois-Pohjanmaan länsiosa – Perämeren vaikutuspiirissä). https://www.ilmasto-opas.fi/artikkelit/pohjois-pohjanmaan-lansiosa-perameren-vaikutuspiirissa (accessed: 30.9.2024).

[343] Association of Finnish Municipalities, 2023. Toimielimet ja johtaminen (Institutions and management) 2023. https://www.kuntaliitto.fi/laki/toimieimet-ja-johtaminen (Accessed 23.2.2024).

[344] Municipality of Ii, 2021. Budget and Financial plan 2022 – 2023. 2021. (Budjetti ja taloussuunnitelma 2022 – 2023).

boosting the municipality's economy. The preference for wind power as a renewable energy source can be explained by the geography of the region. Ii is located on a low-lying river valley area near the Gulf of Bothnia, which is an ideal environment for wind power plants. In fact, the region of North Ostrobothnia is the leading area in Finland regarding wind power generation[345].In addition to wind power, the municipality had used hydropower since the 1960s. Ii is located where the second largest river of Finland Iijoki flows into the Gulf of Bothnia, and is therefore a good site for hydropower from the perspective of power production. Currently there are several hydroelectric power plants in Ii and Oulu region. One of the power plants is in the center area of Ii, which was built already in 1968[346].

Since 2012, Ii has been a member of the Carbon neutral municipalities network (HINKU), and started increasing their sustainability activities and the inclusion of Ii residents to them. During 2015 - 2019, the municipality organized many activities and events related to sustainability, became a member of the Sustainable Municipalities Network (FISU). In 2017, the municipality and even won the EU Regiostars award for innovative regional development in 2017[347], a great achievement for a municipality of 10 000 residents.

The population of Ii consists mainly of native Finnish speakers. This is typical for smaller towns in Northern areas of Finland. The Swedish-speaking population only made up 0,1% of population in the 90s and early 2000s, currently the percentage is 0,2%. Immigrants made up 0,4-0,7% of the population in the 90s and 2000s, currently the number is 0,5%[348]. What makes the population structure interesting compared to the rest of the country, however, is that the population is younger than the national average and has consistently remained so since the 90s. The population of Ii has steadily increased since the 90s[349]. This is due to multiple reasons. In 2007, the municipalities of Ii and Kuivaniemi were combined. What's more, the construction of the highway to Oulu (the 5th largest city in Finland) and more plots of land being available for sale in the municipality. This attracted more families with children into the

https://www.ii.fi/sites/ii.fi/files/TIEDOSTOT/HALLINTOPALV/Ii%20kunta,%20talousarvio%202021%20ja%20taloussuunnitelma%202022-2023.pdf (accessed: 30.9.2024).

[345] FWPA, 2021. The Finnish Wind Power Association. North Ostrobothnia to remain Finland's wind power hub property tax revenue close to 6 million (Pohjois-Pohjanmaa pysyy Suomen tuulivoimakeskittymänä – kiinteistöverotulot lähes 6 miljoonaa). https://tuulivoimayhdistys.fi/ajankohtaista/tiedotteet/pohjois-pohjanmaa-pysyy-suomen-tuulivoimakeskittymana-kiinteistoverotulot-lahes-6-miljoonaa (accessed: 30.9.2024).

[346] Holma, K., 2023. Pohjolan Voima celebrates 80 years of construction of hydropower plants in the north (Pohjolan Voima täyttää 80 vuotta, vesivoimalaitosten rakennusvaiheita https://www.rantapohja.fi/ii/pohjolan-voima-tayttaa-80-vuotta-vesivoimalaitosten-rakennusvaiheita-pohjoisessa/ (accessed: 30.9.2024).

[347] EC, 2017. REGIOSTARS Awards 2017. European Commission (EC). https://ec.europa.eu/regional_policy/projects/regio-stars-awards/2017_en (accessed: 13.8.2024).

[348] StatFin, 2024. Statistics Finland, 11re – Population according to age (1-years) and gender by area, 1972 - 2023 (11re-- Väestö iän (1-v.) ja sukupuolen mukaan alueittain, 1972-2023). Available at https://pxdata.stat.fi/PxWeb/pxweb/fi/StatFin/StatFin__vaerak/statfin_vaerak_pxt_11re.px/ (accessed: 10.9.2024).

[349] Ibidem.

area[350]. The biggest employer in the municipality is the public sector. In the private sector, with commerce being the most important industry[351].

To summarize, Ii is a small municipality which was impacted by the financial crises and needed to find a way to attract businesses and make savings. Sustainability became an innovative way to reach these goals, as climate change had become an increasingly timely topic. Starting from favoring renewable energy, the efforts were soon shared by the locals in everyday life.

7.3.2. Stakeholder Analysis

The tables below characterize the most relevant stakeholders in this historical example. Table 7.3a indicates the main features of the stakeholders. This indicates the significant involvement of government entities and organizations that bridge different stakeholder groups. Most of these stakeholders operate at the local level, demonstrating a focus on the municipality of Ii. However, there is also representation at the national level with stakeholders like the FISU-network and HINKU-network, and even at the supranational level with the European Union.

Figure 7.3a (Power-Interest matrix) visually represents the stakeholders' influence and engagement in the initiative. The key players with high power and high interest are Ii Municipal government and Ii Municipal manager. These stakeholders likely drive decision-making and implementation due to their authority and commitment to the initiative

Table 7.3b demonstrates the impact of the stakeholders. Interestingly, the majority of stakeholders are categorized as "Affected & Affecting."

[350] Yle-Kuntavaalit-Ii., 2017. (Municipal elections 2017, Ii). https://vaalit.yle.fi/tulospalvelu/kv2017/vaalipiiri/12/kunta/139 (accessed 3.6.2024).
[351] Municipality of Ii, 2021. op. cit.

Table 7.3a - Stakeholders: list and main features

Stakeholder name	Category	Spatial Scale	Role	Resources	Relationship
SH1. Micropolis Oy	Business & Industry	Local - Regional	promoter	Economic	Cooperative
SH2. Residents of Ii	Citizens	Local	beneficiary	Knowledge, Positional	Cooperative
SH3. Local citizen organizations	Civil society organizations	Local-Regional-National	beneficiary/target	Knowledge	Cooperative
SH4. European Union	Institutions	Supranational (EU, Global)	third party	Normative, Relational,Positional, Economic	Neutral
SH5. Ii Municipal council	Institutions	Local	promoter	Positional	Cooperative
SH6. Ii Municipal government	Institutions	Local	promoter	Normative, Positional	Cooperative
SH7. FISU-network	Intermediate bodies	National	third party	Knowledge	Cooperative
SH8. HINKU-network	Intermediate bodies	National	third party	Knowledge	Cooperative
SH9. Government of Finland	Politicians	National	third party	Normative, Positional	Neutral
SH10. Ii Municipal manager	Public services	Local	promoter	Normative, Positional	Cooperative

Figure 7.3a – Stakeholders by relevance: the Power-Interest matrix

Table 7.3b – Stakeholders by impact

Impact Category	Stakeholder	Power	Impact
Affected & Affecting	SH6. Ii Municipal government	5	4
	SH1. Micropolis Oy	3	4
	SH2. Residents of Ii	3	4
Affecting	SH10. Ii Municipal manager	5	3
	SH5. Ii Municipal council	4	3
	SH7. FISU-network	3	2
	SH8. HINKU-network	3	2
	SH3. Local citizen organizations	3	2
	SH9. Government of Finland	2	1
	SH4. European Union	2	-1

The emergence of the sustainability measures in Ii can be attributed to collaboration between mostly local stakeholders with some influence also from stakeholders on the national and regional level. The most represented category among the stakeholders were institutions and intermediate bodies. Additionally, business & industry, citizens, politicians, and public services were counted among the stakeholder categories. The most central resource shared was knowledge.

Among the local stakeholders, the municipal council and the municipal government of Ii have been central in the sustainability efforts, as they plan and implement them. To ensure agreement on the steps taken towards climate efforts, each political party in the municipal council selects one member also for a "Resource-wise Ii leader group", which has the main responsibility of planning the sustainability efforts to be taken by the municipality. However, according to our preliminary interviews, in recent years the rise of the right-wing Finns party has increased opposition towards further climate measures[352].

Another important local-level stakeholder in this historical example is the municipal manager of Ii. In Finnish municipalities, the municipal manager manages municipal administration and financial management. In addition, the manager has the power to speak on behalf of the municipal government. During the development years of the sustainability work, the municipality manager had a highly active role in promoting the sustainability work and in developing it.

On the local and regional level, a key stakeholder in this historical example is Micropolis Ltd., which is a company that focuses on the development and research of climate action and renewable energy and cooperates closely with the municipality. The company is responsible for the implementation of the business programme of Ii, business services, and municipal communications and marketing. Micropolis participated in the planning of the sustainability efforts and its marketing.

The membership of national networks for carbon neutral and sustainable municipalities have been important for Ii. From these memberships, the most important ones are the HINKU network (carbon neutral municipalities in Finland) and FISU network (Finnish Sustainable municipalities). The HINKU municipalities commit to reducing greenhouse gas emissions by 80% compared to the year 2007 by the year 2030[353]. In exchange, the municipalities receive expert help to reach their carbon neutrality goals, communications guidance and visibility in the media. The FISU-network aspires towards sustainable consumption and zero waste by the year 2050[354]. Similarly to HINKU-network, the FISU network also provides opportunities for the member municipalities to share knowledge and experiences regarding sustainability. According to the preliminary interviews of the municipality stakeholders, these networks are an effective way to keep up motivation for sustainability and increase visibility.

The European Union played a part in the municipality's sustainability program by giving a platform to them in the RegioStar awards in 2017. The municipality was awarded for their "Resource-wise Ii"-programme and gained international attention. According to the preliminary interviews with the municipal stakeholders, taking part in international competitions on sustainability was an effective way to improve a sense of belonging and identity among Ii residents. According to the stakeholders, it was

[352] See also a news story by Yle: "Iissä tehdään esimerkillistä ilmastotyötä ja sen avulla on säästetty paljon rahaa – joidenkin mielestä pieni kunta on tehnyt jo tarpeeksi". 2021. https://yle.fi/a/3-12065868 (accessed: 15.11.2024).
[353] Hiilineutraalisuomi.fi Hinku - kriteerit. 2023. https://www.hiilineutraalisuomi.fi/fi-FI/Hinku/Hinkukriteerit (accessed: 15.11.2024).
[354] FISU. Tietoa Fisusta, 2024. https://fisunetwork.fi/tietoa-fisusta/ (accessed: 15.11.2024).

initially challenging to convince on the sustainability actions, but over time they became more involved in and interested in them. In this regard, local citizen organizations, such as hobby clubs and associations became an important way for the municipality to spread awareness about the sustainability goals and activities of the municipality.

The Finnish Government is another stakeholder on the national level in this historical example, although not as directly as the other stakeholders listed previously. Finland published its first climate strategy in 2001. The strategy follows the aspirations of the Kyoto protocol to cut down greenhouse gas emissions. In 2015, Finland introduced a climate law which was updated in 2022. In 2022 – 2024 there was a national legislation that obligated Finnish municipalities to prepare a climate plan for every council term[355]. Therefore, the national climate legislation affected the actions that Ii was bound to take.

7.3.3. References

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7.4. Clean Transport Zone in Krakow (PL)

Air quality is the main worst-rated factor in the quality of life in Krakow and triggered significant protest before the process of banning the burning of solid fuels, which took effect in Krakow on September 1, 2019. In 2020 Limited Traffic Zones were introduced in the Kazimierz district. In May 2022, public consultations were held with residents and businesses on the draft of Clean Transport Zone (CTZ) during which more than 600 comments and questions were submitted. More than 100 people were directly involved in the process, and by drawing lots, submissions were taken from 45 residents. The regulations will apply to all residents of Krakow and those entering the city, but critics point out that the new regulations will exacerbate the problem of transportation exclusion, although the restrictions will not apply to people with disabilities and special vehicles. This represents an interesting example of the implementation of measures based on the active attitude of a significant number of city activists. The new legal framework for the CTZ has spurred other major Polish cities to bring the topic of restrictions on car traffic into the discussion and to prompt the introduction of information stickers (certificates) on emission standards.

7.4.1. Context Analysis

The Clean Transport Zone (CTZ) in Krakow was introduced in response to growing issues related to air pollution and emissions from road transport. It is an innovative solution aimed at reducing the movement of high-emission vehicles in designated areas of the city. Krakow, as one of the first cities in Poland, decided to implement such a zone, which marks an important step toward improving air quality and promoting sustainable transport. From the point of view of the Multi-Level Perspective (MLP), the development of the Clean Transport Zone (CTZ) in Krakow can be divided into three stages: Initiation (2016-2018), Expansion (2019-2021), and Stabilization and Future Prospects (2022 onwards). Initially (2016-2018), Krakow's local government, prompted by growing concerns over air pollution and the city's role as a major hub for transportation, introduced the concept of the CTZ to tackle environmental and health challenges linked to excessive vehicle emissions. At this stage, discussions were primarily local, focusing on setting up pilot areas within the city and garnering support from local businesses and residents. During the Expansion phase (2019-2021), the success of the initial pilot zones led to wider adoption of the CTZ concept across different areas of Krakow. Local activism and increased public awareness, driven by both governmental campaigns and independent environmental groups, supported the growing momentum for cleaner air and sustainable urban mobility. The diffusion of knowledge about the benefits of reducing transport emissions coincided with a rising number of studies on urban sustainability and transportation technologies, encouraging citizens and officials to push for stricter regulations. This phase saw a shift in attitude among local policymakers, influenced by public demands for healthier living conditions, which ultimately led to the introduction of more stringent measures on vehicle entry into the CTZ, based on emissions standards.

By the time of the Stabilization and Future Prospects (2022 onwards) phase, the CTZ had not only become a permanent fixture in Krakow but had also inspired similar initiatives in other cities and regions across Poland. Changes at the national level, such as updated environmental protection laws and transportation regulations, enabled municipalities to further tailor their approaches to combating transport-related pollution.

7.4.1.1. Power regime dynamic (political system, legal system, related to politicians)

Krakow's political system is part of Poland's governance structure, featuring a division of powers among legislative, executive, and judicial branches[356]. Locally, the Krakow City Council serves as the legislative body, and the Mayor functions as the executive authority[357]. The Mayor is directly elected by residents and collaborates with city departments and service[358]. Krakow is divided into 18 administrative districts, each with a degree of autonomy[359].

Following the 1989 political transformation, Krakow restored local self-governance, codified in the 1990 Local Government Act[360]. This system allows residents to participate in elections, influencing policies on economic development, infrastructure, and cultural preservation[361]. The Krakow Metropolitan Area, comprising the city and surrounding municipalities, plays a significant role in regional planning on transportation, environmental protection, and economic development[362].

The Krakow City Council is critical in decision-making, budget allocation, and investment planning[363]. Jacek Majchrowski, a left-wing politician, has served as mayor for five terms since 2002—the longest tenure in the city's history[364]. The dualistic system between the City Council and Mayor impacts local governance through cooperation or tension[365]. The city's districts and Metropolitan Area are essential in executing plans aligned with broader metropolitan goals[366]. This governance structure aligns with Poland's legal framework, adhering to constitutional provisions, international agreements, and a hierarchy of laws from national legislation down to local regulations[367].

7.4.1.2. Population structure and dynamics

Before the introduction of the Clean Transport Zone (CTZ) in Krakow, the city had a specific demographic structure with dynamic population changes. As of June 2023, Krakow's population was 804,237, showing a slight increase from 802,781 in 2022. The population density was high at 2,460 people per km²[368]. Despite this growth, there was a natural population decline of 260 people in 2023[369]. The age structure indicated an aging population, with a median age of 40.7 years in Małopolska and 17.9% of individuals

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[369] GUS-Kraków, 2023b. Population Statistics of Krakow. Statistical Office in Krakow, Central Statistical Office (GUS).

aged 65 and older[370]. This poses challenges for local authorities in adapting infrastructure and social services for the increasing elderly population[371].

Despite these challenges, Krakow continues to attract migrants from Poland and abroad[372]. It is one of the few Polish cities expected to grow in the coming decades, potentially exceeding 900,000 residents by 2050, driven largely by migration. The city's appeal to domestic and international migrants, especially students and professionals, contributes to this growth[373]. In the first half of 2020, Krakow had a positive migration balance: 4,012 people moved in while 2,844 left, and migration from abroad added 246 new residents[374]. This trend is expected to continue, especially with increased migration from Ukraine following the 2022 Russian invasion[375]. Krakow's growing service sector and its role as an educational center make it attractive to young professionals[376]. Demographic changes have influenced household structures, with an increase in single-person households driven by urbanization and changing lifestyles[377]. This shift affects housing demand and urban planning[378]. In 2023, Krakow's fertility rate was 1.27 children per woman, aligning with Poland's average of 1.2624. This is below the EU average of 1.53, with France at 1.86 and Southern European countries like Spain and Italy around 1.23-1.2725. Despite the low fertility rate, Krakow's population grows due to positive migration balances[379], offsetting natural decline and reinforcing its role as a hub for both internal and international migrants, particularly from Ukraine[380].

7.4.1.3. Economy of the HE impact area

Krakow's economy features a diversified employment structure dominated by service sectors such as IT, education, and business services[381]. The city benefits from relatively low unemployment rates due to high demand for skilled workers in these areas[382]. Economic growth has increased residents' incomes, though disparities exist across different sectors[383]. In corporate and business rankings, Krakow excels. In the 2024 fDi's European Cities and Regions of the Future, it secured 1st place for business friendliness and human capital and lifestyle, 4th overall among large European cities, and 6th for economic potential. Forbes ranked Krakow 2nd in the 2023 "Business-Friendly Cities" among cities with populations over 300,000. The city remains a top destination for foreign direct investment (FDI), leveraging its rich academic

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environment and appeal to international businesses[384]. By 2023, Krakow had established itself as a leader in the IT sector, employing 55,000 specialists and becoming one of Poland's largest IT hubs[385]. Major companies like HSBC, Comarch, and Aptiv are among the largest IT employers[386]. The city boasts 19 unicorn companies—private tech startups valued over $1 billion[387]. This strong corporate presence, especially in IT and business services, drives economic growth and solidifies Krakow's role in Poland's business landscape[388]. Employment growth between 2015 and 2022 has been consistent, fueled by focus on sectors like IT and communications[389]. Krakow's labor force participation rate was 60.6% in 2023, surpassing the national average of 58.4%[390]. The unemployment rate stood at 2% in mid-2024, significantly lower than the national average of 4.1%, due to strong demand in sectors like IT, business services, and R&D[391]. Income levels in Krakow are higher than the national average, largely due to high wages in new technologies and IT sectors[392]. However, income disparities exist, with IT, finance, and communication offering higher salaries compared to accommodation, gastronomy, and construction[393]. As of mid-2024, the average monthly gross salary in the non-financial sector was 10,173.41 PLN, exceeding the national average of 8,752.89 PLN[394]. This income increase has boosted consumption, benefiting sectors like real estate and public services[395]. Krakow's industrial landscape has shifted from traditional manufacturing to modern industries focused on new technologies and creative fields[396]. Investments, particularly in technology, have fueled innovation and sustainable development[397]. The city embraces global trends like digitalization and eco-friendly practices, enhancing its economic prospects[398].

With over 130,000 students and 260 international corporations, Krakow attracts young professionals and specialists, especially in high-tech industries like IT and business services[399]. The city's focus on innovation and modern infrastructure cements its status as a top destination for domestic and international talent[400]. Despite its successes, Krakow faces challenges related to urbanization and an aging population, requiring adjustments in public policy to maintain growth[401].

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[397] Krakow Technology Park. op. cit.

[398] Krakow City Office.. op. cit.

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7.4.1.4. Socio-cultural dynamics

Krakow's socio-cultural dynamics are deeply rooted in its historical, cultural, educational, demographic, and environmental aspects. Formerly the capital of Poland until the end of the 16th century, its historical center—including landmarks like the Wawel Royal Castle and the Main Market Square—holds immense national and international value[402]. The city's multicultural past, influenced by Polish, Jewish, German, and other cultures, continues to shape its cultural landscape, preserving diverse traditions and customs[403] [404].

As a major academic hub, Krakow is home to prestigious institutions like the Jagiellonian University, founded in 1364. These universities attract students and researchers globally, contributing to a vibrant intellectual and innovative environment[405].

Social movements and activism significantly impact Krakow's socio-cultural landscape[406]. The city is a focal point for movements like environmental protection, women's rights, and human rights advocacy[407]. Notably, Krakow has implemented strict environmental regulations, such as the ban on solid fuel burning, to combat air pollution[408]. Cultural activism is strong, with numerous NGOs and community groups preserving and promoting the city's cultural heritage[409].

Tourism plays a significant role in Krakow's economy, making it one of Poland's most visited cities[410]. In 2023, Krakow attracted over 14 million tourists, surpassing Warsaw's 10 million visitors[411]. Attractions like Wawel Castle, the Main Market Square, Auschwitz, and the Wieliczka Salt Mine draw both domestic and international travelers[412]. Festivals such as the Jewish Culture Festival and the International Theatre Festival "Divine Comedy" enhance its vibrant cultural scene[413]. However, tourism raises concerns about gentrification and preserving cultural authenticity, especially in areas like Kazimierz[414].

Environmental and urban development show measurable progress, particularly in access to green spaces, water management, and air quality improvements. Krakow ranked second in the 2021 Water City Index, highlighting its efficient water management and sustainable practices[415]. Despite successes, air quality remains a challenge, though initiatives are gradually improving it[416]. Krakow and its metropolitan area host several nature reserves, crucial for biodiversity conservation and recreation[417].

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[406] Jagiellonian University. History. https://en.uj.edu.pl/en_GB/about-university/history (accessed: 14.11.2024).
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7.4.1.5. Socio-political dynamics

Krakow's socio-political dynamics are shaped by governance structures, demographic changes, economic transformations, and social activism[418]. The city operates under a dual system: the City Council acts as the legislative body, and the Mayor serves as the executive authority[419]. This structure balances power and aligns local governance with regional and national policies. After the 1989 political transformation, Krakow reinstated local self-governance, enhancing residents' influence over policies like economic development and infrastructure improvements[420].

Krakow has a vibrant civil society with active participation in social movements focused on environmental issues, women's rights, and urban development[421]. These movements have influenced policies, such as the ban on solid fuel burning to combat air pollution[422]. The city has a history of protests and demonstrations, reflecting strong civic engagement[423]. As the capital of the Małopolska region, Krakow plays a critical role in shaping regional policies in infrastructure, environmental protection, and economic development, often setting standards for neighboring municipalities[424].

7.4.1.6. Socio-technical dynamics

Krakow's socio-technical dynamics reflect its transition from traditional industries to a modern, service-oriented economy[425]. In recent decades, the city has shifted toward sectors like information and communication technology (ICT), financial services, and business process outsourcing[426]. This transformation is supported by a highly educated workforce, with strong links between academic institutions and the business sector fostering innovation and growth[427].

Urbanization presents both opportunities and challenges for Krakow, with rising population density necessitating substantial infrastructure investments[428]. Modernization efforts include expanding and improving public transportation networks—roads, trams, and buses—and advancements in digital infrastructure[429]. Environmental sustainability is a central concern due to historical air quality issues[430]. To combat pollution, initiatives include establishing the CTZ, banning solid fuel combustion, and promoting sustainable transportation options like cycling and electric vehicles[431]. The city is also expanding green spaces and enhancing waste management systems to foster a cleaner, more livable environment[432].

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[418] Krakow Development Strategy 2030. op. cit.
[419] Local Government Act. op. cit.
[420] Regulski, J., 2003. op. cit.
[421] Gazeta Krakowska. Protests in Krakow. op. cit.
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[423] Gazeta Krakowska. Protests in Krakow. op. cit.
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[430] Krakow Smog Alert. Sources of Air Pollution. www.krakowskialarmsmogowy.pl (accessed: 14.11.2024).
[431] Krakow City Office. op. cit.
[432] Krakow Municipal Green Space Authority. op. cit.

The social fabric of Krakow is evolving, marked by an aging population and an increasing number of single-person households[433]. The city attracts migrants and international students, adding to its cultural diversity[434]. These demographic shifts pose challenges for healthcare and social services, requiring adaptive strategies to meet the needs of a changing population[435].

Krakow is a cultural powerhouse within Poland and a significant player in the international tourism market[436]. Its rich history and vibrant cultural scene attract millions of visitors each year, contributing to the local economy[437]. However, the influx of tourists demands careful management to balance cultural preservation with the pressures of tourism[438].

7.4.1.7. Political and civic participation

Krakow exhibits high political and civic participation, with voter turnout in local and national elections often exceeding the national average[439]. As one of the first Polish cities to implement participatory budgeting[440], Krakow allows residents to directly influence the allocation of a portion of the city's budget, resulting in numerous community-driven projects[441]. Increasing submissions and votes highlight strong citizen involvement in local governance. The city's initiatives often set standards for neighboring municipalities. Regional collaboration is evident in projects like the Integrated Territorial Investments (ITI), aiming to improve regional connectivity and environmental sustainability[442].

7.4.1.8. Ecological characteristics

A significant effort was the 2019 ban on burning solid fuels, greatly reducing the city's chronic smog problem[443]. Along with introducing a Clean Transport Zone and expanding infrastructure for bicycles and public transport, these measures have reduced pollution and promoted sustainable transportation[444].

In waste management, Krakow implemented a comprehensive waste segregation system, supported by advanced recycling facilities and waste-to-energy plants. These initiatives minimize the environmental impact of waste and improve resource management citywide[445].

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[433] GUS-Kraków, 2023d. op. cit.
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[438] Krakow City Office. op. cit.
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[441] Krakow City Office. op. cit.
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[444] Krakow City Office. op. cit.
[445] Municipal Waste Management Company Krakow. Waste Management. www.mpo.krakow.pl (accessed: 14.11.2024).

Water resource protection is another focus, with ongoing efforts to monitor and clean the Vistula River and other water bodies[446]. Investments in sewage treatment infrastructure aim to prevent water pollution, while renaturalization projects restore the ecological functions of streams and rivers[447].

The city's influence extends beyond its borders, leading regional ecological policies[448]. Collaborating with surrounding municipalities, Krakow spearheads shared environmental initiatives like improving air quality and waste management[449]. Its policies and initiatives often serve as a model for other areas in the region[450].

7.4.2. Stakeholder Analysis

This part of the analysis focuses on the stakeholders involved in the Clean Transport Zone (CTZ) project. Table 7.4a identifies a diverse group of stakeholders representing different sectors of society. Politicians and NGOs emerge as the most prominent categories, reflecting the importance of both government decision-making and citizen engagement on environmental issues such as air quality. Most of these stakeholders operate at both local and national levels. This multi-level governance structure suggests that successful implementation of the CTZ depends on cooperation and coordination between different levels of government and civil society organizations. Table 7.4a also shows the nature of the relationship between different stakeholders and the CTZ. While many stakeholders maintain a collaborative relationship, some, particularly civil society groups, exhibit a more conflictual attitude. This suggests that the CTZ faces strong resistance from some groups, especially those who perceive regulations as negatively affecting their lives or activities.

Reading the matrix of power and interests (Figure 7.4a), it is worth noting the high importance of local government actors: City Mayor and City Council. NGOs, such as the Krakow Smog Alarm, are also important actors. Not only do they have a strong influence on decisions related to the introduction of new regulations, but it is also politically important that the process is successful.

Table 7.4b sheds light on the influence of different stakeholders on the CTZ. The majority of stakeholders were classified as ‘influential’, indicating that they have a significant impact on CTZ implementation and outcomes. This observation is consistent with the earlier finding that the majority of stakeholders operate at the local level, suggesting that local actors, such as the Public Transport Authority and the city mayor, have significant power in shaping the CTZ trajectory.

The future success of Krakow's CTZ depends on effective collaboration and communication between these diverse stakeholders. Balancing the needs and concerns of each group requires a transparent decision-making process and a willingness to adjust policies based on feedback and evaluation. Public acceptance is crucial to the long-term sustainability of the CTZ. The next two years will show whether this transformation can be achieved. Given the state of current work, it is difficult to determine whether a full evaluation will be possible during the COSUSTAIN project.

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[446] Municipal Waterworks and Sewerage in Krakow. Water Resource Protection. www.mpwik.krakow.pl. (accessed: 14.11.2024).
[447] Krakow City Office. op. cit.
[448] Krakow Metropolitan Association.op. cit.
[449] Krakow City Office. op. cit.
[450] Krakow Development Strategy 2030. op. cit.

