MULTI-LEVEL GOVERNANCE AND EMPOWERMENT OF ENERGY COMMUNITIES

Comparing the Cases of Italy and the Netherlands

Flavia Trovalusci
MSc Engineering and Policy Analysis
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COMPARING THE CASES OF ITALY AND THE NETHERLANDS

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Flavia Trovalusci
Student Number: 5379334

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Graduation Committee

First Supervisor and Chairperson:	Dr. T. Hoppe, MAS-OG
Second Supervisor:	Dr. ir. Bert Enserink, MAS-PA
First Assessor:	Dr. ir. Tineke Ruijgh-Van der Ploeg, MAS-PA
Second Assessor:	Dr. Nihit Goyal, MAS-OG
Advisor:	Dr. A.V. Itten, Ministry of Economic Affairs and Climate Policy

TU Delft

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Executive Summary

The recent broader interest in reducing GHG emissions while supporting bottom-up initiatives has led to an increased number of Energy Communities. Those are citizen-led energy initiatives, flourishing across all of Europe as a decentralized way of energy production. Moreover, they have been acknowledged as social innovations, too. ECs enhance the spread of other transitions, not only the energy one, e.g., car-sharing services, EVs, and initiatives against energy poverty. However, an energy community, even though is now acknowledged as a legal entity by the European Union and by local governments, is still facing barriers that are hindering its full deployment. According to the academic literature, those barriers concern, for instance, the lack of a factual regulatory framework, absence of intermediaries, and new business models. Moreover, ECs have not been analyzed through the Multi-Level Governance, specifically on how institutional setting and governance can influence the emergence of these initiatives and support their spread. This Multi-Level Governance implies the study of the stakeholders' interaction among different levels, EU, national and sub-national, until the local level. This multi-level approach was acknowledged in the literature as relevant when examining energy and climate policies, also due to the importance which is recognized in those topics of the local and regional levels. Thus, the use of this framework for further analysis can provide clarity concerning the different responsibilities of local, national, and international actors, as well as intermediaries, and support the identification of additional barriers which has not been highlighted yet. This research, hence, aims to formulate a policy advice on how to strengthen the flourishing process of these citizen-led initiatives by assessing it through the Multi-Level Governance framework.

The main Research Question is, therefore: *'How does Multi-Level Governance support or hinder the empowerment of Energy Communities when comparing Italy and the Netherlands?'*

The scope is achieved through, firstly, the identification of a Multi-Level Governance framework through an extensive literature review. The main dimensions which have been classified to analyze the research are Openness and Transparency, Participation, Accountability, Effectiveness, and Coherence. Those indicators based on MLG have the aim to continue filling the gap on best practices for Energy Communities, as well as factors that are still not considered within the levels and between different levels of governance. Furthermore, given the purpose of this study, a qualitative approach, in particular, a comparative case study design, is utilized. This qualitative approach fits the aim of this research, due to its capacity to consider the complexities of each situation and, when analyzed, results in in-depth information needed to explore, understand and explain phenomena. The identified case studies are Italy and the Netherlands, and data from those countries are retrieved through semi-structured interviews. Due to the aim of evaluating the governance of the case studies, the interviewees were selected to acknowledge the perspective of the different levels of government, i.e., national, subnational, regional and local. Moreover, for each case study, firstly, the description of the stakeholders and the ECs context, as well as the timeline of events, were established; then, findings based on the interviews are analyzed through the lens of MLG, more specifically of the beforementioned five dimensions. Thus, for the cross-case analysis, those findings are compared, in order to observe similarities and differences, as well as barriers and hindering processes.

The results have shown that the use of the MLG framework allowed an in-depth analysis of ECs conditions, both in Italy and the Netherlands. In fact, the use of this framework underlined how stakeholders in the multiple levels are interacting, and, due to the bottom-up approach with which ECs should develop, the local level, as well the interaction of this level with the higher ones, are fundamental for achieving their full deployment. In Italy, Regions and Communes are the ones enabling the establishment of those communities without losing sight of the main purpose of ECs as defined by the EU: achieving benefits for the community's members and its local context; while the Dutch provinces and municipalities support those communities with additional funding schemes, with which they can lower the financial risks for citizens. Furthermore, one aspect which was recognized as relevant but in both countries is still not implemented, is the mobilization of the stakeholders, i.e., more in depth, understanding who the key actors are and opening a

communication and cooperation channel with them. In fact, the MLG does not comprise only governmental and public stakeholders, but private, too. Thus, the stakeholders identified at the local level should broaden their collaboration, not only on financial support, but on sharing the engineering, technical and administrative know-how as well, which is still considered a barrier to ECs' development. In Italy, this could encourage the spread of competencies, which are currently fragmented among different stakeholders and result in one of the main barriers. Moreover, the Dutch cooperatives could benefit from this cooperation in the early stages, with fewer risks in the investment and business plan, with easier access to the right stakeholders. However, it must be noticed that few best practices exist in both countries, and they could be beneficial for one and the other. For instance, the cross-interaction between Dutch ECs, as well as initiatives to involve citizens in active participation regarding sustainability topics (e.g., 'energy breakfasts'), could be significant to be adopted by the Italian ones, where there is a lack of inhabitants' engagement and knowledge on the topics of ECs and sustainability aspects. On the other side, the involvement of the Italian universities, as well as ESCOs and cooperatives' interest could further deploy ECs on the territory.

Overall, the use of the MLG enlightened few barriers in both countries; however, it also supports recommendations and solutions, as described above. The main recommendations for policy-makers concern the facilitation of networking between members of ECs, and between the latter and the citizens; the efficacious decentralization of financial and administrative power and competencies to the regional level; the mobilization of stakeholders, as well as a clear division of roles and responsibilities across actors; and a monitoring role to ensure a locally equal playfield. Furthermore, competences and funds should be available for citizens, in order to achieve a fully bottom-up process of decision-making. And finally, instruments, which could be regarding competences or financing schemes, to foster innovation.

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When I moved to the Netherlands two years ago, I couldn't even imagine how much I could have learned here, and handing in this thesis put a benchmark on the signs of progress I have made. Those improvements are not only academic and knowledge-wise, but also in the new relationships I have established during my Master and in the new experience of living abroad on my own. Therefore, I embrace this opportunity to thank those people who made this journey possible.

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List of Abbreviations

ACM	Authority for Consumers and Markets
ANCI	National Association of Italian Municipalities
ARERA	Italian Energy Authority ('Autorità di Regolazione per Energia Reti e Ambiente')
CEC(s)	Citizen Energy Community(es)
CEP	Clean Energy for all Europeans Package
CNR	National Research Council
DSO	Distribution System Operators
EC(s)	Energy Community(es)
ENEA	National Agency for New Technologies, Energy and Environment
ENEL	Ente Nazionale per l'Energia Elettrica
ESCO	Energy Service Companies
EU	European Union
FiT	Feed-In-Tariff
GHG	Green House Gas
GME	Gestore dei Mercati Finanziari
GSE	Gestore dei Servizi Energetici
IEMD	Directive on Common Rules for the Internal Electricity Market
ITRE	Committee on Industry, Research and Energy
KEV	Climate and Energy Report
LRA	Local and Regional Authorities
MLG	Multi-Level Governance
MiSE	Ministry of Economic Development
MiTE	Ministry for the Ecological Transition
MS	Member States
PA	Public Administration
PBL	Netherlands Environmental Assessment Agency
PNIEC	Italian National Energy and Climate Plan
PPA	Power Purchase Agreements
PV	Photovoltaic
REC(s)	Renewable Energy Community(es)
REDII	Revised Renewable Energy Directive
RES	Renewable Energy Sources
RQ	Research Question
RSE	Research on Energy Systems
RVO	Netherlands Enterprise Agency
SCE	Scheme for Cooperative Energy Generation
SDE	Sustainable Energy Transition scheme
SME	Small Medium Enterprises
TSO	Transmission System Operator
UNCEM	Union of Communes of Uplands Communities
UPI	Union of the Italian Provinces

1. Introduction

With the recent EU Directive 2018/2001 (European Parliament & Council of the European Union, Directive (EU) 2018/2001 on the Promotion of the Use of Energy from Renewable Sources, 2018), and the revised Internal Electricity Market Directive (EU) 2019/944 (European Commission, 2019), the interest on how to reduce GHG emissions while supporting a more sustainable way of producing (and consuming) energy is rising, achieving a focal role in the European debate. One way that has the potential to speed up the pace of this transition is the establishment of Energy Communities (EC) as legal entities (Lowitzsch, Hoicka, & Tulder, 2020). The EU framework recognizes two definitions for Energy Communities, 'Renewable Energy Community' (REC) and 'Citizen Energy Community' (CEC). Both definitions identify the organization, governance, and purpose of cooperative initiatives related to the energy market, while emphasizing the voluntary participation of citizens, local authorities, and small-scale businesses aiming at environmental or social interest rather than profit. Energy Communities are hence citizen-led energy initiatives, and they are arising across all of Europe as a decentralized way of energy production.

An energy community, acknowledged as both technical and social innovation, has societal relevance. On the technological side, it promotes the use of renewable or technology-neutral sources in the production of electricity, its decentralization from main power plants, as well as the supply of the produced (but not consumed) energy surplus. In fact, members of these communities are identified as 'prosumers'[1]: owners of one, or multiple, Renewable Energy (RE) or fossil-fuel-based source, they generate energy and sell the surplus to the grid (Parag & Sovacool, 2016). From a social perspective, the development of this innovation can strengthen the creation of other kinds of communities around the energy one, thus realizing a transition that is also socially relevant: e.g., car-sharing, sustaining initiatives against energy poverty, while still considering energy efficiency (Hiteva & Sovacool, 2017). Furthermore, the inclusion of locals in these bottom-up initiatives for energy production can lead to an improved engagement on environmental topics (Brummer, 2018; Busch, 2021). Hence, these new legal entities have the potential to develop not only a change in the electricity sphere but also in people's behavior and awareness. This decentralization of energy production is noticed to be more and more crucial in the transition toward new sustainable energy systems (Bauwens, et al., 2016), and thus, successful and developing factors, as well as obstacles, should be explored when determining new policies.

This first introductory chapter aims to first explore Energy Communities' barriers and, briefly the Multi-Level Governance. This is achieved through a literature review to identify the knowledge gap. This process leads to the identification of the main Research Question (RQ) and the sub-questions necessary to answer the former. Finally, the societal and EPA relevancies regarding the topic are discussed.

1.1 Problem Exploration and Knowledge Gap

Energy communities can achieve a central role in the energy transition, allowing the decentralization of energy production and consumption on different scales, from households to neighborhoods, to more intensive production. To enable this transition, the EU relies on its Multi-level Governance (MLG) structure, which should empower different layers, from the EU itself to the regional level, all necessary to ensure a more sustainable way of producing and consuming electricity. However, from the literature review presented below, it appears that Energy Communities, even though elements of this transitional process are assessed and based on the MLG's configuration, have not been analyzed through this lens. Hence, the following sub-chapters are looking into MLG, both in general terms and specifically in the energy transition, and ECs, in order to conclude with the identification of the knowledge gap.

1.1.1 Multi-Level Governance

Multi-Level Governance (MLG) is regarded as a central concept of the European Union, defined indeed by the Committee of the Regions in 2009 (Committee of the Regions, The Committee of the Regions' White

[1] Crasis between the words 'consumer' and producer'.

Paper on multilevel governance, 2009). The aim is to support the development of the EU and its countries in partnership with local and regional governmental authorities, as well as private ones. Thus, also when reflecting on energy transition, the multi-level approach is relevant: due to the importance which was recognized at the sub-national level (Jänicke & Quitzow, 2017), local and regional authorities have gained a key role to ensure this transition (Coopenergy, 2015).

Jänicke (2015) provided an overview of the different layers of the EU governance, from the Global level to the EU, National, State and Local Levels. Here, the Local level should further include the regional and provincial levels, in order to depict fully all the realities of MLG.
More in detail, the author underlines both vertical and horizontal influences between, respectively, the different levels of governance and the different actors in the same level. In each layer, best practices and innovations are developed, and the regional ones are further scaled up by the layer above and supported by the latter. Few mechanisms are identified horizontally, such as "pioneer activities and lesson-drawing, networking, and cooperation, as well as competition". The article ends with policy recommendations, where it is underlined the importance of an MLG structure to affirm sustainable practices for the energy sector.

Furthermore, Dobravec, et al. (2021) summed up a few key points of MLG in their initial literature review, firstly the relevance of an 'active participation' of all layers for ensuring the energy transition, then the importance of analyzing energy and climate initiatives through MLG lenses since barriers and responsibilities can be identified both horizontally and vertically, and the value of cooperation between the sub-national and national level.

There are a few metrics utilized to assess how MLG is performing, and those are going to be explored and reviewed in chapter 2. This process will support the establishment of a theoretical framework suitable to analyze and get new insights into ECs.

To conclude, Multi-Level Governance is considered for a few years as an approach that can enable climate and energy transitions. Thus, it can be regarded as a relevant theoretical framework for assessing the role of ECs in these transitions. The analysis of best practices on how to further develop horizontally and vertically the governance is still going on; however, few studies had already proved them useful in improving metrics and assessment methods. Thus, the alignment of the different layers has been acknowledged as valuable in supporting energy initiatives. However, ECs have not been analyzed from this perspective, hence this void should be explored and filled, in order to support the research and the spread of these communities. In the following chapter, a literature review is conducted on the different barriers which are still hindering the development of these communities, as well as best practices and identified key actors.

1.1.2 Energy Communities

The subsequent literature review focus on highlighting the main barriers and the main growth factors for ECs, in order to understand whether a knowledge gap can be identified regarding the governance of these initiatives.

One of the main difficulties which are hindering the evolving process of Energy Communities is the lack of political support. According to Capellan-Perez (2018), the latter manifests itself in the absence of a factual policy framework: legal, technical, and economic regulations at the national level do not leave any leeway for a community to grow and mature. On the same line of reasoning, other authors, like Brummer (2018), Vallecha, et al. (2021), Mirzania, et al. (2019), identified a lack of a supportive policy framework. In their literature review, Busch, et al. (2021) underlined as well the necessity of an integrated mix of policies in order to successfully achieve ECs' development. While researching the case study of a renewable energy island in Denmark, Sperling (2017) identified different enabling factors for energy community projects, as shown in Appendix 1.
Furthermore, the study of Warbroek, et al. (2019) shows that success needs to be incentivized by incorporating simultaneously the three levels (EC itself, interaction among ECs, governance): for example, as it can be seen in Table 11 in Appendix 1, internal accomplishments in the community still implies cohesion with both the local government and other communities to reach its full deployment. In the early stages, 'organizational capacity' (e.g., project champions, human capital, fund, time) and 'linkages to intermediaries' as facilitators are acknowledged as key factors.

Moreover, according to Lowitzsch et al. (2020), the governance is hindering the formation and scaling process of these communities, not supporting their development: the enabling frameworks are lacking in "developing, implementing and rolling out business models that broaden the capital participation of consumers". The latest research on new business models for energy communities, e.g., (Brown, 2019; Fioriti, et al., 2021; Nolden, et al., 2020), highlights the necessity of intermediaries. The latter, already mentioned in the previous paragraph, are organizations, private or governmental, that should achieve the role of facilitators in both stakeholders' participation and alignment with policy changes, as well as investors of new projects when revenues of the energy community are high enough. Intermediaries need to support the progress of "practical" and "endogenous" capabilities while providing knowledge and resources to overcome barriers: these behaviors should accomplish the implementation of "energy and governance systems for new practices and concepts" (Warbroek, et al., 2018).