Table 7.4a - Stakeholders: list and main features

Stakeholder name	Category	Spatial Scale	Role	Resources	Relationship
SH1. Foundation for the Promotion of Electric Vehicles (FPPE)	Business & Industry	National	promoter	Relational, Knowledge	cooperative
SH2. Polish Alternative Fuels Association (PSPA)	Business & Industry	National	third party	Relational, Knowledge	cooperative
SH3. Citizens_of_the_District_I-III	Citizens	Local	beneficiary/target	Relational	conflictual
SH4. Association_Stare_Podgórze	Civil society organizations	Local	target	Relational,	conflictual
SH5. Otwarta Wieliczka Association	Civil society organizations	Local	target	Relational	conflictual
SH6. Kraków_Smog_Alarm	NGOs	National	third party	Normative, Relational, Positional, Knowledge	cooperative
SH7. Clean Air Fund (until_2020)	NGOs	National - Supranational	promoter	Relational, Economic, Knowledge	cooperative
SH8. European Climate Foundation	NGOs	National - Supranational	promoter	Economic, Knowledge	cooperative
SH9. Piotr Skarga Association (nieoddamymiasta.pl)	NGOs	National	target	Relational	conflictual
SH10. Mayor_City	Politicians	Local	promoter	Normative, Relational, Positional	cooperative
SH11. Deputy_Mayor_for_City_Infrastructure	Politicians	Local	promoter	Positional, Knowledge	neutral
SH12. President of the association Cities for Bicycles	Politicians	National	beneficiary	Knowledge	neutral
SH13. Ministry_of_Climate_and_Environment	Politicians	National	third party	Normative, Relational, Positional, Economic, Knowledge	cooperative
SH14. Councillors_of_Districts_I,II	Politicians	Local	target	Relational, Positional	neutral
SH15. City_Council_of_Cracow	Politicians	Local	promoter	Normative, Relational, Positional, Economic	cooperative
SH16. ‘Altrans’ Transport Systems Planning and Design Studio (consulting)	Professionals	National	third party	Knowledge	neutral

Stakeholder name	Category	Spatial Scale	Role	Resources	Relationship
SH17. International Council on Clean Transportation	Professionals	National - Supranational	third party	Knowledge	cooperative
SH18. Public_Transport_Authority_of_Krakow	Public services	Local	promoter	Normative, Positional, Economic, Knowledge	cooperative
SH19. Krakow University of Technology	Research	Local-Regional -National	third party	Relational, Knowledge	cooperative

Figure 7.4a – Stakeholders by relevance: the Power-Interest matrix

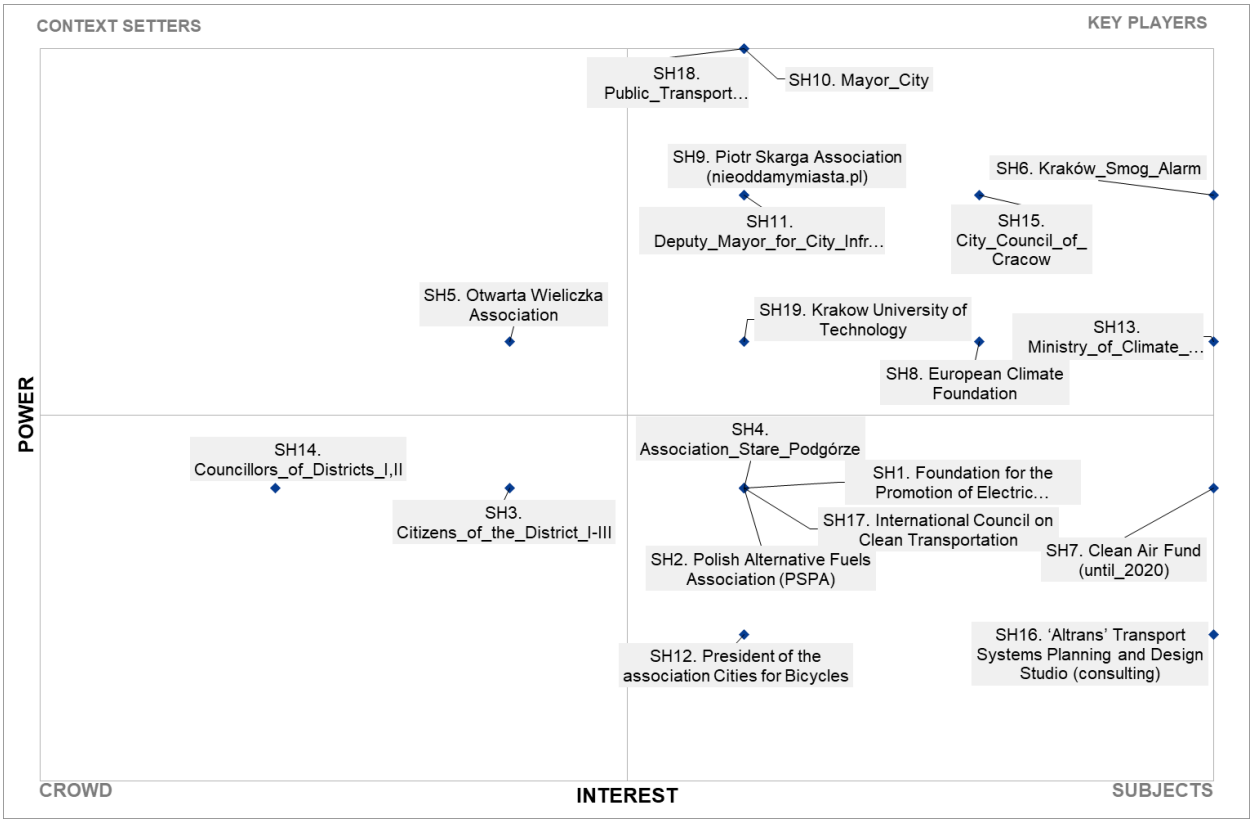

Table 7.4b – Stakeholders by impact

Impact Category	Stakeholder	Power	Impact
Affected	SH4. Association_Stare_Podgórze	2	-3
	SH3. Citizens_of_the_District_I-III	2	-4
Affected & Affecting	SH9. Piotr Skarga Association (nieoddamymiasta.pl)	4	-4
	SH5. Otwarta Wieliczka Association	3	-3
	SH1. Foundation for the Promotion of Electric Vehicles (FPPE)	2	2
	SH16. 'Altrans' Transport Systems Planning and Design Studio (consulting)	1	1
	SH12. President of the association Cities for Bicycles	1	1
Affecting	SH18. Public_Transport_Authority_of_Krakow	5	1
	SH10. Mayor_City	5	-1
	SH11. Deputy_Mayor_for_City_Infrastructure	4	2

Impact Category	Stakeholder	Power	Impact
	SH6. Kraków_Smog_Alarm	4	1
	SH15. City_Council_of_Cracow	4	-1
	SH19. Krakow University of Technology	3	1
	SH13. Ministry_of_Climate_and_Environment	3	1
	SH8. European Climate Foundation	3	1
	SH17. International Council on Clean Transportation	2	1
	SH7. Clean Air Fund (until_2020)	2	1
	SH2. Polish Alternative Fuels Association (PSPA)	2	1
	SH14. Councillors_of_Districts_I,II	2	-1

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7.5. Green zones for recreation and community spaces in Tartu County (EE)

A formerly undeveloped area, around a previous Soviet military airport just bordering the city of Tartu, has been going through major transformations from military-industrial functions to green recreation areas, which now offer a wide variety of green-oriented recreation opportunities and infrastructures.

The need to develop a good living environment and to create a sense of community has risen from rapid suburbanization: the case site is a new post-2000 suburban neighborhood with mixed housing types of multi-apartment buildings as well as detached houses, and with extensive growth of population during the last 20 years - currently 3.5 thousand inhabitants within 10.4 km².

Innovative participatory policymaking activities, such as idea brainstorming events, co-creation of interventions and planning the outputs, have been conducted together with active residents. Different participatory ventures organized by the local government have been carried out, such as meetings with residents and stakeholders to plan the whole area, architectural competition to build a community house and an educational center. Different stakeholders, such as NGOs, private companies, and residents have been involved in these ventures. Residents who have participated have diverse socio-economic and ethnic backgrounds and represent different age and gender groups.

Small but growing number of people joining community initiatives in creating and maintaining the public areas (e.g., taking part in planting), which starts to enhance identity creation and contributes to place-making.

This represents an interesting example of new suburban developments without the history of community identity - a challenge to engage residents. Also an example of how a local government can promote a participatory process including diverse profiles of people and stakeholders to design and implement green innovations.

7.5.1. Context Analysis

7.5.1.1. Raadi (Tartu municipality) - Geographical and Territorial Characteristics

Raadi settlement is located near the city of Tartu, and it is the largest settlement in Tartu municipality with approximately 3.500 inhabitants, in the area of 10.4 km² (2024). Tartu municipality has a territory of 742 km², and it is located in the northern part of Tartu county. Raadi settlement is a new post-2000 suburban area with mixed housing types and extensive growth of population during the last 20 years, with also several locations of industry and businesses. Raadi area is partly a former brownfield site as it is located in and around the former Soviet military airport, underused since the withdrawal of Soviet troops, and the surrounding empty fields.

The land ownership of Raadi settlement has been split between different private owners, municipality and the state. There is a high pressure for the residential developments in the area. The closest regional center is the city of Tartu, where many important services (health care, culture, secondary and vocational education, higher education and research), and trade and transport hubs are located – Raadi is functionally related to the city of Tartu. The area has developed mainly into a commuting zone for people working in Tartu. Prior to the CAI the area had very few public recreation/community facilities; there was

no school nor a central community space. Raadi settlement, divided into three spatially divided clusters, lacked a central place. Currently, an unique wooden building with school, kindergarten and community center is being developed and planned to be built in a few stages within 2025-2026. Raadi people "commute to Tartu to consume and to Raadi to sleep" (interview with a local government (LG) specialist, 26.09.24).

There is a public kindergarten located in Raadi, but it is not offering enough places for local kids. New light traffic roads have been built to Raadi for sustainable mobility. The demand-based public transport connections have been developed. Important national highways as well as Tallinn-Tartu railway line pass through Tartu municipality. A bottleneck related to transport is the poor accessibility to the city of Tartu – the roads leading from the highly populated Raadi to the city of Tartu, where most of the residents go to school and work, are congested during peak hours.

7.5.1.2. Population and residential dynamics

Since 2015 the population has increased in Tartu municipality – from 10.500 to 13.200 (2024), out of which approximately 25% lives in Raadi area. Accordingly, the density has also grown in the municipality of Tartu from 14.2 to 17.4 inhabitants per km². With its good suburban location near the city of Tartu (98.000 inhabitants live in Tartu) and mixed types of housing Raadi attracts young working-age people (often with children). People tend to opt for living in Raadi due to closeness to the city, more favorable real estate prices and/or a better living environment. The intensity of housing construction continues to be high although in 2022-23 economic crises have produced some setbacks, as the population is predicted to grow.

This is due to a positive migration rate (especially in younger age groups) as well as a positive birth rate. The natural fertility rate of Tartu municipality has remained relatively stable and positive during the last five years. In terms of the age structure, Tartu municipality is dominated by 25-45 year olds, and consequently, children between 0-10 years. There are slightly more men than women within the population.

The population developments directly link to the residential developments. The construction of detached houses has been stable over years, but the development of apartment buildings has increased significantly. 3 to 5 floor apartment buildings dominate in the residential construction, followed by terraced and detached houses.

7.5.1.3. Socio-cultural issues

Historically, Raadi settlement has been the center of cultural and economic life as the heart of the manor of the historic Baltic German landlords; in the 20th century, it was home to the collections of the Estonian National Museum and then to the military aircraft of the USSR. In the 21st century, the new building of the Estonian National Museum is directing the further development of the Raadi area. Many traditional cultural events take place in Tartu municipality although the lack of space for organizing cultural events is one of the pressing issues.

However, being a new post-2000 suburban area, a local government has utilized numerous methods and various innovations with the aim to rope in the residents of Raadi to create more of a sense of

place-based community and a path to organizing more cultural events within the community as well. Participatory initiatives are led, developed and implemented by the local government, to engage residents step-by-step and improve the living environment and green infrastructure in the area. According to the interview with a local government specialist, there are no non-profit organizations registered in Raadi by Raadi residents, no applications for funding, for initiatives nor for events (interview with LG specialist, 26.09.24). In their interview, a Raadi resident pointed out that since they do not have a leader or activist in Raadi who would initiate events, they expect the local government to organize events for them. To this day, most of the events organized in Raadi area are made to happen by the local government and not by people living there. That might be the reason for not participating in the community events, the feeling of unfamiliarity which one of the local residents describes:. “I feel like everyone is a stranger, I assume that most people taking part would be from an older generation, but I don't really know... it's possibly biased” (25.09.24).

Building a community is a task in the eyes of some of the local people and also the local government suggesting that they value every progress in Raadi towards building a local identity. They are also hopeful that the new school and community building would give Raadi people a space to gather and organize locally in the near future.

7.5.1.4. Power Regime and Governance

The ‘90s and ‘00s marked the transition from authoritarian practices to democratic governance practices. The completion of land reform by 2000 favored the further development of private transactions with land. Private developments and capital gains were supported by the general framework of neo-liberal planning regulations and strategies. Private developers have been the main actors driving the process of new construction (land mostly in private ownership) while the local government has been developing a strategic vision and providing the public services and infrastructure.

The national legislative framework on planning and construction improved over time and the new laws from 2015 already provided a more complete legal framework for defining construction activities and land use on the local level. On that level, a more strategic planning vision was introduced in early 2020s in Tartu municipality. Negotiations between the local government and private developers on developing social and green infrastructure have become more successful over time as well. Tartu municipality development plan 2022-2030 (2024) and the new zoning plan from 2022 became clearer manifestation of agreed strategic spatial vision between stakeholders and of integrated development principles (designating the networks of infrastructures, green areas, recreation zones, social infrastructure, and by setting stricter conditions on the use and construction of the planning area).

7.5.1.5. Public Participation and Community Activism

Overall, the planning culture has developed to favor more participatory practices in planning over the last twenty years (regulated by the planning legislation). People in Raadi, however, tend not to be socially active and often also distance themselves from each other. People living in apartment-houses tend to be especially ‘unsocial’ with their neighbors – “most people do not go out for community events or for any type of socialization“ (Raadi resident for 20 years, 25.09.24). The lack of steady active participation in the neighborhood by residents was mentioned also by the local government specialist. The resident claimed in the interview that most people in Raadi are so engaged in their own life and problems, that there is no

time to be active in the community, sometimes no time to even think about having a community. “People have multiple jobs just to get by.” (25.09.24)

Local government is trying to carry out many consultations and discussions with landowners, entrepreneurs and residents to come to a mutual understanding of the local needs and preferences. New digital and social innovations to engage residents in local development activities have been applied by the local government (such as digital web apps for sharing information, social media platforms, workshops, and new procedures).

2017 was the year of a considerable change in the communication between LG and residents in Raadi (interview with LG specialists, 27.05.24). The earlier closed style of communication changed. Local governments, in their own words, established a more inclusive approach to cooperating with people, learning about their needs and visions, and acting on the discoveries. Specialists find the real-estate boom of those years and the inclusive budget system to be the main reasons for accelerating better communication bringing about “the situation where everyone won”. (LG specialists 27.05.24) Another interview offered an opposing view that Raadi people do not have an active dialogue with the local government. Furthermore, apparently, nearby villages (e.g. Kõrveküla) tend to resent Raadi people and the events in Raadi neighborhood, considering them to be “cityfolks” (26.09.24).

Practical steps undertaken by LG prove some progress: planting trees and bushes with residents at Majoraadi park, painting benches, planning playgrounds and co-organizing a green recreational area, Mõisavärava park. Using web applications for participatory practices has turned out to be quite successful. Local government`s innovative action has a slow impact on community engagement. A Raadi resident in their interview mentioned that people tend to come out somewhat more for the events that include the whole family and take place outdoors (e.g. orienteering in the neighborhood, treasure hunt with a printed map or some other type of game in nature) - “one can also bring their pets!” (25.09.24.)

Analysis of Raadi residents Facebook group (over 6K members) shows that the main reason people are currently connecting are lost cats. Aside from Facebook, people find information on activities and gatherings in the municipality newspaper Tartu Valla Kuukiri. Although this is meant to be a monthly, and “everyone reads it”, according to both the residents and the local government representatives, the timing of this newspaper is unfavorable to sharing info on activities in time for people to join these activities.

7.5.1.6. Economic Situation and Employment

Tartu county and the city of Tartu are integrated economically and in terms of the labor force. The service sector provides 2/3 of the employment in the county. The technical as well as transport infrastructure is well developed, supporting the development of the enterprises (e.g., wholesale and retail trade companies as well as manufacturing and professional, scientific and technical activities) in the area. Most companies operate in the field of construction (170 companies), whereas the most paid workers were employed in the manufacturing industry.

The area has been experiencing extensive development of real estate, which brings in new residents at a fast pace. The demand for better social infrastructure (kindergartens, schools) and technical infrastructure (roads, water and sewerage, digitalization, etc.) has increased rapidly. In Tartu municipality 25-49 years olds are the largest age group, so the municipality's residents are peak taxpayers and therefore the income of the local government is relatively good. The share of the working age population

who earns gross income has increased over the last years (Tartu municipality development plan 2022-2030). The average gross salary in Tartu municipality was 1749 euros in 2023 which exceeds the average of Estonia. Municipal revenues from economic activities have increased over the last years (1.6 times from 2018 to 2024).

7.5.1.7. Ecological characteristics

Approximately 20% of the total area of Tartu municipality is protected for its rich water bodies and changing natural landscapes. A smaller nature reserve is also located in Raadi settlement. The general plan of the municipality of Tartu defines the support areas and green corridors of the green network in order to ensure the preservation and development of biodiversity (Tartu municipality development plan 2022-2030) while the general plan of the Tartu municipality envisages the increase of green areas in densely populated areas. The air quality in the municipality is considered relatively good.

New residential development in the vicinity of the city of Tartu, however, brings environmental risks to the area – the number of motor vehicles has increased significantly (causing the spread of exhaust gasses, dust and noise); there is a constant pressure for new residential developments at the expense of natural resources. Various environmental impact mitigation measures are planned in the general plan of the Tartu municipality - protective greening in the areas that are possible sources for pollution and/or environmental hazard, increasing the proportion of greening in densely populated areas, facilitating sustainable transportation, etc. The entire territory of Tartu municipality is covered by organized waste transport. (Tartu municipality development plan 2022-2030)

In the energy and climate plan prepared by Tartu municipality, the goal of the municipality is to achieve a reduction of carbon emissions by 19% (to 70 Kt CO_2 equivalent) by 2030 compared to 2019. To achieve this, Tartu municipality has already undertaken several projects. New public buildings and extensions to, for example, kindergarten and school buildings) have been aiming for higher energy efficiency (with A energy class when possible).

Raadi area has historically been mainly industrial (dominated by the military airport). Raadi area has been polluted and covered in waste and scrap for years, but since 2015, EU and national funds have been used to develop greener infrastructure. The local government envisions transforming Raadi into a unique area with large open green spaces, also promoting biodiversity. The former Soviet military airport territory and its surroundings is still to a large extent in public hands, and can be transformed into a recreation zone. The main building of the Estonian National Museum is partly in the Raadi area. Historic Raadi mansion is being used by the museum and the open space around it is for open air events for the community. Lake Raadi is currently still not clean enough to be used for swimming, even though the past 20 years have seen several efforts to clean it.

7.5.1.8. Other Important Factors

Even though the pandemic changed people's lives on many levels, a local government specialist in their interview assured that in Tartu municipality Covid-19 enabled trying “what else is possible?”. “This unexpected lockdown really changed how things were done and made us reevaluate things, from everyday work to communication to organizing events, a lot changed during those times!” (26.09.24) The local resident in their interview confirms adjusting to the new circumstances during Covid: “I just moved

my yoga classes online and everything worked just as before, I was even surprised that this event didn't affect my endeavor that much" (25.09.24).

7.5.1.9. Conclusions and Summary

Raadi administrative unit has a vast open green space for future planning, several ongoing residential developments, rapid suburbanization with undeveloped public facilities and infrastructure. The closeness to the city of Tartu determines its current lack of identity but place-boundness and local identity seems to also go through slow but steady progress.

Initiations by residents are still rather rare, and rarely consistent. Local government is expecting residents to show more initiative and in their own words are ready to support them. Even though there has been some advancement, several characteristics, such as the relatively scattered population, non-existent communal space, so that Raadi cannot really be considered to form a tight knight community yet. The residents are still hesitant to initiate activities and expect the local government to organize and lead events and activities. Communication between the local government and CAI requires more attention, but after analyzing the interviews with different stakeholders, it seems to have lots of potential.

7.5.2. Stakeholder Analysis

From Table 7.5a, it follows that categories of "Business & Industry" and "Institutions" are dominating, which means the big private sector and governmental involvement in the project. The largest part of all the stakeholders acts at a local and regional level; there is much importance demonstrated with regard to Tartu County. However, considering the involvement of the Estonian Government and Academic Institutions in the stakeholder team, it covers national levels but also supranational levels, therefore allowing broader impacts and links with national and international policies and networks.

Power-Interest matrix (figure 7.5a), visually represents the stakeholders' influence and level of engagement in the project. The Estonian Government and the Local Government stand out as key players, holding high levels of both power and interest. Their strong influence and commitment to the project likely stem from their authority and resources, making them crucial drivers of its implementation. Context setters, possessing high power but moderate interest, include Academic Institutions and the Tartu Valla Kuukiri (local newspaper).

Table 7.5b, which examines the impact of stakeholders on the project, reveals an interesting pattern. Rather than a clear majority falling into either the "Affecting" or "Affected" categories, a significant number of stakeholders are categorized as "Affected & Affecting." This signifies a dynamic interplay of influence and impact, where stakeholders like Entrepreneurs, Academic Institutions, and the Raadi Facebook Group are not merely passive recipients of the project's outcomes.

Table 7.5a – Stakeholders: list and main features

Stakeholder name	Category	Spatial Scale	Role	Resources	Relationship
SH1. Private developers	Business & Industry	Local-Regional-National	promoter	Economic,Relational	cooperative
SH2. Entrepreneurs	Business & Industry	Local-Regional-National	promoter	Economic,Relational,Knowledge	cooperative
SH3. Local self-made entrepreneurs	Business & Industry	Local-Regional	promoter	Economic,Relational,Positional	cooperative
SH4. Residents	Citizens	Local	beneficiary/target	Relational,Knowledge,	neutral
SH5. Estonian National Museum	Institutions	Local-Regional-National	third party	Positional,Relational	cooperative
SH6. Estonian Government	Institutions	Regional-National-Supranational	third party	Normative,Positional,Economic,Knowledge	neutral
SH7. Tartu Valla Kuukiri (local newspaper)	Media	Local-Regional	promoter	Relational,Positional	conflictual
SH8. Raadi Facebook Group	Media	Local-Regional	promoter	Relational,Positional	cooperative
SH9. Sport organizations	NGOs	Local-Regional-National	promoter	Economic,Relational	cooperative
SH10. Local government	Public services	Local - Regional	third party	Normative, Relational,Positional,Knowledge	cooperative
SH11. Educational institutions	Public services	Local - Regional	beneficiary	Positional,Relational	neutral
SH12. Academic institutions	Research	Regional-National-Supranational	third party	Knowledge	cooperative
SH13. External experts	Research	Regional-National	third party	Knowledge,Positional	cooperative

Figure 7.5a – Stakeholders by relevance: the Power-Interest matrix

Table 7.5b – Stakeholders by impact

Impact Category	Stakeholder	Power	Impact
Affected	SH2. Entrepreneurs	3	5
	SH3. Local self-made entrepreneurs	2	3
	SH4. Residents	2	3
Affected & Affecting	SH12. Academic institutions	4	4
	SH8. Raadi Facebook Group	3	4
	SH1. Private developers	3	3
	SH11. Educational institutions	2	2
Affecting	SH6. Estonian Government	5	2
	SH10. Local government	5	2
	SH13. External experts	4	3

Impact Category	Stakeholder	Power	Impact
	SH7. Tartu Valla Kuukiri (local newspaper)	4	2
	SH9. Sport organizations	3	2
	SH5. Estonian National Museum	2	1

The key stakeholders in these historical examples were identified mainly by interviewing the municipality's specialists, residents of Raadi and other stakeholders, e.g. private company`s owner registered and acting nationwide as well as in the municipality. Some of the stakeholders were found through analyzing media and other publishing.

The main stakeholders in historical examples were local government, private developers and other entrepreneurs, NGOs, educational institutions, Estonian National Museum, academic institutions and the residents. Some of these stakeholders have two or more roles in the scenery. For example, the municipality`s architect is also a resident and a Raadi community`s Facebook group`s administrator.

Private developers driving the process of new residential construction are interested in cooperation with the local government on their part; they have added pressure towards the local government for obtaining the land. Developers are predominantly from the real-estate section, infrastructure buildout and other businesses.

Other entrepreneurs, for example, a nationwide gas stations chain developing mainly in Southern Estonia, have started numerous initiatives, while and around building their business – playgrounds, outdoor gyms, other sport outputs and a bakery. Company's service centers have a focus towards creating an environment for people who live in the area. The owner also shared his experience in working with the local government: "I am grateful if they are not stopping us or slowing us down, but I know they don't have many resources, so I don't expect much of a support from them" (17.10.2024). He mentioned that his main partners in initiatives are **affiliates** and **sport organizations**. Even though in the future the stations are planned to be the centers in climate and other crises, then public procurement by the **Estonian governmen**t is in place with other suppliers. Disjointedness in various endeavors is hard to accomplish with the local government: "Political situations change faster than strategies", found the business leader.

Local government develops a strategic vision, provides public services and evolves infrastructure, which in Raadi case is a challenge to keep up due to the fast pace in the growth of population. LG acknowledges the need for further collaboration with people in the Raadi area, the lack of place-based identity and urgency for offering a space and support for those rare and single initiatives to be carried out. However, the main focus over the last few years has been the planning out and building of the new education and community center with multiple functions to serve the people.

Over the last few years, **leading actors in the municipality** have gone long ways to meet the people half-way and bring support along. Municipality's **cultural specialist** has organized a few bigger gatherings and one major event with activities and performances. In her own words, if she gets to, she has preferred to use Raadi vast green space and their anonymous and disconnected community for those ideas to start

to change the situation slowly but surely. **Developers** have supported cultural specialists' ideas with money and services. In summer 2024 she created an event "Raadi Elamus!" – biggest supporters were private developers, who's interest has been to design Raadi area to be stronger and have more value for the future residents, the main target group they are building for.

Municipalities` architects, along with other LG members, have reached out to engage the residents through various endeavors. Even though they haven't gotten as active participation by the residents as they had expected, there was some interest and a few people joining in planting the trees in the area, community cleaning days etc.

Tartu Valla Kuukiri, municipality`s monthly newspaper, was mentioned in all the interviews conducted. The newspaper is the main information carrier mentioned as such by all the stakeholders interviewed. Another form of delivering information to the people of Raadi is the Facebook group for Raadi residents, which has over 6000 joined members. The information shared on both media platforms is incomparable. While the Facebook group`s content is mostly built by residents themselves and interest groups connected to them, also being extremely time-relevant, then monthly newspaper`s content is built around the local government, events and happenings they choose to present. Some interviewees have found that they are not satisfied with the topicality and neutrality of the content. One of the business people claimed: "One can find entrepreneurs and their undertakings mentioned only on the last pages, where they can buy paid advertisements".

Academic institutions have had a part in designing Raadi landscape and the infrastructure. Estonian University of Life Sciences carried out a scientific conference based on environmentally sustainable planning on three levels: city, community and building. **The Estonian National Museum** cleaned the garbage to make space for the museum area, took out 200 tons of garbage and are continuing to work together with Estonian University of Life Sciences landscape architects and infrastructure developers to design the area. The whole Raadi main street is going to be an extension of museum expeditions in the open air. As a stakeholder Estonian National Museum has a big part in adding value and designing the landscape of the current and future Raadi area.

The Estonian government was the key stakeholder in organizing the cleaning of the late airport waste area. It was only during the last economic downturn, in 2008–2011 that the relationship between the stakeholders in spatial design began to change. A third party emerged that clearly changed the previous two-way relationship between the public sector and the landowner; interested in the good development of their living environment, citizens and civic associations bringing together activists entered the stage[451].

7.5.3. References

Kljavin, K., Pirrus, J., Kurik, K-L. and Pastak I., 2020. Urban activism in the co-creation of public space. Estonian Human Development Report. https://2020.inimareng.ee/en/urban-activism-in-the-co-creation-of-public-space.html (accessed: 26.10,2024).

[451] Kljavin, K., Pirrus, J., Kurik, K-L. and Pastak I., 2020. Urban activism in the co-creation of public space. Estonian Human Development Report. https://2020.inimareng.ee/en/urban-activism-in-the-co-creation-of-public-space.html (accessed: 26.10,2024).

8. HISTORIC EXAMPLES OF ACTIVISM

8.1. Anti-nuclear movement in Austria since 1972 (AT)

The Anti-nuclear movement in Austria is a pivotal example of how public opinion, social activism, and political dynamics converge to influence first national and later European energy policy. It originated in the small municipality of Zwentendorf an der Donau in the province of Lower Austria, where the construction of the first Austrian nuclear power plant started in 1972. Influenced by growing environmental awareness and nuclear safety concerns on the landscape level, social mobilization driven by grassroots activism and supralocal networking started to intensify continuously after the first civil protest in 1970. As a last resort to the politically controversial project, a binding public referendum was held in 1978, which narrowly ended in favor of the opponents of nuclear power and led to a Nuclear Blocking Act. The later nuclear disaster in Chernobyl in 1986 had a further impact on public opinion regarding nuclear energy generation, further accelerating the transition towards a nuclear-free energy policy in Austria. By aligning its national policies with broader international goals, Austria has positioned itself as a leader in the Anti-nuclear movement within Europe and beyond, particularly in promoting critical debate on nuclear safety and regulation, nuclear waste management, and the promotion of renewable energy.