However, energy communities are still not out of their niche (Ruggiero, et al., 2018). To sum up, several problems that community collectives encounter are related to mismatch with existing institutions. These include the absence of intermediaries in the decision-making process, unstable and uncertain policy frameworks, limited political support and access to policymaking arenas, and experiencing a strained relationship with government bodies that are not all eager to empower and support community energy initiatives.

The absence of a consistent policy framework is partially due to the transposition of the beforementioned EU Directives results in national regulations, where the main takeaways are the inclusion of both technical aspects (e.g., gird tariffs, capacity) and governance ones (e.g., the role of members and eligibility) (Frieden, et al., 2020). However, a few factors are still not included in those frameworks, e.g., the support on financial aspects from governments, as well as on 'structural' and 'symbolic' resources, identified with engagement and assistance for decision-making aspects (Bomberg & McEwen, 2012). Furthermore, Lowitzsch, et al. (2020) underlined that the results of this transposition process are key to supporting the main aforementioned factors which can strengthen the development of energy communities.

Moreover, Blasch, et al. (2021) in their recent research study depict four relevant research questions concerning the deployment of Energy Communities, underlining the existing 'mismatch between ambition and reality'. The focus of these four research proposals, which still need to be addressed, is on the lack of understanding on, respectively, the regulatory context, the learning mechanism, business models, and the performance assessment for supporting the energy transition. More in detail, one of them is focused on institutional setting and governance and how those can influence the emergence of these initiatives, as well as support their spread. Thus, a knowledge gap concerning the topic of governance and its frameworks is overall identified by the authors.

To conclude, a few barriers have already been acknowledged, as well as best practices. However, an analysis through MLG of Energy Communities is still missing, leaving thus a gap in the research knowledge.

1.1.3 Knowledge Gap

Exploring these communities could support a deeper and new understanding of elements that are hindering their full deployment, e.g., the transposition from the EU directives to national requirements; and, furthermore, it could provide clarity concerning the different responsibilities of local, national, and international actors, as well as intermediaries.

Consequently to the literature research, the forthcoming study will look into the different levels of governance an Energy Community has to comply with, in order to formulate a comprehensive policy advice.

Additionally, in-depth case studies in the Netherlands exist but not in recent times, e.g., (Proka, Loorbach, & Hisschemöller, 2018; Hufen & Koppenjan, 2015; De Vries, Boon, & Peine, 2016), except for (Vernay & Sebi, 2020), while Italian case studies are still a novelty in the literature. Thus, in order to address these questions which still remain open, two case studies, one Italian and one, Dutch for a comparative approach are going to be analyzed, as it will be explained in Chapter 2. However, since it is clear from both the EC's and MLG's literature the relevance of intermediaries and the gap on how practically they can provide a link between national and European governance, and national and local one, also the role of the latter will be explored for both case studies. Different legal and administrative frameworks characterize the two

countries, as well as geographical locations, making it interesting to explore both. Furthermore, an example of a plausible intermediary at the European level is REScoop.eu, the European federation of citizen energy cooperatives (REScoop, 2021) which has not been considered in any research paper yet. This organization not only provides tools for citizens who are willing to create these communities, e.g., advocacy and organizational development, but also citizen representation in the EU in order to achieve an equal playfield across of all Europe.

Overall, a knowledge gap was identified regarding the Multi-Level Governance setting of Energy Communities and this gap is going to be explored through different case studies which will support further analysis and findings.

1.2 Research Question

The aim of this research is therefore to first differentiate between the different levels of governance that participate in the spreading process of ECs and then combine the acknowledgments in the form of policy advice for the involved governments on how to support the development of those communities. A gap in the literature has been acknowledged concerning how Multi-level Governance could support the development of Energy Communities. A policy advice is formulated on the latter question through firstly the evaluation of the European Union governance, then the analysis of the Netherlands and Italy as case studies, and furthermore the examination of the role of intermediaries, as a link between different layers of the MLG.

Thus, the research question is:

'How does Multi-Level Governance support or hinder the empowerment of Energy Communities when comparing Italy and the Netherlands?'

The attempt of answering this RQ is achieved through addressing different sub-questions:

1. What are the implications of an MLG approach for Energy Communities?
2. How is the European Union hindering or supporting the empowering process of energy communities?
3. How are the Italian national and subnational governments hindering and supporting the empowering process of energy communities: Italy as a case study?
4. How are the Dutch national and subnational governments hindering and/or supporting the empowerment process of energy communities: the Netherlands as a case study?
5. What lessons and recommendations on MLG vis-à-vis Energy Communities can be identified and applied by policy-makers according to the comparative case study of Italy and the Netherlands?

The first more descriptive question is useful to give the context and definitions of the metrics which are used for evaluating MLG's performance, as well as the identification of best practices from Energy Communities; the aim is the establishment of an aligned metric for assessing the performance of EC through an MLG perspective. The subsequent two questions aim to understand in practice what is still lacking in the policy frameworks of respectively the European Union and both the Dutch and Italian governments on ECs, in order to fill the gap on how to achieve a maturing process of those communities. The last one intends to address the overall findings and data analysis, leading to the answer to the main RQ.

1.3 Relevance

Societal Relevance

As described in the previous chapter, the aim of the thesis is to assess how MLG performs regarding ECs. First of all, the latter have a great deal of societal relevance. Reducing GHG emissions, increasing social acceptance of RE sources, enhancing citizens' knowledge on how energy is produced are a few of the benefits which can arise when creating an EC. Furthermore, it supports the generation of a 'communitarian' feeling, which can start a virtuous circle of initiatives around these energy ones. On the other hand, MLG's approach has been acknowledged as relevant for climate and energy policies. Thus, applying this framework to those communities can give additional insights into the factors which are still hindering the development of these communities, as well as the elements which can support them and assist in their scaling process.

Overall, the establishment of a theoretical framework based on the MLG's approach for assessing ECs is still a novelty, and it can support the already existing literature in understanding how to spread in the most suitable way those communities and both their environmental and social impact across Europe.

Relevance to the Engineering and Policy Analysis (EPA) Master track

The EPA Master lays its foundation on an interdisciplinary approach, applied to Grand Challenges as main topic. This thesis aims in analyzing the Grand Challenge of sustainability, specifically energy transition, and, in order to achieve this goal, not only technology is significant to evaluate, but also organizational, legal, administrative, and managerial aspects. ECs, in fact, are both technical innovations, since they allow a more sustainable way of living with the use of RES and the aim of self-consumption, and social innovations. As it will be explored in the following chapters, those communities involve human interactions, supporting the creation of communities of people beyond the Energy one, e.g., car sharing services, involvement of low-income households for the fight against energy poverty. Thus, the interdisciplinary methodology, which is core for the Master, is crucial to address in a comprehensive way the subject of ECs.

Furthermore, this research ends by suggesting a policy advice as answer to the main RQ, advice which is going to be formulated through analytical and validation processes of the EC's complex multi-actor system.

Overall, this research project fits the purpose of the EPA Master, since it examines a complex system of interactions among stakeholders, while not only considering the technological aspects, but also policy domains and networks among relevant public and private actors. It, hence, embraces the interdisciplinary and actor-based approach which the Master requires, with the addition of a topic related to the Grand Challenges.

2. Theoretical Framework

In this chapter, it is established a theoretical framework that enables explanations and analyses of Multi-Level Governance (MLG) and its relation to the decision-making process of Energy Communities. Firstly, the definition of MLG is presented and discussed, and its background in the application for energy and climate topics is explored; then, indicators used to assess MLG's performance are identified through a literature review. Finally, the identified parameters are reviewed to see if they are relevant for the scope of the research, specifically for ECs, and, thus, a new theoretical framework is reached with the proper indicators.

2.1 Framework on Multi-Level Governance

2.1.1 Definition

Multi-Level Governance has not been defined univocally, yet. However, it can be depicted as 'the participation of a range of different types of actors (public, private and societal) in policymaking and implementation through formal and informal means' (European Parliament, et al., 2014). The main aim of MLG to be utilized for is the switch from a centralized government to distributed, sub-national one, hence the decentralization of governmental forms across levels (EU, national and sub-national) and actors. As explained in the Introduction section and described in the following figure, Jänicke (2015) provided an overview of those different layers and stakeholders' interactions, which can be horizontal (actors cooperating at the same level) and vertical (actors interacting between different layers).

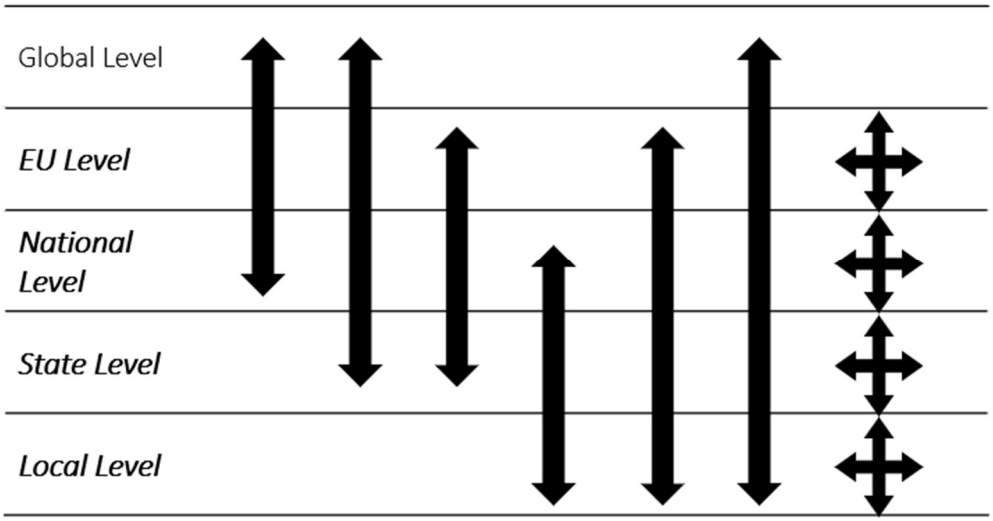

Figure 1: MLG (adapted from (Jänicke (2015)).

Starting from the definition cited above, participation of actors in the MLG approach can be vertical, between stakeholders of different levels, horizontal, between actors at the same level, and functional. Those interactions provide the support for the shifting paradigm of 'command-and-control' policies into more flexible and adaptive policies. The involved stakeholders are multiple, from governmental ones to private, but also citizens and voluntary members (e.g., local authorities, universities, and communities). The more recent theoretical studies on MLG, e.g., (Di Gregorio, et al., 2019) and (Kuyper, Linnér, & Schroeder, 2017), are also focusing on non-state stakeholders and partnerships among them, as well as their changing relations, due to the more inclusive process which is arising in the field of energy and climate mitigation policies.

Moreover, cooperation and participation among stakeholders of different levels and intra-level have been categorized into two types of MLG, Type I and Type II, where formal and informal arrangements can be performed. The first one is in accordance with federalist principles, while the second one with adaptive

policies' governance. As is summarized in Figure 4, Daniell & Mercer (2017) represent, according to Grid-Group Cultural Theory (Douglas, 1978), the different typologies of MLG.

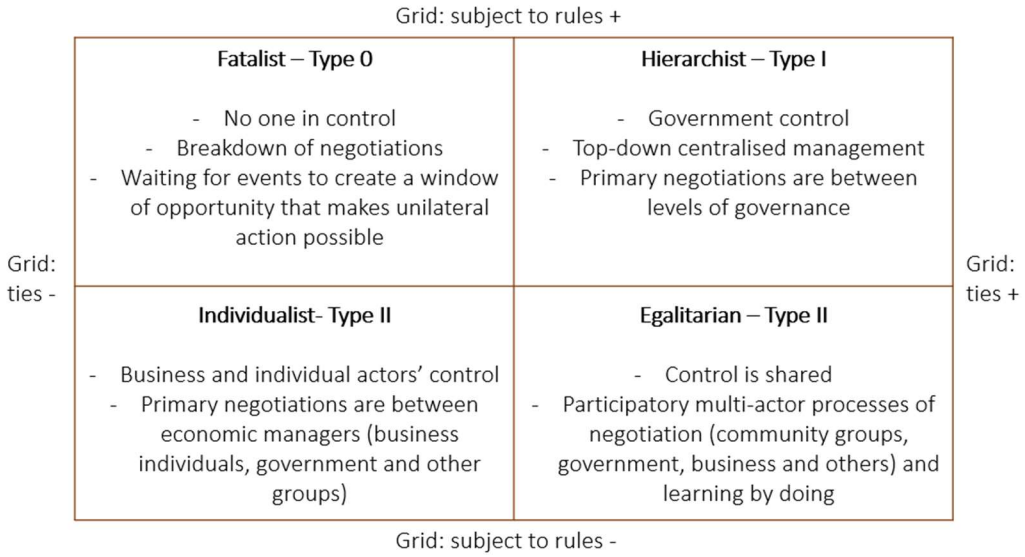

Figure 2: Types of MLG (own adaptation from (Daniell & Mercer, 2017)).

Even though the first type implies clear jurisdictional boundaries and 'non-intersecting memberships', while the second one is based on flexibility, those types are not mutually exclusive, since one can be absorbed in the other and co-exist.

Moving on, what does a 'good' MLG actually mean? First of all, the Committee of the regions, a European Union advisory body, when introducing MLG as a core concept for the EU, defined five principles for a 'good' governance: openness and transparency, participation, accountability, effectiveness and coherence (Committee of the Regions, The Committee of the Regions' White Paper on multilevel governance, 2009). Thus, this Committee identifies a resilient MLG in clear communication and division of responsibilities between stakeholders, in an active inclusion of the latter from the policy design to the policy implementation process and in straightforward goals and their evaluations.

The EU Covenant of Mayors, launched by the European Commission in 2008 to bring together local governments voluntarily committed to implement climate and energy objectives, supports the effective realization of MLG, for which it identifies two key aspects to be implemented: 'structures' and 'dialogue-processes' (Covenant of Mayors, 2021). The former implies formal and informal means of stakeholders' participation, while the latter the interactions between actors. However, it is underlined that MLG is not univocal, but its implementation should be customized to the territory's and government's needs.

Furthermore, Di Gregorio, et al. (2019) mentions three changes in power/authority mechanisms necessary for a successful implementation of MLG. Firstly, power should be decentralized, applying a bottom-up perspective; then, it should be allocated across the different levels of governance. And finally, coordination arrangements should be spread internationally, avoiding the centrality of the state.

However, thus far only a few indicators and frameworks have been used for assessing the MLG's performance (see next sub-section), and they can provide more answers on what relevant factors have been acknowledged to be successful for its implementation.

In the scope of this thesis research, academic literature focused on the relevance of MLG in addressing energy and climate policies. Di Gregorio, et al. (2019) coined the term 'glocal' to underline both the local and global aspects of climate change mitigation, which can hence be solved only by integrating a holistic and multi-level perspective of the governance. Likewise, Dobravec, et al. (2021) underline in their review the necessity of all levels' deployment to successfully address climate and energy policies. They outline a few cases where MLG was utilized as an approach for the evaluation of energy policies in both developing and developed countries; it enabled the acknowledgment of barriers (e.g., blurred responsibilities, lack of collaboration, active participation from all levels) and best practices (e.g., relevance of regional and local

authorities). Similarly, (Jänicke & Quitzow, 2017) underline the necessity of multi-level governance for addressing the complexity of climate and energy policies; moreover, they also highlight the relevance of the local level of MLG, due to the crucial role of civil society (and thus, bottom-up initiatives) is starting to gain.