8.1.1. Context Analysis

8.1.1.1. Socio-political and economic pre-conditions. Austria's Post-War Economic Growth and Energy Demand: The Case of Nuclear Power

In the 1950s and 1960s, Austria experienced rapid economic recovery and growth, a phenomenon often referred to as the economic miracle[452]. During this period, significant investments were made in infrastructure, which were facilitated by Austria's participation in the Marshall Plan and further boosted industrial development. Key indicators of prosperity included consistent GDP growth, relatively low unemployment rates, rising exports, as well as increasing domestic consumption[453]. However, growth-oriented development put Austria's energy system under unprecedented pressure. From 1960 onwards, the country's total energy consumption increased rapidly, and like other European countries, Austria was heavily dependent on oil imports, particularly from the Middle East[454]. As public awareness of the environmental risks and economic vulnerabilities tied to fossil fuel dependency increased[455]. Nuclear advocates argued that it would enhance Austria's energy sovereignty and reduce its dependence on oil imports.

In 1956, the Austrian Research Centre for Nuclear Energy was founded, ushering in the first era of pro-nuclear energy in Austria, which lasted until the late-1960s. Nuclear power was discussed as a potential driver of economic diversification, promising job creation in engineering, construction, and

[452] Weish, P., 1988. Austria's no to nuclear power. Conference proceedings presented in Japan (Tokyo, Kyoto and Wakayama), April. https://homepage.univie.ac.at/peter.weish/schriften/austrias_no_to_nuclear_power.pdf (accessed: 07.6.2024).
[453] Statistics Austria, 2022. Austria: data, figures, facts. https://www.statistik.at/fileadmin/publications/austria_data_figures_facts.pdf (accessed: 22.9.2024).
[454] York, R., 2007. Demographic trends and energy consumption in European Union Nations, 1960–2025.
[455] Pekny, W., 2024. Interviewed by Braito, M. and Klingler, M. August 14, 2024.

nuclear research[456]. Although Austria was not a member of the European Economic Community (EEC), its involvement in the European Free Trade Association (EFTA) and other bilateral agreements exposed it to European energy policies, where nuclear energy was gaining prominence. Nuclear power was not only perceived as a solution for energy security, being framed as a high-tech and cost-effective solution it was also as a symbol of modernity and technological progress[457]. France, Great Britain, and West Germany had already invested extensively in nuclear technology, promoting it as a key pillar of European cooperation. Although Austria was not a member of Euratom, the European Atomic Energy Community, the nuclear policies of neighboring countries such as Germany and Switzerland significantly shaped the national energy discourse. This intensified further in the 1970s, when new economic challenges encouraged a review of nuclear power development. In particular, the 1973 oil crisis, coupled with rising public debt and stagflation, shook global to national energy policy. Growing concerns about energy shortages, machine shutdowns, and mass unemployment made nuclear energy also in Austria a potential solution for preventing economic collapse.

8.1.1.2. Political Support for Nuclear Power

In 1969, the location for the NPP construction in Zwentendorf an der Donau, which is located in the federal state Lower Austria, was actively promoted by the conservative Austrian People's Party (ÖVP) under Chancellor Josef Klaus in 1969[458]. Until then, the Radiation Protection Act had also been adopted and further plans for the construction of NPPs had been published. However, the final decision to build Austria's first NPP in Zwentendorf, was to be taken one national election later, on 22 March 1971, under the Chancellor Bruno Kreisky, leader of the Social Democratic Party of Austria (SPÖ). By emphasizing its role in promoting energy security and industrial growth[459], the federal nuclear strategy received strong support from major economic institutions such as the Austrian Federation of Trade Unions (ÖGB), the Chamber of Labour, the Chamber of Commerce, and the Federation of Austrian Industries.

The Zwentendorf NPP project was of particular significance. The location's industrial heritage dates to the early 20th century, when it was the site of a major munitions factory and Austria's second-largest oil refinery, both of which collapsed after World War II. The NPP, designed with a boiling water reactor of 700 MW(e) and providing 10% of Austria's electricity demand at that time, was also to revive the industrial heritage of the site. Therefore, the NPP project was not only a technical endeavor, but also a substantial socioeconomic investment involving major Austrian construction companies, such as Siemens AG and VÖST, and offering new employment opportunities[460]. On April 4, 1972, an official ground-breaking ceremony started the construction of the Zwentendorf NPP, materializing the government's commitment to nuclear power. Construction work continued at a brisk pace over the next five years. Given the scale of the investment, the majority of political and economic actors assumed that

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[456] Natter, B., 1987. Die "Bürger" versus die "Mächtigen" - Populistischer Protest an den Beispielen Zwentendorf und Hainburg. In: Pelinka, A. (ed.). Populismus in Österreich. Wien, Edition Junios: 151-170.

[457] Char, N.L. and Csik, B.J., 1987. Nuclear power development: History and outlook. IAEA BULLETIN.

[458] https://bokuprod-my.sharepoint.com/personal/c716493_office365_boku_ac_at/Documents/Context%20analysis%20AKW%20Zwentendorf_v02.docx#_ftn1

[459] Natter, B., 1987. op. cit.

[460] Högelsberger, H., 2024. Interviewed by Braito, M. and Klingler, M. August 14, 2024.

the NPP would eventually be commissioned – even though first signs of growing opposition were emerging[461].

8.1.1.3. Social participation and emerging forms of civil disobedience

The development of the broad civil society movement against the NPP Zwentendorf started with first initiatives of social participation in the early-1970s, leading to the decisive national referendum on the commissioning in 1978. Therefore, the key phase of Austria's Anti-nuclear movement fell entirely into the 13-year tenure (1970-1983) of the social democratic Chancellor Bruno Kreisky. Criticism of the political and economic establishment with regard to the federal plans for the development of nuclear energy was very rare; instead, opponents were stigmatized as enemies of progress, as "rascals"[462], as Kreisky called the activists.

The Anti-nuclear movement in Zwentendorf can be traced back to 1970, after the site for the construction of the NPP was selected and environmental activists organized a protest march with about 200 participants[463]. This initial small group of Anti-nuclear activists was to increase a thousandfold by the time of the referendum in 1978, mostly by raising public awareness on nuclear safety concerns, and connecting with other local groups of nuclear resistance. In particular, the federal government's energy plan presented in 1976, which envisaged the construction of two other NPPs in Stein/St. Pantaleon in the federal state of Upper Austria as well as in St. Andrä in Carinthia by 1990, provoked further local to regional protests. The group of Anti-nuclear activists in Upper Austria was extremely concerned about the location of the nuclear waste storage facility and succeeded to delay the start of construction and ultimately prevent it by addressing the issue publicly. Wider social involvement was also driven by media coverage on regional protest movements in the federal state of Vorarlberg, which formed between 1973 and 1975 in response to a Swiss proposal to build a NPP in Rüthi near the Austrian-Swiss border. Furthermore, international protest examples, such as the eleven-week blockade of the NPP Kaiseraugst, Switzerland, in 1975, or the mobilization of 28,000 demonstrators from various segments of the population against the NPP Wyhl in Baden-Württemberg, Germany, in 1975, demonstrated the impact of public media coverage on the national perspective of civil engagement in grassroot movements – which was not yet common in post-war Austria[464].

Until the mid-1970s, however, the Austrian Anti-nuclear movement was relatively apolitical and conservative, engaging in highly selective and low-key activities as a poorly organized group of life and environmental protectors (e.g. Naturschutzbund, Weltbund zum Schutze des Lebens)[465]. In the first half of 1976, this movement led to the formation of a nationwide alliance of Anti-nuclear activists, the

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[461] Hemmer, R. and Meßner, D., 2016. Zwentendorf – Das sicherste Kernkraftwerk der Welt. Podcast: Geschichten aus der Geschichte, GAG45. https://www.geschichte.fm/podcast/zs45/ (accessed: 19.9.2024).

[462] Keferstein, L., 2021. *Eine kurze Geschichte der Anti-Atomkraft-Bewegung in Österreich.* In: DiePresse.com. https://www.diepresse.com/5925045/eine-kurze-geschichte-der-anti-atomkraft-bewegung-in-oesterreich (accessed: 06.6.2024).

[463] Brandstätter, L., Grosser, M. and Wethner, H., 1984. Die AntiAKW-Bewegung in Österreich. In: Katzmann, W. (ed.). Umdenken. Analysen grüner Politik in Österreich. Wien, Edition Junius.

[464] Natter, B., 1987. op. cit.

[465] Ibidem.

"Initiative Austrian Nuclear Power Opponents"[466] with the following key concerns: no operation of the Zwentendorf NPP, no NPPs in Austria, and no nuclear waste storage on Austrian borders. Peter Weish (e.g.[467], a scientist and leading representative of the Austrian ecological movement), provided public information shortly after the founding of the IÖAG about the problems of operating NPPs, and warned, among other things, of the dangers of misuse and terrorist attacks on NPPs.

An increasing public Anti-nuclear sentiment started being fuelled by overarching discursive developments, emphasizing and linking nuclear power to issues of nuclear safety and environment, skepticism about progress and technology as well as criticism by peace movements regarding the proliferation of nuclear weapons. Environmental activist groups, inspired by e.g. the Club of Rome's report on the Limits to Growth (1968), argued for reducing energy consumption and investing in renewable technologies as an alternative to meet Austria's energy needs without risking environmental degradation or economic instability (Pekny, 2024). The latter was discussed in particular with regard to potential economic risks, including cost overruns, the possibility of higher government debt, and the long-term financial liabilities associated with waste management and decommissioning. In the specific case of the NPP Zwentendorf, the construction proved to be more expensive and time-consuming than originally anticipated, which led to delays and budget overruns and further fuelled public skepticism[468].

The base of active opponents of nuclear power and the range of issues covered broadened over time, particularly through the involvement of left-wing students and the participation of local communist associations (e.g. Maoistischer Kommunistischer Bund Linz). Högelsberger[469] highlights in his reflection the social diversity of the later Anti-nuclear movement, which brought together a wide range of political and social groups – "from far-left groups like Maoists and Trotskyists to conservative environmentalists". A key instrument of communication was further provided by the government's atomic energy ("Kernenergie") informational campaign, which included public symposia and debates held at universities across Austria. Contrary to the actual goal of this campaign, it turned out to be very beneficial in promoting the dissemination of the Anti-nuclear groups' views[470]. In 1977, social participation peaked and led to the formation of several large Anti-nuclear Zwentendorf demonstrations, such as the protest march ("Sternenfahrt") with over 8,000 protestors to Zwentendorf on June 12[471], or on the National Holiday on October 26 at the Ballhausplatz in Vienna, where Kreisky famously claimed: "I don't let myself be treated like that by a couple of rascals."[472]. However, the rascals' protests tainted party politics and led to the formation of an Anti-nuclear energy union of the Freedom Party of Austria (FPÖ) and the ÖVP.

A joint parliamentary decision for the commissioning of the NPP Zwentendorf before the summer of 1978 was therefore no longer achievable by the SPÖ and ÖVP (Austrian People's Party) coalition government in the first half of 1978. Therefore, Kreisky decided – although contrary to his conviction that the nuclear

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[466] IÖAG, 1977. Wie ist das mit den Atomkraftwerken wirklich? Initiative Österreichischer Atomkraftgegner, Wien.
[467] Weish, P., 1977. The nuclear debate in Austria. Report. https://inis.iaea.org/collection/NCLCollectionStore/_Public/45/111/45111994.pdf (accessed: 07.6.2024).
[468] Weish, P., 1988. op. cit.
[469] Högelsberger, H., 2024. op. cit.
[470] Weish, P., 1977. op. cit.
[471] Hirsch, H. and Thurner, P., 2017. The Politics of Nuclear Energy in Western Europe. Oxford, Oxford University Press.
[472] Keferstein, L., 2021. op. cit.

energy issue was by "no means appropriate for a vote by the people"[473] – that a national referendum should be held to decide on the commissioning of the Zwentendorf NPP[474]. On 5 November 1978, the formal decision-making process was finally reopened by the referendum, in which 1,606,308 people, or 50.47% of the votes cast, were against the commissioning (1,576,839 people voted in favor of the commissioning)[475].

From a historical perspective, the referendum can be seen as the cornerstone and starting point for the anti-nuclear stance that is now firmly anchored in Austrian society. Despite the NPP Zwentendorf being fully constructed, a narrow majority of less than 30,000 votes was against its operation. This public decision not only reflected broader anxieties about nuclear safety, economic viability, and environmental sustainability; according to Pelinka[476] , it is also an "indicator in as much as it demonstrated the decline of the political elites' ability to handle a controversial political issue", and propelled a process of change that had previously gone unnoticed due to Austria's highly centralized and top-down political decision-making process. Despite the later adoption of a bill banning the starting of any NPP in Austria, new attempts were (unsuccessfully) made in 1980 by the SPÖ, backed mainly by the socialist faction of the Austrian Federation of Trade Unions, to repeal it[477]. In 1985, shareholders liquidated the operating company (Gemeinschaftskraftwerk Tullnerfeld GesmbH).

The final blow to Austria's nuclear ambitions came after the Chernobyl disaster in 1986, which drastically enhanced public awareness about the catastrophic potential of nuclear accidents. The rejection of nuclear power became a societal consensus in Austria, and led to the unanimous passing of the Federal Constitutional Law for a Nuclear-Free Austria in 1999. Although attempts were made to reuse the NPP Zwentendorf, such as converting it into a coal-fired power plant, these proposals were first dismissed due to prohibitive costs[478]. It was only in 2005, when the Energieversorgung Niederösterreich Aktiengesellschaft (EVN AG) acquired the Zwentendorf NPP, that an alternative use as a training center, solar power plant and event venue began, which continues to this day.

8.1.1.4. Socio-cultural characteristics

Level of Education - Education played a central role in shaping Austria's Anti-nuclear movement, with students and academic institutions at the forefront. Although characterized by the positivistic paradigm and beliefs in technological-economic innovation, universities were hubs for organizing and debating nuclear energy development. Younger activists often influenced older family members to oppose nuclear power[479] [480]. The Anti-nuclear movement acted as an informal educational actor, providing a platform for

[473] Stockinger, H., 2008. Good to remember in times of "nuclear renaissance" - 30 years ago in Austria: The first-ever national referendum and Atomic Energy Prohibition Act worldwide. *Nuclear Monitor* 1 (680), 3-6.
[474] Bayer, F., 2014. Die Ablehnung der Kernenergie in Österreich: Ein Anti-Atom-Konsens als Errungenschaft einer sozialen Bewegung? In: Momentum Quarterly: Zeitschrift für sozialen Fortschritt, 3 (3), 170-187.
[475] Rathkolb, O., 1978. 1974-1978: Proteste und Volksabstimmung gegen das Atomkraftwerk Zwentendorf. Lexikon, Haus der Geschichte Österreich. https://hdgoe.at/zwentendorf (accessed: 06.6.2024).
[476] Pelinka, A., 1983. The nuclear power referendum in Austria. *Electoral Studies* 2, 253–261. https://doi.org/10.1016/S0261-3794(83)80032-8.
[477] Ibidem.
[478] Hemmer, R., Meßner, D., 2016. op. cit.
[479] Högelsberger, H., 2024. op. cit.
[480] Pekny, W., 2024. op. cit.

scientific critique and raising public awareness of nuclear risks, and offering Austrians new opportunities for civic engagement and participation[481] [482] [483].

Health Care and Public Health - Health risks were a key focus of the Anti-nuclear movement. Public health professionals highlighted the dangers of radioactive contamination and the inadequacies in emergency planning. Groups like "Physicians Against Nuclear Power" further bridged health advocacy and environmentalism, enhancing the movement's credibility in raising concerns about long-term population health[484].

Accessibility to Cultural Institutions - Universities, public forums, and – to some extent – artistic practices were pivotal in shaping the cultural dialogue on Anti-nuclear energy. Grassroots communication strategies were limited due a lack of public media access but took advantage of the governmental atomic energy information campaign by infiltrating public events and providing alternative information on nuclear safety, for instance, with flyers. In general, actions were also limited due to financial constraints but ranged from brass band marches to a three-day hunger strike in front of the Federal Chancellery. In addition, artists actively engaged in the protests, using their influence to broaden the movement's appeal beyond academia and political activism[485]. In 1972, for instance, Walther Soyka, a musician and well-known figure of Vienna's art and culture scene, appeared at a building negotiation event in Zwentendorf with over 900 authorizations to take action against the planned NPP – his protest was ultimately suppressed by the federal police[486]. Eventually, the mainstream public media became more critical of the government's nuclear policies, allowing for more widespread public engagement with the issue[487].

Social Cohesion and Social Security - The Anti-nuclear movement was characterized in the late-1970s by inclusiveness, uniting people from all parts of society under a common cause despite their ideological differences[488] [489] [490] [491]. Women played a prominent role, particularly by engaging in groups like "Mothers Against Nuclear Power"[492]. However, the cohesion was challenged by the tension between economic stability and environmental concerns. The rural population, in particular, initially supported nuclear power due to promises of job creation, regional development and national energy security. As the variety of nuclear risks reached more public awareness, economic arguments started being overshadowed by concerns for long-term social and ecological security, shifting the movement's narrative from short-term

[481] Högelsberger, H., 2024. op. cit.
[482] Weish, P., 1988. op. cit.
[483] Weish, P., 1977. op. cit.
[484] Weish, P., 1988. op. cit.
[485] Högelsberger, H., 2024. op. cit.
[486] Bayer, F., 2014.
[487] Weish, P., 1988. op. cit.
[488] Högelsberger, H., 2024. op. cit.
[489] Natter, B., 1987. op. cit.
[490] Pekny, W., 2024. op. cit.
[491] Pelinka, A., 1983. op. cit.
[492] Weish, P., 1988. op. cit.

economic benefits to long-term sustainability[493] [494]. The ability of the Anti-nuclear movement to address these tensions helped solidify a broader sense of national unity around environmental protection[495] [496].

Level of Social Trust - The Anti-nuclear movement in Austria was emblematic of a broader distrust in political and economic elites. There was a strong anti-authoritarian sentiment within the movement, as activists perceived the government's push for nuclear energy as imposed, without adequate democratic consultation and full transparency regarding the safety risks. This fostered a "David versus Goliath"[497] dynamic, where ordinary citizens recognized themselves as fighting against powerful elites who disregarded their concerns[498]. While trust in political elites was low, trust in scientific expertise was relatively high. However, the movement relied more on scientific criticism of nuclear energy, which added argumentative credibility and provided an authoritative counter-narrative to government rhetoric[499].

Engagement in Religious Practices - Although religion was not central to the movement, religious groups did participate, aligning their moral values with environmentalism. Catholic youth organizations and other religious communities emphasized intergenerational responsibility and the moral duty to protect the environment, contributing to the movement's ethical framework[500].

Broader Socio-Political Shifts and National Identity - The Anti-nuclear protests had lasting impacts on Austria's socio-political landscape, leading to the formation of the Green Party and reinforcing the country's eco-political identity[501]. In 2018, Austria celebrated 40 years of Anti-nuclear power.

8.1.1.5. Socio-technical characteristics

From a MLP-perspective, the emergence, culmination, and persistence of the Anti-nuclear movement can be described as follows:

1. At the landscape level, two main imperatives exist prior the referendum in 1978, exerting stabilizing as well as destabilizing pressures on socio-technical regimes: "Pro Nuclear Energy – framed by energy security, cost-efficiency, science and technological progress" and "Anti-Nuclear Energy and Weapons – framed by nuclear safety concerns, environmental and peace awareness, and growth criticism". The Pro-Nuclear Energy imperative started earlier in the 1950s (e.g. Atoms for Peace Declaration) and strengthened particularly the regime trajectories of science, technology, and policy that led to Austria's first nuclear program, including the formation of the Study Society for Atomic Energy (SGAE) in 1955. Environmental concerns had little impact until the mid-1960s, as nuclear energy was regarded as an advanced technology of the future with controllable risks and hazards based on scientific knowledge. However, the external Anti-Nuclear Energy and Weapons imperative increased slowly but constantly over time, putting significant

[493] Pekny, W., 2024. op. cit.
[494] Pelinka, A., 1983. op. cit.
[495] Natter, B., 1987. op. cit.
[496] Pelinka, A., 1983. op. cit.
[497] Högelsberger, H., 2024. op. cit.
[498] Natter, B., 1987. op. cit.
[499] Weish, P., 1977. op. cit.
[500] Weish, P., 1988. op. cit.
[501] Hemmer, R. and Meßner, D., 2016. op. cit.

destabilizing pressure on the prevalent socio-technical regime. In addition, various external shock events can be identified as sudden disruptions to regimes: while the 1973 oil crisis reinforced the incumbent regime trajectory of pro-nuclear economy and industry, the Chernobyl nuclear disaster of 1986 or the Fukushima nuclear disaster of 2011 had far-reaching impact on fostering the public anti-nuclear stance in Austria, which in turn supported the newly transformed socio-technical regime trajectory, in particular policy and culture.

2. At the socio-technical regime level, political and industrial elites internally support the regime's stability. However, a window of opportunity opens up due the upscaling effect of widening social involvement and protest at niche level, which manifests itself in the first protest march to Zwentendorf in 1970 and is reinforced by the regime-destabilizing external landscape development of the "Anti-Nuclear and Weapons" imperative. In the opening-phase internal pressure within regimes (e.g. science: dissemination of empirical evidence on nuclear safety issues; culture: increased social engagement and participation) will steadily increase, causing cracks in their stability. This window of opportunity will last over the period of 9 years, transferring into the closing phase with the referendum in 1978. In particular, the policy and technology regime remain unstable here, and no decision has yet been taken on whether and which alternative solutions, such as the renewable energy expansion, will be adopted. In the post-phase of the window of opportunity, the socio-technical regime undergoes a radical transformation, leading to the complete renunciation of the federal nuclear program, the decommissioning of the NPP site Zwentendorf in 1985, and the Federal Constitutional Law Nuclear-Free Austria in 1999. Furthermore, this new socio-technical regime started to influence landscape development by enlarging the imperative of 'Anti-nuclear energy and weapons' through the promotion of renewable energies, thus significantly contributing to shifting public opinion and energy policy in the EU until today.
3. At the niche level, the first formations of Anti-nuclear groups are emerging on the local scale at different NPP project sites in or near Austria. Driven by technological safety concerns, such as radioactive contamination, nuclear accidents, as well long-term environmental concerns regarding the nuclear waste management and decommissioning, the perception and mindset of these niche actor groups are also influenced by the "Anti-Nuclear Energy and Weapons" imperative at the landscape level. During the opening phase of the window of opportunity, networking activities among local protest groups, the integration of diverse allies in the protest, as well as hijacking the public information campaign and providing counter-information on nuclear energy to a wider public audience are key for increasing pressure on the policy regime. The unexpected policy regime's strategy to promote public participation in decision-making through the referendum marks the decisive moment of the closing phase, in which the Anti-nuclear protest movement mobilized the greatest number of internal resources to reframe nuclear energy as a public safety issue, including the alternative solution of renewable energies, and to organize the largest demonstrations. In the post-phase of the window of opportunity, many niche actors joined a new protest movement (occupation of the Hainburg Au wetlands in 1984) or became part of the policy regime themselves through the founding of the first Austrian Green Party in 1986.

It is important to mention that the Austrian administrative structure builds on a federal system with a clear division of responsibilities between the federal government, nine federal states, and local

authorities of districts and municipalities, which are the smallest administrative units. Although federal decisions play an important role in Austria, state and local governments hold significant authority in managing local to regional affairs.

8.1.2.Stakeholder Analysis

Table 8.1a provides information on the different stakeholders of the process analyzed in the Anti-Nuclear Movement in Austria HE. The stakeholders, as can be seen, came from a wide range of backgrounds. The professionals are represented by two individuals: Peter Weish and Bernd Lötsch. The categories: business and industry, intermediary organizations, and institutions have two stakeholders each. Citizens, media and NGOs were also involved in the initiative. The field of action of most stakeholders covered the entire country. On a transnational level, media representatives and one research entity, the Konrad Lorenz institute, were active.

An analysis of the power-interest relationship (Figure 8.1a) shows that the initiative attracted the attention and strongly involved the vast majority of stakeholders, who used their competencies and capacities to try to influence the course of events. This is also indicated by the data in Table 8.1b, where the majority of stakeholders involved in the initiative were classified as affecting the flow of the initiative.

Table 8.1a – Stakeholders: list and main features

Stakeholder name	Category	Spatial Scale	Role	Resources	Relationship
SH1. Federation of Austrian Industries	Business & Industry	National	beneficiary	Normative, Relational, Economic	conflictual
SH2. Verbund AG	Business & Industry	National	beneficiary	Normative, Relational, Economic, Knowledge	conflictual
SH3. Environmental activists	Citizens	Local-Regional-National	promoter	Relational	cooperative
SH4. ARGE Nein zu Zwentendorf	Civil society organizations	National	promoter	Relational	cooperative
SH5. Chamber of Labour	Institutions	National	beneficiary-target	Normative, Relational	conflictual
SH6. Chamber of Commerce	Institutions	National	beneficiary	Normative, Relational, Economic	conflictual
SH7. Austrian Federation of Trade Unions (ÖGB)	Intermediate bodies	National	beneficiary	Normative, Relational	conflictual
SH8. Trade unionists against nuclear energy and war	Intermediate bodies	National	promoter	Relational	cooperative
SH9. Journalists	Media	National - Supranational	target	Normative, Relational	cooperative
SH10. Bruno Kreisky (Social Democratic Party of Austria)	Politicians	National	beneficiary-target	Normative, Relational, Positional, Economic	conflictual
SH11. Peter Weish	Professionals	National	promoter	Relational, Knowledge	cooperative
SH12. Konrad Lorenz Institute	Research	National - Supranational	promoter	Relational, Knowledge	cooperative
SH13. Bernd Lötsch	Professionals	National	promoter	Relational, Knowledge	cooperative
SH14. Public University	Research	National	promoter	Relational, Knowledge	neutral
SH15. Austrian Research Centre for Nuclear Energy	Research	National	beneficiary-target	Relational, Knowledge	conflictual

Figure 8.1a – Stakeholders by relevance: the Power-Interest matrix

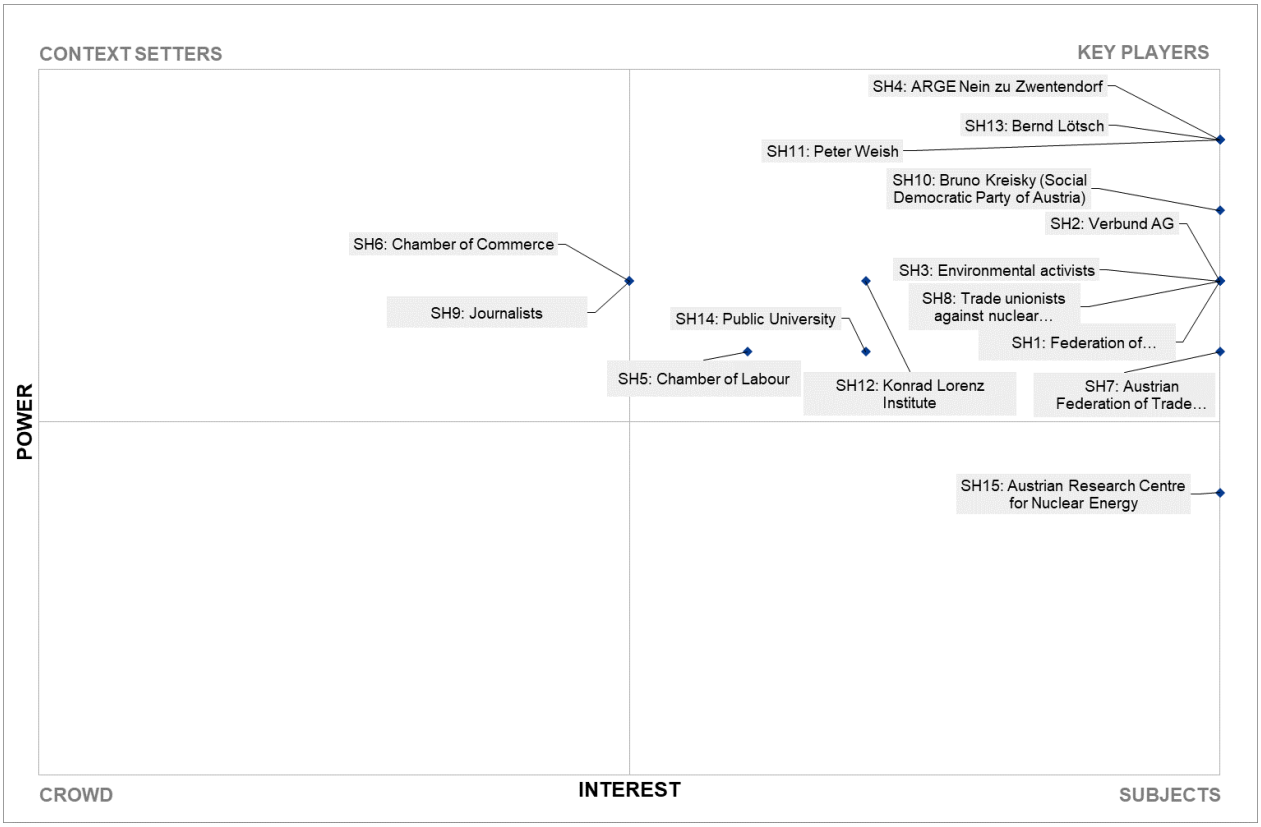

Table 8.1b – Stakeholders by impact

Impact Category	Stakeholder	Power	Impact
Affected & Affecting	SH4. ARGE Nein zu Zwentendorf	9	5
	SH3. Environmental activists	7	5
	SH9. Journalists	7	3
	SH15. Austrian Research Centre for Nuclear Energy	4	-5
Affecting	SH11. Peter Weish	9	5
	SH12. Konrad Lorenz Institute	7	3
	SH13. Bernd Lötsch	9	5
	SH10. Bruno Kreisky (Social Democratic Party of Austria)	8	-3
	SH8. Trade unionists against nuclear energy and war	7	5
	SH1. Federation of Austrian Industries	7	-2

Impact Category	Stakeholder	Power	Impact
	SH6. Chamber of Commerce	7	-2
	SH2. Verbund AG	7	-3
	SH14. Public University	6	1
	SH5. Chamber of Labour	6	-1
	SH7. Austrian Federation of Trade Unions (ÖGB)	6	-1

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Weish, P., 1988. Austria’s no to nuclear power. Conference proceedings presented in Japan (Tokyo, Kyoto and Wakayama), April. https://homepage.univie.ac.at/peter.weish/schriften/austrias_no_to_nuclear_power.pdf (accessed: 07.6.2024).

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8.2. Energy poverty movements in Spain: Residents' movement in the Northern District of Granada (ES)

Mobilizations began in the early 2010s during the economic crisis and have persisted through subsequent challenges, including the COVID-19 pandemic and recurring power cuts caused by deteriorating electrical infrastructure and illegal electricity hook-ups. The residents, supported by over 100 active members and a network of NGOs such as Asociación Pro Derechos Humanos de Andalucía (APDHA) and neighborhood associations like the Asociación Vecinos Nueva Cartuja, have built a strong movement advocating for their right to reliable and affordable energy. This community, which includes vulnerable households of diverse ethnic backgrounds—such as collectives of Spanish gypsies and immigrant groups—has faced chronic power outages that disrupt daily life, aggravate health conditions, and perpetuate social and economic exclusion.

Despite these adversities, the residents' movement has successfully brought attention to their plight, taking their grievances to the European Parliament and garnering support from international organizations like the Energy Poverty Advisory Hub (EPAH). A significant milestone in their activism was the creation of the Platform against Power Cuts, which united various organizations and led to the City Council's implementation of a Special Emergency Plan. However, while the idea of establishing energy communities to provide vulnerable households with cheaper renewable energy is being explored as a long-term solution, these communities have not yet been created. The process of "energy solidarity", which envisions sharing energy from newly created renewable energy communities with residents of the Northern District, remains a future goal. Until then, the community of residents continues to advocate for structural changes and sustainable solutions, striving to transform the Northern District from a stigmatized neighborhood into a potential model of social innovation and collective action against energy poverty in Spain.

8.2.1. Context Analysis

The mobilizations in the Northern District of Granada, starting during the economic crisis of the early 2010s, align with broader landscape-level pressures. The global financial crisis and subsequent austerity measures created widespread economic hardship, particularly in vulnerable communities like the Northern District. These external pressures exacerbated the pre-existing socio-economic challenges faced by residents, such as energy poverty and deteriorating infrastructure. In the MLP framework, these socio-economic pressures reflect landscape dynamics that drive systemic challenges to the existing socio-technical regime.

The socio-technical regime in the Northern District has historically been dominated by an unreliable and outdated energy infrastructure, which perpetuates energy poverty. This regime is maintained by large utility companies and a regulatory environment that has, until recently, failed to adequately address the needs of vulnerable households. However, niche innovations—such as the community's activism and the formation of the Platform against Power Cuts—are emerging in response to these regime failures. These grassroots movements challenge the status quo by advocating for structural reforms and exploring new forms of energy distribution, such as the potential creation of energy communities.

The success of the residents' movement in bringing their plight to the European Parliament reflects the increasing pressure on the socio-technical regime from both landscape-level changes (such as European energy policies) and niche-level innovations (like the Platform against Power Cuts). The community's efforts represent a niche innovation that could transform the local energy regime by fostering energy solidarity and exploring the creation of renewable energy communities. These efforts align with broader landscape trends in climate change mitigation, social inclusion, and decentralized energy systems.

8.2.1.1. Geographical and Territorial Characteristics

Granada is a municipality in southern Spain, located in the south-eastern region of the Iberian Peninsula. It serves as the capital of the province of Granada, one of the eight provinces comprising the region of Andalusia. As of 1 January 2022, Andalusia is Spain's most populous region, with 8,500,187 inhabitants. The province of Granada has a population of 921,987 inhabitants, of which 228,682 live in the municipality. Granada's landscape is characterized by a juxtaposition of mountainous areas and expansive plains. To the south and east, the Sierra Nevada Mountain range forms a dramatic backdrop, with peaks rising above 3,000 meters. This mountainous terrain has a significant impact on both the local climate and the city's urban structure[502]. Despite the surrounding rugged terrain, the city of Granada is primarily located on the alluvial plain of the Genil River, forming part of the Vega de Granada, an area of relatively gentle relief.

From an MLP framework perspective, Granada's geographical features, such as its mountainous terrain and river plains, represent elements of the "landscape" level. These natural characteristics shape the socio-technical regime by influencing the types of economic activities that dominate in the area, such as agriculture and tourism, while also setting constraints on urban development. The Sierra Nevada, for example, plays a role in tourism development, particularly for winter activities, which directly impacts the economic regime of the region.

Regionally, Andalusia covers an area of 87,268 km²s, making it Spain's largest region[503]. It is divided into eight provinces and 785 municipalities. The region features a high degree of variation in its topography, climate, hydrology, and land use, all of which profoundly influence its socio-economic and environmental development. Andalusia's topography is dominated by several key geomorphological structures, most notably the Betic System, which includes mountain ranges such as the Sierra Nevada, Sierra de los Filabres, and Sierra de Grazalema. The Guadalquivir River basin, together with its network of tributaries, constitutes the central geographical axis of the region. To the north of the Guadalquivir, the Sierra Morena forms a natural barrier, separating Andalusia from the southwestern lowlands of the Iberian Peninsula. To the south, the region is bordered by 917 kilometers of coastline along both the Mediterranean Sea and the Atlantic Ocean. This geographical diversity produces a wide range of climatic conditions, influenced by both altitude (continental climate) and proximity to the sea (Mediterranean climate).

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[502] Rivas-Martínez, S., Penas, Á., del Río, S., Díaz González, T. E. and Rivas-Sáenz, S., 2017. Bioclimatology of the Iberian Peninsula and the Balearic Islands. *The Vegetation of the Iberian Peninsula* 1, 29-80.

[503] IECA, 2024. Sistema de Información Multiterritorial de Andalucía. https://www.juntadeandalucia.es/institutodeestadisticaycartografia/dega/sistema-de-informacion-multiterritorial-de-andalucia-sima

The province of Granada itself spans 12,647 km² and comprises 174 municipalities. Owing to its location within the Betic System, it shares the same diverse landscape and climatic characteristics as Andalusia. The Genil River traverses a significant portion of the province, and it also boasts 79 kilometers of Mediterranean coastline.

The city of Granada is situated at approximately 738 meters above sea level, covering an area of 88.2 km²s [504]. It is surrounded by a metropolitan area that includes 30 municipalities, with a combined population double that of the provincial capital. Since the 1950s, Granada and its metropolitan area have experienced significant population growth and urban expansion, leading to a doubling of their populations. This growth has resulted in increased population density and the progressive urbanization of land adjacent to the city. Internally, Granada is divided into various neighborhoods, which can be broadly classified into two categories based on their urban development: historic districts and more recently developed neighborhoods that have emerged since the mid-20th century.

At the "regime" level, the rapid urbanization and expansion of Granada since the mid-20th century have shaped the city's economic and social structures. From an MLP landscape perspective, the Northern District has experienced significant socio-economic challenges as a result of this expansion, with limited integration into the broader urban regime, leading to disparities in infrastructure and employment. The geographical constraints of a dense urban setting with outdated infrastructure contribute to chronic power issues, including frequent outages.

At the socio-technical regime level, the energy infrastructure in the Northern District is ill-equipped to handle the demands of its population, leading to systemic energy poverty. This outdated system is maintained by utility companies that prioritize short-term fixes over long-term solutions. The regime is increasingly under pressure from landscape-level trends, such as European Union policies on energy efficiency and poverty reduction, which aim to modernize energy systems across the continent. The growth of informal economies in these disadvantaged areas can be seen as part of a niche-level development, emerging as an alternative to the formal economic system.

The historic districts of Granada include Albaicín, Sacromonte, Realejo, and the city center. Albaicín, a medieval district that has grown since the Muslim period, is now a UNESCO World Heritage Site and a major tourist destination, where residents coexist with tourists, artists, and merchants, creating a vibrant cultural mosaic[505]. Sacromonte, known for its cave dwellings and its deep connection to flamenco culture, is often referred to as the "Gypsy Quarter." This neighborhood has maintained its distinct cultural identity over centuries, although in recent years it has faced increasing pressure from tourism[506]. Realejo, historically the center of Granada's Jewish community before their expulsion in 1492, has undergone significant gentrification in recent years[507]. Finally, the historic city center has seen various phases of

[504] INE, 2024. Municipal Register Demography and population. Instituto Nacional de Estadística (INE) https://www.ine.es

[505] Bahrami, B., 1998. A Door to Paradise: Converts, the New Age, Islam, and the Past in Granada, Spain. *City & Society*, *10*(1), 121-132.

[506] Romero-Frías, E. and Leontidis, C., 2020. The impact of sharing economy in heritage neighborhoods in Granada. In *Sharing economy and the impact of collaborative consumption, p*p. 69-96. IGI Global.

[507] Morales Yago, F. J., & Portal Coca, F. J. (2018). Una aproximación a los procesos de gentrificación en el centro de la ciudad de Granada a través de las transformaciones urbanísticas más relevantes (1991-2017). Papeles de geografía, (64), 198-222.

urban renewal and reconfiguration since the 18th century. Romantic and neoclassical architects left a lasting imprint on the urban landscape, and today the city center offers a blend of restored historic buildings alongside modern commercial and residential developments.

Tourism, particularly in areas like Albaicín and Sacromonte, represents a key element of Granada's socio-technical regime. As part of the service sector, tourism has driven economic growth but has also placed pressure on local resources and infrastructure. The development of tourism can be viewed through the MLP framework as part of a regime dynamic that has influenced social and economic behavior, while gentrification and niche innovations such as cultural tourism reflect shifts within this regime.

From the mid-20th century onward, the city expanded southward into the Zaidín neighborhood, westward into the Chana neighborhood, and northward into the Cartuja and Almanjayar areas. While Zaidín and Chana initially developed as working-class neighborhoods in the 1950s, the northern expansion resulted in neighborhoods that are now among the most economically disadvantaged in the city, characterized by high unemployment rates and persistent socio-economic challenges. Granada's Northern District faces significant issues related to social exclusion and a lack of resources, which undermine residents' quality of life. These problems are further compounded by poor housing conditions, leading to a sense of stagnation. Limited access to public services and ongoing economic difficulties exacerbate the challenges faced by this part of the city[508].

8.2.1.2. Demographic Trends, Migration, and Educational Attainment

While Andalusia is Spain's most populous region, its vast territorial size results in a relatively low population density of around 100 inhabitants per km², only slightly above the national average. Population density varies considerably across different areas: in 2022, the provincial average was 72.9 inhabitants per km², reflecting the effects of rural depopulation. By contrast, the municipality of Granada had a population density of 2,593 inhabitants per km². Although Granada occupies only 0.7% of the province's surface area, it is home to 24.8% of the province's total population. This discrepancy can be attributed to the "capital effect," as well as the high degree of rurality in much of the rest of the province. Within the city, population density is especially high in the Northern District, reaching 8,874 inhabitants per km² in 2022.

Population dynamics from 2011 to 2022 reflect two major socio-economic events: the aftermath of the 2008 financial crisis and the impact of the COVID-19 pandemic. While the national and regional populations experienced modest growth, the province of Granada saw a population decline of 0.28%. The city of Granada experienced a sharper decline, with a 4.76% reduction in its population, while the Northern District experienced an even more pronounced decrease of 6.42%. These demographic patterns are key to understanding the socio-economic context of Granada's Northern District. When examining the population by major age groups, a consistent trend emerges across all territories: a decline in the relative proportion of children and working-age individuals, contributing to a general aging of the population. However, the northern District of Granada presents a notable exception to this trend. In

[508] Egea Jiménez, et al., 2009. Viejas y nuevas realidades urbanas. Identificación de zonas de habitabilidad desfavorecida en la ciudad de Granada. *Cuadernos geográficos*, 45, 83-105.

these areas, there is a lower proportion of residents over the age of 64 and a significantly higher proportion of children under 16. Additionally, there has been a notable increase in the working-age population, driven in part by the influx of foreign residents. In 2021, the average age in the city of Granada was 44.74 years, while in the Northern District it was 37.02 years.

The foreign-born population has seen significant growth over the past decade, with rates exceeding 20% across all territories. In 2021, foreign nationals represented 10.51% of the population in Andalusia and 15.30% nationwide. In the province of Granada, this percentage was 9.88%, rising to 11.68% within the city. However, in Granada's Northern District, the foreign-born population surged to 17.12% (INE, 2023). This, combined with the presence of a substantial gypsy community and other vulnerable groups, has created an environment marked by high levels of social tension. The proliferation of informal housing markets with substandard living conditions has contributed to the concentration of these populations in disadvantaged areas.

Granada's rich university tradition dates back to the Madrasas, Islamic schools of law and theology, with the first Madrasas established in the 12th century. The Madrasa of Granada was the first Western institution of higher education modeled after North African universities, offering instruction in theology, law, medicine, and mathematics. The University of Granada, as a formal institution, was established under Charles V and completed by Clement VII, who granted it the same privileges as the universities of Bologna, Paris, Salamanca, and Alcalá in 1531. This long-standing academic tradition has profoundly shaped the city's human capital. In 2021, 45.17% of Granada's population over the age of 16 held higher education degrees, compared to the national average of 31.76%. Regionally, Andalusia lagged behind at 26.83%, while in the province of Granada, the influence of the university raised the percentage to 30.40%. However, in the Northern District, despite the presence of several faculties, educational attainment remains significantly lower, with only 14.3% of residents having completed higher education in 2021. This highlights the limited emphasis placed on education in these areas, where socio-economic conditions and labor market factors have a stronger influence, as will be explored in later sections.

The demographic profile of the Northern District reflects a highly diverse population, including marginalized groups such as immigrants and vulnerable households. These demographic trends are heavily shaped by landscape-level factors like economic migration and broader socio-economic inequality. The district faces significant challenges in terms of social exclusion, which is compounded by the energy poverty crisis.

At the socio-technical regime level, inadequate access to public services, including education and employment, has historically trapped many residents in cycles of poverty and dependency on an unreliable energy infrastructure. The regime has failed to address the underlying socio-economic disparities that exacerbate energy poverty.

However, niche innovations are emerging within the community, focusing on education and participation in energy solidarity initiatives. These grassroots efforts, often led by NGOs and local associations, aim to empower residents with the knowledge and tools to challenge the existing energy regime. Through educational initiatives and advocacy, these niche innovations create pathways for more equitable energy solutions that could lead to the development of renewable energy communities, addressing both demographic and energy challenges.

8.2.1.3. Economic Structure and Employment

The economy of Granada and its province reflects a diverse structure, similar to that of Spain as a whole, but with specific characteristics shaped by its geographical and historical context. Economic activity in the region has shown divergent trends since 2011, especially between coastal and inland areas. The service sector, particularly tourism, has been the primary driver of employment across the region. Cities like Seville, Córdoba, Granada, and Málaga have experienced significant growth in tourism, contributing to increased employment in hospitality and related services. Although the COVID-19 pandemic severely impacted this sector, it has shown strong recovery in recent years. As Spain's leading agricultural producer, Andalusia has maintained stable levels of employment in agriculture despite challenges related to climate change and fluctuating market prices. Key agricultural products include olive oil, wine, and various crops, which remain central to the region's economic resilience. However, the industrial sector in Andalusia has seen a relative decline, with the exceptions of agro-industry, renewable energy, and certain key clusters such as the aerospace and naval industries.

In the province of Granada, the economic structure is somewhat less diversified compared to the broader region of Andalusia, with greater reliance on agriculture and the agro-industrial sector. Nevertheless, services and construction also play important roles. Agriculture remains a key sector in the provincial economy, despite facing challenges such as price volatility and the ongoing impact of drought. However, crops like olives, almonds, and tropical fruits along the coast have shown considerable resilience. This has supported the continued importance of the agro-industrial sector, which has remained a major employer despite the pressures of modernisation and automation. International competitiveness and innovation have helped this sector to maintain its relevance. Although tourism has a significant impact in the provincial capital, the services sector in the province is more varied, with a focus on rural and cultural tourism. Employment in trade and personal services has also grown steadily.

At the municipal level, Granada’s economy is heavily dominated by the commercial sector, which accounts for a substantial portion of both employment and businesses. This sector is critical to the local economy, with a strong presence of retail businesses, particularly in the city and its metropolitan area, bolstered by the development of large shopping centers. Tourism is another pillar of Granada's economy, driven by its rich cultural, historical, and architectural heritage, most notably the Alhambra, a UNESCO World Heritage Site. Granada is a major international tourist destination, and the service sector—including hospitality and tourism-related activities—generates significant direct and indirect employment. Despite the 2008 financial crisis and the more recent COVID-19 pandemic, it continues to be a key engine of local economic activity. In addition to commerce and tourism, education and public services are also important sources of employment, thanks in large part to the presence of the University of Granada and major healthcare institutions.

In contrast, the Northern District of Granada has a more limited economic base, with only basic commercial services present, and regulated productive activity is minimal. Informal employment, drug trafficking, and other illicit activities have become alternative sources of income in these areas. Consequently, the informal economy represents a significant challenge in comparison to the rest of the city, province, and region, where such activities are less prominent.

In 2021, the percentage of the working-age population employed at the national level was 46.48% . This figure decreased gradually but moderately at the regional, provincial, and municipal levels, reaching

41.21%. However, in the Northern District of Granada, only 27.66% of the working-age population was employed, far below the average, reflecting the high degree of labor market precarity in these areas. This situation is also evident in unemployment rates. In the Northern District, unemployment affected 52.53% of the economically active population, significantly higher than the provincial (23.52%), regional (24.01%), and national (17.03%) averages.

The precariousness of the labor market is directly reflected in per capita income levels, as measured by gross personal income. In 2021, per capita income in Andalusia and the province of Granada was approximately €13,000, while in the municipality of Granada, it was 26% higher, reaching €17,263 per person annually. However, in the Northern District of Granada, per capita income was only €6,964, representing just 40.34% of the municipal average, making it one of the most socio-economically deprived areas in the city, province, and region. The analysis of poverty levels in these neighborhoods can be further illustrated by another indicator: the percentage of the population with an income per consumption unit below €5,000. In other territorial units, this percentage does not exceed 9%, while in the Northern District of Granada, it reaches 22.08%. In other words, more than one-fifth of households live on less than €14 per day[509].

The Northern District's economy is shaped by high unemployment, precarious work conditions, and reliance on informal labor markets. These economic challenges reflect **landscape pressures** stemming from Spain's prolonged economic crises, which have exacerbated social inequality and contributed to energy poverty.

At the **socio-technical regime level**, the district's economy is intertwined with an outdated energy system that is unable to provide reliable, affordable electricity to residents. This regime, dominated by utility companies and ineffective local governance, has perpetuated economic instability by failing to address the district's infrastructure needs.

Niche innovations are emerging from within the community as residents, supported by NGOs, seek alternative economic models, such as community-driven renewable energy projects. These initiatives aim to provide cheaper, sustainable energy sources while creating new employment opportunities within the green economy. These **niche innovations** align with **landscape-level trends** that prioritize climate action, energy resilience, and economic sustainability, offering a potential path forward for the Northern District's economic recovery.

8.2.1.4. Political and Administrative Structure

Spain is a parliamentary monarchy, established by the 1978 Constitution, which consolidated a democratic system following forty years of Francoist dictatorship. The Constitution organizes the political system according to the principle of the separation of powers: legislative, executive, and judicial. The legislative power is vested in the Cortes Generales (comprising the Congress of Deputies and the Senate), while the executive power is exercised by the Government. The judiciary is independent and is

[509] Tax Agency, 2023. Statistics of Personal Income Tax declarers with disability by municipalities https://agenciatributaria.gob.es/Sede/en_gb/datosabiertos/catalogo/hacienda/Estadistica_de_los_declarantes_del_IRPF_por_municipios.shtml

responsible for the administration of justice. These central institutions are headquartered in Madrid, the nation's capital.

Spain's territorial organization is divided into regions, provinces, and municipalities. The regions enjoy a high degree of self-government. The regional government of Andalusia is headquartered in Seville, the region's capital, and it administers key decentralized public services, including education, healthcare, social services, and culture.

The provincial government of Granada is organized around the Diputación Provincial, which coordinates and supports smaller municipalities. It is administratively structured to facilitate the provision of public services among its municipalities and to collaborate with the regional government in implementing both regional and local policies.

Granada, as a municipality, operates under a municipal government system, with its legislative body, the Municipal Council, responsible for approving the municipal budget, urban development plans, and local ordinances. The council is presided over by the mayor, who is in charge of the city's executive administration. Politically, Granada's municipal government has alternated between center-left and center-right parties in recent years. Currently, the city is governed by the center-right Partido Popular (PP).

The political and administrative structure in the Northern District is shaped by broader **socio-technical regime dynamics**, where local authorities have historically struggled to provide adequate public services, including energy infrastructure. The district's governance is closely tied to provincial and national energy policies, but these have often been slow to address the pressing needs of vulnerable populations.

At the **landscape level**, European Union policies on energy efficiency and poverty reduction, such as the Energy Poverty Advisory Hub (EPAH), are putting increasing pressure on local governments to reform energy systems. These external forces provide **windows of opportunity** for **niche innovations** within the district, particularly in the form of energy solidarity initiatives.

The **niche innovations** seen in the district's grassroots movements, such as the Platform against Power Cuts, are challenging the existing political regime. These movements are advocating for decentralized, community-based energy governance models that can provide more equitable energy access. The growing support for these initiatives reflects a broader shift in political participation and governance, aligned with European trends towards citizen empowerment in the energy sector.

8.2.1.5. Political Participation

Between 2011 and 2023, political participation across various territorial levels followed similar patterns, depending on the type of election. Voter turnout in general elections averaged around 70%, in line with the national average, while turnout in municipal elections was significantly lower, particularly in 2023. This drop in local election participation may reflect a sense of disillusionment or disengagement from local politics or a perception that national elections are more consequential. Social movements, such as those advocating for the defense of public education and healthcare, have played an important role in mobilizing citizens, although these movements have not always translated into higher electoral participation. In the Northern District of Granada, where social deprivation is more pronounced, electoral

participation has historically been low compared to other parts of the city. Moreover, voter turnout in these neighborhoods has seen a significant decline between 2011 and 2023[510].

In Andalusia, political participation rates fluctuated between 2011 and 2023 depending on the type of election. General election turnout remained consistently high at around 69%, while participation in municipal elections was much lower, particularly in 2023, when it stood at 61.36%.

In the province of Granada, political participation follows similar patterns to Andalusia, but it varies depending on the location. Rural areas generally experience lower turnout due to factors such as youth migration to cities and an aging population. In smaller municipalities and rural areas, turnout for local and regional elections has ranged between 50% and 60%, depending on citizens' engagement with political processes and the socio-economic challenges they face. In contrast, in larger municipalities and areas near the provincial capital, participation tends to be higher. However, this urban-rural divide does not apply uniformly to the city of Granada. In general elections (both in 2011 and 2023), voter turnout exceeded 73%, significantly higher than regional and provincial averages, whereas in local elections, voter participation was substantially lower than in other levels of government.

Political participation in the Northern District has been significantly shaped by landscape-level forces, such as Spain's economic crises and the rise of social movements demanding justice and reform. These pressures have fueled local activism, with residents mobilizing to address systemic issues like energy poverty. While political disengagement is common among Granada's residents, who often feel marginalized by the system, in the Northern District, where unemployment and social marginalization are acute, it is indeed possible to suggest that recent grassroots mobilizations, such as Citizen Assembly Initiatives (CAI), may have originated as an alternative means for marginalized communities in the Northern District of Granada to influence political processes, especially in a context where traditional electoral participation was declining. CAIs, by fostering local engagement, might have provided residents with a sense of agency and an alternative avenue for voicing concerns, particularly in addressing socio-economic issues such as unemployment, poverty, and social exclusion.

However, after CAI became integrated within the framework of Higher Education and more institutionalized, its role as an alternative form of political influence may have shifted. As CAIs became part of a more formalized structure, they may have become less grassroots-driven and more aligned with

institutional objectives, potentially reducing their capacity to serve as a direct counterbalance to traditional political processes. This institutionalization could have led to a perceived reduction in their effectiveness in representing the specific needs of marginalized communities, further contributing to political disengagement.

Niche innovations in the form of organized protests, community meetings, and advocacy efforts are increasingly influencing the political landscape of the district. The residents' success in bringing their case to the European Parliament demonstrates the potential for bottom-up political activism to influence regime change. These movements are closely aligned with landscape trends in climate action and social innovation, which emphasize the role of citizens in shaping energy transitions and addressing energy poverty.

[510] IECA, 2024. op. cit.

In conclusion, the socio-economic barriers affecting political participation in disadvantaged neighborhoods like those in Northern Granada are diverse and complex. High levels of poverty and inequality have a direct impact on political engagement. People facing economic hardship are often more concerned with meeting basic needs, such as access to housing, employment, and food, rather than participating in political processes. In many cases, economic precarity reduces their capacity to engage actively in elections or participate in social movements. Chronic unemployment and a lack of opportunities foster disenchantment with political institutions, as many residents feel that politicians are unlikely to improve their situation or represent their interests. Limited access to quality education in these neighborhoods also affects their ability to understand the political system and feel empowered to participate in it. Low educational attainment often correlates with a diminished understanding of democratic processes and reduced interest in voting or participating in civic life. Moreover, a general distrust of institutions and government representatives is common in such disadvantaged areas, further exacerbating the disconnect between these citizens and the political process. The stigma associated with living in a marginalized neighborhood may also lead to political disengagement, as residents often feel their voices will not be heard or valued.

8.2.2. Stakeholder Analysis

The most represented categories of stakeholders (SHs) are civil society organizations, including the Platform against Power Cuts and Asociación Vecinos Nueva Cartuja, as well as institutions like Endesa and Naturgy. These stakeholders have a broad relevance at the local, regional, and national scales, especially for those engaged in addressing energy poverty and advocating for policy change (Table 8.2a).

In terms of impact, the majority of stakeholders are more affecting than affected, as seen with Platform against Power Cuts and Asociación Vecinos Nueva Cartuja, both of which have a strong ability to influence outcomes while also being significantly impacted by energy poverty. Other stakeholders, such as Endesa and Naturgy, are more affected by the crisis but have less influence over systemic changes, reflecting their role as part of the energy regime (Table 8.2b).

The key players in the Northern District are grassroots organizations such as Platform against Power Cuts, Asociación Vecinos Nueva Cartuja, and Cooperase, while the context setters are primarily the regional government (Junta de Andalucía), national institutions like the Ministry of Industry, Energy, and Tourism, and private energy companies like Endesa and Naturgy (Figure 8.2a) . These stakeholders hold significant positional influence in shaping policies related to energy poverty and energy solidarity initiatives.