Furthermore, Smith (2007) addresses the role of the regional level regarding renewable energies in England through MLG lenses. The latter was selected due to the complexity of the topic, its necessity for coordinated activities and negotiation processes from different actors, and the relevance of networking; from his findings, it turned out the high degree of interconnection between Type I and Type II of governance. The Committee of the Regions, as before mentioned, interested in applying the principles of MLG, analyzed how this governance supports the performance of Sustainable Energy Action Plans (SEAP), and summarized a few recommendations, e.g., a more central role of Municipalities, the necessity of more internal and external coordination. The European Commission commissioned developed a study on MLG's performance from the perspective of local and regional partners on energy efficiency as the main topic (European Commission, 2015); this European body underlined the need for MLG when approaching energy policies, too. This study explores each level: the European one should have the task of providing both funds and institutional regulations, the national one the adaptation to national legislation and support policies; the local level should have enough leeway to provide 'an open planning process with broad participation', cross-sector policies, and mobilization of actors. Additionally, it underlines the stakeholders' identification as a significant step in implementing MLG, as well as keeping them determined and in communication between them.

2.1.2 Multi-Level Governance Indicators

MLG has been studied and theorized widely, as it can be read in the previous sub-chapter. A few studies, e.g., (Hooghe & Marks., 2003) and (Committee of the Regions, 2014), explore more in-depth plausible theoretical frameworks for assessing MLG's performance, and, thus, for identifying the factors that are still absent for its resilient implementation. Hence, this chapter examines those frameworks, in order to understand the necessary indicators for analyzing the further case studies.

Firstly, Hooghe & Marks (2003) underlines three measures for MLG regarding how much is it dispersed power across different authorities: the "distribution of policies across jurisdictions", the "fiscal power" and the "formal and informal power relations among jurisdictions". The importance of this dispersion is highlighted in the paper: decentralization enhances the role of citizens, 'internalizes externalities', and supports innovation. In this article it is defined, according to what was just said, the two beforementioned types of governance, where the EU is placed in between, with some elements from Type I (e.g., hierarchical structure) and others from Type II (e.g., flexible territorial authorities). The author identifies a few characteristics regarding coordination across jurisdictions for each governance, which are key to understand the possible dynamics MLG can assume, as depicted in Table 5.

Table 1: Coordination in Type I and Type II of MLG (own adaptation from (Hooghe & Marks., 2003)).

Type I	*Type II*
Non-intersecting jurisdiction	Functional specificity
Sharply cascading scale	Low level of distribution conflict
Multiplex competencies	Ad hoc, policy-specific, architecture
System-wide institutional architecture	

As it can be drawn from Table 5, Type I is based on a hierarchical structure, where the governments have clearly defined not-overlapping boundaries on the same level and different levels, while Type II decomposes specific policies among overlapping and numerous jurisdictions. And again, the author identifies the mix of both types as optimal: several task-specific Type II governments and a few multi-purposes Type I.
The following frameworks are all utilizing those definitions and characteristics, in order to better understand the forces and loops of MLG. And, thus, it is relevant to include them in this research.

OECD (2010) applied an MLG's framework to analyse climate change policies, more specifically for understanding the coordination and interactions of stakeholders both at the same level and at different ones. They identified as necessary for the analysed topic the inclusion of both the vertical and horizontal dimensions. In order to do so, MLG for climate best policies is assessed through three main areas:

- Local and horizontal coordination;
- National/local and vertical coordination and their institutional models;
- Key tools for MLG.

With these guidelines, the authors established a few good practices, which are mostly located at the local level. For example, the national level is valuable in creating a long-term and cost-effective framework, while the local level can support innovation and the implementation of participatory systems.

Other best practices which are useful to consider when evaluating MLG are identified by the European Parliament, et al. (2014). Those are summarized by the Committee of the Regions (2014) in the following Table 6.

Table 2: Indicators of best practices for MLG (Committee of the Regions, 2014).

Indicator	*Specifics*
Types of policy coordination	• Vertical • Horizontal • Functional
Institutional capacity	• New forms of organizations, procedures, skills
Stakeholders' mobilization	• Process • Design • Implementation • Monitoring
Governance modes	• More/less formal
Transferability and pragmatic arrangements	• Tools used for implementing policies
Administrative and political stakeholders	• Technical efficiency • Democratic accountability

The authors evaluated MLG in EU countries against these indicators, which they identified as characterizing this kind of governance. Again, the type of coordination between levels is explored, with the addition of organizational and administrative factors than the frameworks explored before.
The European Parliament, et al. (2014) based partially their analysis on the scoreboard made by the Committee of the Regions (European Committee of the Regions, Germond, Maurer, & Gaillard, 2012). The latter is dived into two macro-areas, procedures and content, and those are analyzed through different indicators with a score from 1 (low) to 6 (high), as can be seen in Table 7. This table is based on a more recent version of the scoreboard (European Committee of the Regions, Vara, Unfried, Maurer, & al., 2018).

Table 3: Scoreboard for MLG (own adaptation from (European Committee of the Regions, Vara, Unfried, Maurer, & al., 2018)).

Indicators	*Specifics*
Information and Consultation	• Availability of information • Enabling procedures for public consultation • Decentralized communication policies (e.g., networks, grass root organizations, LRAs)

Stakeholders' involvement	• LRAs (local and regional authorities) involvement and participation • Quality of contributions
Responsiveness	• Receptivity of EU institutions • Consideration of LRAs' contributions
Territorial/Integrated approach	• Customization on the territory in defining policies • Inclusion of local knowledge/expertise in policies • Monitoring system
Smart regulation mechanisms	• Simplification of administrative mechanisms • Impact analysis • Subsidies
Innovative instruments for implementation and partnership	• Innovative instruments

The difference between this framework from the others above is the perspective that is adopted to evaluate MLG: here, the focus is on local and regional authorities, and how this level deploys MLG's full potential.

More specific on the energy sector, the International Energy Agency (IEA) explored how MLG can positively affect energy efficiency. In order to achieve this purpose, IEA (2009) defined a scoreboard, mainly from 1 to 5, where the following indicators were identified:

Table 4: MLG for energy efficiency Scoreboard (own adaptation from (IEA, 2009)).

Type	*Specifics*
Dimension of coordination	• Horizontal • Vertical
Modes of governance	• Governing by authority • Governing by provision • Governing through enabling • Self-governing
Scope considerations	• Level of inclusion (from bilateral to multilateral, where multiple levels are included) • Type of energy efficiency measure promoted
Structure considerations	• Initiation and decision-making process (Bottom-up/Top-down) • Nature of participation (Compulsory/Voluntary) • Formality of administrative structures • Level of accountability (e.g., reporting evaluation)
Other considerations	• Budget size • Funding symmetry

The authors included both MLG's main frameworks (Horizontal/Vertical coordination and Modes of governance) and additional elements which support the specificity of the analysis. For example, the

indicator on energy efficiency is directly linked to the topic, in order to address and diversify all the possible policies implemented (e.g., subsidies, refurbishment, training).

Finally, the last comprehensive framework addressed is the one created by (Riedel, Rambelli, & Storch, 2016) to evaluate the impact of MLG on the implementation of the Sustainable Energy Action Plan (SEAP) across European countries.

Table 5: MLG's framework for SEAP (own adaptation from (Riedel, Rambelli, & Storch, 2016)).

Type	*Specifics*
Transparency of the approach and communication	• Active provision of information/ openness of the consultation • Responsiveness
Stakeholder Involvement and participation	• Within the administration • With Civil society / citizens • With Businesses • With local policy-makers/political fora
Horizontal Integration (cooperation with other municipalities)	• Local level • Cross-border cooperation
Vertical Integration (cooperation with authorities in different levels)	• Municipality contact • Regional contact • National contact
Innovation	• Innovation
Additional criteria	• Geographical distribution • Size and structure of municipalities

In conclusion, the common factors which are, thus, identified as relevant are the ones concerning horizontal and vertical coordination, stakeholders' participation and innovative criteria. Hence, the next sub-chapter is going to introduce the framework for energy communities on the basis of what was discovered in this one.

2.2 Multi-Level Governance Framework for Energy Communities

ECs, as explained in section 1.1.2, while in a few countries are becoming more mainstream (e.g., Denmark), in others they are still in the niche phase. Thus, understanding how MLG can support the deployment of these communities at the regime level could be vital. As explained in the Literature review on ECs, few are the factors that support this change. To sum them up, in the early stages of organizational development, ECs should focus on engaging with citizens and local communities, in order to achieve support, by displaying the benefits of being a member and a co-owner of these initiatives. In this phase, reaching consensus among the different levels of governance, from the government to the citizens,. is vital for moving toward the next organizational stage, in which energy communities face their success (or failure) in deploying sustainable energy projects. The achievement of the latter is accomplished through challenges linked with organizational capacity and the cooperation of intermediaries, if any. However, the success of ECs is also determined by interaction with both the local government and local communities, thus implementing in its structure ways of communication with the latter actors. Finally, acknowledging the importance of the mission's choice gives insights into the possible direction an EC is moving towards. Considering the success factors for empowerment, a community can shape its organizational frame to achieve its full potential.

Hence, the framework based on MLG has the aim to continue filling the gap on best practices for ECs, as well as factors that are still not considered in the different levels and between different levels of governance.

In order to achieve this purpose, all the beforementioned indicators are compared to each other, and when there is overlap, the most comprehensive indicator is chosen. The following step is to divide the indicators over the components and dimensions of MLG. This results in a new framework, see Table 6, which will be used to address the main RQ: How does Multi-Level Governance support or hinder the empowerment of Energy Communities when comparing Italy and the Netherlands? The sub-questions mentioned in chapter 1.2 are meant to explore the case studies and understand the best practices of Italy and the Netherlands, and what still can be improved. Thus, the selected indicators have the role to enable this identification.

Table 6: New MLG Framework for evaluating Energy Communities.

Dimension	*Indicator*	*Specifics*
Openness and Transparency	*Openness*	• Networking
	Transparency	• Availability of information • Enabling procedures for public consultation
Participation	*Policy Coordination*	• Vertical • Horizontal
	When	• Process • Design • Implementation • Monitoring
	With who	• Partnership (Within the administration, With citizens, With Private organizations, With local policy-makers)
Accountability	*Responsibility*	• Level of accountability
Effectiveness	*Regulation*	• Formality of administrative structures
	Decision-making process	• Initiation and decision-making process
	Supportive mechanisms	• Budget size • Funding schemes
	Innovation	• Innovative instruments
Coherence	*Alignment*	• Receptivity of EU institutions • Customization on the territory in defining policies

The framework's dimensions are based on the beforementioned five principles which were defined by the Committee of the Regions as the foundation of a resilient Multi-Level Governance. Both indicators and specifics were retrieved from the previous frameworks and analyzed if fitting the purpose at hand.
The measures for the indicators are defined in Appendix 1.

2.3 Conclusions

Overall, in this chapter the theoretical framework is established. The latter is useful to both analyse those communities through a MLG lens and give insights on how to implement in a more fruitful way the MLG. The framework was achieved through the delineation of both MLG's definition and the identified indicators. Furthermore, after a brief review of ECs, a new MLG framework for the evaluation of those communities is determined. Five are the identified dimensions, Openness and Transparency, Participation, Accountability,

Effectiveness and Coherence, while eleven are the indicators upon which the following analysis will be based upon. This framework is the result of an in-depth analysis of the MLG definition, its success factors, and ECs elements that are significant to achieve their full deployment.

In the next chapter, it is acknowledged how this theoretical framework is utilized for the analysis of the project. In fact, the research design and methodology are explored in chapter 3.

3. Research Design and Methodology

This chapter addresses the following items. Firstly, the research design and its justification are addressed, with a focus on case studies' selection and comparative case study design. Furthermore, a brief description of data collection's methods and the objectives this research wants to achieve, as well as the following step of data treatment and data analysis: thus, coding and qualitative data analysis. Finally, the chapter addresses validity, its threats, and replicability of the analysis.

3.1 Research Aim

3.1.1 Research Design

This thesis aims to explore the impact of multiple levels of governance regarding the deployment of ECs, and how it contributes to and improves the maturity process of these bottom-up initiatives for the energy transition.

Given the purpose of this study, a qualitative approach, in particular, a comparative case study design, is utilized. Qualitative methods are particularly appropriate for this study because they examine the different meanings, experiences, and interactions that individuals have and place them within a specific context (Lune & Berg, 2017; Denzin & Lincoln, 2005). The main benefit of using these methods is their capacity to consider the complexities of each situation and, when studied, results in in-depth information needed to explore, understand and explain phenomena. However, the qualitative methodology, as well as the quantitative one, can be subject to bias from the author's perspective. Thus, this limitation would be kept in mind throughout the further study, which will be critically analysed to ensure its validity (Whittemore, et al., 2001).

As it will be discussed in the next paragraphs, the main research approach is comparative case studies, specifically Italian and Dutch, in which the theoretical framework of MLG will be applied to them in order to understand what are the successful or hindering factors for the Energy Communities' development.

3.1.2 Research Flow Diagram

To present an overview of both the steps which are going to be followed and the structure of the research project, a Research Flow Diagram is constructed. The research starts with a theoretical phase, which is the preliminary research. A literature study on different concepts surrounding both MLG and ECs is conducted. The first one is going to support the conceptualization of a theoretical framework, while the second one for adapting and validating the latter. Also, stakeholder analysis will be conducted in this phase. This is used to decide which experts will be interviewed. Then, interviews and desk research are the key methods for retrieving data at the European level. Furthermore, the case studies of Italy and the Netherlands are going to support the further analysis. Finally, data are analysed, and the policy advice is formulated to answer the main Research Question. The steps which are going to be followed in this research are summarized in the Research Flow Diagram below (Figure 2), while the methodology used will be addressed in the following section.

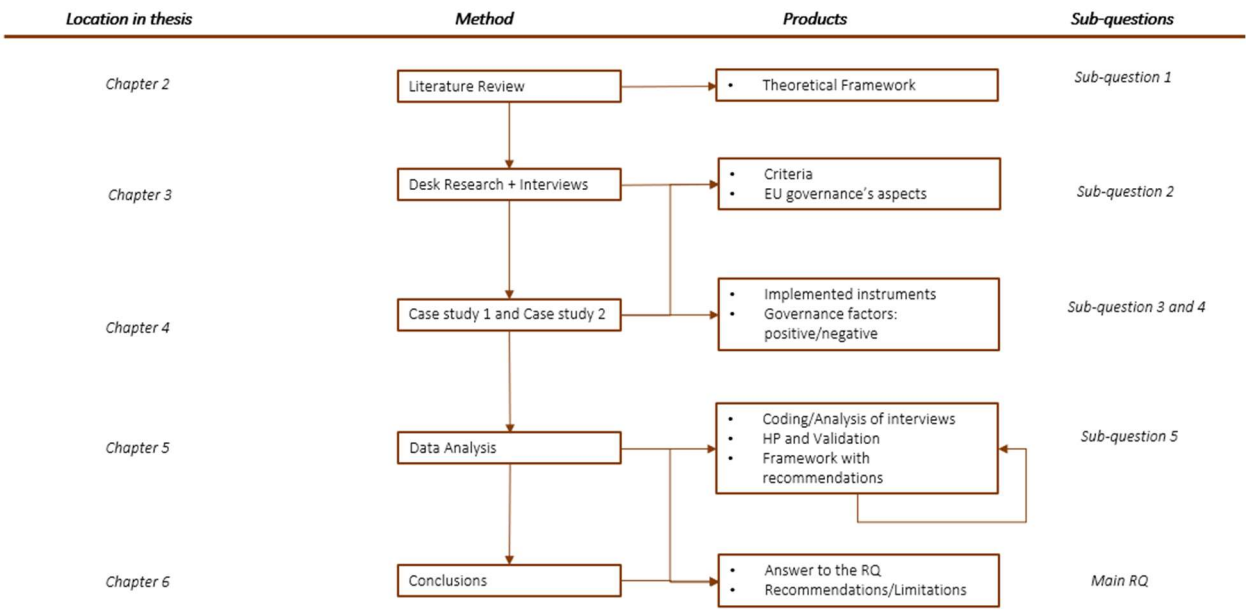

Figure 3: Research Flow Diagram (own figure).