Table 8.2a – Stakeholders: list and main features

Stakeholder name	Category	Spatial Scale	Role	Resources	Relationship
SH1. Endesa	Business & Industry	Local-Regional-National	beneficiary	Economic	conflictual
SH2. Naturgy	Business & Industry	Local-Regional-National	beneficiary	Economic	conflictual
SH3. Platform against Power Cuts	Civil Society Organizations	Local	promoter	Knowledge	cooperative
SH4. Asociación Vecinos Nueva Cartuja	Civil Society Organizations	Local	promoter	Relational	cooperative
SH5. Ministry of Industry, Energy and Tourism	Institutions	National	third party	Normative, Positional	cooperative
SH6. Junta de Andalucia	Institutions	Regional	third party	Normative, Positional	cooperative
SH7. City Council of Granada	Institutions	Local	third party	Normative, Relational,Positional	neutral
SH8. Energy Poverty Advisory Hub (EPAH)	Intermediate Bodies	European	target	Relational	cooperative
SH9. Local Newspapers	Media	Local	third party	Relational	cooperative
SH10. Traditional Media	Media	Local-Regional	third party	Relational	neutral
SH11. Asociación Pro Derechos Humanos de Andalucía (APDHA)	NGOs	Local-Regional	promoter	Relational	conflictual
SH12. Cooperase	NGOs	Local	promoter	Relational	cooperative
SH13. Healthcare Centers in Northern District	Public Services	Local	beneficiary	Relational	cooperative
SH14. Local Schools	Public Services	Local	beneficiary	Relational	cooperative
SH15. University of Granada	Research	Local-Regional	promoter	Knowledge	neutral

Figure 8.2a – Stakeholders by relevance: the Power-Interest matrix

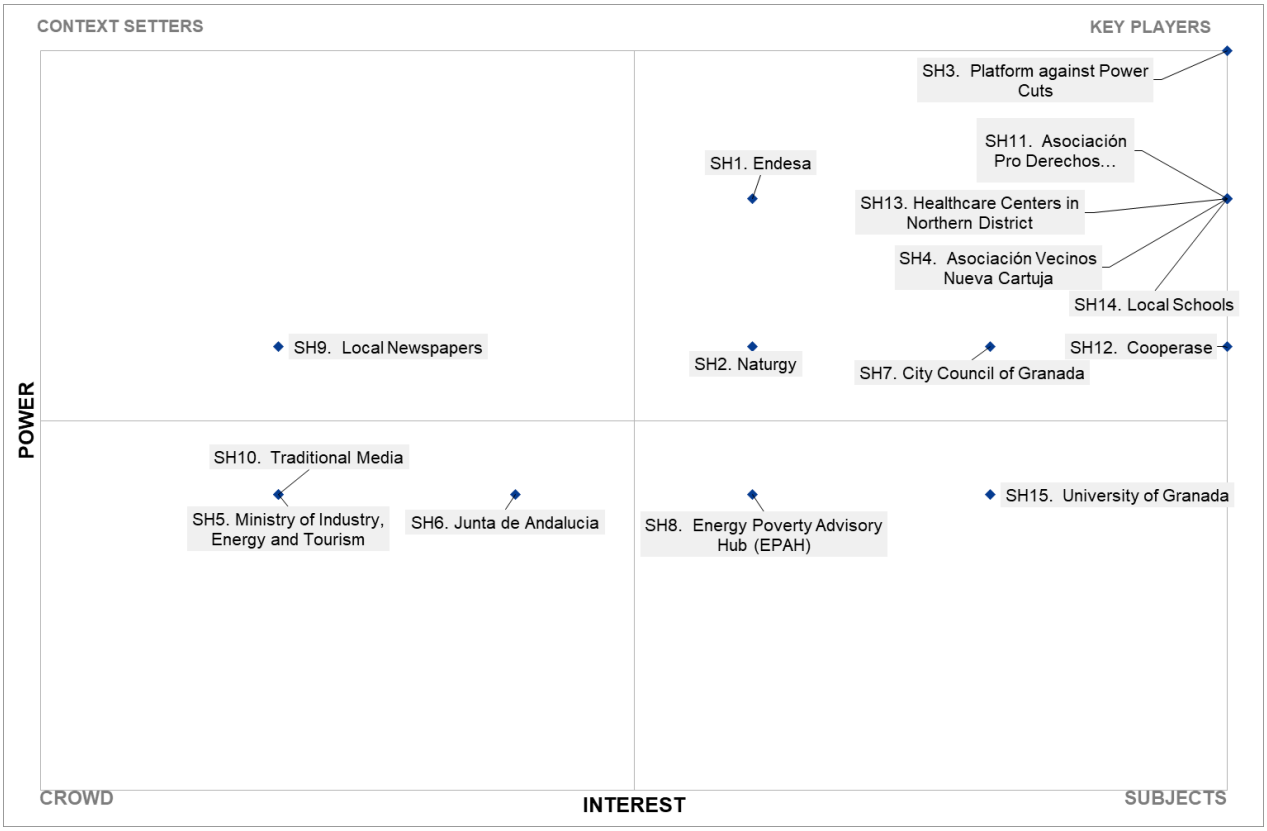

Table 8.2b – Stakeholders by impact

Impact Category	Stakeholder	Power	Impact
Affected & Affecting	SH3. Platform against Power Cuts	5	5
	SH4. Asociación Vecinos Nueva Cartuja	4	5
	SH7. City Council of Granada	3	3
	SH2. Naturgy	3	3
	SH12. Cooperase	3	3
	SH5. Ministry of Industry, Energy and Tourism	2	2
	SH6. Junta de Andalucia	2	2
	SH8. Energy Poverty Advisory Hub (EPAH)	2	2
	SH15. University of Granada	2	2
	SH10. Traditional Media	2	2

Impact Category	Stakeholder	Power	Impact
Affecting	SH1. Endesa	4	3
	SH11. Asociación Pro Derechos Humanos de Andalucía (APDHA)	4	3
	SH13. Healthcare Centers in Northern District	4	2
	SH14. Local Schools	4	2
	SH9. Local Newspapers	3	2

The Northern District of Granada has long been a focal point for grassroots activism and community mobilization in response to severe energy poverty. The district, primarily inhabited by socioeconomically vulnerable households, has experienced frequent power cuts over the past decade. These outages have been exacerbated by outdated electrical infrastructure and illegal hook-ups, leading to deteriorating living conditions. Grassroots organizations, neighborhood associations, and NGOs, such as the Platform against Power Cuts and Asociación Vecinos Nueva Cartuja, have been central in advocating for energy justice and engaging with local authorities.

Local mobilization, supported by APDHA, has raised awareness about the ongoing crisis, though long-term solutions remain elusive. The City Council of Granada has collaborated with local activists, yet private energy providers, particularly Endesa, have faced criticism for their minimal response to the crisis. The idea of energy communities, promoted by Cooperase and others, remains a future goal for addressing the district's energy needs through renewable resources.

The SA reveals that grassroots organizations like Platform against Power Cuts and Asociación Vecinos Nueva Cartuja are key drivers in advocating for solutions, with significant power to affect change. These groups, while heavily impacted, maintain strong relationships with local communities and play a crucial role in shaping the narrative and pushing for structural reforms. On the other hand, private energy companies such as Endesa and Naturgy, while crucial in the energy supply chain, have a more passive role in addressing energy poverty, avoiding engagement with the most affected communities.

The analysis underscores the tension between grassroots activism and institutional inertia, particularly in the face of systemic failures by both private companies and local authorities. These dynamics highlight the need for an integrated, multi-level approach to resolving energy poverty, one that involves collaboration between local activists, regional and national institutions, and the energy sector, with a focus on sustainable, community-driven energy solutions. The case of the Northern District highlights the need for an integrated, multi-level approach that addresses the social, economic, and health dimensions of energy poverty while promoting sustainable solutions such as energy communities.

8.2.3. References

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8.3. Energy poverty movements in Spain: Energy Poverty Alliance (ES)

The **Energy Poverty Alliance (APE)**, is a grassroots social movement engaged in political activism advocating for energy rights founded in Barcelona in February 2014, emerged as a response to the economic crisis, advocating for energy rights for vulnerable groups[511]. Partnering with neighbors' organizations and social movements like Plataforma de Afectados por la Hipoteca (PAH), APE framed access to essential utilities (water, energy, housing) as basic rights[512]. Through political advocacy, APE sought to end utility cutoffs, drafting a bill via a participatory process to protect energy rights and vulnerable citizens. APE's first major action occurred in March 2014, occupying Endesa's[513] headquarters to protest energy poverty, which brought significant media attention. This momentum led to the creation of Catalonia's Energy Poverty Board in July 2014, a consultative body proposing urgent measures like guaranteed minimum energy supply and social rates[514]. In December 2014, APE, PAH, and the DESC Observatory launched a signature campaign to introduce a Popular Legislative Initiative (ILP) addressing tenure, eviction, and energy poverty. This culminated in the 2015 Energy Poverty Law, a groundbreaking law protecting vulnerable households. Over the last decade, APE has become a prominent voice for energy rights, providing support and counseling for those affected by energy poverty while advocating for universal access to basic services. Although not legally registered, APE channels funds through Engineers Without Borders (ESF) and comprises hundreds of regular participants, predominantly vulnerable families, especially women. This movement exemplifies how grassroots initiatives can drive legal and social innovation, supporting economically vulnerable groups[515].

8.3.1. Context Analysis

First defined by Brenda Boardman in the 1990s as households spending over 10% of income on energy, energy poverty is now seen as a broader issue involving the inability to meet energy needs due to low income and inefficient housing[516]. In Spain, energy poverty is defined as a household's inability to secure essential energy needs, often exacerbated by inefficient housing[517]. The Spanish government also designates "vulnerable consumers," those eligible for support in energy poverty[518]. Garcia & Mundó differentiate energy poverty from energy vulnerability, which considers specific needs, such as health conditions, that heighten risks from power cuts. Energy access is increasingly viewed as a human right, with lack of affordable energy impeding a dignified life and social inclusion. Although recognized as a policy focus since 2014, Spain's public policy has yet to fully address energy poverty as a structural

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[511] Delgado Ramisa, L. (Coord.), 2022. *Estado de la exclusión residencial: impactos de la Ley 24/2015 y otras medidas de respuesta*. https://ddd.uab.cat/pub/estudis/2022/290430/estexcres_a2022iSPA.pdf (accessed: 06.10.2024).

[512] Guiteras, M., 2018. Alianza contra la Pobreza Energética, Catalunya, Estado español. Transnational Institute. https://www.tni.org/es/art%C3%ADculo/alianza-contra-la-pobreza-energetica-catalunya-estado-espanol. (accessed: 06.10.2024).

[513] Major energy provider in Spain.

[514] Garcia, M. and Mundó, J., 2014. L'energia com a dret. Com afrontar la pobresa energètica. *Dossier Catalunya Social Propostes des del Tercer Sector*, 38, September.

[515] APE, 2024. ¿Qué es APE?. Aliança contra la Pobresa Energètica. https://pobresaenergetica.es/es/quienes-somos/que-es-ape/ (accessed: 21.5.2024).

[516] Boardman, B., 1991. Fuel poverty is different. *Policy Studies* 12, (4), pp.30-41.

[517] Ministerio para la Transición Ecológica, 2019. Estrategia Nacional Contra la Pobreza Energética 2019-2024. https://www.miteco.gob.es/es/prensa/estrategianacionalcontralapobrezaenergetica2019-2024_tcm30-496282.pdf. (accessed: 21.5.2021).

[518] Ibidem.

societal issue[519]**.** The Consumer Code 37[520] identified gas, electricity, and water as essential services, but policy protections were limited. In 2013, Catalonia introduced Law Decree 6/2013, amending Law 22/2010 to prevent winter energy cutoffs[521] for economically vulnerable individuals. However, the decree, ratified by the resolution 480[522], was overturned by the Constitutional Court[523] after the central government claimed Catalonia lacked the authority to enact such protections.

Energy poverty first entered Catalan policy discussions through the EPEE project, with Ecoserveis as a partner, though the concept was largely unknown, and no organized movements existed[524]. Nonprofits led early initiatives like the EPEE (2006-2009) and Energy Ambassadors (2009-2011) projects, training social professionals to identify and address energy poverty[525]. In 2012, the Asociación de Ciencias Ambientales (ACA) published the first study on energy poverty, and the Catalan Energy Plan 2012-2020 identified it as a strategic focus. The 2008 economic crisis fueled housing rights movements, revealing cases where housing stability was undermined by utility insecurity. However, calls for energy democracy from environmental groups and CSOs had yet to fully engage the public.

At the **landscape level**, the focus geopolitically shifts to Europe, addressing the conceptualization and approach to energy poverty through EU regulations, alongside the global shock brought by the financial and economic crisis that began in the US in 2008. Energy poverty, increasingly significant due to its severe impact on households, is tied to socio-economic challenges like housing instability and debt. The 2008 crisis worsened unemployment, especially in Spain, Greece, Portugal, and Cyprus, where lower social protection, long-term unemployment, and inadequate heating systems compound energy poverty[526][527]. Shorter-term factors, considered as consequences of sudden shocks like the 2008 economic and financial crisis, include variables such as economic growth or recession, unemployment, and employment. These macro factors create the general context in which energy poverty figures fluctuate. At the more conceptual level, movements like APE fight for the recognition of energy as a basic right, meaning that everyone should have access to at a fair price, universally and equitably. Different international instruments recognize, either explicitly or implicitly, the human right to energy, like the Universal Declaration of Human Rights (UDHR), the Charter of Emerging Human Rights, the International Covenant

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[519] MITECO, 2020. *Integrated National Energy and Climate Plan 2021-2030*.

[520] Decret Llei 22/2010, del 20 de juliol, del codi de consum de Catalunya. https://cido.diba.cat/legislacio/1348987/llei-222010-del-20-de-juliol-del-codi-de-consum-de-catalunya-departament-de-la-presidencia (accessed: 21.5.2024)

[521] Decret llei 6/2013, de 23 de desembre, pel qual es modifica la llei 22/2010, de 20 de juliol, del codi de consum de Catalunya (Disposició derogada). https://cido.diba.cat/legislacio/1757003/resolucio-480x-del-parlament-de-catalunya-de-validacio-del-decret-llei-62013-del-23-de-desembre-pel-qual-es-modifica-la-llei-222010-del-20-de-juliol-del-codi-de-consum-de-catalunya-parlament-de-catalunya (accessed: 21.5.2024).

[522] Resolució 480/X del Parlament de Catalunya, de validació del Decret Llei 6/2013, del 23 de desembre, pel qual es modifica la Llei 22/2010, del 20 de juliol, del Codi de consum de Catalunya.

[523] Recurs d'inconstitucionalitat núm. 5831-2014, interposat per la presidenta del Govern en funcions respecte del Decret Llei de Catalunya 6/2013, de 23 de desembre, pel qual es modifica la Llei 22/2010, de 20 de juliol, del Codi de consum de Catalunya (sentència).

[524] Information extracted from the interview with Marta García París.

[525] Ibidem.

[526] Sweet, E., Nandi, A., Adam, E.K. and McDade, T.W., 2013. The high price of debt: Household financial debt and its impact on mental and physical health. *Social Science & Medicine* 91, pp.94-100.

[527] Vásquez-Vera, H., Rodríguez-Sanz, M., Palència, L. and Borrell, C., 2016.'Foreclosure and health in southern Europe: results from the platform for people affected by mortgages. *Journal of Urban Health* 93, (2), pp.312-330.

on Economic, Social, and Cultural Rights (ICESCR) and the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW).

At the **regime level**, Catalonia and Spain provide a legal framework to address energy poverty. APE emerged in response to widespread supply cuts; by 2012, 1.4 million Spanish households faced power disconnections due to rising bills and reduced purchasing power, a significant increase from 600,000 in 2006. In the Barcelona Metropolitan Area, 75,000 water cuts occurred between 2008 and 2016, reflecting socio-economic strain[528]. APE's impact has since grown, influencing Catalonia and national policies on energy poverty, including reforms to social electricity subsidies[529]. Structural issues such as inefficient housing and poverty are central to energy poverty in Spain, driven by systemic inequalities[530]. González-Eguino[531] links energy poverty to poverty and social exclusion, rooted in low income, inadequate housing, and high energy costs. In Spain, energy poverty is now viewed as a core component of poverty[532]. Catalonia's strong social fabric has enabled CAIs like APE to organize against energy poverty, as research shows lower-income households bear a higher energy cost burden despite consuming less energy[533]. APE's major success was the 2015 Law 24/2015[534], which protects energy-vulnerable consumers from power cuts by requiring precautionary measures from utility companies[535]. This began with a 2013 "winter truce" proposal and led to a 2014 campaign by APE, PAH, and the DESC Observatory for a Popular Legislative Initiative targeting housing, eviction, and energy poverty[536]. In July 2015, the Catalan Parliament unanimously passed the **Energy Poverty Law (24/2015)** via a Popular Legislative Initiative (ILP). This law prohibits utility cutoffs for vulnerable consumers, requires utility companies to consult Social Services for vulnerability assessments, and mandates debt-sharing between the government and utilities[537]. Known as one of Spain's most protective laws, it has inspired similar legislation elsewhere. APE also organizes support groups for solidarity and guidance on energy rights and, along with groups like Taula del Tercer Sector and Ecoserveis, helped create the 2015 Solidarity Fund to cover unpaid utility bills in Barcelona[538].

At the **niche** level, APE's work is centered in Barcelona, where it began, advocating for universal energy access as a human right, especially for vulnerable and socially excluded households. APE seeks to

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[528] Delgado Ramisa, L. (Coord.), 2022. op. cit.

[529] Navarro, L., 2023. *La APE y la Mesa del Tercer Sector*: Se ha condonado la deuda a 41.000 familias, pero hay que pulsar el acelerador porque sólo faltan 2 años para que caduque el convenio. *Ilphabitatge.* https://ilphabitatge.cat/es/la-ape-y-la-mesa-del-tercer-sector-se-ha-condonado-la-deuda-a-41-000-familias-pero-hay-que-pulsar-el-acelerador-porque-solo-faltan-2-anos-para-que-caduque-el-convenio/ (accessed 21.6.2024).

[530] ACA, 2018. *Pobreza, vulnerabilidad y desigualdad energética. Nuevos enfoques de análisis*. - Asociación de Ciencias Ambientales (ACA), Madrid.

[531] González-Eguino, M., 2015. Energy poverty: An overview. *Renewable and Sustainable Energy Reviews* 47, pp.377-385.

[532] Tirado Herrero, S. and Ürge-Vorsatz, D., 2012. Trapped in the heat: A post-communist type of fuel poverty, *Energy Policy* 49, pp.60-68.

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[534] Delgado Ramisa, L. (Coord.), 2022. op. cit.

[535] Babot, J., 2024. Régimen jurídico de la pobreza energética: cómo garantizar el derecho a la energía en la Estrategia Nacional de Pobreza Energética. Presentation at *EPAH National Event in Spain - Hacia una nueva estrategia nacional de pobreza energética: aportaciones desde el mundo local*, 15 March.

[536] González-Eguino, M., 2015. op. cit.

[537] Ibidem.

[538] Ibidem.

transform affected individuals from passive victims of an unjust energy model into empowered activists demanding their rights[539]. This empowerment process challenges oligopoly abuses, aiming to set limits on corporate actions affecting vulnerable consumers. APE links dignified housing and basic utilities access to systemic issues within the energy model, positioning itself as a primary grassroots advocate against energy poverty. The movement's impact was strengthened by collaboration with NGOs like Ecoserveis, Taula del Tercer Sector, and the Catalan ombudsman, along with support from groups on the Catalan government's energy poverty board. This joint effort contributed to the groundwork for the passage of Law 24/2015, which institutionalized protections for vulnerable consumers. Without this collective lobbying and institutional advocacy, APE's influence and success would have been limited.

Energy poverty primarily affects households that must allocate a large portion of their income to energy bills, leading to difficulties in meeting basic energy needs. This often results in inadequate thermal comfort, limited disposable income, poor living conditions, and risks of non-payment, disconnection, social isolation, and stigmatization. These factors are commonly used as indicators to measure energy poverty levels in households. Traditionally, energy poverty is attributed to three main factors: **high energy prices, low household income, and poor energy efficiency**. Recently, the concept of **energy vulnerability** has expanded this framework, introducing dimensions such as social practices, specific household needs, and formal recognition of energy-poor households to better capture the complexity of the issue[540].

Spain, the EU's second-largest country (498,485 km²), joined the EU in 1986 and ranks as its fourth most populous member, with 48.1 million people, over 80% in urban areas[541]. Currently, about 17% of Spaniards face energy poverty, struggling with adequate heating and utility costs, often choosing between heating and healthy food[542]. Major energy companies, including Endesa, Naturgy, Iberdrola, Repsol, and EDP, report rising profits while consumer costs increase, underscoring policy needs[543]. In 2014, over 15% of Spaniards and 10.9% of Catalan households couldn't afford adequate warmth, affecting health, family life, and academics. Over 50% of Spain's housing lacks energy efficiency measures, with nearly 17% showing structural issues due to poor insulation. The 2011 census found 5.5% of homes in poor condition, and by 2012, 20.1% of Catalans were below the poverty line. **Catalonia**, with 7.4 million residents in 2014 according to IDESCAT, has a strong history of energy poverty activism. Following the 2008 economic crisis, social spending cuts, rising unemployment, lower wages, and a surge in extreme poverty[544] intensified the issue, with a fivefold rise in poverty and unpaid utility bills, and youth poverty risk escalating from 16.5% in 2008 to 60% by 2013[545].

The annual **GDP growth rate** is a key indicator of the extent and depth of the economic recession caused by the financial crisis of 2008. From 2008 to 2015, Catalonia and Spain saw significant fluctuations, with

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[539] Guiteras, M., 2018. op. cit.

[540]Bouzarovski, S. 2014. Energy poverty in the European Union: landscapes of vulnerability. Wiley Interdisciplinary Reviews: Energy and Environment, 3(3), 276-289.

[541] Destatis, 2023. Europe: Population. https://www.destatis.de/Europa/EN/Topic/Key-indicators/Population.html (accessed: 06.10.2024).

[542] Romero Mora, J.C., Barrella, R. and Centeno Hernáez, E., 2023. *Informe de Indicadores de pobreza energética en España 2022*. Universidad de Comillas.

[543] Aliança contra la Pobresa Energètica, 2024. ¿Qué es APE? https://pobresaenergetica.es/es/quienes-somos/que-es-ape/ (accessed: 21 May 2024).

[544] Despite being under the leadership of a left-leaning coalition comprising the Socialist Party (PSC), the Republican Left of Catalonia (ERC), and Initiative for Catalonia Greens - United and Alternative Left (ICV-EUiA).

[545] INSOCAT 2013. Indicadors socials a Catalunya en relació al context estatal i europeu. *Monogràfic Famílies*. Informe INSOCAT per a la millora de l'acció social. January.

steep contractions in 2008–2009 (-3.6% in Catalonia, -3.8% nationally) and again in 2012 (-3.0% for both). A mild recovery began in 2010, but growth rates dipped negative once more in 2011. Although the decline eased by 2013, meaningful recovery only emerged in 2015, when Catalonia's GDP rose by 4.3%, surpassing the national average of 3.8% according to data from INE. Tirado Herrero[546] reports that from 2008 to 2014, Spanish **household energy costs** rose sharply, with natural gas and electricity prices increasing faster than the EU average. By 2014, Spain had the EU's third-highest natural gas price (0.095 PPS/kWh) and fourth-highest electricity price (0.25 PPS/kWh). Gas prices rose by 67% (from €5.75 to €9.59 cents/kWh), and electricity by 73% (€13.66 to €23.67 cents/kWh). During this period of recession, with high unemployment and reduced wages, 11.1% of Spaniards couldn't maintain adequate winter heating—above the EU average of 10.2%[547]. The 2012 EU-SILC showed that 25% struggled with summer cooling, and 9.2% faced payment delays, with millions enduring cold homes, payment issues, and structural housing problems, reflecting widespread energy poverty in Spain.

In 2014, 8,447 Spaniards were at risk of poverty, while 19.3% of Catalans faced poverty or social exclusion by 2015 (EU-SILC Survey)[548]. The **housing cost overburden rate**[549]—a measure of financial strain from housing costs—affected 10.3% of the population in 2014, limiting their ability to afford essentials like food and healthcare. Urban residents felt more pressure, with 11.8% facing high housing costs compared to 8.7% in rural areas, where costs were generally lower due to less demand (EU-SILC Survey). In its breakdown by **poverty status**, 10.3% of the population in 2014 faced significant financial pressure from housing expenses, potentially limiting their ability to afford other essentials such as food, healthcare, and education. Additionally, the indicator reveals differences by degree of urbanization, reflecting how housing costs impact different communities. In 2014, 11.8% of the population living in cities faced a housing cost overburden. In contrast, the rate in rural areas was 8.7%, indicating relatively lower financial pressure from housing costs. Urban areas typically have higher housing costs due to demand and limited space, contributing to greater financial stress for residents. In 2014, Spain's Living Condition Survey (INE, 2024) revealed financial vulnerability, especially among one-person (€14,565) and single-parent households with children (€17,070). Households distribution[550] showed 9.8% lived alone, 11.6% were two adults under 65, and 16.7% were three or more adults (EU-SILC survey). The **overcrowding rate indicator**[551] shows that 3.7% of owners with mortgages and 12% of market-rate renters, with higher rates among social housing tenants were the most affected collectives. Poverty impacted 10.8% of those below 60% of median income, particularly in urban areas (6.3%) versus rural (4.3%). These indicators underscore the financial and housing challenges linked to energy poverty, driving initiatives like APE in Barcelona.

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[546] Tirado Herrero, S., Jiménez Meneses, L., López Fernández, J.L., Perero Van Hove, E., and Irigoyen Hidalgo, V., 2016. op. cit.

[547] Ibidem.

[548] This trend has shown a slight increase over the years, reaching its peak at 23.2% in 2020 for Catalunya and 11,413 people in Spain in 2023.

[549] This indicator is defined as the percentage of the population living in a household where the total housing costs (net of housing allowances) represent more than 40% of the total disposable household income (net of housing allowances).

[550] The indicator gives for each type of household the percentage of the total population.

[551] This indicator is defined as the percentage of the population living in an overcrowded household. A person is considered as living in an overcrowded household if the household does not have at its disposal a minimum of rooms equal to: - one room for the household; - one room by couple in the household; - one room for each single person aged 18 and more; - one room by pair of single people of the same sex between 12 and 17 years of age; - one room for each single person between 12 and 17 years of age and not included in the previous category; - one room by pair of children under 12 years of age.The indicator is presented by accommodation tenure status.

Barcelona is bordered by mountains, the sea, and adjacent cities, limiting its potential for expansion. Its geography creates climate variability, and in 2014, the population was 1,583,351. Life expectancy averaged 83.9 years, with public healthcare covering 71.2% of residents, 37.8% holding university degrees, and 17.2% born outside the city[552]. According to the Public Health Agency of Barcelona, the population is aging, with many seniors living alone, especially women over 75[553]. In 2015, the GDP was €77.6 billion, per capita income was €19,335, employment was 74.4%, and poverty risk was 19.2%[554]. In 2014, Barcelona residents identified unemployment, economic hardship, and job conditions as top concerns, followed by insecurity and service cuts. Despite better job opportunities and wages, high living costs—especially housing—pose challenges. By 2016, energy poverty affected 10.6% of the population, meaning about 69,500 households. Issues included inadequate home heating (9.4%), payment delays for services (14.5%), and housing quality problems like leaks (9.2%)[555]. The survey highlighted that vulnerable collectives, including single-person households and households with dependents, were expected to grow due to demographic shifts and rising prices for essentials. Climate change was likely to further impact energy needs, with increased demand for water and cooling[556].

On a **political level**, Barcelona, like other major cities, must manage local impacts of global issues such as economic crises, inequality, and environmental challenges, despite its limited geographic scope (Tirado Herrero, 2018). The city has led efforts in addressing energy vulnerability and defending basic rights. In Barcelona and also in Catalonia, social mobilizations asking for the right of access to the basic needs and services (housing conditions, water) have been a long and prominent struggle throughout the last century. Shantytowns communities protesting for decent housing in the 20th century are an example of a first social request of public housing policies. Another example was the rent strike in Barcelona in 1931, during which citizens protested the high rents and the precarious living conditions, introducing the concept of "social and non-speculative rents. It's important to mention that the struggle to guarantee access to basic services like water also has a long history. A notable example is the so-called "water war", which began in 1991 in the Metropolitan Area of Barcelona due to the increase in water bills, involving more than 200,000 people refusing to pay the water taxes.

APE's rise during the economic crisis, amid austerity and financial instability, underscores its transformative role, countering the notion that social movements only thrive in prosperous times[557][558]. Traditionally, financial struggles with housing and utilities were viewed as personal failings, a narrative shaped by neoliberal ideals. However, social movements have reframed these issues as systemic

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[552] Ajuntament de Barcelona, 2018. *Pla Clima de Barcelona*. https://www.barcelona.cat/barcelona-pel-clima/sites/default/files/plan_clima_juny_ok.pdf. (accessed: 24.06.2024).

[553] IDESCAT, 2024. Población extranjera a 1 de enero. Por distritos'. Institut d'Estadística de Catalunya. https://www.idescat.cat/ (accessed: 12.5.2024)

[554] The last figure shows that 24.4% of the population is at risk of poverty (IDESCAT, 2023).

[555] Mas i Sardà, M., 2016. *Informe de Salut de Barcelona 2016*. Agència de Salut Pública de Barcelona. https://www.aspb.cat/wp-content/uploads/2018/04/Informe-Salut-2016-Web-DEF.pdf. (accessed 12.10.2024).