3.2 Comparative Case Study Methodology

The methodology of 'case study' will allow the researcher to investigate within a real-life context. Yin (2014) describes a case study as 'an empirical study that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and context are not clearly evident.' Hancock & Algozzine (2006) summarize a few recurrent characteristics which delineate case study research: it focuses on phenomena, analysed in their own specific context through multiple sources of information. Furthermore, case studies are utilized to address complex phenomena, both in an exploratory and explanatory way (Harrison, et al., 2017). For this reason the research method in the present study fits and tries to explain the specificity of the topic at hand. The case study, therefore, is a pertinent way to investigate a real-life, answering the sub-questions and laying the foundation for giving a policy advice concerning the governance of Energy Communities.

Furthermore, regarding the use of more than one case study, Yin (2003) and Stake (1995) utilize two definitions. The former delineates the multiple-case study methodology, which, according to him, enables an in-depth understanding of differences/similarities within and between cases. Similar to this definition, Stake (1995) use the word 'collective' for identifying the application of multiple case studies. In this research project, a multiple-case approach is designated to analyse two different case studies. To ensure that more confidence is established in this methodology, firstly each case is addressed thoroughly (Baxter & Jack, 2010). Then, a comparison is achieved based on the theoretical framework defined in Chapter 2.

3.2.1 Case Study Selection

The previous sub-chapter explored and defined the theoretical framework, which, through the use of its indicators, is going to be utilized to identify and further assess what MLG can enhance for the development of ECs. However, the definition of the frameworks' boundaries can support the identification and validation of the chosen case studies. As mentioned in Chapter 1, the latter are Italy and the Netherlands. Thus, this chapter has the aim to explain why those countries were chosen in the first place and in the light of this framework.

Due to the broad context of the topic at hand, multiple criteria are utilized to assess the feasibility of those two countries as case studies for the analysis. Firstly, geo-economic factors are addressed, to underline the context in which ECs are developing, as well as energy-related aspects, e.g., energy sources and energy mix. Furthermore, two more features are relevant to delve into: the current situation of ECs and the MLG

structure in those two countries. Those two last points aim to enhance the understanding of the setting, and whether Italy and the Netherlands are suitable for a comparative case study approach.

Firstly, the geo-economic factors of the two countries were considered. Italy, located in the Southern part of Europe, is a less rich country, with lower GDP per Capita (ca. 31 US$) than the Netherlands (ca. 52 US$) (World Bank national accounts data, 2022), in the North of Europe. Thus, analysing how two different geographical locations, with different standards of living, are dealing with the development of Energy Communities could depict a wider photograph of Europe's connotations when addressing ECs. Furthermore, it is relevant to address these countries since they have different energy mixes, where Italy has higher shares of renewable energy sources than the Netherlands, as it can be seen from the graphs.

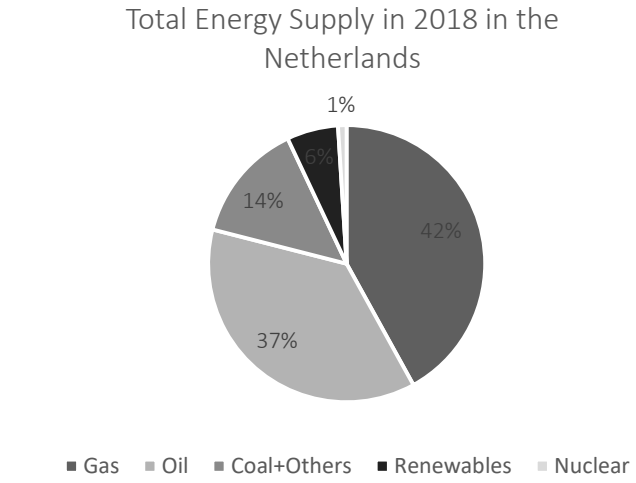

Figure 4: Graphic of the Total Energy Supply in 2018 in the Netherlands (IRENA, Energy Profile: Netherlands, 2021).

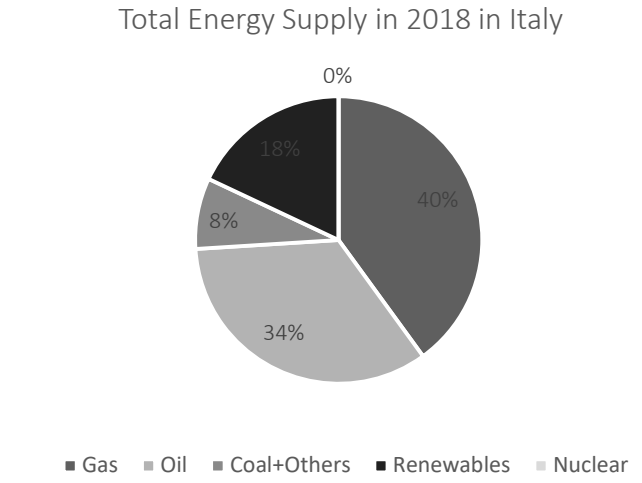

Figure 5: Graphic of the Total Energy Supply in 2018 in Italy (IRENA, Energy Profile: Italy, 2021).

The data are referred to the pre-Covid19 period.
Additionally, the Netherlands makes use of a lot of Bioenergy (66%) when considering renewables, then Wind (23%) and Solar (11%) (IRENA, Energy Profile: Netherlands, 2021). Not entirely different is the Italian situation, where Bioenergy is still the main renewable source, with 50%, followed by Geothermal (20%), Hydro/marine (15%), Solar (8%) and Wind (7%) (IRENA, Energy Profile: Italy, 2021).
Thus, the similar energy mix even though in the opposite areas of Europe makes it interesting to delve into those countries.

More related to Energy Communities, mainly two factors were considered significant. Firstly, the Netherlands counts the highest number of Energy Communities (ca. 670 in 2021) (HIER, 2022) after Germany and Denmark, while Italy does not even reach the threshold of fewer energy pioneers' countries (e.g., Spain), counting around 20 Energy Communities (Utilitatis & RSE, 2022). Second, REScoop.eu developed a tracker with which it monitors the transposition process of the EU Directives on ECs, specifically the Directive on common rules for the Internal Electricity Market ((EU) 2019/944) and the revised Renewable Energy Directive (2018/2001/EU), in national regulations (REScoop.eu, Transposition Tracker, 2022). According to it, the Italian legislative framework for ECs is in a better stage than the one in the Netherland. Italy defined thoroughly both RECs and CECs as legal entities, while the Netherlands lacks separate definitions, leading to a not comprehensive regulatory framework and an incomplete definition in terms of governance and citizen participation. Thus, it is relevant to analyse why the Netherlands, even with a partial framework, counts a high number of ECs while Italy is facing the opposite situation; and later on, to compare the results to identify best practices that could be significant for one and the other.

Lastly, the framework explained in the previous sub-chapter can support the analysis and comparison of these two countries. The latter are at dissimilar stages of ECs' definition, and thus evaluating them through

an MLG lens can support additional insights and the uncovering of both success and ineffective factors. Their MLG system is quite similar, both divided into multiple subnational governments, and with a decentralized score, calculated by the European Committee of the Regions and based upon fiscal, administrative, and political dimensions, equivalent in both countries (European Committee of the Regions, Decentralization Index, 2022).
The MLG indicators can further uncover why, even though from a legislative point of view, regarding ECs, it is more advanced than other countries, Italy does not see high numbers of Energy Communities in its territory, leading to the hypothesis of hindering factors in the lower level of governance or in the communication between them; and, on the other side, why the Netherlands is encountering difficulties in a righteous and complete legal definition.

Overall, Italy and the Netherlands represent, from a geographical and economic perspective, two samples of European countries. They are going through the transposition process in a complementary way; and, thus, the analysis of those can lead to find Multi-Level Governance best practices, which are suitable for one and the other, in their comparison.

3.3 Data Collection

Data collection was conducted through desk research and semi-structured interviews. Firstly, through desk research, information will be gathered with the use of online academic search engines. Essential sources for academic literature are Science Direct, Scopus, Google Scholar, and the TU Delft repository. Internal documents of the European Union, Italian and Dutch governments will be used to enlarge the amount of information. The overall desk research will generate better insights on how the governance of ECs works, and what are the parameters that must be satisfied and promoted at a national level. Furthermore, the understanding of those communities, generally speaking, and more specifically in area development cases, will be improved. Desk research will provide more knowledge on what has already been researched and will contribute to the understanding of the research problem and questions (Sreejesh, et al., 2014).
Additionally, interviews with experts, identified through the stakeholder analysis, will be conducted. There are three different types of interviews: structured, semi-structured and structured (Bolderston, 2012). Moreover, the chosen mode of the interviews will be semi-structured. This allows for new ideas to be brought up to discuss during the interviews, as a result of what the interviewees say. It further allows the interviewer to react to the answers of the interviewees and be more reactive than with a structured interview, which is close-ended. However, this typology of interview brings some limitations: it is a time-consuming task, and the achievement is dependent on the willingness of the people interviewed to collaborate. Overall, the interviews are used as main source for input data for the framework, next to literature sources. The questions can be found in Appendix 2, and those are based on the theoretical framework presented in Chapter 2. In fact, the questions are divided into two areas: the first one with general information on the interviewee and the liability of the shared insights; the second is further split per dimensions of the MLG framework for ECs, i.e., Participation, Openness & Transparency, Accountability, Effectiveness, and Coherence. Furthermore, due to the aim to evaluate the governance of the case studies, the interviewees were selected to acknowledge the perspective of the different levels of government, i.e., national, subnational, regional and local. The interviews were conducted until no new additional information was gained. And, as it can be seen in Table 7: Overview of interviews., each stakeholder interviewed has been allocated within one or two levels, based on the different roles the stakeholder covers. The interviewees were selected beforehand, through stakeholder analysis, which will be presented at the beginning of the case studies' chapters, and they were contacted mainly via e-mail. In total, 22 interviews were conducted, online, and, when the interviewee agreed, registered. Furthermore, for those who preferred to be anonymous, this condition was respected.

Table 7: Overview of interviews.

Organisation	*Level of Governance*	*Case Study*
European Parliament	European	Europe/Italy
Energie Samen	National	The Netherlands
TNO	National	The Netherlands
Amsterdam Wind	Local	The Netherlands
RSE	National	Italy
Greenchoice	National	The Netherlands
GSE	National	Italy
Stedin	National	The Netherlands
Ass. Senatore Girotto	National	Italy
Enel/ComeRes	European/National	Europe/Italy
ComeRes	European/National	Europe/The Netherlands
Enexis	National	The Netherlands
REScoop.eu	National/European	Europe/The Netherlands
Municipality Den Haag	Regional	The Netherlands
Ventotene EC/FSA	Regional/Local	Italy
Regione Lazio	Regional	Italy
NEWCOMERS	European/National	Europe/The Netherlands
Arera	National	Italy
Ministry Economic Affairs	National	The Netherlands
TNO	National/Regional	The Netherlands
Bocconi University	National	Italy
Province Zuid-Holland	Regional	The Netherlands

3.4 Data Treatment and Analysis

After collecting the data from the interviews and the desk research, the conversations were transcribed as text files, and grouped accordingly to the different case studies. All the gained information is analyzed by the qualitative data analysis tool ATLAS.ti (ATLAS.ti, 2022), as software that allows Computer-assisted Qualitative Data Analysis (CAQDAS). Thus, the latter software, which is suited to analyses large bodies of textual data, is used to code the interviews and to link the coded data: more specifically, codes are based on the indicators defined in the previous chapter, i.e., Openness, Transparency, Policy Coordination, When, With who, Responsibility, Regulation, Decision-making process, Supportive mechanisms, Innovation, Alignment. This supports the analysis of the interviews, allowing the identification on the text of relevant insights. Furthermore, to enable a comparative analysis of the case studies, the incidence of the codes is compared.

Moreover, within case study, firstly, the description of the stakeholders and the context, as well as the timeline, were established; then, findings based on the interviews are analyzed through the lens of MLG,

more specifically of the five dimensions acknowledged in Table 6, (i) Openness and Transparency, (ii) Participation, (iii) Accountability, (iv) Effectiveness, and (v) Coherence. Then, for the cross-case analysis, those findings are compared, in order to observe similarities and differences, as well as barriers and hindering processes. A table is presented, to summarize the main acknowledgments. Finally, the sub-questions and the main research question are answered, and a policy recommendation is outlined.

For the validation process, after the research project is conducted, one expert of the ECs' field, and employer of REScoop.eu will reviewed part of the project. This process is conducted in this way for two main reasons: firstly, to avoid bias; and furthermore, due to the wide context of the case studies, a one-sided view would not be enough. Furthermore, validating the results, as well as the theoretical framework, could enhance the trust in the replicability of the findings and in a further use of this framework for other case studies. However, before the process of replication, limitations of this research (section 8.3) should be acknowledged.

3.5 Conclusions

In summary, a multiply-case study approach, is used to answer the main RQ. Two case studies were selected, Italy and the Netherlands, based on economic, geographical and MLG criteria. Firstly, a within-case analysis is accomplished, and, afterward, the findings built on desk research and semi-structured interviews via the MLG for ECs' framework are compared in a cross-case study. According to those findings, the analysis is concluded with policy recommendations.

More in detail, from chapters 4 to 6, the case studies are evaluated individually, while in chapter 7 the results of cross-case analysis are presented. Furthermore, the last two chapters of this thesis report presents policy recommendations, and the reflection upon the results achieved. More specifically, the research questions will be answered in the Conclusion and Discussion Chapter.

4. The European Union

This chapter explains firstly the context around ECs at the European level. It, hence, specifies the landscape and the form in which ECs were defined as legal identities, the relevant stakeholders in this environment and a brief description of these communities' definitions. Then, the results are going to be addressed with their explanations.

4.1 Landscape

Even though ECs' have been flourishing among a few European countries in the last twenty years (Caramizaru & Uihlein, 2020), they were not acknowledged as legal identities, and in other countries, still illegal. However, the turning point was in 2018 and 2019, when two directives were approved by the European Parliament and the Council of the European Union through the 'Clean energy for all Europeans' package (European Commission & Directorate-General for Energy, 2019). This sub-chapter aims at giving a clear picture of the process with which ECs were outlined, and will thus address a stakeholder analysis and a delineation of what is meant by 'Directive' and with EC.

4.1.1 Stakeholders

Different stakeholders interact at the European Level. The most relevant ones are summarized in Table 9.

Table 8: Stakeholder Analysis at the European level.