[556] Ajuntament de Barcelona, 2018. op. cit.

[557] Della Porta, D., Andretta, M., Fernandes, T., O'Connor, F., Romanos, E. and Vogiatzoglou, M., 2017. *Late neoliberalism and its discontents in the economic crisis: Comparing social movements in the European periphery*. Springer International Publishing.

[558] Della Porta, D., 2020. Building bridges: Social movements and civil society in times of crisis. *Voluntas: International Journal of Voluntary and Nonprofit Organizations* 31, (5), pp.938-948.

problems affecting society broadly[559] [560]. APE's impact on mobilizing the public draws on historical activism and expert networks, influenced significantly by Spain's 15M movement, which exposed systemic inequality after the crisis[561]. APE challenges the traditional assistentialist approach in Southern Europe by promoting empowerment over passive aid, encouraging active leadership among those affected. Rooted in principles of direct democracy, APE and similar movements like PAH and the Sindicat de Llogateres employ horizontal, assembly-based methods that foster collective decision-making and a shared sense of agency[562]. These participatory models counter neoliberal narratives focused on individual responsibility, advocating instead for systemic change[563]. Through protests against corporate giants like Endesa, APE embodies civil disobedience, following Thoreau's ideals, and positions individuals as active agents against inequality. Integrating behavioral economics, APE underscores energy as a right, addressing energy poverty with an understanding of the complex socio-economic realities of vulnerable populations.

8.3.2. Stakeholder Analysis

As for the stakeholders involved in APE specific context, they are mainly categorized into four groups (Table 8.3a): **business & industry**, **CSOs**, **NGOs, public institutions**, and **professionals with expertise on energy poverty**. The most represented categories are **public administration bodies at different levels** and **CSOs**, highlighting their importance in the area covered by this table. In terms of geographic relevance, the majority of stakeholders operate primarily at the **local and regional scales**, with some extending to the **national level**. This local/national focus suggests a concentrated effort on addressing issues within the specific catalan context than at a global or supranational level. Furthermore, the roles of these stakeholders vary from **beneficiary** to **promoter** and **third party**, and their relationships range from **cooperative** to **conflictual** interactions, indicating a complex network of interests and interactions among these groups. Below a brief description of the stakeholders encountered in this preliminary stakeholder analysis.

- **The Plataforma d'Afectats per la Hipoteca (PAH)** is a key social actor, promoter of the law at the level of political advocacy and mobilization, taking action. Essential for providing community support to APE (Alliance Against Energy Poverty) and for the law's approval. Together with APE, they created the ILP (People's Legislative Initiative) commission and undertook advocacy efforts to ensure the law's implementation. High impact on the law approval, creating the social ground to change (for the ILP you need a minimum of 50000 signatures to have it accepted to be discussed in the Parliament) the regime level.
- The **Third Sector Roundtable** became a very important factor when Endesa sent a letter to municipalities in the summer of 2018, threatening to cut off electricity to vulnerable citizens if they didn't pay the debt. This marked a crucial moment in post-law dynamics. Up until then, APE and the other social actors had focused heavily on the law—preventing disconnections and demanding that companies assume families' debt through agreements with the Generalitat.

[559] Ishkanian, A., 2022. Social Movements and Social Policy: New Research Horizons. *Journal of Social Policy* 51, (3), pp.582–595.
[560] Andreas, M. and Jabakhanji, S.B., 2023. The I-frame vs. S-frame: how neoliberalism has led behavioral sciences astray. *Frontiers in Psychology* 14, p.1247703.
[561] Rey-García, M. and Royo, S., 2022. Strengthening Civil Society in Spain: A Post-COVID-19 Agenda.
[562] Della Porta, D., 2020. op. cit.
[563] Polletta, F., 2019. *Freedom is an endless meeting: Democracy in American social movements*. University of Chicago Press.

Despite this, in August, Endesa sent a letter to the municipalities stating that if the debt for vulnerable individuals wasn't paid by October 1st, their electricity would be cut starting in October. This caused an uproar, especially within the municipalities themselves, and the Generalitat was forced to act. From that moment on, APE formed a very important alliance with the Third Sector Roundtable to secure Endesa's agreement to this measure, which meant the forgiveness of debt for 35,000 families.

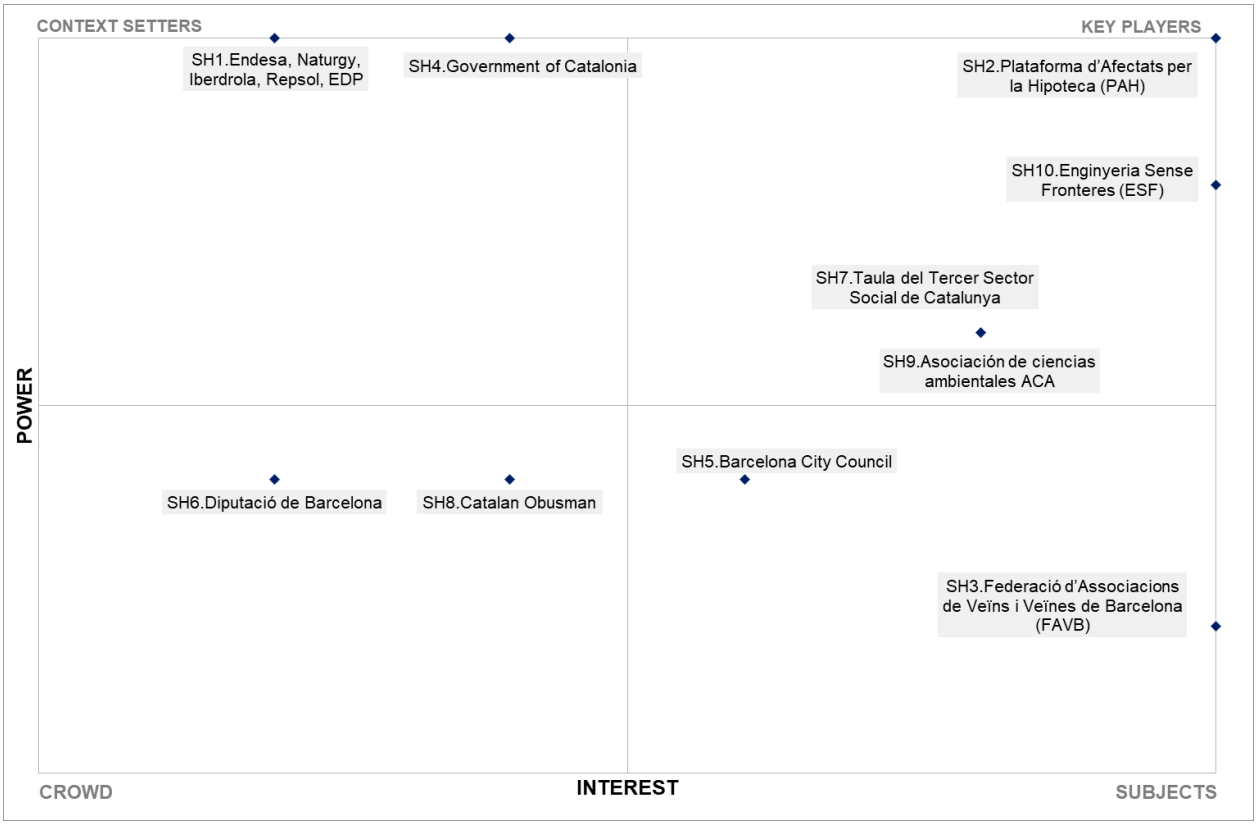
- The **Association of Environmental Sciences (ACA)** provided crucial support to APE by enriching discourse with research-backed evidence and detailed data on energy poverty. ACA brings extensive expertise in analyzing the social, economic, and environmental impacts of energy poverty, conducting in-depth studies that reveal the extent of the issue and its effects on vulnerable communities. Their work includes comprehensive reports, statistical analyses, and case studies that highlight the realities of energy access and affordability. This rigorous research supported the joint efforts toward tackling energy poverty providing credible, data-driven insights to influence policy decisions and foster public awareness around energy equity.
- On the other side, **Engineering Without Borders (ESF)** was and still is the driving force behind APE, serving as its ideological and financial promoter. ESF was the actor that initiated conversations with other organizations and provided the technical support necessary for all the actions from the very beginning. Through various projects, ESF enables people to dedicate time to APE, energizing and advancing it as a whole.
- On the public administration side, **Barcelona City Council** showed full support and maintained a positive relationship with APE, after the application of the law by actively positioning itself in favor of combating energy poverty. This commitment is demonstrated through initiatives like the creation of municipal services such as the Energy Advisory Centers (EACs), designed and managed externally by two NGOs committed to tackling EP (ECOSERVEIS and ABD). These centers provide a public service dedicated to assisting residents affected by energy poverty.
- The Catalan government (**Generalitat de Catalunya**) has been the primary and most frequent point of contact because, at the local level, the power to regulate the electricity companies lies with the Generalitat rather than the municipalities. Therefore, working with all governments has been essential. At times, this collaboration has involved cooperation, while at other times, it has led to conflict. When the law was first approved, there was initially no response from the Generalitat to APE's demands, which insisted on the law's enforcement, and on its role of ensuring its compliance.
- Finally, as for the private side, the **energy industry** wields significant power at the national level, operating much like an oligopoly that impacts not only citizens but also municipalities, especially in cases involving utility disconnections and debt forgiveness. This concentration of power often places municipalities at a disadvantage, complicating efforts to protect vulnerable populations from energy cutoffs and to negotiate fair terms for debt relief.

Table 8.3a – Stakeholders: list and main features

Stakeholder name	Category	Spatial Scale	Role	Resources	Relationship
SH1.Endesa, Naturgy, Iberdrola, Repsol, EDP	Business & Industry	Regional, National, Supranational	beneficiary	Economic	conflictual
SH2.Plataforma d'Afectats per la Hipoteca (PAH)	Civil society organizations	Local , Regional	promoter	Normative, Relational,Positional	cooperative
SH3.Federació d'Associacions de Veïns i Veïnes de Barcelona (FAVB)	Civil society organizations	Local	Beneficiary, target	Relational	cooperative
SH4.Government of Catalonia	Institutions	Regional	third party	Normative	conflictual
SH5.Barcelona City Council	Institutions	Local	third party	Normative, Positional	cooperative
SH6.Diputació de Barcelona	Institutions	Local	third party	Normative, Positional	neutral
SH7.Taula del Tercer Sector Social de Catalunya	Intermediate bodies	Local , Regional	target	Knowledge,Normative	cooperative
SH8.Catalan Obusman	Intermediate bodies	Regional	third party	Positional	cooperative
SH9.Asociación de ciencias ambientales ACA	Professionals	Local,Regional,National	target	Knowledge, Normative	cooperative
SH10.Enginyeria Sense Fronteres (ESF)	NGOs	Local , Regional	promoter	Relational, Positional, Economic, Knowledge	cooperative

Regarding the Power-Interest matrix (**Figure 8.3)**, **context setters** are stakeholders with high power but relatively lower interest. These include **Endesa, Naturgy, Iberdrola, Repsol, EDP** (SH1) and the **Government of Catalonia** (SH4), private and public entities respectively that have significant influence but may not be as directly engaged as promoters, thus shaping the overall context in which other stakeholders operate. On the other hand, **key players** are those with both high power and high interest, such as **Plataforma d'Afectats per la Hipoteca (PAH)** (SH2) and **Enginyeria Sense Fronteres (ESF)** (SH10) in reverting the situation and tackling energy poverty. These organizations not only had considerable influence on the general population, acting together, but were also deeply involved together with the Energy Poverty Alliance (APE) in the outcome (the Energy Poverty Law 24/2015), making them crucial actors in driving change and impacting decision-making in this space.

Figure 8.3a – Stakeholders by relevance: the Power-Interest matrix



Finally, in Table 8.3b, most stakeholders have a dual role of being both affected and affecting others within the context, indicating a reciprocal relationship where their actions influence others while they are also impacted by external factors. Stakeholders like Plataforma d'Afectats per la Hipoteca (PAH), Endesa, Naturgy, Iberdrola, Repsol, EDP, and Enginyeria Sense Fronteres (ESF) exhibit high impact ratings, showing they are particularly active in shaping the outcome and are also sensitive to the influences of other stakeholders.

Additionally, a few stakeholders, like the Barcelona City Council and Catalan Ombudsman have a more passive role as they experience the consequences of the actions of others. Conversely, the Government of Catalonia stands out as primarily affecting others rather than being significantly affected, handling considerable power and influence with a minimal reciprocal impact. This distribution highlights a complex set of interactions, where influence and sensitivity to external factors vary significantly among stakeholders.

Table 8.3b – Stakeholders by impact

Impact Category	Stakeholder	Power	Impact
Affected	SH5.Barcelona City Council	2	4
	SH8.Catalan Obusman	2	3

Impact Category	Stakeholder	Power	Impact
Affected & Affecting	SH2.Plataforma d'Afectats per la Hipoteca (PAH)	5	5
	SH1.Endesa, Naturgy, Iberdrola, Repsol, EDP	5	-5
	SH10.Enginyeria Sense Fronteres (ESF)	4	5
	SH9.Asociación de ciencias ambientales ACA	3	3
	SH7.Taula del Tercer Sector Social de Catalunya	3	3
	SH6.Diputació de Barcelona	2	2
	SH3.Federació d'Associacions de Veïns i Veïnes de Barcelona (FAVB)	1	1
Affecting	SH4.Government of Catalonia	5	-3

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8.4. Pro Hanhikivi association (FI)

The Pro Hanhikivi association was established in reaction to a plan to build a new nuclear power plant (NPP) in the municipality of Pyhäjoki in Finland. The civic action started in autumn 2007 and ended in 2020. In 2014, the association counted more than 300 members, and in 2015 the vice-president of the association, Hanna Halmeenpää, was elected as a member of the Parliament and held office until 2019. The association worked in a well-organized and almost professional way, mainly at the desk, in project consultation processes, in the courts and through the media, but hardly ever through demonstrations. In May 2022 the NPP project collapsed because of some delays and a loss of political support after Russia's invasion of Ukraine. The association challenged the various actors (such as the nuclear company, the ministry, the municipality) and forced them to argue in more detail. Of interest to CO-SUSTAIN is how a grassroot association/movement managed to network and co-produce information with different actors and thus argue against a government-promoted infrastructural project.

8.4.1. Context Analysis

The Pro Hanhikivi association was established as a response to the plan to build the Fennovoima nuclear power plant in the Hanhikivi area in the municipality of Pyhäjoki. The Pro Hanhikivi association opposed the building of the nuclear power plant and nuclear power in general, preferring renewable energy sources for energy production. The Pro Hanhikivi association (niche) managed to influence the stakeholders of the NPP project (the regime) through official methods, for example by writing statements about the effects of the NPP to the nature of the Hanhikivi area. In addition to these influencing methods, the Pro Hanhikivi associationI successfully gained media attention through writing opinion pieces to local and national newspapers and participating in debates about nuclear energy on national television. Even though the association worked with small resources, they managed to gain significant visibility and influence stakeholders on the regime level and gained visibility on the national (landscape) level.

Nuclear power has been one of the cornerstones of Finnish energy policy for decades. In 2021, i.e. before the commissioning of the Olkiluoto 3 1600 MW NPP unit, the share of nuclear energy in total electricity consumption was 26%. The issue of building more nuclear power has been debated several times over the decades. Power companies and industry applied for a license to build a new NPP unit in the early 1990s, but the application was rejected by Parliament in 1993. The power company TVO applied for a new Decision-in-Principle for the Olkiluoto3 unit in 2000. The Parliament approved the application in 2002. A few years later, the debate on further nuclear power construction was launched in Finland[564].

For decades, Finland's energy-intensive industry has demanded low-cost base load electricity production, with nuclear power being the most important form of production[565]. At the national level (nuclear) power companies (and their main shareholders), the Government, the Minister of Economic Affairs, the Ministry of Economic Affairs and Employment (MEAE) and the Radiation and Nuclear Safety Authority (STUK) are

[564] Litmanen, T. and Kojo, M., 2011. Not Excluding Nuclear Power: The Dynamics and Stability of Nuclear Power Policy Arrangements in Finland. *Journal of Integrative Environmental Sciences* 8, 3, 171–94.

[565] Jensen-Eriksen N., 2020. Looking for cheap and abundant power: Business, government and nuclear energy in Finland. *Business History*, *64*(8), 2020, 1413–1434.

the other key players in nuclear energy policy[566]. The regional level is weak in the Finnish political decision-making context.

In 2007 a new nuclear power company Fennovoima was established. The plan of the company was to build a new NPP. The municipality of Pyhäjoki became one of the alternative sites. It is noteworthy that the existing Finnish NPPs are located at two sites in "nuclear communities". It was considered rather bold to start a site selection process for new NPP in a green field community, i.e. a municipality without any previous experience with nuclear technology. In 2011 Fennovoima announced that the NPP would be built in the Hanhikivi site in the municipality of Pyhäjoki[567].

The site selection of a nuclear power plant is influenced by the EIA procedure, the decision-in-principle procedure and planning, among other things. According to the Nuclear Energy Act the proposed host community of a nuclear facility is vested with veto right on the site selection. The decision on the possible use of veto right is done by the local council. The Ministry of Economic Affairs and Employment which is responsible for (nuclear) energy policy in Finland, asks the statements of some stakeholders at the Decision-in-Principle stage. The local council's statement is particularly important precisely because of the right of veto. By the Nuclear Energy Act, even the government cannot ignore the opinion of the municipality. Thus, the municipality has considerable power in the choice of the site.

The local council of Pyhäjoki voted in favor of the NPP project first time in 2009 and second time in 2014[568] and therefore approved the construction of the NPP on its territory. However, after the Russian invasion of Ukraine, political support for the project disappeared and Fennovoima terminated its contract with Rosatom in May 2022.

Originally, the nuclear technology for the Fennovoima NPP was to be ordered from the German company E.ON[569]. However, after the Fukushima disaster, E.ON withdrew from the project in 2012. Fennovoima selected the Russian energy corporation Rosatom as its new plant supplier in 2013. Because of this change, Fennovoima[570] was required to update its application for a Decision-in-Principle in 2014. However, Russia's invasion of Ukraine affected the political support of the NPP and eventually led to the termination of the contract with Rosatom and the cancellations of plans to build the NPP in Pyhäjoki.

According to a survey by the Finnish broadcaster Yle, anti-nuclear sentiments rose in Finland due to the turmoil surrounding the Fennovoima power plant[571]. Anti-nuclear opinions had been on steady decline

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[566] Kerkkänen, A., 2010. Ilmastonmuutoksen hallinnan politiikka. Kansainvälisen ilmastokysymyksen haltuunotto Suomessa. Tampereen yliopisto. Tampere. https://urn.fi/urn:isbn:978-951-44-8207-6 (accessed: 05.6.2024).

[567] Syrjämäki E., Kojo M., Litmanen, T., 2015. Muuttunut hanke: Fennovoiman ydinvoimalahankkeen YVA-yleisötilaisuudet Pyhäjoella vuosina 2013–2014. http://urn.fi/URN:ISBN:978-951-39-6246-3 (accessed: 05.6.2024).

[568] Ibidem.

[569] Fennovoima. Periaatepäätöshakemus. 2009

[570] Fennovoima Hakemus valtioneuvoston 6.5.2010 antaman ydinenergialain (990/1987) 11 §:n mukaisen periaatepäätöksen M 4/2010 vp täydentämiseksi. 2014. https://tem.fi/documents/1410877/2608779/Fennovoiman+hakemus+ja+sen+t%C3%A4ydennys.pdf/425dc920-63b7-4c82-b559-649e3211d312/Fennovoiman+hakemus+ja+sen+t%C3%A4ydennys.pdf?version=1.1&t=1463477585000

[571] Yle, Kysely, 2014. Fennovoima-sekoilu käänsi mielipiteitä ydinvoimaa vastaan. https://yle.fi/a/3-8203800 (accessed: 11.7.2024).

since the 90s[572], which made the decline in public approval stand out. The anti-nuclear sentiment has since then phased out and the public approval for nuclear energy is currently very high[573]. Interestingly, even though on the national level approval for nuclear energy faced decline during the Fennovoima project, according to a survey in Pyhäjoki, the local approval for building a NPP to Hanhikivi remains high[574]. In fact, The Pyhäjoki municipality still pursues locating a NPP to Hanhikivi[575].

Pyhäjoki, located by the Gulf of Bothnia some 80 kilometers to south-west from the City of Oulu, is a small rural municipality with about 3 000 inhabitants (about 3 400 in 2010). Pyhäjoki covers an area of 1365,53 km^2 [576]. Agriculture and forestry, small businesses and public services are the main employers in Pyhäjoki, which is typical of small rural municipalities in Finland. Unemployment rate was in April 2024 10,3 percent. Distance to the nearest town Raahe (some 24 000 inhabitants) from Pyhäjoki is less than 30 km. The steel manufacturer Rautaruukki Ltd has its production facilities in Raahe.

The population of Pyhäjoki is mainly native Finnish speaking. Foreigners make up only 3.6% of the municipality's population[577]. The population is older than the Finnish average, as over 30% of the municipality's population is over the age of 64. The national average is 23.4%. Unemployment is higher than the national average, 11%[578]. The planned site of the NPP, the area of Hanhikivi, is located North from the Pyhäjoki town center. It's an area of a couple of kilometers on a flat and low-lying area near the shore of the Gulf of Bothnia[579]. Before the construction process, the area had coastal meadows and pine forest and was mainly in its natural state, apart from some summer cottages[580].

8.4.2. Stakeholder Analysis

The categories of stakeholders most represented in Pro Hanhikivi association HE were national and international business and industry representatives, such as Fennovoima, Finnish Radiation and Nuclear

[572] Lappalainen Tuomo, 2007. Ydinvoiman kannatus ennätystasolla. https://suomenkuvalehti.fi/wp-content/uploads/sk/files/vanhat/library/attachments/Lis%C3%A4%C3%A4%20ydinvoimaa%20(SK%202107).pdf (accessed: 11.7.2024).

[573] Energiateollisuus, Energiateollisuuden kysely: ydinvoimalla vakka suosio. 2024. https://energia.fi/tiedotteet/energiateollisuuden-kysely-ydinvoimalla-vankka-suosio/ (accessed: 12.7.2024).

[574] Pyhäjoki, Ydinvoimaan ja tuulivoimaan suhtaudutaan Pyhäjoella myönteisesti. 2024. Ydinvoimaan ja tuulivoimaan suhtaudutaan Pyhäjoella myönteisesti | Pyhäjoki (pyhajoki.fi) (accessed: 11.7.2024).

[575] The municipality of Pyhäjoki, Budget of 2024: economic plan of 2024 – 2026. (Talousarvio 2024: Taloussuunnitelma 2024-2026) 2023. https://www.pyhajoki.fi/sites/default/files/tiedostot/Liitetiedostot/Talousarvio%202024%20ja%20taloussuunnitelma%202024-2026.pdf (accessed: 30.9.2024).

[576] National Land Survey of Finland, Finnish surface area by municipality (Suomen pinta-ala kunnittain). 2024. https://www.maanmittauslaitos.fi/sites/maanmittauslaitos.fi/files/attachments/2024/01/Vuoden_2024_pinta-alatilasto_kunnat_maakunnat.pdf (accessed: 30.9.2024).

[577] Statistics Finland, Municipalities' key numbers (Kuntien avainluvut). 2024. https://stat.fi/tup/alue/kuntienavainluvut.html#?year=2023&active1=KU625&active2=SSS (accessed: 30.9.2024).

[578] Ibidem.

[579] Climateguide, 2022. West of North Ostrobothnia In the Bay of Bothnia (Pohjois-Pohjanmaan länsiosa – Perämeren vaikutuspiirissä). https://www.ilmasto-opas.fi/artikkelit/pohjois-pohjanmaan-lansiosa-perameren-vaikutuspiirissa (accessed: 30.9.2024).

[580] Council of Oulu Region, 2010. Hanhikivi nuclear regional plan (Hanhikiven ydinvoimamaakuntakaava). https://pohjois-pohjanmaa.fi/wp-content/uploads/2020/09/627-2.pdf (accessed: 30.9.2024).

Safety Authority (STUK), E.On, Rosatom (+subsidiaries), Fortum, Voimaosakeyhtiö SF and Outokumpu .Local administration actors and the media were also quite represented (Table 8.4a).

Looking at Table 8.4b, it can be seen that politicians and public actors operating at the national level had the greatest real influence on the initiative, while the stakeholders most affected by the initiative were mainly the media and NGOs. In contrast, key players included the three municipalities and Fennovoima representing business (Figure 8.4a)

Table 8.4a – Stakeholders: list and main features

Stakeholder name	Category	Spatial Scale	Role	Resources	Relationship
SH1. Fennovoima	Business & Industry	National	beneficiary	Economic, Positional, Knowledge, Relational	conflictual
SH2. Finnish Radiation and Nuclear Safety Authority (STUK)	Business & Industry	National	beneficiary	Positional, Knowledge,Normative	neutral
SH3. E.On	Business & Industry	Supranational (EU, Global)	target	Economic, Knowledge	conflictual
SH4. Rosatom (+subsidiaries)	Business & Industry	Supranational (EU, Global)	target	Economic, Knowledge	conflictual
SH5. Fortum	Business & Industry	National	target	Economic	conflictual
SH6. Voimaosakeyhtiö SF	Business & Industry	National	target	Economic, Relational	conflictual
SH7. Outokumpu	Business & Industry	National	target	Economic	conflictual
SH8. Ministry of Economic Affairs and Employment (MEAE)	Institutions	National	beneficiary	Positional, Knowledge,Normative,Economic,Relational	neutral
SH9. Ministry of Environment	Institutions	National	third party	Positional, Knowledge,Normative,	neutral
SH10. National Broadcaster YLE	Media	National	third party	Normative, Relational	cooperative
SH11. Helsingin Sanomat newspaper	Media	National	third party	Normative, relational	cooperative
SH12. Kaleva (regional newspaper)	Media	Regional	third party	Relational	cooperative
SH13. Raahen Seutu (local newspaper)	Media	Local	target	Relational	cooperative
SH14. Pro Hanhikivi Association	NGOs	Local	promoter	Relational	cooperative
SH15. Greenpeace	NGOs	National , Supranational	beneficiary	Relational, Knowledge, Economic	cooperative
SH16. Hyökyaalto (Anti,nuclear campaign group)	NGOs	National	third party	Knowledge	cooperative
SH17. Government of Finland	Politicians	National	promoter	Normative, Relational, Positional, Economic	neutral

Stakeholder name	Category	Spatial Scale	Role	Resources	Relationship
SH18. Parliament of Finland	Politicians	National	target	Normative, Relational, Economic	neutral
SH19. The Greens (political party)	Politicians	National	target	Relational, Positional	neutral
SH20. Pyhäjoki Municipality	Public services	Local , Regional	beneficiary/target	Economic	conflictual
SH21. Municipal government of Pyhäjoki	Public services	Local	target	Normative, Positional	conflictual
SH22. Municipal council of Pyhäjoki	Public services	Local	target	Normative, Positional	conflictual
SH23. The Center of Economic Development, transport and the Environment (ELY,Center)	Public services	National	third party	Knowledge, Normative, Positional	neutral

Figure 8.4a – Stakeholders by relevance: the Power-Interest matrix

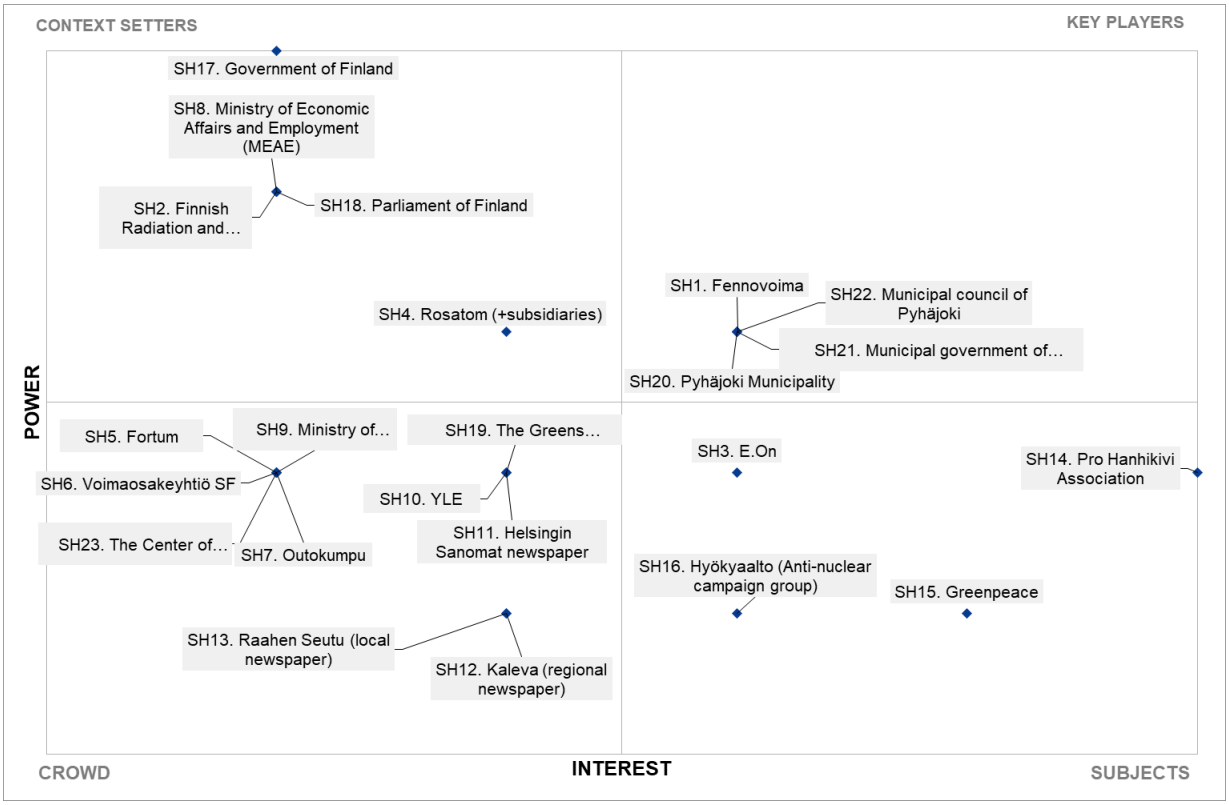

Table 8.4b – Stakeholders by impact

Impact Category	Stakeholder	Power	Impact
Affected	SH10. National Broadcaster YLE	2	3
	SH11. Helsingin Sanomat newspaper	2	3
	SH3. E.On	2	3
	SH15. Greenpeace	1	3
	SH12. Kaleva (regional newspaper)	1	2
	SH13. Raahen Seutu (local newspaper)	1	2
	SH16. Hyökyaalto (Anti-nuclear campaign group)	1	2
Affected & Affecting	SH20. Pyhäjoki Municipality	3	3
	SH1. Fennovoima	3	3
	SH4. Rosatom (+subsidiaries)	3	3

Impact Category	Stakeholder	Power	Impact
	SH21. Municipal government of Pyhäjoki	3	3
	SH22. Municipal council of Pyhäjoki	3	3
	SH14. Pro Hanhikivi Association	2	2
	SH9. Ministry of Environment	2	2
	SH5. Fortum	2	2
	SH6. Voimaosakeyhtiö SF	2	2
	SH7. Outokumpu	2	2
	SH19. The Greens (political party)	2	2
Affecting	SH17. Government of Finland	5	3
	SH2. Finnish Radiation and Nuclear Safety Authority (STUK)	4	3
	SH18. Parliament of Finland	4	3
	SH8. Ministry of Economic Affairs and Employment (MEAE)	4	2
	SH23. The Center of Economic Development, transport and the Environment (ELY-Center)	2	1

The Pro Hanhikivi association was established as a response to the plans of the Pyhäjoki municipality to allow the building of the Fennovoima nuclear power plant to the Hanhikivi area. The association's members included residents from Pyhäjoki and neighboring regions and their goal was to prevent the building of the Fennovoima NPP through peaceful and legal methods. These actions included writing complaints to the institutions responsible for the approval of the various stages of the nuclear power plant's construction and gaining media attention through interviews and opinion pieces. Their influence grew over time from the local level, to the regional and up to national level. In 2015, the Pro Hanhikivi VP Hanna Halmeenpää was elected as a member of the Finnish Parliament and the association gained an access to national politics. Regardless of their efforts, the association decided to give up in 2016.