CATEGORY	ACTOR
GOVERNMENTAL STAKEHOLDERS	• European Commission • European Parliament • European Council • Council of the European Union • United Nations • European Committee of the Regions • European Environment Agency • Member States • Regional authorities
NON-GOVERNMENTAL ORGANIZATIONS	• Researchers • NGOs • SME • Coalitions (e.g., the Broad Green Community) • Energy-intensive industry • Coal industry • Utility industry

Overall, different governmental stakeholders participate in the legislative decision-making process. In the specific case of ordinary legislation procedure, the European Commission has the exclusive role of legislative initiative, thus, proposing new laws. The latter institution is composed of 27 members (one for each Member State), which are chosen by the President of the Commission and approved by the European Council, and its role is to set strategies, as well as new laws and funding programs. Moreover, the European Parliament and the Council have to approve the new proposals through a series of readings within which the proposal can be changed (Daniele, 2014). After three readings, if the amendments have not satisfied the majority of the parties yet, the proposal is rejected. For a better understanding of the context, the Parliament is composed of no more than 751 members (750 Member States and 1 President), elected with a universal suffrage every five years. The seats are distributed through a 'digressively proportional' process, thus based on the country's population. However, the members are divided accordingly to their political

affiliation into transnational groups, e.g., Christian Democrats, Progressive Alliance of Socialists and Democrats, or Group of Greens. It is relevant to add that members of the Parliament can also be part of one of the Committees (20 at the moment); those standing or temporary Committees deal with specific issues, e.g., Foreign Affairs or Development, and their role is to support the Commission in suggesting proposals. Furthermore, the Council of Europe, in the ordinary legislative procedure works jointly with the Parliament. The former has as members a ministerial representative for each Member State, and, for the approval of new proposals, the majority is needed (i.e., 14 votes).

Therefore, only considering governmental institutions in the adoption process of a new proposition is already intricate. However, stakeholders who cannot directly affect the decision-making process must be considered as well. Through lobbying and coalitions, they can influence policy making: meetings with key stakeholders, and papers published are a few of the means used to impact the final decision on new proposals (von Malmborg, 2022). An example of the lobbying process Is given by (Ydersbond, 2018), who, analyzing the 2030 Framework, identified three coalitions with shared interests. They concern the utility industry, the 'Broad Green Community' and the Alliance of the Energy Intensive Industries. Additionally, (von Malmborg, 2022) also recognizes the role of Member States and their coalition with the other Member States, as well as with other stakeholders' coalitions, in the lobbying process.

In summary, the decision-making process at the European Level is complex and not always linear and unequivocal, with multiple stakeholders who try to influence this process. And thus, the aim of the following sub-chapters is to give insights on the ECs definition and implementation process at the EU level.

4.1.2 Energy Communities definition at the European Level

As mentioned before, two directives are the ones concerning ECs, the Directive on common rules for the internal electricity market ((EU) 2019/944) (European Commission, 2019) and the revised Renewable energy directive (2018/2001/EU) (European Parliament & Council of the European Union, Directive (EU) 2018/2001 on the Promotion of the Use of Energy from Renewable Sources, 2018), both included in the 'Clean energy for all Europeans' package (CEP) (European Commission & Directorate-General for Energy, 2019). Before introducing those directives and their details, a brief preamble on what is a directive and what are the implications for the Member States is presented with the aim of clarifying some aspects which are relevant for the EU analysis regarding specifically ECs.

In the ordinary legislative procedure, a directive is proposed by the Commission and then is evaluated, firstly, by the national parliaments, afterward by the European Economic and Social Committee, the Committee of the Regions and it is finally approved by the European Parliament and the Council of the European Union. The peculiarities of a directive are multiple: it binds the European countries (in this specific case, all of them) to obtain the requested results, and it leaves to the country's specific institutions to define its proper forms and means to achieve them. On one side, it supports the centralization of results and goals at the European level, while on the other side, it promotes the decentralization at a national level of regulatory instruments. Furthermore, a directive is provided with a deadline, within which countries are obliged to finish the transposition process and, hence, to implement it in their national legislation and regulatory framework, or to prove it is already implemented. The Member States have in fact to present the law(s) in which they applied the directive to the Commission for monitoring purposes (Daniele, 2014). Thus, since the definitions of ECs are included in two directives, they must be transposed from the European directives into national regulations. This process will be explored for both case studies in the following chapters.

Moreover, how are ECs defined in those directives? Firstly, it must be specified that two different types of ECs are defined: Renewable Energy Communities (REC) (European Parliament & Council of the European Union, 2018) and Citizen Energy Community (CEC) (European Commission, 2019). The former is defined in the revised Renewable Energy Directive (REDII) and the latter in the Directive on Common Rules for the Internal Electricity Market (IEMD). Both REC and CEC are defined as legal entities:

- "'renewable energy community' means a legal entity:
    a) which, in accordance with the applicable national law, is based on *open and voluntary participation*, is *autonomous*, and is effectively *controlled by shareholders or members that*

are located in the proximity of the renewable energy projects that are owned and developed by that legal entity;

b) the shareholders or members of which are *natural persons, SMEs or local authorities, including municipalities*;

c) the primary purpose of which is *to provide environmental, economic or social community benefits* for its shareholders or members or for the local areas where it operates, *rather than financial profits*;" Article 2(16) (European Parliament & Council of the European Union, Directive (EU) 2018/2001 on the Promotion of the Use of Energy from Renewable Sources, 2018)

– "'citizen energy community' means a legal entity that:

a) is based on *voluntary and open participation* and is effectively *controlled by* members or shareholders that are *natural persons, local authorities, including municipalities, or small enterprises*;

b) has for its primary purpose to *provide environmental, economic or social community benefits* to its members or shareholders or to the local areas where it operates *rather than to generate financial profits*; and

c) may engage in *generation, including from renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency services or charging services for electric vehicles or provide other energy services to its members or shareholders*;" Article 2(11) (European Commission, 2019)

In the REDII, Article 22(2) further stated, concerning the roles of RECs, that "[…] renewable energy communities are entitled to: (a) *produce, consume, store and sell renewable energy*, including through renewables power purchase agreements; (b) *share, within the renewable energy community, renewable energy that is produced by the production units owned by that renewable energy community*, subject to the other requirements laid down in this Article and to maintaining the rights and obligations of the renewable energy community *members as customers*" (European Parliament & Council of the European Union, Directive (EU) 2018/2001 on the Promotion of the Use of Energy from Renewable Sources, 2018).

REC and CEC have few characteristics in common. Firstly, to be eligible as those, they have to be attributed with a legal entity that complies with the EU definition (e.g., one of the most utilized forms for a REC is the cooperative). Furthermore, the participation has to be voluntary and open, and their purpose should be value-based and not profit-driven. However, few are also the differences between them. A REC has to comply with more constraints. It has to use only renewable energy sources for energy production, and the concept of 'proximity' has to be applied as a requirement in the national regulation. Large companies cannot be members of a REC, limiting the membership to natural persons, SMEs and local authorities. Furthermore, the overall aim is to increase the share of renewables within the national boundaries and promote the acceptability of renewable energy sources at the local level. MS, while transposing these attributes in national regulations, have to enable facilitating schemes, e.g., technical and financial support, as well as support in the entrance in the energy market. Another key concept mentioned in the REDII is the concept of energy poverty. It, in fact, underlined the potential of RECs in the inclusion of vulnerable households in their renewables project, thus in the provision of lower tariffs and lower consumption.
On the other side, a CEC can only produce electricity, but from technology-neutral sources, and there is no proximity constraint. Large and medium enterprises (SMEs) are both excluded from the membership, and the aim that the MS in their transposition process have to consider is the support of this new actor in the energy market. In a level (equal) playing field, they should be allowed to become Distribution System Operators (DSO), thus, with their status and their obligations, however, without losing customers' privileges.

To sum up, ECs were defined and codified in two directives, REDII for RECs and IEDM for CECs. Thus, as the 'directive' requires, those definitions must have been transposed in national regulations before specified deadlines, i.e., the 31st of December 2020 for CECs and the 30th of June 2021 for RECs. The definitions imply the entrance of these two new actors in the electricity market, one with the use of renewable energy

sources and the other with technology-neutral sources. And Member States should ease this process through the customization of regulatory frameworks based on the territory.

4.2 Findings

This chapter aims in understanding how the decision-making process at the EU level was regarding the definitions of ECs. It provides also further insights, which were achieved during interviews with relevant stakeholders in the field. Moreover, the process is analysed through the theoretical framework presented in Chapter 2, and thus its dimensions are addressed to shed some light on how the European Union is performing under the MLG.

The previous section illustrated the relevant definitions and stakeholders for the topic at hand. However, how was the process that got approved the REDII and the IEMD?
As it can be seen from Figure 1 and Figure 2, respectively for REDII and IEMD, the legislative procedure was long and complex. From the interviews (Table 7), a few insights into this European decision-making process were retrieved to understand from a wider perspective the context in which ECs were defined.
The legislative procedures started in 2016. However, a few previous elements are worthy to be mentioned. Communities producing their own electricity were already present in the European Union's territory (Caramizaru & Uihlein, 2020), fragmented in those countries where it was actually legally possible to self-produce energy. For example, the Belgian cooperative Ecopower was founded in 1991, with the aim, at first, to finance projects regarding renewable energy sources, and later, to supply 'green' energy (Ecopower, 2022). This cooperative, among the few others already developed, had a central role in the years to come. Around 2008, almost ten years before the beginning of the legislative journey, Ecopower's representatives were invited by Claude Turmes, a member of the European party Greens/EFA (European Free Alliance), to give a presentation at the European Parliament on renewable energy sources, quite a new technology still. This event was significant for two main reasons: firstly, renewables entered the EU Parliament, and furthermore, it marked the first time members of energy cooperatives had the chance to meet and acknowledge each other's achievements. It led to the first international cooperation between cooperatives, the Belgian Ecopower and the French Enercoop, and to a first proposal for an EU grant. The latter, regarding RES acceptance and cooperative business models, was rejected at first since it was regarded as 'too innovative'; however, with few changes, the project was approved a year later in the Intelligent Energy Europe programme by the European Commission, with the name REScoop 20-20-20. A collaboration between countries started: meetings and visits on sight revealed the differences in development and legislative procedures among countries. Thus, in 2013 the European federation of citizen energy cooperatives (entitled REScoop.eu) was founded, with the aim of bringing 'together cooperatives and associations of citizens working in the field of renewable energies and energy efficiency' (REScoop.eu, Legal Status, 2013). This association is part of a wider coalition at the European level, the Community Power Coalition, which incorporates organizations like Friends of the Earth Europe, Energy Cities, ICLEI, Greenpeace Europe, etc.; it aims to give a voice on energy-related topics at the European level (The European Community Power Coalition, 2022). It was worth mentioning this coordination and cooperation process: those associations together backed the entire ECs' definition procedure, and, in their lobbying process, influenced and supported relevant stakeholders.

Moreover, in 2015 a window of opportunity, i.e., the revision of the Third Energy Package, was used by members of the Committee on Industry, Research and Energy (ITRE), to propose two Communications: "Delivering a New Deal for Energy Consumers" and "Towards a new energy market design", with, respectively, Theresa Griffin and Werner Langen as rapporteurs (Committee on Industry, Research and Energy, 2015/2323(INI) (2016); Committee on Industry, Research and Energy, (2015/2322(INI)) (2016)). These documents represented the first step toward adoption of CE into the REDII and IEMD, for they included as main topics the empowerment of citizens, underlining the main role they should have in the energy transition through collective purchasing schemes and self-generation, innovations on smart demand management, energy poverty, and data accessibility. Furthermore, it was mentioned there for the first time

a definition of 'prosumer', crasis[2] between producer and consumer. One insight on this acknowledged during an interview was that in the following Directives this term was replaced by the terms 'self-consumers' and 'active user'. This was due to the fact that the more conservative parties required a prosumer, since it is also producing energy, to comply with the same obligations and requirements of national companies producing energy. And thus, to avoid further complications, the part of the term which refers to the production activity disappeared.

In 2016, those documents earned the majority vote in the EU Parliament. In fact, during that year, coalitions were formed around those common interests, with the support of the Community Power Coalition. In the same year the 'Clean Energy for European Citizens' package was published, the central topics mentioned in the two Communications were all included. From 2016 until the publishing date of the Directives, the latter were inspected thoroughly by the Committees, the Parliament, and the European Commission, as specified in Figures 1 and 2. Finally, on the 24th of December 2019, the REDII entered into force, and later in June 2019 also the IEMD. This achievement was not without challenges and effort.

[2] "The fusion or contraction of two adjacent vowels into one" (Collins, 2022).

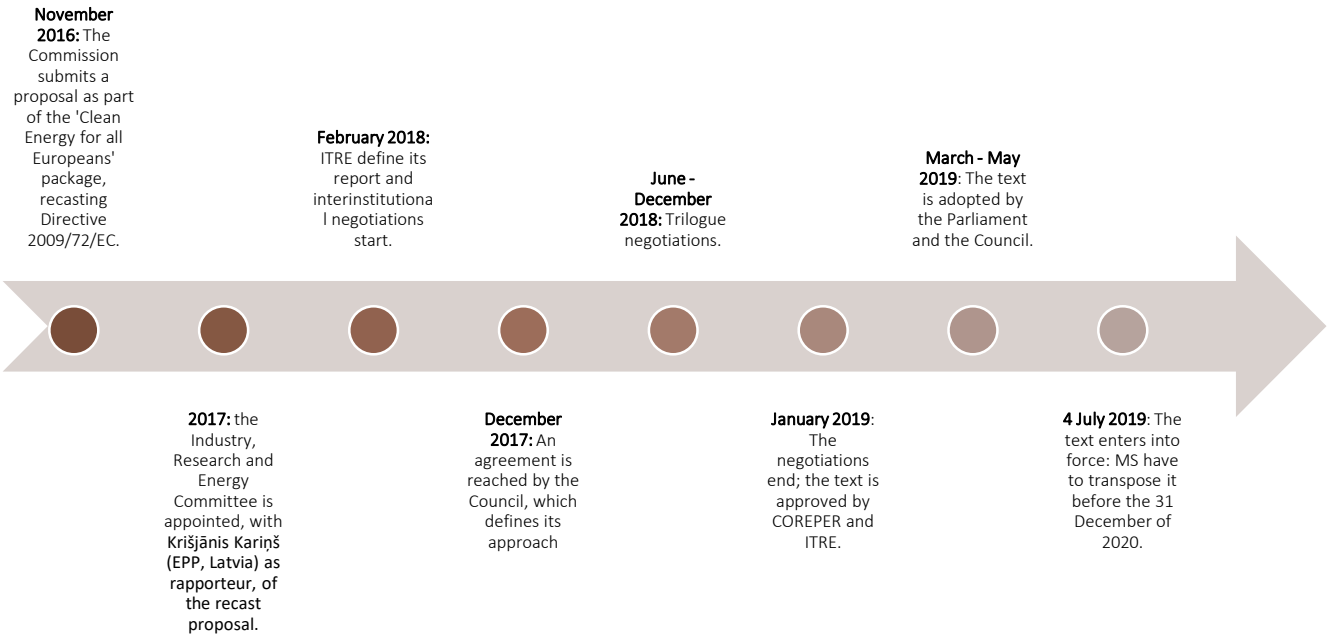

Figure 6: Legislative process for IEMD (European Parliament, 2022).