This historical example has a plethora of stakeholders from the local, regional, national, and supranational level, which emphasizes how the nuclear power plant projects have various stakeholders invested in them. The main spatial scale for the stakeholders was the national level, followed then by regional and local levels. The building of the nuclear power plant involves many stakeholders in Finland, as the decision, site planning and safety regulations all regard different institutions. The Pro Hanhikivi association affected these institutions by writing complaints of Fennovoima's applications to build the NPP and by gaining attention from the media.

The main categories of the stakeholders involved in this historical example were business & industry, public services, politicians, media, and NGOs. The key players in this historical example are the municipal council and government of Pyhäjoki and the nuclear power plant company Fennovoima.

The context setters included Rosatom, STUK (The Finnish Radiation and Nuclear Safety Authority), The Ministry of Economic Affairs and Employment and the government and Parliament of Finland. Excluding Rosatom, all other context setters have power regarding the decision to build new nuclear power plants in Finland.

Stakeholders on the local level

The Pro Hanhikivi Association, Municipal council of Pyhäjoki, Municipal government of Pyhäjoki and "Raahen seutu" newspaper are the main stakeholders on the local level. The activities of this small association were conducted mainly by the association's chair and vice chair. Although they were initially only a local stakeholder, their actions gained national attention through the media.

The Municipal council and government of Pyhäjoki were mainly supporting building the power plant in Hanhikivi. However, some members of the municipal government and council supported Pro Hanhikivi's work on stopping the NPP from being built.

Raahen Seutu, a small local newspaper, published editorials and opinion pieces that were positive towards the building of the power plant and negative towards Pro Hanhikivi. However, this way the Pro Hanhikivi association gained some publicity on the local level.

Stakeholders on the regional level

Municipality of Pyhäjoki in general and the Kaleva newspaper can be situated on the regional level. The municipality in general had a negative attitude towards Pro Hanhikivi, although differing opinions existed as well.

Kaleva is a regional newspaper that is published in the North Ostrobothnia region. They published editorials and opinion pieces that were slightly negative towards Pro Hanhikivi and generally positive towards building the NPP. However, these publications helped Pro Hanhikivi to gain publicity.

Stakeholders on the national level

On the national level, the main stakeholders included corporations, institutions, political parties and media. The Finnish corporations taking part in building of the Hanhikivi NPP included Fennovoima, Voimaosakeyhtiö SF, Fortum and Outokumpu. These corporations had a negative attitude towards the Pro Hanhikivi association, as the association publicly criticized their plan to build the NPP.

The media outlets Helsingin Sanomat and the national broadcaster YLE were the most important platforms for Pro Hanhikivi to gain publicity. These are the most popular media outlets in Finland and reach millions of Finns daily. YLE included Pro Hanhikivi multiple times in debates and interviews on their TV channels regarding nuclear power and the Hanhikivi power plant. Helsingin Sanomat, the biggest newspaper in Finland, included Pro Hanhikivi in their news stories regarding the building of the NPP.

The Pro Hanhikivi association collaborated with Greenpeace to raise awareness about the downsides of nuclear power. Greenpeace was important for the Pro Hanhikivi association, as Greenpeace had the resources to organize effective campaigns.

The protest movement Hyökyaalto opposed the building of the NPP in Hanhikivi. In contrast to Pro Hanhikivi, Hyökyaalto's main method of opposing nuclear power was protests. As Hyökyaalto was gaining publicity, Pro Hanhikivi publicly stated that they are not collaborating with Hyökyaalto.

The main ministries that were stakeholders in this historical example were the Ministry of Economic Affairs and Employment (MEAE) and the Ministry of Environment. Other important institutions included the Finnish Radiation and Nuclear Safety Authority (STUK) and The Center of Economic Development, transport and the Environment (ELY-Center). Pro Hanhikivi pursued to influence these institutions by writing petitions and complaints and comments regarding land use planning.

The main political stakeholders were the Government and Parliament of Finland and the political party The Greens. The Finnish government decided to approve the building of the Hanhikivi NPP, which led the Greens leaving the government in 2014. The Pro Hanhikivi association and the Greens had a positive but strained relationship. Pro Hanhikivi expected more support towards their actions from the Greens and were disappointed that the Greens did not leave the government sooner. However, Pro Hanhikivi VP Hanna Halmeenpää became a member of parliament for the Greens in the 2015 parliament elections.

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Yle, Kysely, 2014. Fennovoima-sekoilu käänsi mielipiteitä ydinvoimaa vastaan. https://yle.fi/a/3-8203800 (accessed: 11.7.2024).

8.5. Organisation Krakow Smog Alert (PL)

Smog has been a significant issue in Krakow for over 200 years[581], but public awareness only grew in the 21st century. Two key events sparked this: research from Jagiellonian University on the effects of air pollution on pregnancy and child development, and the creation of the "Krakow Smog Alert" Facebook page in 2012, which published daily pollution data[582]. This raised awareness and led to protests, with thousands demanding action[583]. A grassroots campaign pressured authorities to ban burning coal and wood by 2019 and pushed for regulations and financial support for eco-friendly heating[584] . KSA inspired over 50 similar initiatives across Poland[585]. It also fostered innovation, such as the development of air quality tracking tools like Airly, born from university hackathons and crowdsourced data projects. This case demonstrates how social movements can influence governance and drive social innovation.

8.5.1. Context Analysis

The Krakow Smog Alert is a social movement established in response to the alarming poor air quality in Krakow. Smog has been a phenomenon associated with the city for years, creating a negative counterbalance to its historic beauty and heritage[586]. In 2012, after the Jagiellonian University announced the results of research on the negative impact of air pollution in Krakow on the course and quality of pregnancy, as well as on the health and development of children, the three persons (Andrzej Guła, Anna Dworakowska and Ewa Lutomska) established a thematic Facebook profile named "Krakow Smog Alarm – *pl. Krakowski Alarm Smogowy*" (KSA). It was a forum where people involved in improving the environment in Krakow could communicate and announce protest actions. The first protest announced on Facebook gathered about 300 people[587]. Soon, the number of people involved in active protests grew to several thousand. A broad social campaign was launched in the media and through outdoor advertising. It called for a change of energy carriers to those that pollute the air less. After a year, the informal movement transformed into an association: "Krakowski Alarm Smogowy"[588]. This can be considered the moment when the collective action initiative (CAI) was created. The increasingly strong pressure from activists, their long-standing lobbying for clean air and the involvement of many stakeholder groups and officials led finally to a change in local regulations regarding the recognition of the incineration of solid fuels in Krakow as prohibited. Since 2019, KSA has become a mature movement

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[581] Wilczyńska-Michalik, W., Pietras, B. and Michalik, M., 2016. Smog w Krakowie-spojrzenie w przyszłość z perspektywy historycznej. *Aura* (11), 3-8.

[582] Wantuch, D. and Kuraś, B., 2016. Jak aktywiści przeganiali smog znad Krakowa, „Wyborcza", 22.01.2016. https://krakow.wyborcza.pl/krakow/7,44425,19514744,jak-aktywisci-przeganiali-smog-znad-krakowa.html (accessed: 04.06.2024).

[583] Motak, D. 2015. Krótka historia walki ze smogiem, https://www.radiokrakow.pl/krotka-historia-walki-ze-smogiem (accessed: 02.09.2024).

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[585] PAS, 2024. https://polskialarmsmogowy.pl/historia/ (accessed: 02.09.2024).

[586] Bokwa, A., 2017. Smog jako element mezoklimatu Krakowa. [in:] M. Drewniak and M. Mika (eds.), *Człowiek i jego działania. Spojrzenie geografa.* Kraków: Instytut Geografii i Gospodarki Przestrzennej Uniwersytetu Jagiellońskiego w Krakowie, 61-69.

[587] Gawlik, K., 2022. Krakowianie wychodzili na ulicach zmianę, która kiedyś wydawała się abstrakcją, https://smoglab.pl/krakowski-alarm-smogowy-krakowianie-wychodzili-na-ulicach-zmiane/ (accessed: 07.09.2024).

[588] Maltby, T., Birch, S., Fagan, A., and Subašić, M., 2024. What is the role of activism in air pollution politics? Understanding policy change in Poland. *Environment and Planning C: Politics and Space*, 23996544241231677.

(CAI). While continuing to operate in the region where it originated, it also operates at the level of the entire country[589].

From the point of view of MLP three stages of the CAI development can be distinguished: Emergency (2012–2016), Diffusion (2017 – 2019) and Reconfigurations (after 2019). Primarily, the **niche** of the CAI was the city of Krakow, but the development of the local activism caused: an increase in the number of scientific studies on various aspects of the climate imperative and their popularization leading to and an increase in citizens' knowledge and awareness of the importance of clean air for social health. As a result, similar initiatives began to emerge in other regions of the country up to the national level (Polish Smog Alert). In time local conditions (**regime**) also were changing. As a result of intensive lobbying and educational activities of the CAI, the attitude of local government representatives towards the environment, climate protection problems and to the demands of local communities has changed leading to the changes in local legal regulations. At the national level **(landscape**), changes in environmental protection regulations occurred, which consequently led to the possibility of introducing local regulations aimed at improving the condition of the environment. Namely: the use of solid fuels in Krakow is prohibited.

In the Reconfiguration stage the national level of perception of the climate imperative was influenced by several factors:

- the accelerating pace of striving for climate neutrality by the European Union, confirmed by the introduction of a number of pro-ecological regulations,
- changes in Poland's energy policy, reducing the importance of coal in meeting the country's energy needs,
- market changes that have reduced the costs of installing renewable energy sources,
- Russia's invasion of Ukraine, as a result of which there was a significant change in the directions and quality of the country's fuel and energy supply.

In this changed landscape, KSA finds further opportunities to pressure local authorities to take further steps and change the law in direction that will improve the air in Krakow.

The latest effect of the KSA's activities was the adoption of an anti-smog resolution, according to which the use of unclassified solid fuel boilers is banned in the entire Małopolska province[590].

The actions of the Polish Smog Alarm indicate the direction of further steps. They appeal for coal quality standards and emission standards for boilers as well as regulations to limit car traffic in cities; introducing zones with limited traffic emissions, releasing parking fees and tightening vehicle inspections in terms of exhaust emissions.

[589] Gawlik, K., 2022. op. cit.

[590] Life IP-Małopolska, 2024. Uchwała antysmogowa dla Małopolski. https://powietrze.malopolska.pl/antysmogowa/malopolska/ (accessed: 29.05.2024).

8.5.1.1. KSA relation to sustainable transformation/climate imperative

A long-term effort by KSA members, activists, residents and local authorities has led to the introduction of a ban on burning coal and wood and the decommissioning of around 30,000 wood- and coal-fired boilers, resulting in a significant improvement in air quality in Krakow[591].

Social activism and grassroots efforts have resulted in numerous social innovations and changes in social and cultural practices. The issue of combating air pollution has brought together different social groups and has led to activities and projects, such as hackathons, civic initiatives to create and place air quality sensors in city spaces, educational programs and social campaigns, and even a few start-ups. The case of Krakow shows how grassroots activities and civic participation can influence local regulations and local authorities.

Smog episodes still occur in Krakow. At present, the main challenge remains pollution from neighboring municipalities, where there are still around 11,000 off-grade boilers in operation. Another source of pollution is car traffic in the city. Transport emissions are responsible for almost 45 percent of PM10 concentrations and 77 percent of nitrogen oxide concentrations in the center of Krakow[592].

8.5.1.2. Socio-political characteristics

In Poland, the governing model is based on local government. The Provincial Assembly is the legislative body, the Marshal is the executive body, and the Voivode is the representative of the Government in the province. The activists' postulates had to be formalized at some stage in the form of resolutions and regulations, which required the involvement of local as well as central authorities. Initially, local authorities were reluctant to introduce a ban on burning solid fuels in Kraków. KSA activists were accused of political motivation (the desire to build political capital on smog problems), harming Kraków's image (as a popular tourist destination) or lack of social sensitivity (the ban on using cheap solid fuels contributed to the growth of energy poverty for particularly vulnerable groups)[593].

Relatively quickly, the Kraków city authorities sided with the activists and submitted a petition to the provincial assembly to pass a resolution banning the use of solid fuels in the city[594]. This resolution was immediately challenged by various groups whose interests were violated. In addition to some residents, the resolution was also protested by producers and sellers of coal and firewood, manufacturers of stoves and boilers for solid fuels, and associations of stove and fireplace manufacturers[595].

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[591] KAS, 2024. Kraków nie jest już stolicą smogu – historyczna poprawa jakości powietrza, https://krakowskialarmsmogowy.pl/2024/05/09/krakow-nie-jest-juz-stolica-smogu-historyczna-poprawa-jakosci-powietrza/ (accessed: 18.10.2024).

[592] Toborek, P., 2024. Historyczna poprawa jakości powietrza w Krakowie. Stolica Małopolski jest wolna od smogu, https://www.portalsamorzadowy.pl/ochrona-srodowiska/historyczna-poprawa-jakosci-powietrza-w-krakowie-stolica-malopolski-jest-wolna-od-smogu,543995.html (accessed: 04.06.2024).

[593] Gawlik, K., 2022. op. cit.

[594] Wantuch, D. and Kuraś, B., 2016. op. cit.

[595] PIGSW, 2024. Małopolskie Uchwały Antysmogowe, https://pigsw.pl/malopolska-uas/ (accessed: 02.09.2024).

After several lawsuits and interventions by the central authorities in the field of changing national law, the anti-smog resolution for Kraków was finally adopted. A total ban on burning coal and wood has been in force in Kraków since September 1, 2019.

The next step of the KSA's activities was to eliminate pollution flowing into Krakow from the municipalities surrounding the city. This action also ended in success. The Małopolska Regional Assembly adopted an anti-smog resolution, according to which a ban on the use of unclassified solid fuel boilers was introduced throughout Małopolska.

8.5.1.3. Demographic structure

In the years 2000-2015, Krakow recorded an increase in population from 740 thousand people in 2000 to 760 thousand - in 2015, mainly due to a positive migration balance, despite a negative natural increase. The city attracted young professionals and students, which contributed to its dynamic economic and infrastructural development. These processes were reflected in the change in the age structure. The share of people aged 25-34 increased (young professionals coming to Krakow), the share of people aged 0-18 decreased (low birth rate). At the same time, Krakow had to face the challenges related to the aging society and managing the growing population[596].

8.5.1.4. Economic situation

In the years 2000-2015, Krakow recorded high economic growth, and GDP per capita. This was possible mainly due to the development of the services sector, modern technologies and tourism. Krakow has become an important center of services, especially IT, outsourcing and shared service centers (SSC) and financial centers. The city has attracted many foreign investments[597] [598]. In the years 2000-2015, foreign direct investment in Krakow amounted to around PLN 10 billion, which constituted 10% of all investments in Poland. In the years 2000-2015, there was an increase in employment in Krakow, especially in the services and advanced technology sector. In 2015, the unemployment rate in Krakow was 4.5%, compared to 9.8% for Poland. During this time, the country's economic growth was significant, but Krakow's growth rate was faster than the national average. Krakow has become one of the most developed and attractive economic centers in Poland.

8.5.1.5. Socio-cultural characteristics

Krakow is one of the oldest cities in Poland. The Old Town district was inscribed on the UNESCO World Heritage List in 1978. Krakow is home to 24 higher education institutions (10 public and 14 non-public)[599], including the Jagiellonian University, one of the oldest in Europe. Krakow is also the seat of many renowned cultural institutions: museums, theaters, galleries, as well as many cultural festivals, such as

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[596] Polska w Liczbach, 2024. https://www.polskawliczbach.pl/Krakow (accessed: 13.08.2024).

[597] CNUCED, 2012. *World investment report 2011: Non-equity modes of international production and development*. UN. https://unctad.org/system/files/official-document/wir2011_en.pdf (accessed: 07.09.2024).

[598] ABSL, 2017. Sektor nowoczesnych usług biznesowych w Polsce 2017. https://g3.gazetaprawna.pl/p/_wspolne/pliki/2981000/2981561-raport-absl-2017.pdf (accessed: 05.10.2024).

[599] Urząd Miasta Krakowa, 2013. Raport o stanie miasta 2012. https://www.bip.krakow.pl/plik.php?zid=110312&wer=0&new=t&mode=shw (accessed: 10.09.2024).

the Krakow Film Festival, the Festival of Jewish Culture or the International Literary Festival in Krakow. Krakow is one of the most visited cities in Poland. Every year millions of domestic and foreign tourists come to the city. Between 2010 and 2017, the number of tourists increased from 6 million to 12.9 million[600]. The tourist attractiveness of Kraków and the recorded year-on-year increase in the number of visitors to the city is driving the development of tourism-related sectors, although it also generates tensions and costs. Attention is drawn to the problems of rising prices of services, renting or buying property and the progressive gentrification of historic districts[601].

8.5.1.6. Socio-technical characteristics

Krakow has long been an industrial powerhouse. The Lenin Steelworks, built after World War II, became the largest industrial complex in Krakow and a major source of air pollution. Other factories, such as the Solvay Soda Plant and the Bonarka Chemical Plant, also played an important role in the city's industrial development. The Aluminum Plant in Skawina, which borders Krakow, is also worth mentioning. In the second half of the 20th century, these heavy industry plants were sources of massive pollution. They were gradually closed or modernized[602], giving way to modern commercial and office investments . The creation of a special economic zone in 1998 attracted leading technology companies such as Motorola, IBM, and Cisco, signaling a shift towards a more modern and diversified economy. The city's energy infrastructure includes a large public electricity generating unit that supplies both electricity and heat to the region. In addition, two CHP plants in nearby Skawina provide district heating to the Krakow Metropolitan Area.

8.5.1.7. Social participation

Kraków's civil society is generally very active and participates in numerous social movements, playing a key role in shaping local politics. After 2000, these movements focused mainly on environmental issues, women's rights and urban development. The beginnings of mass actions to mobilize society are linked to the city's air quality. In 2013, Kraków had one of the worst air quality in Europe, which prompted local environmental groups to demand reforms, which were successfully completed.

In 2016, Kraków was one of the cities involved in the nationwide "Black Protests" against the proposed restrictive abortion laws in Poland. Thousands of people protested in the streets, demanding greater autonomy and protection of women's rights.

Social activism was also manifested in actions to protect Kraków's historical heritage and promote sustainable development in the face of the city's rapid growth. Issues such as the construction of new infrastructure, green areas and the need for better public transport were often raised by these groups, which significantly influenced the decisions of the city authorities. In 2014, the city introduced a participatory budget, enabling residents to decide how to allocate the city budget for investments according to their preferences.

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[600] Tracz, M. and Semczuk, M., 2018. Wpływ turystyki na zmianę funkcji przestrzeni miejskiej na przykładzie Krakowa. *Biuletyn Komitetu Przestrzennego Zagospodarowania Kraju PAN*.

[601] Kruczek, Z., 2018. Turyści vs. mieszkańcy. Wpływ nadmiernej frekwencji turystów na proces gentryfikacji miast historycznych na przykładzie Krakowa. *Turystyka Kulturowa*, *3*, 29-41.

[602] Wilczyńska-Michalik, W., Pietras, B. and Michalik, M., 2016. op. cit.

8.5.1.8. Ecological characteristics

In the years 2000-2016, Krakow faced serious environmental challenges, in particular related to air quality, protection of green areas and waste management.

The city's geographical location in a valley, combined with intensive industrial activity and coal-fired heating, meant that air pollution standards were very often exceeded in the city[603]. This was therefore one of the most pressing environmental problems of the period. The previously discussed anti-smog resolution (initiated by city activists) partially solved this problem.

Krakow has a rich network of parks and green areas. Unfortunately, new housing developments, office space and infrastructure projects are reducing the amount of available green space. Areas that function as natural areas or are minimally affected by human activity have decreased from 76.1% in 2006 to 71.3% in 2016. This decline has contributed to challenges in maintaining the city's biodiversity and has exacerbated problems related to heat islands and local pollution[604].

However, several initiatives have sought to balance development with environmental protection. For example, Krakow has focused on creating sustainable urban projects, such as expanding public transport options to reduce car use and emissions. In addition, local environmental groups have advocated for the protection of parks and nature reserves, pushing for a more responsible approach to urban planning[605]. There has also been progress in waste management. Krakow has made significant changes, in part due to European Union directives that required higher recycling and waste segregation rates. The city has introduced stricter regulations on waste collection and recycling, among other things In 2016, the Krakow Waste Incineration Plant was established [606].

8.5.2. Stakeholder Analysis

According to Table 8.5a the most frequently represented category of stakeholders associated with the initiative oriented towards the fight for clean air in Krakow are non-governmental organizations. These are primarily the initiators of the activities: Krakow Smog Alert and the nationwide branch created on its basis - Polish Smog Alert. This group also includes environmental organizations with regional, national and international reach (Polish Green Network, Frank Bolt Foundation, ClientEarth). The second largest group of stakeholders are public entities of all types, representing successive levels of local and government (regional and central) administration. Other stakeholders include representatives of business and industry or intermediary bodies, including interest group organizations, as well as the scientific community. An important place on the stakeholder map was also occupied by the media, which played a huge role in the entire initiative. Local and regional media kept the public informed of developments and

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[603] Ibidem.

[604] KRKNews, 2021. W Krakowie ubywa terenów zielonych, ale wciąż jest ich dużo. https://krknews.pl/w-krakowie-ubywa-terenow-zielonych-ale-wciaz-jest-ich-duzo/#:~:text=To%20du%C5%BCo.,(20%20pa%C5%BAdziernika%202021)%20prof (accessed: 18.10.2024).

[605] Rąpalski P., 2015. Trwa wojna o Zakrzówek - urzędnicy kontra aktywiści. https://krakow.naszemiasto.pl/trwa-wojna-o-zakrzowek-urzednicy-kontra-aktywisci/ar/c3-3541702 (accessed: 23.09.2024).

[606] Blecharczyk, W. and Kandefer, M., 2021. Rola Krakowskiego Holdingu Komunalnego SA w zakresie gospodarki odpadowej Miasta Krakowa. *Zeszyty Naukowe Wyższej Szkoły Ekonomii i Informatyki w Krakowie* (17), 9-24.

subsequent air protection measures contributing to increased awareness and social mobilization. According to the informants interviewed, however, it was the unflattering articles about smog in Krakow published in the foreign press and international portals that made it necessary for the central authorities headed by the Prime Minister of the government to address the air quality problem. This significantly accelerated and changed the importance of the entire initiative and contributed to its success. A separate group is the citizens, most of whom supported the initiative.

An analysis of stakeholder status by power and interest provides interesting information. In Figure 8.5a, it can be seen that one of the characteristics of HE is that the majority of stakeholders are strongly involved in the initiative, with relatively high opportunities to influence its course. This is one of the reasons why the initiative centered around the solid fuel ban went on for years, with the predominance of supporters and opponents of change switching repeatedly during the battle. In the end, the implementation of key laws, after repeated appeals to various institutions, was successful, although it was significantly postponed.

Table 8.5b classifies stakeholders based on their influence on the initiative, dividing them into three categories. Among those influenced are Krakow Smog Alert, along with a group of other NGOs and citizens fighting for the right to clean air, as well as public institutions influencing the legislative process and programs to enable real change. At the other extreme are the stakeholders most affected by the initiative. Among them are intermediary bodies that represented professional groups and entities that suffered a loss due to the introduction of restrictions on the use of solid fuels in Krakow, as well as citizens who perceive the proposed changes as limiting their freedom of choice and an economic burden. The largest group is made up of stakeholders who, on the one hand, influenced the course of the initiative in selected areas, and, on the other, suffered the consequences (positive or negative) of the ongoing process.