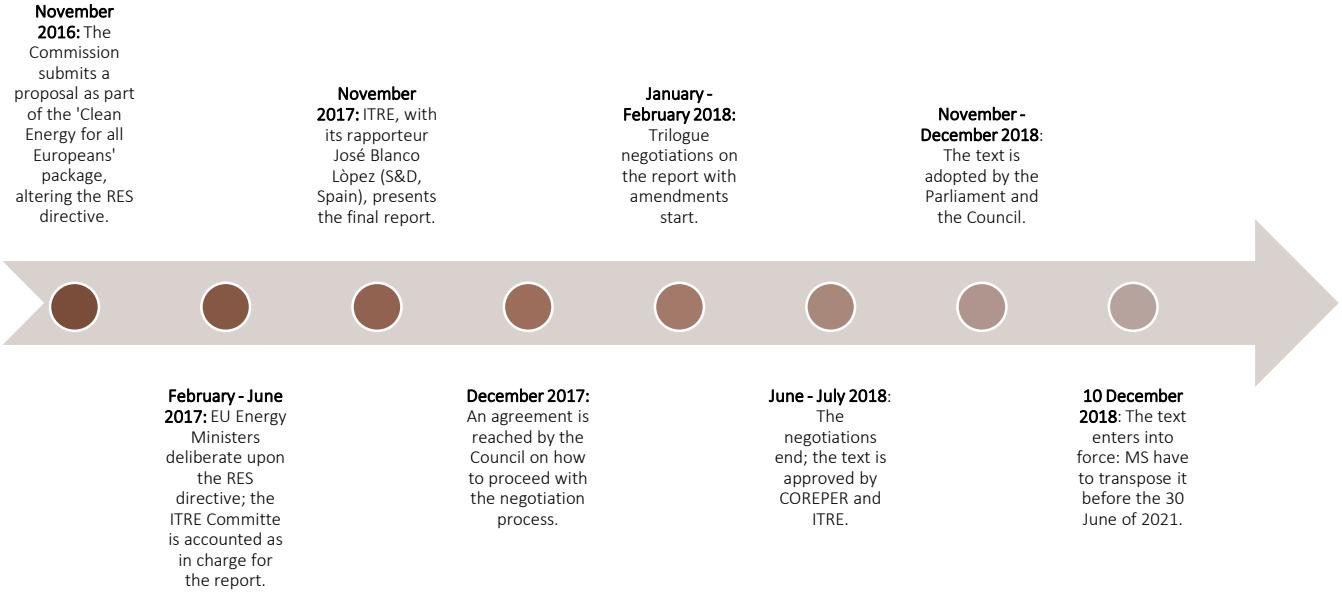

Figure 7: Legislative process for REDII (European Parliament, 2022).

To cite one of the interviewees, “Representatives of the fossil fuel industry, with their centralized business model and their economic status, were against those changes” (translation by the author). The interviewee, a member of the ITRE Committee himself at that time, recognized that, luckily, supporters were not missing out, and from the cooperation with the Greens, the Labour Party, and the Socialist Party, were produced.

The two Directives had and still have diverse consequences. Firstly, since the Directives provided definitions, but left the customization and the means to national governments, to cite a member of REScoop.eu, “We just won a very tiny battle at the European level, the very important one though; but the main challenge will be the battle at the national level to have those definitions transposed, and to make sure that we get enabling frameworks at the national level”. The concerns expressed by this interviewee found their foundation in the fact that, working in a federation of energy cooperatives, he experiences how some countries are more prepared and interested than others in this transposition process.

The lack of specificity, from the MLG side, enables lower levels to define their own regulatory system, based on already enforced laws and the socio-economic context. However, if not supported, some countries could be left behind. Regarding it, at the European level, funds were made available, and projects around ECs have been flourishing. A few of those projects are focused on this transposition process, thus how different countries are implementing the Directives, i.e., NEWCOMERS and COME RES (NEWCOMERS, 2022; COME RES, 2022). The aim of both those projects is to understand, from different perspectives, what barriers and best practices are achieved across Europe and facilitate knowledge transfer among different countries. For example, NEWCOMERS joined forces with two other programs, COMETS, and SocialRES, and planned to publish a joint policy brief, while COME RES scheduled on-site visits around European energy communities to give the latter the chance to acknowledge directly from each other the best practices and how to overcome difficulties (i.e., a Latvian energy community, which is struggling, visits an Italian one, which, on the other hand, is flourishing).

4.3 Conclusions

Overall, in accordance with what has been comprised, a framework that defines ECs legally was produced, although the process was not effortless. However, since the main challenge was recognized to be in the transposition process in national regulation, the performance of the European Union as an enabler of the MLG for ECs will be assessed via the analysis of this process in the two case studies, Italy and the Netherlands, i.e., in the following chapters. As described in Chapter 2, Openness and Transparency, Participation, Accountability, Effectiveness, and Coherence are the dimensions with which the EU as enabler, and Italy, and the Netherlands as receivers and facilitators will be evaluated.

5. Italy

This chapter aims to give an overview of the landscape in which ECs are deployed, thus, a brief introduction to the Italian energy market and its stakeholders. Furthermore, the definition of ECs in the Italian regulatory framework is going to be addressed; and lastly, the main findings gathered through the interviews, which allows to identify the main barriers and opportunities the Italian government enforced.

5.1 Landscape

5.1.1 Electricity Market & Stakeholders

The liberalization and privatization of the Italian energy market started at the end of 1990, when in 1999 the Bersani Decree (79/1999) reformed the electricity system through the unbundling of energy monopolies (DECRETO LEGISLATIVO 16 marzo 1999, n. 79, 1999). This process kept moving forward in the direction of decentralization of the energy market when a further Constitutional reform was enforced in 2001, giving additional legislative and administrative power to the Regions (Modifiche al titolo V della parte seconda della Costituzione, 2001). Currently, according to Di Nucci & Russolillo (2019), the establishment around energy in Italy is complex, characterized by 'a high level of fragmentation both vertically at the government level and horizontally at the sector level'. Thus, numerous actors are involved in the policy decision-making process, with additional changes implemented in 2021 by the Draghi government. The latter appointed, through the merging of the Ministry of the Environment and the energy competencies of the Ministry of Economic Development (MiSE), a new Ministry, for the Ecological Transition (MiTE). One of its roles is to enforce energy policies, regarding renewables and energy efficiency too (Dipartimento Funzione Pubblica, 2022). Thus, at the national level, the Ministry for the Ecological Transition has a central position, surrounded by the other Ministries with more marginal roles, e.g., the Ministry of Agriculture (which is in charge of biomass policies). Moreover, other governmental institutes are worthwhile to mention, the research ones, the National Research Council (CNR), the National Agency for New Technologies, Energy and Environment (ENEA) and the institution for Research on Energy Systems (RSE); the latter are funded by the Fund for research into Electrical Systems as defined by the Ministry for Ecological Transition, as well as national and European grants.

On a lower level, there are different types of actors relevant. Firstly, the Regions, which are nineteen and two autonomous provinces, gained relevance, as mentioned before; for example, those entities can enforce the governmental law on their territory, as well as additional funding schemes. Vertically, the national and the regional institutional level communicate formally with each other via the State-Regions conference, as well, horizontally, Regions can coordinate their actions through the Conference of the Regions and the Autonomous Provinces (European Committee of the Regions, Italy - Systems of multilevel governance, 2022). Furthermore, there are also local and regional authorities (LRAs) which join this coordination process: the Union of the Italian Provinces (UPI), the National Association of Italian Municipalities (ANCI) and the National Union of Communes of Uplands Communities (UNCEM).

In the energy field, at the national level, an influential actor is the Italian Energy Authority (ARERA, Autorità di Regolazione per Energia Reti e Ambiente), which covers an advisory role for the Italian government and Parliament, as well as the power to set tariffs and to define quality standards, preserving consumers' interests (Arera, 2022). Next to this regulatory institution, the publicly-owned company, GSE (Gestore dei Servizi Energetici), mainly delineates and provides incentives for electricity production from renewable energy sources, and fosters energy efficiency; in the context of ECs, this company is not only dependent content-wise on the MiTE Decrees and legislation, but also from Arera's Resolutions (GSE, Chi siamo, 2022). Furthermore, the power trade in the electricity market is responsibility of the Gestore dei Mercati Finanziari (GME). Lastly there are the Transmission System Operator (TSO) and the Distribution System Operators (DSO); the former has maintained a monopoly, owned by Terna, while the latter are around 130. However, the majority of the electricity in the network is still controlled by ENEL, (Ente Nazionale per l'Energia Elettrica), a multinational Italian utility, which was publicly owned until 1992 (Enel, 2022).

This complex system of institutions, as summarized also in Table 17 in the Appendix, describes the setting in which the transposition process of the EU Directives happened. Regarding more specifically renewable energy policies, Prontera (2021) gives a clear overview of the modifications the direction of those policies went through from 1999, and thus from the liberalization of the market, until 2019. The main takeaways are that, in the first half of those twenty years, significant incentives for PV (photovoltaic) were granted through a Feed-In-Tariff (FiT), while in the second half, due to high costs of the FiT scheme, those incentives were decreased substantially, leading to a decline of RES investments. However, while the RES market remains stagnant, the government endorsed in 2019, with the Italian National Energy and Climate Plan (PNIEC), the target of 55% of electricity coming from RES by 2030.
In this landscape, ECs did not have direct policy support until the two EU Directives, and they benefited only from the discontinuous Italian FiT scheme. However, in the first period mentioned above, few ECs flourished, due to the high level of incentives ensured, and a simultaneous reduction in the PVs' costs (Candelise & Ruggieri, 2020). After the end of the FiT, only several of them succeeded in remaining active, mainly due to their national extent or the support of commercial players, e.g., Retenergie and ForGreen.

However, after the European Directives were enforced at end of 2018 for REDII and in July 2019 for IEMD, ECs' delineation and definitions have been transposed into national regulation, and thus, supporting schemes were also defined. Moreover, the following chapters will give an overview of the definition of ECs in Italy and of the performance of the latter and of the Italian MLG in supporting or hindering those communities' flourishment.

5.1.2 Energy Communities Definition at the National Level

ECs were referred to for the first time in the Italian regulatory framework in 2017, in the Italian Energy Strategy, and, afterward, in 2018, within the PNIEC. However, in those schemes, there were still no direct supporting policies for those communities. Only at the end of 2019 and the beginning of 2020, after the two European Directives were enforced, the Italian government started moving in the right direction for enabling the ECs full deployment. Through the law 8/2020 (Legge n.8, 2020), a temporary transposition of the REDII was implemented, and with it, some constraints were added to the already existing European definitions:

- REC renewable plants have to be lower than 200kW in terms of installed capacity.
- Renewable plants, for being part of a REC or collective self-consumption, have to be installed after the 1st of March 2020.
- Plants and consumers have to be connected to the same low-voltage distribution sub-grid.

Members of RECs, as defined in the Directives, can be citizens, SMEs (Small Medium Enterprises), local authorities, and Public Administrations (PA); however, the participation in a REC cannot be the main form of business for any of those members. This definition leaves open the entrance of other actors in the ECs market, e.g., Energy Service Companies (ESCO) or renewable energy developers, which can support and facilitate the growth of these communities (Candelise & Ruggieri, 2020). Furthermore, members do not lose their role as consumers, and thus, they are able to switch to any DSO at any moment in time. The law does not define a specific form those communities have to choose, and it is, hence, left the choice to the members. The aim of RECs is also specified: "to deliver environmental, economic and social benefits to their members or to the local territory around those communities, rather than financial profits" (translation by the author).

After the law, two actions followed throughout 2020. Firstly, Arera, which had to fulfill all the regulatory aspects, implemented a 'virtual model' via the Resolution 318/2020 (Delibera 318/2020/R/eel, 2020). This model allows members to share their produced energy through the public distribution grid, with no infrastructural changes. Hence, this means members of a REC or collective self-consume scheme pay the electricity bill, and receive a 'cash-back' which corresponds to the shared electricity, i.e., the value of self-consumption. This implies a first incentive ensured by the Authority in the temporary legislation: due to the ease on network losses since the energy is shared among members, the latter receive around 8 €/MWh. In addition to this, the MiSE (currently MiTE), through the resolution of the 16th of September 2020 (DECRETO

16 settembre 2020, 2020), defined a new incentive, which will last for 20 years, for self-consumed electricity in RECs: 110 €/MWh. However, this second incentive can be earned only for the plants with power lower than 200kW. The threshold for the latter constraint will be raised up to 1 MW in the definitive regulatory framework, as well as the shift from the low-voltage distribution grid to the medium-voltage one. Moreover, this scheme aims at increasing the local consumption of RE produced, while minimizing the use of the network grid. This incentive system has been implemented operatively by the GSE at the end of 2020, via the publication of the technical rules for the access to the valorization and incentive program of shared electricity (GSE, Regole tecniche per l'accesso al servizio di valorizzazione e incentivazione dell'energia elettrica condivisa, 2020). The division of the Arera and MiTE incentives among the members of the community is left to the latter. Thus, multiple configurations can be implemented; for example, the incentives can be distributed only to the members which invested in the power plants, or they can be used for initiatives which would benefit the community.

To sum up, RECs' members are going to receive back, if simultaneously producing and consuming: 8 €/MWh for the reduction of distribution/transmission losses, plus 110 €/MWh for the shared electricity, plus the compensation for the electricity injected into the grid according to the electricity market price (e.g., the Italian National Single Price (PUN), which is the reference wholesale price for electricity, reached over 200 €/MWh (Gestore Mercati Energetici, 2022)). This recapitulation is based on the transitory regulation; the definitive one should be fully implemented by the end of 2022. Furthermore, in addition to those direct incentives, the National Recovery and Resilience Plan (PNRR) provides around 2.2 billion euros for RECs promotion and support of municipalities with less than 5,000 inhabitants (Ministero dello Sviluppo Economico, 2021).
Due to the relevance of the regions, which has been underlined in the previous section, it is worthwhile to mention that also those stakeholders are moving towards the implementation of supporting and enabling schemes for energy communities, with high customization on the territory. For example, the Piedmont and Puglia regions anticipated the transposition process and included in their legislative frameworks the stimulus of RECs (Boulanger, Massari, Longo, Turillazzi, & Nucci, 2021). Other examples are the Emilia Romagna region, with the publishing of the Pact for Work and Climate (Regione Emilia-Romagna, 2020), and the Lazio region, with 110 million for the establishment of 100 RECs in 100 municipalities before the end of 2022 (Regione Lazio, 2022).

What about CECs? Its definition was transposed through the legislative Decree 210/08.11.2021 (DECRETO LEGISLATIVO 8 novembre 2021, n. 210, 2021). This resolution enforces the membership as open and voluntary, as well as the freedom to choose any legal form which is in line with the purpose of CECs. The latter should provide environmental, economic and social benefits, rather than profit, to their local community. Likewise to the RECs, CECs' activities remain the same as the ones defined in the IEMD, thus, generation, distribution, supply, consumption, energy storage, energy efficiency, as well as recharging services for electric vehicles, without any restriction RES. Furthermore, natural persons, small businesses, local authorities, research and environmental organizations, PA, as well as religious institutions are allowed to become members. Addressing electricity, the latter is 'shared' when the production and the consumption remain in the distribution grid belonging to the same market area; and the shared electricity is defined as the minimum value between the value of produced and the injected energy by the plants and the value of energy withdrawn by the members of the CEC. Moreover, in a few legislative articles which refer to CECs, 14 (10) and 14(24), the role of implementing those communities and to facilitate their entrance in the energy market is assigned to Arera. However, more details are expected when this decree becomes law, and as well as when the Authority releases the operating procedures.

Overall, the Italian government is focusing on the full deployment of RECs, also due to the driving force towards the use of renewable energy sources from the European Union and the PNIEC. Moreover, the next section is going to explore barriers and supporting processes which have been acknowledged through the MLG framework defined in Chapter 2.

5.2 Findings

This chapter aims in giving insights, gathered through the conducted interviews and based on the MLG framework, regarding both the transposition process of the Directives in the Italian national agenda and the deployment of ECs in Italy. The five dimensions which are going to be explored are, hence, Openness and Transparency, Participation, Accountability, Effectiveness, and Coherence (see Table 6). Moreover, since CECs are still not in the Italian scenery, this section will dive into RECs, with only a few insights on CECs that were given during the interviewing process.

In Italy, differently from other European countries, the activity of collective self-consumption and sharing electricity among members in the same building, let alone ECs, were still illegal until the transposition process of the EU directives, thus until 2020. And, for example, an interviewee, when he only tried to approach those topics a few years ago with his neighbors, was labelled by the latter as an 'eccentric environmentalist'. Thus, laws and incentives were not there, and neither was acceptance from citizens. However, nowadays, the dialogue around citizens is growing, even though around 30 ECs have been developed (but only 10 are fully operational) and, facing many barriers that are still dominant. Hence, the question can be raised on what point ECs deployment has reached so far in this country?

Firstly, starting from the national level, it is important to point out that the engagement of the Italian national government was substantial from the early stages of ECs' definition process at the EU level. The Senator and, later on, President of the Industry Commission of the Senate, Gianni Pietro Girotto, with his political secretariat, supported, and still supports, the implementation of these communities in the Italian legislation. In fact, he was in direct contact with one of the members of the European Commission, Dario Tamburrano, who was one of the promoters of the inclusion of ECs in the REDII and IEMD. Furthermore, the Senator enabled the 'sprint' of ECs in Italy through the proposal of the temporary law and first incentives, which were later on implemented. However, in this first phase, environmental associations and NGOs were lacking in their engagement, apart from a cooperative supplier, ènostra. The latter was created throughout the cooperation with RESCcoop.eu in 2014, and, with its founders, it was one of the stakeholders which promoted from the beginning self-consumption and ECs. Moreover, lobbying initiatives by the energy establishment to the political parties and Ministries were also acknowledged: implementing self-consumption and ECs was seen as revolutionary and competitive to the already existing institutions. The political process which led to the implementation of the two Directives was transparent, and all documentation was published on the governmental websites. And, additionally, consultations were conducted among stakeholders and the Senate, and the latter with the Chamber. However, the temporary phase has not ended yet: the definitive Ministerial Decree, which has to be approved by the European Commission, the Arera consultation and the final regulations from GSE should be finished by the end of 2022, with a delay of half a year.

Among the governmental actors, Arera, which has the role to define the virtual model for the self-consumption of electricity, cooperated actively with the government and the Italian Parliament also in the early stages, as it was all documented via memories on their website. Three other consultations are still going on: an informal one with the GSE, a periodical one with the associations and providers, and a public one to establish improvements after the definitive version is approved. The collaboration with GSE is relevant regarding operationalization aspects of the Decree, both when writing the latter, to take into account more important aspects to implement; and then after the resolution, when the GSE has to update its guidelines, which have to be verified by the Authority. 'Due to the high level of complexity of the topic (ECs)' (own translations), also GSE interacts with multiple and diverse stakeholders, through promotion and divulgation, as well as interpretation of the law, delineation of the incentives, and investments plans. This institution collaborates with cooperatives (e.g., Legacoop), which are considered 'multipliers' since they easily reach their members to communicate new initiatives, with SMEs, the PA and mayors. Additionally, GSE and the Regions established focus groups with all interested stakeholders; however, 15 were conducted, since not all Regions joined this initiative. From December 2021, meetings were also initiated with Italian utilities and ESCOs: the role around ECs of those companies with technical competencies, as acknowledged by GSE, is double, both sharing know-how and facilitating the aggregation of members, e.g., EnelX, a spin-off of Enel, as aggregator and promoter of business plans for ECs. Thus, GSE, through its

institutional role, is placing itself as an intermediary between those stakeholders which were mentioned and the legislative actors, even more in this temporary phase, to highlight criticalities and needs. Moreover, both this institution and Arera are nowadays underlining the relevance of, not only production from RES, but also of energy efficiency and electrification of the consumption; an example is GSE promoting the latter topics to Legacoop, which has expressed interest in addressing energy from a wider perspective, e.g., not only use of RES, but also energy efficiency measures.

Furthermore, few Regions have started consultations, with institutions as Arera or GSE. For example, the Lombardy region is planning, not only to support financially RECs, but also to establish their own spin-off, e.g., help-desk, for ECs, specifically for the ones that are developing through PA. During an informal meeting between the Authority and the representatives of this Region, the former suggested another direction in which Regions could delve into, as mentioned above: energy efficiency and energy saving. Since those topics are not stimulated both by the European Directives and the Italian legislation, the Regions can fill this void by providing customized support to ECs which are willing to include those topics in their project. An interviewee underlined, in fact, that, providing as main support the exploitation of renewables could lead to an overlap with the national regulation, and no value-added, while including supporting schemes for energy efficiency could lead to a step further into decarbonization. Another example is the Lazio Region, where the latter has assigned 110 million euros for start-ups on RECs, and this deal was achieved with the La Sapienza University of Rome. As acknowledged by one of the interviewees, this grant is the only way to speed up an egalitarian deployment of these communities. However, the Regions, according to the interviews, in the early stages were not engaged with relevant stakeholders; inter-regional meetings, or meetings with the MiTE, and informal ones with GSE were conducted; although, consultations with all relevant stakeholders, governmental and of the energy sector together, were never launched. For instance, the Lazio Region managed to organize a conference with all interested parties only in May 2022.

Apart from those governmental actors, also national research organizations, due to their institutional belonging, have been included in the process of defining ECs, and they are now placing themselves as intermediaries, too. Through publications and research, the RSE interacts with multiple stakeholders, Ministries, Regions, Provinces, NGOs, private companies, and technology providers. Thus, as mentioned by the interviewee, “due to the involvement of many and various levels of governance around ECs, we have an open dialogue with both private and public entities” (own translation). Moreover, a study by the RSE highlights the so-called Energy Community builders: intermediaries which can support the formation of those communities, e.g., universities and private companies, e.g., ènostra or EnelX. Among those, new ones could have this role in the coming period, according to the interviewee; for example, Confcooperative or Legacoop, which share the same aim and interests as ECs, or ANCI, as facilitator of a networking and replicability process among communes. On the same topic, an interesting challenge, issued by the same interviewee for the foreseeable future, is how to insert private companies in the ECs development, since their technical and aggregation competencies are significant, without compromising the aim of those communities, i.e., benefits for the local territory, as well as new actors in the electricity market. Thus, in this context, cooperatives, or associations like ANCI, or universities, have less concern, since their main focus is already on the territory. RSE’s research is hence focused on providing enabling schemes which empower, through identifying and redirecting resources, citizens and local businesses as prosumers; and on performing an impact assessment, thus, verifying the impact of RECs on citizens, PA and enterprises which are involved in the Italian electricity market, also considering approaches to energy poverty.
The other national research institute, ENEA, is supporting ECs by providing services, i.e., tools such as RECON, which allows to obtain a preliminary analysis of energy, financial and economic aspects, DHOMUS, a platform for the analysis of consumption of electricity data to give feedback on members’ behavior, and Local Token Economy, a platform for exchanging goods and services through tokens in the lenses of the sharing economy. Moreover, it is positioning itself as an intermediary, too, with municipalities, Regions, or associations like Anci, to spread the so-called ‘ENEA model’, which includes the before-mentioned tools and know-how.

However, as mentioned before, the number of ECs developing on the Italian territory is low: around thirty, but about ten of them fully operational. In those twenty that are not operational, the EC of Ventotene is,

for example, still struggling to acquire and install solar PVs, while the association is already established. The latter was founded in October 2021, through the involvement of the Major of the island of Ventotene, members of La Sapienza University, and the Department of the Ecological Transition of Lazio Region. From one side, the involvement of those actors facilitated the opening of a direct communication channel with GSE for questions and doubts, resulting in speeding up the process of constitution of the association. On the other side, bonding the EC to the Major, which is the president of the association, resulted afterward in a slowdown, when the same Major was removed from his role and a commissioner was appointed. But this community had (and still has) to face other barriers, e.g., the lack of an efficacious engagement from the PA, the absence of PVs to install, and of the money to purchase the latter, difficulties in including citizens, and lack of time and know-how available. What Ventotene EC is looking forward to now are the funds which will be made available by the PNRR for communes with less than 5,000 inhabitants; this underlines the importance of regional and national funding schemes to support those communities, not only to provide solar panels or technical aid, but also to incentivize the engagement of the citizens allowing the latter to join a no-risk investment.

In addition to the ones just mentioned, other barriers have been identified by the different stakeholders, as summarized in Table 9. Firstly, there is still a lack of knowledge regarding what is necessary to establish an EC: for citizens without the support of PA or organizations, is difficult to understand which actors are necessary to contact, which type of association is best to set up, how to identify which bank would be available to invest in the community. Furthermore, the changes in the definitive Decree, which allows the incentivization of plants with higher power (max. 1Mw) and enlargement of the proximity area to the medium-voltage distribution grid, brings new challenges. It complicates the governance: who will promote broader ECs? What is the purpose of the latter? In an extra-urban context, multiple Communes are under the same medium-voltage distribution grid; hence, it could also be possible to establish an EC within different villages in it. But it also further complicates the financial aspects, since larger ECs would mean larger investments, and nowadays those initiatives are mainly small and driven by public institutions. Moreover, where the public sector is not able to provide investments, new actors, e.g., a bank, have to enter the ECs market. However, the latter, as also industrial actors in the energy field, are waiting for the temporary phase to end. And lastly, with those adjustments in the legislation, in the incentives and the further introduction of the CECs, new business models and business plans have to provide: those changes allow to widen the choice of technologies to install, enabling wind turbines or agro-voltaic to enter the ECs market. Thus, due to those many challenges, the role of the legislator does not have to be limited only to provide equal financial resources, but also competencies, without losing the connection to the local territory.

Table 9: Main Barriers in Italy.

BARRIERS
No funds available for the installation of RES
Lack of know-how and competencies of both citizens and governmental institutions
Lack of time
Difficulties in citizens' engagement
Difficulties in understanding stakeholders' roles (who to address)
Ineffective engagement from the PA
Lack of support for networking among ECs
Long waiting time for the definitive legislation
Lack of support for innovation

5.3 Conclusions

Overall, the process of ECs definitions is therefore still going on: the temporary phase marked by the early Resolutions is finally seeing its end, while new challenges are going to be brought up with the definitive regulation. Few of those possible obstacles are still mainly concerning the roles of public and private institutions. Funding schemes, coming from the EU, from the Italian government and its regions are available and are going to be available for the next twenty years; however, how to venture them valuably, with a lack of know-how among citizens and governmental structures, remains a question that is not solved.

When applying the MLG framework regarding the openness and transparency of the ECs definition process, from one side, information and consultations are available, due to the high involvement of public institutions; however, there is still detachment of citizens regarding the topic. Thus, the networking process which facilitates the policy decentralization is not used well enough, and the local governments, after almost two years from the transposition of the EU Directives, are now initiating to understand the relevance of the theme and to enable supporting schemes for ECs. Regarding this, the participation is both horizontal and vertical, and it includes different stakeholders; nevertheless, the novelty of ECs and their complexity in terms of engagement with different levels of governance are still hindering the deployment of these communities. Moreover, the temporary phase, from one side, supported a first acknowledgment of the topic, with lower investments needed; on the other side, the slow progress to a definitive framework is hindering new actors, which can assume the role of intermediaries, and thus, facilitate ECs, to enter this sector. Thus, also regarding accountability, a few challenges still exist. Public institutions, e.g., the PA and universities, at a Regional and Communal level are now understanding how and what schemes to implement, with more customization on the territory and with the aim to not overlap with the national framework; private organizations, e.g., banks, and utilities are still holding back, waiting for the proper and permanent time to define their role of possible facilitators. The latter aspect is still rather hindering the overall effectiveness of the transposition process, even though significant progress has been achieved when remembering that few years ago ECs would have not been legal. Funding schemes are available nationally, and from now on also a few examples of regional schemes, too. However, the latter are mainly redirected to the PA, which makes it difficult to obtain full bottom-up initiatives. Besides the financial aspects, there is still a lack of competencies, as acknowledged by all the interviewees, which can be also noticed from the gap between ECs established and the ones operative. Lastly, as mentioned above, the involvement of members of the national government in the ECs delineation process at the EU level is reflected in the coherent alignment of the Italian legislation with the European one regarding ECs characterization. However, a couple of factors which are missing in both frameworks, European and Italian, as underlined by the interviewee, are the topics of energy efficiency, and the stimulus to not-consuming or stand-alone practices. Thus, the transposition of ECs notions was successful in the Italian legislation, nonetheless innovative measures were not included, leaving room for maneuvering for lower levels of government to embrace these topics and other advancements.

To sum up, this chapter aimed to, firstly, identify and delineate relevant stakeholders in the ECs and energy sector. Furthermore, the depiction of those communities in the Italian legislation was presented, and, to conclude, finding based on the conducted interviews were outlined, with a focus on the five dimensions, Openness and Transparency, Participation, Accountability, Effectiveness, and Coherence, presented in Chapter 2. The latter findings will be presented again for the comparative analysis with the other case study, the Netherlands, which will be addressed in the following chapter.

6. The Netherlands

The purpose of this chapter is to, firstly, introduce the Dutch electricity market and its stakeholders, in order to provide an outline of the context in which ECs are established. Furthermore, the national legislation is reviewed to understand the transposition process from the EU Directives of those communities, as well the supporting schemes available for the latter. Finally, findings achieved via the interviewing process are reviewed to highlight supporting and hindering factors for ECs in the Netherlands

6.1 Landscape

6.1.1 Electricity Market & Stakeholders

As well as Italy, the liberalization of the Dutch electricity market started at the end of the 1990s, more specifically in 1998 with the Dutch Electricity Act. The retail market was later opened, and from 2004, both households and companies were allowed to choose their own energy supplier. With the Unbundling Act in 2009, this process of liberalization reached its scope: generation, transmission, distribution and sales executed by different entities. More in-depth, since then, generation was privately-owned, while distribution remained publicly owned.

The actors, as can be seen from Table 16 in the Appendix, are, multiple and diverse. Starting from governmental actors, the Ministry of Economic Affairs and Climate Policy has the main role regarding energy policies, design and implementation in order to reach the national targets of GHG emissions and RES. Furthermore, it supervises spatial planning of broad energy projects, e.g., offshore wind farms, onshore wind farms with more than 100MW, as well as RES projects above 50MW (European Committee of the Regions, Division of Powers: The Netherlands, 2022). And, additionally, this Ministry oversees the development and the implementation of the Regional Energy Strategy programme. A branch of this Ministry is the Netherlands Enterprise Agency (RVO), which has the responsibility to overview public spending and to implement support schemes for RES, e.g., the Sustainable Energy Transition scheme (SDE) or reduced taxation (RVO, 2022). Moreover, other ministries relevant in the energy sector are the Ministry of Infrastructure and Water Management, Ministry of the Interior and Kingdom Relations, and the Ministry of Agriculture, Nature and Food Quality. On a lower governmental level, provinces and municipalities oversee smaller energy projects. Thus, the responsibility of the twelve provinces is concerned with the planning of onshore wind plans between 5 and 100 MW, while for the 355 municipalities onshore wind farms below 5MW and solar PV until 50MW are allowed (European Committee of the Regions, Division of Powers: The Netherlands, 2022). Furthermore, a new division of roles concerning the energy sector is based upon the aforementioned 30 Energy Regions, which have to comply with goals on renewables, heath and built environment. More specifically, they are aiming to produce via onshore RES 35 TWh, and to support the transition to low-carbon heating (Ministry of Economic Affairs and Climate Policy, Long term strategy on climate mitigation, 2019).

Moreover, another relevant energy actor is the regulator, i.e., the Authority for Consumers and Markets (ACM), which is an independent organization, but supervised by the Minister of Economic Affairs and Climate Policy. Its role is to preserve consumers' and businesses' rights, as well as monitor TSOs and DSOs. In fact, the electricity grid is allocated to the high-voltage grid, regulated by the former, and the low-voltage distribution grid is controlled by the latter. TenneT is the only Dutch TSO, with main shareholder the Ministry of Finance, while the Netherlands counts eight DSOs, owned by regional governments. Lastly, the main research institute embedded in the Ministry of Infrastructure and Water Management is the Netherlands Environmental Assessment Agency (PBL). Its role is to research policy analysis strategies regarding mainly environment, energy and climate, and it hence releases the annual Climate and Energy Report (KEV) on those topics (PBL, 2021).