Table 8.5a – Stakeholders: list and main features

Stakeholder name	Category	Spatial Scale	Role	Resources	Relationship
SH1. Krakow Smog Alert	NGOs	Local	promoter	Relational	cooperative
SH2. Polish Smog Alert	NGOs	Local-Regional-National	promoter	Relational	cooperative
SH3. ClientEarth Poland	NGOs	National - Supranational	promoter	Relational, Knowledge	cooperative
SH4. Polish Green Network	NGOs	Local-Regional-National	promoter	Relational, Knowledge	cooperative
SH5. Business against smog	Business & Industry	Local	promoter	Positional, Relational	cooperative
SH6. Inspectorate of Environmental Protection	Public services	Local-Regional-National	target	Positional, Normative	conflictual
SH7. National/Regional Fund for Environmental Protection and Water Management	Public services	Local-Regional-National	target	Positional	neutral
SH8. World Bank	Institutions	Supranational (EU, Global)	third party	Economic, Positional, Knowledge, Relational	cooperative
SH9. Scientists from Jagiellonian University Medical College	Research	Local-Regional-National	third party	Knowledge	cooperative
SH10. Scientists from AGH University of Science and Technology	Research	Local-Regional-National	third party	Knowledge	cooperative
SH11. Supreme Administrative Court	Institutions	National	third party	Normative	neutral
SH12. City Council of Cracow	Public services	Local	target	Normative, Positional, Relational, Economic	cooperative
SH13. Mayor of Krakow	Politicians	Local	target	Normative, Relational, Positional	cooperative
SH14. Lesser Poland Regional Assembly	Politicians	Regional	target	Normative, Positional, Relational, Economic	cooperative
SH15. Małopolska Provincial Office	Politicians	Regional	target	Normative, Positional, Relational, Economic	neutral
SH16. Ministry of Development	Institutions	National	target	Normative, Positional, Relational, Economic	cooperative
SH17. Ministry of Energy	Institutions	National	target	Normative, Positional, Relational, Economic	conflictual
SH18. Airly	Business &	Regional-National-	beneficiary	Knowledge	cooperative

	Industry	Supranational			
SH19. Hackathons	Civil society organizations	Local	promoter	Knowledge	cooperative
SH20. Frank Bolt Foundation	NGOs	Local-Regional-National	promoter	Knowledge	cooperative
SH21. Citizens supporting initiative	Citizens	Local	beneficiary/target	Relational	cooperative
SH22. Citizens against initiative	Citizens	Local	beneficiary/target	Relational	conflictual
SH23. Lesser Poland Guild of Stove Fitter and Related Professions	Intermediate bodies	Regional	target	Positional, Relational	conflictual
SH24. Polish Economic Chamber of Coal Dealers	Intermediate bodies	Local-Regional-National	beneficiary	Positional, Relational	conflictual
SH25. Local media (krowoderska.pl, gazeta wyborcza)	Media	Local	beneficiary/target	Relational	cooperative
SH26. Foreign media	Media	Supranational (EU, Global)	third party	Relational	neutral
SH27. SMOGLAB	Media	National	third party	Relational	cooperative
SH28. Influencers/Social media celebrities	Media	Local-Regional-National	third party	Relational	cooperative

Figure 8.5a – Stakeholders by relevance: the Power-Interest matrix

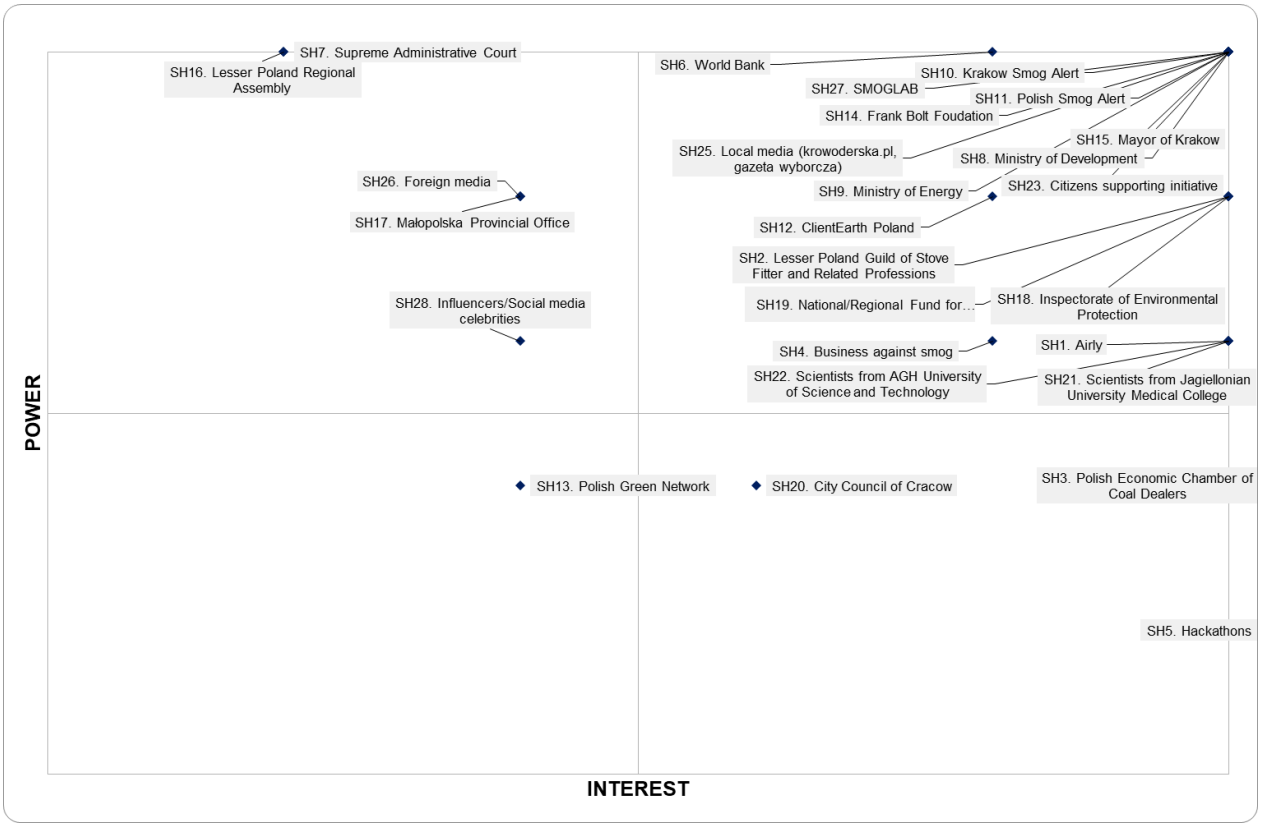

Table 8.5b – Stakeholders by impact

Impact Category	Stakeholder	Power	Impact
Affected	SH5. Business against smog	3	4
	SH18. Airly	3	5
	SH22. Citizens against initiative	2	5
	SH24. Polish Economic Chamber of Coal Dealers	2	5
Affected & Affecting	SH4. Polish Green Network	2	2
	SH9. Scientists from Jagiellonian University Medical College	3	3
	SH10. Scientists from AGH University of Science and Technology	3	3
	SH11. Supreme Administrative Court	1	1
	SH19. Hackathons	1	1
	SH23. Lesser Poland Guild of Stove Fitter and Related Professions	4	5
	SH2. Polish Smog Alert	5	5
	SH7. National/Regional Fund for Environmental Protection and Water Management	4	4

Impact Category	Stakeholder	Power	Impact
	SH21. Citizens supporting initiative	5	5
	SH27. SMOGLAB	5	5
	SH1. Krakow Smog Alert	5	5
Affecting	SH16. Ministry of Development	5	3
	SH17. Ministry of Energy	5	4
	SH20. Frank Bolt Foundation	5	4
	SH3. ClientEarth Poland	4	2

The Krakow Smog Alert is a social movement established in December 2012 in response to the alarming poor air quality in Krakow. Smog has been a phenomenon associated with the city for years, creating a negative counterbalance to its historic beauty and heritage. Smog in Krakow is a historical phenomenon; its presence in the city dates back to the 19th century, a time of technological and economic development. Until the 1990s development of industry (heat and power plants and steelworks in Krakow) was considered a major source of air pollution. After the steelworks were closed, household emissions (boilers) and traffic emissions are considered to be the main reasons for air quality degradation[607].

For years, residents remarked about poor air quality but could not see the consequences of inhaling it. Ecological organizations have been active in Kraków since the 1980s[608](Polish Green Network), but it is only at the beginning of the second decade of the 21st century that the topic of smog appears more and more often in the local public debate. This was influenced by two events that in 2012 mobilized residents to fight for clean air: (1) the announcement of 20 years of research at the Jagiellonian University on the negative impact of air pollution in Krakow on pregnancy and children development, and (2) the founding of the 'Krakow Smog Alert' Facebook profile by 3 people (Ewa Lutomska, Andrzej Guła, Anna Dworakowska), which published daily information on the state of air in Krakow. This made residents much more aware of the scale of pollution and its impact on their health.

Numerous petitions, manifestations, and actions of urban activists were the initial forms of local political activities. Social activism and grassroots efforts have resulted in many social innovations and changes in social and cultural practices. The issue of combating air pollution has brought together different social groups and has led to activities and projects, such as hackathons, civic initiatives to create and place air quality sensors in city spaces, and a number of educational programmes and social campaigns.

As a consequence of these activities and social pressures, a law has been introduced in Krakow which bans the burning of coal, wood and other solid fuels in boilers, cookers and fireplaces in the Krakow area from 1 September 2019. Now the citizens are fighting for a similar ban on solid fuels burning in surrounding communes. At the same time, taking the success of Krakow Smog Alert as an example, smog

[607] Jeleński T., Dendys, M., Radziszewska-Zielina, E. and Fedorczak-Cisak M., 2021. Inclusion of Renewable Energy Sources in Municipal Environmental Policy: The Case Study of Kraków, Poland. *Energies* 14, (24), 8573. https://doi.org/10.3390/en14248573.

[608] Delorme, A., 2007. Dlaczego autentycznie społeczny ruch ekologiczny powstał w Krakowie. *Państwo i Społeczeństwo* 7, (4), 33-42.

alerts have been set up in dozens of other cities in Poland, and local government authorities there have begun to introduce anti-smog regulations following the example of Krakow.

The civic initiative focused on the fight to improve air quality in Krakow began in 2012 when a Facebook profile called Krakow Smog Alert (KSA) was set up by three individuals. Initially, the profile published daily information on the air quality in the city. In the autumn of 2012, KSA used the social network for the first time to invite residents to participate in a protest march. At the time, around 300 people gathered to express their concern about the air quality in the city. Other organizations, public persons, city activists and artists associated with Krakow, as well as academics, joined in organizing the marches and publicizing the air quality issue. A community formed spontaneously around the Facebook profile, which began to amplify public discontent and put pressure on local authorities. A year later, in December 2013, the association was formally registered under the name Krakow Smog Alert. At the same time, a large-scale social campaign was initiated in the media and through outdoor advertising, which was financed from the bottom up by the community. Activists lobbying started for a change in regulations on permitted energy carriers (exclusion of solid fuels), as well as for the introduction of financial support programmes for the replacement of heating sources with ecological ones and subsidies for thermal modernisation of buildings. Due to the activities of the KSA, supporting organizations and citizens, from 2019 coal and wood can no longer be burned in the city, and the organization paved the way for all anti-smog resolutions in Poland (more than 50 other local smog alerts have been created since then). The members of such organizations are mainly residents of cities and towns where air pollution standards are exceeded, but they also involve social organizations, urban movements, scientists, artists, and some politicians. From the merger of the local smog alerts (Kraków, Lower Silesia and Podhale), the Polish Smog Alert (PSA) was established in 2015, bringing together civic movements concerned about poor air quality in Poland.

The regime level consists of several levels corresponding to successive units of public administration. These are the local authorities represented by the city mayor and city council, the Marshal's Office and the Małopolska Regional Assembly. The Collective Action Initiative (CAI) landscape can be defined at the national level, with key stakeholders being the central government and its regional structure: the Małopolska Voivodeship Office. The legal framework and socio-cultural and economic conditions of the case study are also a part of the CAI landscape on the national scale: high dependence of the national economy on coal, the extraction of which is an important sector of the Polish economy. The dynamics of CAI activities were determined primarily by the different positions towards KSA's demands at different levels of administration, which resulted directly from the political struggle between political parties.

Initially, local authorities were reluctant to introduce such radical solutions to improve air quality, despite clear evidence, including scientific findings, about their negative impact on human health. Activists were accused of being politically motivated (wanting to build political capital on the smog issues), acting to the detriment of Krakow's image (as a popular tourist destination) or lacking social sensitivity (banning solid fuels as a major factor in energy poverty for vulnerable groups). Relatively quickly, the municipal authorities of Krakow sided with the activists and submitted a petition to the provincial assembly to adopt a resolution banning the use of solid fuels in the city.

At the same time, the city introduced protective programmes for energy-poor and low-income people in the form of subsidies for heating bills and a system of subsidies for replacing coal-fired furnaces with other heat sources. The latter was regressive, i.e. the subsidy was lower each year to mobilize residents to quickly decide to replace their heating sources. In the initial period, it was up to 100% of the investment costs. The initiators of CAI emphasize that the success of the project and the successful exertion of pressure on the municipal authorities was due to the huge mobilization of people, who were provided with reliable knowledge of the problem and possible solutions. This made politicians more willing to make unpopular decisions. Indeed, the resolution adopted by the Provincial Assembly at Krakow's request was immediately challenged by various groups whose interests had been violated. In addition to some residents, producers and sellers of coal and firewood, manufacturers of solid-fuel cookers and boilers, or associations of cooker and fireplace makers also agitated against the resolution.

The anti-smog Resolution of the Provincial Assembly was adopted at the end of 2013, and already in February 2014, it was challenged before the Provincial Administrative Court, which annulled the introduced anti-smog regulations. This ruling was upheld by the Supreme Administrative Court (SAC) in August 2015[609]. The case at this stage became so high-profile that the central authorities had to address it. Public pressure meant that the government coalition in power at the time still managed to pass an amendment to the environmental protection law before the end of the legislature responding to all the SAC's objections. As a result, at the end of 2016, the councilors of the Małopolska Regional Assembly were able to adopt a second anti-smog resolution for Krakow, i.e. a total ban on burning coal and wood from 1 September 2019[610].

According to the KSA activists themselves, over several years of fighting for clean air, politicians have undergone a huge metamorphosis in their thinking about smog and decided, despite the political risks, to take such difficult decisions at a rapid pace. Achieving these changes required, in addition to marches and protests, also the support of scientists as well as works involving writing and submitting petitions, visits to Warsaw (the capital of Poland) to meet with representatives of the central authorities, and many social campaigns in which public figures were often involved. The most recent result of KSA's activities was the passing of an anti-smog resolution by the Małopolska Voivodeship Assembly, according to which the operation of classless solid fuel boilers was banned throughout the Małopolskie Voivodeship. Originally, the resolution was to come into force at the beginning of 2023, but due to the energy crisis caused by Russia's attack on Ukraine, the Sejmik finally postponed the deadline to April 2024[611]. This decision was

[609] Teraz Środowisko, 2015. Czy Kraków będzie stroną przed NSA w sprawie tzw. "uchwały antysmogowej"? https://www.teraz-srodowisko.pl/aktualnosci/Krakow-NSA-uchwala-antysmogowa-643.html (accessed: 23.09.2024).
[610] CIRE, 2016. Kraków. Uchwała antysmogowa zaskarżona, https://www.cire.pl/artykuly/serwis-informacyjny-cire-24/111455-krakow-uchwala-antysmogowa-zaskarzona (accessed: 07.09.2024).
[611] Spiller, J., 2022. Małopolska uchwała antysmogowa wejdzie w życie później niż zakładano, https://www.teraz-srodowisko.pl/aktualnosci/malopolska-uchwala-antysmogowa-kwiecien-2024-12430.html (accessed: 07.09.2024).

appealed to the Voivode, and activists from the KSA were also joined by the city of Krakow in the role of allies fighting for air quality[612].

A long-term effort by KSA members, activists, residents and local authorities has led to the introduction of a ban on burning coal and wood. The year 2023 was the first year in the history of measurements in which there were no annual exceedances of the level of particulate matter and the permissible number of smog days at any of the measurement stations in Krakow (KAS 2024). Social activism and grassroots efforts have resulted in numerous social innovations and changes in social and cultural practices. The issue of combating air pollution has brought together different social groups and has led to activities and projects, such as hackathons, civic initiatives to create and place air quality sensors in city spaces, educational programs and social campaigns, and even a few start-ups. The case of Krakow is shown to this day as a unique example of how grassroots activities and civic participation can influence local regulations and local authorities. Despite meeting current air quality standards, smog episodes still occur in Krakow and the health risk is still significant. The levels recommended by the World Health Organisation (WHO) have also still not been achieved[613].

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9. CONCLUSION

According to Paul Ekman and Erik Amnå[614] one can outline four types of political participation: Engagement, Civic Engagement, Formal Political Participation and Activism. **Engagement** refers to lower-level participation in social issues, such as attending meetings or local events, which are more personal in nature. Civic engagement extends beyond individual participation to include volunteering and supporting causes that benefit the community, empowering citizens and strengthening social cohesion. Formal political engagement includes organized efforts such as voting in elections or aspiring for political positions , or engaging in policymaking processes to influence government decisions. Activism however, is a more complex form of participation which encompasses advocacy that involves direct confrontation, mass protests or campaigns that challenge established norms and structures. These categories reflect varying levels or "depths" of involvement with democracy and community life, highlighting the spectrum of participation dynamics.

Initially developed to describe interpersonal interactions and their emotional dimensions in different contexts, this typology provides a useful framework for analyzing community engagement and political discourse.

Within the CO-SUSTAIN project, however, the typology has been adapted to focus on the dominant characteristics of organizations so as to be able to identify their diversity on the transformative path. It is worth emphasizing that the categories of Ekman and Amna typology were implemented at the conception stage of the project making them a valuable tool for the initial organization of the research material gathered throughout the contextual analysis.

9.1. HISTORIC EXAMPLES OF INVOLVEMENT

The excerpt below deals with involvement as a specific form of public participation. This type of involvement represents a passive form of participation with low levels of commitment and activity. The main activities which are included in this type of involvement are receiving information and voicing one's opinion, although not necessarily participating in any decision-making processes or other actions. Here, in order to understand the importance of these initiatives, it is important to look at the practices and decisions made by their members or supporters. The Chapter five draws on case studies of five European initiatives to illustrate involvement in practice:

- OurPower Energy Cooperative (AT): This cooperative promotes energy democracy and citizen power through an online marketplace connecting renewable energy producers and consumers. Although OurPower encourages citizen participation in the renewable energy transition, individuals primarily engage by buying or selling electricity, a relatively passive form of involvement.
- Energy Community in the Rural Municipality of Monachil (ES): This community aims to promote energy savings, efficiency, and renewable self-consumption among residents. While the community encourages participation, members primarily engage through membership. Although

[614] Ekman, J. and Amnå, E., 2012. Political participation and civic engagement: Towards a new typology. *Human Affair*s 22. Doi: 10.2478/s13374-012-0024-1.

decisions are taken by consensus, this is not a large number of people in the municipality, despite the growth of the organization.

- "Przylesie" Housing Energy Community (PL): This housing cooperative implemented "deep thermal modernization" and renewable energy investments to reduce energy consumption. Although residents are involved in decision-making through consultations and referenda, participation is limited to cooperative members, and active engagement is concentrated within elected boards.
- Urban gardening communities in the city of Tartu (EE): These community-based initiatives provide spaces for urban food production and promote ecological lifestyles. While hundreds of gardeners participate in these initiatives, their engagement primarily involves renting individual garden beds or participating in community activities.
- Solidarity Renewable Energy Community (REC) Naples Est (IT): This initiative aims to increase social inclusion and support low-income households through renewable energy. The community, while promoting energy literacy and participation, involves residents mainly as beneficiaries of reduced energy bills and educational programs. Decision-making power lies primarily with the founding organizations, such as Legambiente and Fondazione Famiglie di Maria.

Key observations about involvement in some historical examples include:

1. Limited active participation: While the initiatives encourage citizen engagement, active participation in decision-making processes and actions remains limited.
2. Focus on individual benefits: Many individuals engage primarily to access personal benefits, such as reduced energy bills or access to garden plots.
3. Influence of external factors: The development and activities of these initiatives are significantly influenced by external factors, including EU and national policies, as well as local regulations.

However, the type of participation depends on specific historical examples. Focusing on self-interest does not mean isolation from the environment. For example, in the case of Monachil, members intend indirectly to contribute to a common goal. Through networking, they lead to improving neighborhood relations and promoting transformative solutions.

Involvement can be understood as an introductory stage that precedes participation in more active forms. It allows for the opportunity to become aware, to form opinions, and possibly even to become interested in becoming more actively involved. With the provision of information and opinion-sharing fora, initiatives can be said to facilitate at least some connectedness and a feeling of belonging among participants, even if their participation remains passive. Indeed, case studies have shown how these initiatives are very often dependent upon an active core of smaller size, while the rest are passively involved in the individual benefits.

The bottom line from this chapter is that involvement can indeed have a supporting role as a passive form of participation in civic endeavors and society and environmental challenges; but the case studies also bring out the limitations of involvement in transformative change. The initiatives are typically

sustained by an active core while a larger group of people participate passively, basically to gain access to the individual benefits. All these limitations in wider active involvement in decision-making processes and actions raise questions over the effectiveness of involvement as part of measures towards major societal and environmental goals. However, the cases analyzed are not insignificant for the surrounding socio-economic system. Even with this involvement, many HEs leave an important imprint in the form of impact on the institutional system, the legal system or at least inspiration and as good practice.

9.2. HISTORIC EXAMPLES OF CIVIC ENGAGEMENT

The historical examples of civic engagement described in Chapter six exemplify actions taken at the individual and collective level, which focus predominantly on individual and collective efforts, for example to improve living conditions in the local community, charitable activities or helping others outside one's own circle of family or friends. A characteristic feature of this type of involvement is its voluntary nature. Four examples of such activities are described in the deliverable:

- Network of 'Makers': this relates to the situation in Spain at the beginning of the Covid-19 pandemic. In response to the shortage of sufficient equipment, including respirators in hospitals, an initiative made up of people proficient in IT was formed to work together and then, using 3D printing technology, to print ventilators and produce protective equipment. Acting spontaneously and without a clear leader, this network was an example of a rapid and effective civil society response to a public health crisis.
- Local self-help movement in Kainuu region: the initiative was a response to the effects of a natural disaster. During the winter of 2017-2018, heavy snowfall in the Kainuu region caused numerous power grid failures and blackouts. These failures affected more than ten thousand of households and paralyzed the operations of companies and public service providers. The negative effects of the situation were largely reduced thanks to grassroots mobilization and the importance of neighborhood emergency help.
- Earthquake in L'Aquila in 2009: actions taken spontaneously by residents were driven by dissent and opposition to the tardiness of the local authorities in rebuilding the city after the earthquake and the lack of adequate policies to counter the consequences of such events in the future. Established citizens' committees and voluntary groups were involved in, among other things, clearing the rubble of the city, helping the needy and rebuilding damaged infrastructure.
- Flood in Genoa in 2011: faced with the disaster of flooding, residents spontaneously got involved in helping those affected and cleaning up flooded streets. Cooperation between voluntary groups, activists and public actors resulted in a well-functioning, coordinated relief operation.

Looking cross-sectionally at all the examples presented, two points can be noted. The first points to the strong role of human capital, commitment and altruism, as well as (often specialized) competences, the ability of individuals to self-organize in order to realize joint ventures came to the fore. All four initiatives were based on cooperation and solidarity between participants. In Spain, the 'creators' effectively coordinated their activities online. In Finland, neighborly help and support played a key role. In Genoa, a synergy between local leaders and volunteer groups was spontaneously created. In L'Aquila, residents organized protests and campaigns to work together to rebuild the city.

The second issue is how social mobilization initiated in response to crises and disasters translates into the long-term impact of the initiatives undertaken, resilience and preparedness to face future risks. In

Finland, power cuts have increased preparedness for similar situations. In Genoa, the network of volunteers established after the 2011 floods was reactivated during the COVID-19 pandemic. In L'Aquila, the experience of the earthquake mobilized residents to fight for a safer and more resilient city.

The case studies show that crises can stimulate the emergence of grassroots civic initiatives based on solidarity, self-help and the use of local resources. These initiatives can contribute to making communities more resilient to future challenges.

9.3. HISTORIC EXAMPLES OF FORMAL POLITICAL PARTICIPATION

Chapter seven looks at the settings and contexts surrounding formal political participation in the context of climate change mitigation and adaptation initiatives. In this section, we analyzed those historical cases that were categorized in the initial phase of the project as having formalized political participation. These tend to be activities that use established institutional channels, primarily voting in elections and contacting elected officials. These activities are often characterized by moderate levels of engagement and clear objectives to influence political decisions. Within this part of the analysis, we looked at initiatives such as:

- Vienna Climate Team (AT): This initiative uses participatory budgeting to involve citizens in allocating funds for climate mitigation and adaptation projects in Vienna.
- Youth Climate Group, city of Granollers (ES): This project empowers young people to participate in local climate policy by providing training and facilitating engagement with city officials.
- Resource Wise Municipality (FI): This case study focuses on the municipality of Ii, Finland, and its efforts to become carbon neutral through collaboration with citizens, businesses, and national networks.
- Clean Transport Zones in Krakow (PL): Krakow implemented Clean Transport Zones to address air pollution, drawing on citizen input through public consultations and feedback mechanisms.
- Green zones for recreation and community spaces in Tartu County (EE): This initiative focuses on transforming a former military area into green recreational spaces in Tartu County, Estonia, involving residents through participatory planning and community engagement.

Across these case studies, two common themes and observations emerge regarding the nature and impact of formal political participation in climate-related initiatives:

1. After almost in all HE, one can see the influence of actors at the regime level who represent some administrative body. Formal political participation is often shaped and influenced by regime-level actors, including government officials, political parties and legislation. These examples show active participation in these actors in the early stages of initiation development.
2. The importance of public consultation and other feedback mechanisms in developing initiatives is present in almost all HEs analyzed here. Formal political participation often included consultation tools such as public consultation (Clean Transport Zones in Krakow), participatory budgeting (Vienna Climate Team), participatory planning (Ii in Finland and indirectly Youth Climate Group) and other feedback mechanisms that allow citizens to express their opinions and concerns. It is also a stage for gaining legitimacy for the activities carried out.

Formal political participation in the making of climate change mitigation and adaptation initiatives is one important avenue through which citizens may influence policy decisions using established institutional channels. Yet it is crucial to underline a number of limitations with regard to formal political participation and to find support for strategies that enhance citizen participation, inclusiveness, and overcoming bureaucracy to take effective action on climate change.

While there are a number of challenges and limitations to formally engage citizens in climate-related initiatives, the extent to which individual citizens and groups actually participate can be highly unequal. This raises issues of representativeness and fairness in decision-making processes. Formal political processes are cumbersome, complicatedly slow, and often hardly allow for the proper timing of effective climate action. Navigating bureaucratic structures and legal frameworks is always a challenge.

9.4. HISTORIC EXAMPLES OF ACTIVISM

The historical examples of activism illustrate how manifested forms of activism and grassroot social movements emerged in response to specific challenges and problems. Activism is characterized as that type of political participation that is based on overt action for or against a particular idea. This is usually done by participating in protests and demonstrations, writing petitions and motions to the authorities, boycotts and various forms of civil disobedience or, finally, by setting up more or less formalized social movements, forums and organizations. Chapter eight takes a closer look at five historical examples of activism:

- Anti-nuclear movement in Austria since 1972: This initiative started in the 1970s and focused on opposition to the construction of a nuclear power plant in Zwentendorf an der Donau. Concerns about nuclear safety led to a referendum, which resulted in a law blocking the development of nuclear power in Austria. The Chernobyl disaster in 1986 further strengthened anti-nuclear sentiment and Austria became a leader in promoting anti-nuclear policies in Europe.
- Residents' movement in the Northern District of Granada, Spain: an initiative in which residents, experiencing chronic power outages, organized a social movement to fight for reliable and affordable energy, drawing attention to the plight of the residents and seeking long-term solutions together with a network of NGOs - including one based on the energy communities model.
- Energy Poverty Alliance (APE): is a grassroots social movement that was founded in Barcelona in 2014 in response to the economic crisis and growing energy poverty. Working with neighborhood organizations and other social movements, APE fought for the recognition of access to basic services (water, energy, housing) as a fundamental right. Their efforts led to the passage of a landmark energy poverty law in Catalonia in 2015.
- Pro Hanhikivi Association: it was founded in Finland in 2007 to oppose the proposed construction of the Pyhäjoki nuclear power plant. Their activities mainly focused on building awareness of the risks of nuclear power and promoting alternative energy sources, using project consultations, legal action and the media to challenge the government-backed project. NPP project eventually collapsed in 2022 due to delays and loss of political support following Russia's invasion of Ukraine.
- Krakow Smog Alert: is a social movement that was founded in Krakow in 2012 in response to rising air pollution. Initially operating as a Facebook page, KAS published daily pollution data, raising public awareness and mobilizing residents to protest. The movement put pressure on the

authorities, leading to the ban on coal and wood burning in Krakow in 2019. KAS has also inspired similar initiatives across Poland.

The HE's described show some common patterns as well as differences in the way they operate. The differences can be seen mainly in the strategies adopted and the choice of tools for influencing and achieving goals. Some activities focused on achieving their goal through the organization of protests, media campaigns and lobbying, some made extensive use of social media to disseminate information and build awareness, others exerted pressure on the authorities through participation in consultations or the available repertoire of legal actions. What emerges as a set of common features of each case are:

- the agility of social movements and the ability to mobilize broad public support for issues, whether at the level of the society, NGOs or, in selected cases, academic institutions or policy makers,
- the social and relational capital manifested in the widespread entry of activist groups into cooperation with other organizations,
- the long-term commitment of social movements to their causes, their persistence of purpose and their ability to turn momentary and spontaneous mobilization around important issues into sustainable structures and long-term action for change.

Social movements and activism as a form of political participation emerge in response to specific issues, ranging from direct threats to health and the environment to issues of social justice and access to basic goods. Often, social mobilization is catalyzed by crises of various types, reinforcing a sense of urgency for action and change. As can be seen from the above examples, social capital, cooperation and the use of expertise are key factors in the success of social movements.

To conclude the above findings, it is worth pointing out that social movements play an important role in processes of social change. While involvement and formal political participation face limitations in scale and depth of engagement, they play important roles in fostering awareness and legitimacy. Civic engagement and activism, by contrast, demonstrate the transformative potential of grassroots mobilization and collective efforts. Their emergence is determined by a combination of external factors, such as crises and perceived threats, and internal factors, such as social capital, cooperation and consideration of the local context. These movements can effectively influence policy, change social attitudes and contribute to building a more sustainable and just future. Ultimately, the success of these initiatives depends on their ability to balance participation levels, leverage local resources, and adapt to the broader social, political, and climatic context.