Among those institutional actors, other stakeholders are relevant for ECs' deployment. Examples are Federations or Cooperatives of ECs, e.g., Energie Samen, as well as knowledge platforms (e.g., Hier opgewekt), which widely support the spread of these communities through ancillary services and knowhow. Furthermore, international organizations, as the European federation REScooop.eu, have the role of representing those communities at the European level, as well as facilitating knowledge transferability across communities and countries.

This ensemble of stakeholders is needed to achieve the national energy and emissions goals, and, thus, within them, to enable ECs spread. Moreover, policies regarding the electricity sector in the Netherlands are primarily based on European legislation and directives. The amendments of the Electricity represent the changes in the European frameworks; i.e., the Third Energy Package Regulations were implemented in 2012 in the Act, and the before mentioned ACM was designated to supervise the alignment of the latter in the Dutch legislation. Furthermore, four legislative frameworks are relevant for the characterization of energy policies (PBL, 2021), the Energy Agreement, the Coalition Agreement, the Climate Act and the Climate Agreement. Firstly, in 2013, the Energy Agreement for Sustainable Growth was signed by the government and 47 organizations to set the targets until 2023, e.g., 14% of electricity from RES by 2020 and 17% by 2030, 15,000 additional jobs and tax reductions. Additionally, in 2015 the Paris Agreement set similar goals: until 2020, a reduction of greenhouse gas (GHG) emissions of 20%, an increase of RES in the electricity market by 20% and the increment of energy efficiency by 20%; by 2030, 40% decrease of GHG emissions, compared to the levels of 1990, and 27% more in the utilization of RES; and in 2050, 80%-95% of GHG reduction. This agreement was set out in the Energy Report in 2016, where the outline program included 14% of shares from RES by 2020, and 16% by 2023. However, to underline the social attention those topics such as energy and climate have in the Netherland, a court case was initiated by Dutch citizens and the Urgenda Foundation against the state of the Netherlands; this event lead to a ruling by the court which obliged a reduction of GHG emissions by 25% before 2020. Moreover, in 2017, the third Rutte government Coalition Agreement outlined the further steps to the Paris Agreement, i.e., a 49% decrease in GHG emissions by 2030 and the introduction of circular economy principles. This agreement laid the foundation for the Climate Agreement, which, published in 2019, outlined the Dutch energy transition. The latter comprises long-term targets of a reduction of 49% in GHG emissions (27% of electricity produced from RES) by 2030 and 95% by 2050, compared to 1990, as well as 50% of electricity locally-owned. This agreement also established the outline for the Dutch Integrated National Energy and Climate Plan 2021-2030 (NECP). In the same year, the Senate deployed the Climate Act, which enforces those beforementioned goals, and it further imposes a yearly release of the Climate and Energy Report (KEV).

In summary, regarding renewable energy policies, the Netherlands aims in reaching the reduction of 49% GHG emission target by 2030, while long-term goals are the reduction of emissions by 95% and CO_2 neutral electricity generation in 2050. More specifically for renewables, the target is 27% of electricity production via RES in 2030. And, for reaching those goals, multiple stakeholders are needed. Moreover, ECs are initiatives that could support this purpose, and how those communities are encouraged in the national regulation will be addressed in the next section.

6.1.2 Supporting Measures for Energy Communities

ECs in the Netherlands started developing around 1980, when associations, e.g., cooperatives, were able to own wind turbines and get access to the electricity grid. However, selling electricity to their members was still not legal, and thus, those associations were bounded to sell it to official suppliers (Oteman, Kooij, & Wiering, 2017). A boost in the direction of RES was given in 1993 with the Treaty of Maastricht, and then in 1997 with the Treaty of Amsterdam, where a change towards renewables was established. Thus, in order to reach this goal, few supporting schemes were developed across the years. In 2008, the first Sustainable Energy Production (Stimulering Duurzame Energiesubsidie (SDE) scheme was issued, followed by SDE+ in 2011 and SDE++ in 2020. Additionally, in 2004, a net metering program (Salderingsregeling) was implemented to lower prosumers' energy bills, and it resulted in an increase in PVs installations. Likewise, around 2010, regional funds were made available for RESS projects; and, in almost ten years, 400 million

Euros were spent on those projects. In 2013, with the Energy Agreement, cooperatives and citizens were for the first time considered actors in the Dutch energy transition. In fact, in 2014, the Postal Code scheme ('Postcoderoosregeling' in Dutch), a taxation scheme favourable to those generating collectively generated green power, was implemented, allowing CEs to contribute to the ownership of energy production devices allocated within the same Postal Code (residential) area. Nowadays, in 2022, the number of ECs in the Netherlands reaches over 600, placing this country in third place in Europe, with only Germany and Denmark ahead (HIER, 2022).

Differently from Italy, ECs were already flourishing in the Netherlands before the two European frameworks were implemented. However, due to the mandatory character of those directives, the Dutch Minister of Economic Affairs and Climate Policy had to initiate a transposition process of those entities. The latter process was concluded in February 2021, with the enforcement of the Energy Act 2022 (Elektriciteitswet 2022). In this legal framework, ECs are not distinguished in RECs and CECs, but they are defined in a single concept, 'Energiegemeenschap' in Dutch, and not all EU notions have been included in it. Participation is voluntary and open, to all natural persons, no matter the form in which they present themselves. ECs are allowed to operate freely on the Dutch electricity market, thus, to engage in all activities in this market, while the main aim remains to provide benefits to members and citizens of a given local territory, not profit. Geographical proximity is defined in terms of contiguity to renewable energy projects. However, it is stated that further rules have to be laid down to ensure the compliance with these constraints.

Moreover, at the time of the writing, no funding schemes are directly available to ECs. However, a few were available to renewable energy projects; like SDE(+/++), Net metering, the Postal code scheme, and the Regulatory sandbox.
The Stimulation of Sustainable Energy Production (SDE+) first, and then Sustainable Energy Transition Incentive Scheme (SDE++), are the main policy initiative to support RES (Ministry of Economic Affairs and Climate Policy, SDE++ 2021: Stimulation of Sustainable Energy Production and Climate Transition, 2021). The newly implemented SDE++ allows projects regarding RES and CO_2 reduction (e.g., carbon capture and storage) to compete, and the ones which result in a larger reduction of GHG emissions are the first to be considered for the subsidy. This subsidy covers the difference between the cost price of the energy produced by RES or CO_2 emission reduction and the market remuneration. Funds are granted through an auction system, where companies, institutions and non-profit organizations are allowed to bid. The projects that win the bid have to get through a viability assessment process by the RVO, which, lastly, decides the financial support. For example, in 2021, the overall budget available was 5 billion euros. Moreover, numerous documents are needed to be eligible, from feasibility study to the transmission capacity indication from the grid operator, and permission for the location; optional ones, depending on the technology used, are environmental permits, as well as water permits.

The Net metering scheme encourages self-consumption (Anciaux, 2019). In fact, it allows prosumers to inject self-generated electricity they produce into the grid. In exchange, they receive, at the end of the year, an added value based on the difference between the total electricity demand in that year and the excess power fed back into the grid, all of it exempted by taxes. This scheme will be slowly receded as per the beginning of 2025 until 2030 (Zonnefabriek, 2022).

The Postal code scheme has been recently replaced by the Subsidy Scheme for Cooperative Energy Generation (SCE) (Rijksdienst vor Ondernemend Nederland, Subsidieregeling Coöperatieve Energieopwekking (SCE), 2022). The proximity constraint remains the same: the joint owners of RES (PV, wind, hydroelectric) have to live in the same postal code area. However, the main difference of those two schemes regards the form of incentives: the former was based on tax restitutions, while the new one on a FiT, which is revised annually. Thus, the subsidy per kWh is the difference between the FiT and the market price, i.e., the higher the market price, the lower the subsidy and vice versa. The FiT can be distributed to the members accordingly to the interests of the participants, e.g., more revenues for members with higher shares in the project. The budget was around 92 million euros in 2021. Moreover, a feasibility study must be available to obtain the subsidies, thus, a description of the production, financing plan, cost-benefit analysis, and energy calculations.

Finally, even though the enforcement period lasted from 2015 to 2018, it is worthwhile to mention the Dutch Regulative Exemption, which was enabled through the Electricity Act 2015-2018 ('Experimenten Elektriciteitswet 2015-2018') (Rijksdienst vor Ondernemend Nederland, Experimenten Elektriciteitswet 2015-2018, 2022). This so-called 'regulatory sandbox' allowed cooperative with RE projects to overtake initiatives which would be considered illegal for the Dutch legislation, thus, assuming the role of grid operators or energy suppliers. Hence, this scheme enabled local initiatives to try out innovations, and the understanding of new plausible alterations in the electricity legislation.

6.2 Results

This chapter's purpose is the analysis of the insights, collected through the interviewing process and based on the MLG framework, regarding how Dutch institutional, private and local settings are national and hindering or supporting the empowerment process of ECs. Furthermore, as underlined in the previous chapter, the five dimensions of the MLG framework which are going to be explored are Openness and Transparency, Participation, Accountability, Effectiveness, and Coherence.

In the Netherlands, the history of ECs started more than thirty years ago, and, since 2009, they have been flourishing (Oteman, Kooij, & Wiering, 2017), even though the EU Directives in which those communities were entitled as legal entities were enforced between 2018 and 2019. The transposition process, from those Directives into national legislation, was concluded only partially by June 2022 (REScoop.eu, Transposition Tracker, 2022): the ECs were defined, allowing them to comply with every activity in the market, but clear boundaries, as well as direct incentives were not defined. There are some plausible reasons which were acknowledged by few of the interviewees for this incomplete transposition process. The implementation of the ECs' definitions could be, then, shifted to lower administrative levels, i.e., provinces and municipalities, or to ministerial regulations, which could allow more flexibility for possible consequent changes. Moreover, as underlined by an interviewee from the legal sector, enforcing a full definition for ECs is useful only when derogations or subsidies are customized specifically for that definition and refer directly to it. However, this next step of facilitating the active role of those communities in the energy market is still not on the national agenda Another reason is linked to a relevant and current issue in the Netherlands: net/grid congestion; in fact, as envisioned by one member of the Municipality of Den Haag, boundaries need to be set in the future on the size of such communities, because of the potential systemic risks that large cooperatives generating high amounts of renewable energy (in the form of electricity) might impose on the electricity system. With the wide use of RES, and, hence, the intermittency of renewables, the grid is reaching its maximum capacity, leading to the necessity of expanding the latter, while the pace of urbanization is too fast to comply with these needed improvements.

However, the question remains how ECs managed to reach high numbers in their development without direct support from the national government? Firstly, it must be mentioned that the funding schemes that were described above, e.g., SDE or the Postal Code scheme, which were enforced at the national level, are one of the main factors which allowed ECs to flourish. But those schemes are available only after the production starts, thus, later on in the development phase of those communities. Hence, few are the acknowledged factors, e.g., networking connections among ECs, and actors, e.g., municipalities, that facilitate ECs in the earlier in the process.

Starting from the decentralized government stakeholders, the Dutch context is fragmented among municipalities and provinces which support, with funds and/or knowledge sharing, the development of those communities (or, generally, RES projects) and others that do not. In fact, there are no standard policy guidelines on how those institutions should participate in or cooperate with ECs: currently is context-specific and organized ad hoc for different types of communities (e.g., energy, heath, or smart grids). An issue raised is that, even though in municipalities there are often project developers ready to help ECs, the cooperation is not always smooth for mainly two reasons identified by the interviewees: firstly, those communities are established through a bottom-up decision-making process, and, thus, less available to cooperate with higher

levels. Furthermore, project leaders or employees of the municipal organization are sometimes mainly focused on the technical part of the projects, leaving no room for investing in their relationship with the ECs stakeholders, and, hence no room for a more fruitful cooperation remains. However, few are the examples in which the collaboration succeeded in developing projects, which, on the other side, would have not been deployed without their support. For example, the municipality of The Hague, in order to reach the target of carbon-neutrality by 2030, ensures the development of projects regarding energy transition via a Holding Fund, which supports sustainable energy projects through loans, guarantees or equity investments. The latter budget is split into the ED Fund, which supports low-carbon programs, and the Fred Fund, for local entrepreneurs. The municipality is also collaborating, among other organizations (e.g., Haagse Stroom), with Cooperative "Sterk op Stroom", an energy cooperative, and they established a partnership to support the development of a multi-service cooperative (storage, car sharing, smart grids and sustainability). Or, another example is the wind farm "de Spinder", which was realized through the support of the municipality of Tilburg, which provided its network for reaching out to other cooperatives in the area and for conducting the spatial analysis, and the "Energiefond Brabant", which is a public investment fund from the Province of North Brabant. The latter example shows collaboration between municipalities and provinces, too. Another case of provincial government supporting ECs, and, thus, acting as an intermediary, pertains to the Province of Zuid-Holland, where subsidies are available to energy projects, from citizens to associations, aiming to reduce CO_2 emissions. However, each province has its own program, and, with little to no cooperation between them according to an interviewee. For example, the province in which Amsterdam is located, the North Holland province, has not developed any funding schemes which could support ECs yet. And, in fact, the umbrella cooperative of four energy cooperatives Amsterdam Wind relied upon municipal financial support, and not provincial support.

Moreover, umbrella organizations are other relevant actors which support ECs from the national level to the bottom. The main five of those organizations have established the 'Participatie Coalitie' (Participation Coalition in English; translation by the author), providing a wide range of services for reaching the goals established in the Climate Agreement: from supporting citizens' engagement in the Regional Energy Strategies, to counseling for local ownership of RES and energy projects. The driving force of this coalition is to coordinate the members of those organizations on the national level, while not losing the sight of the local level, thus, ensuring both the representation of ECs and local initiatives in the national guidelines and knowledge sharing and practical aid to those local initiatives. For example, the national goal for which 50% of the renewable energy capacity on land should be controlled by the local environment was proposed by this coalition and approved by the Dutch government. A collaborative? agreement was, in fact, stipulated between the Ministry of Economic Affairs and the five organizations, HIER, de Natuur en Milieufederaties, Energie Samen, LSA bewoners en Stichting Buurkracht. Among those, Energie Samen was the most mentioned regarding ECs as one of the main drivers. As the President of this association, Mr. Siward Zomer, said: "They (ECs and local projects) still need almost everything. We help them to raise capital with the IT system, we help them with organizational advice, with advice for connection to the grid. We have a funding department, so we create access to capital for them; we've got to the lobby and advocacy, and then we do the district heating". Therefore, the main goal of Energie Samen is to lower all of the possible barriers for their members, providing the services mentioned. And, as future prospect, this association aims in becoming one of the biggest energy suppliers, not owned by shareholders, but owned by citizens on the local level (i.e., organizing a governance structure of elections to enable citizens to have the power to decide their representatives). Energie Samen can be regarded as a relevant example of a cooperative which was created by the merger of a few cooperatives, in order to have a more powerful, in terms of money and lobbying, organization. Those (umbrella or federations of) cooperatives of cooperatives are currently taking the role of facilitators at the local level. For example, the energy cooperative Zuiderlicht established, to facilitate networking among communities and among citizens, energy breakfasts and ambassadors for the different neighborhoods in Amsterdam, as well as training programs for project developers. Furthermore, due to the limited amount of land or roof available, in towns, as well as more constraints, cross-connections are being set up through networking. Collaborations with ECs outside the city could be pivotal for ensuring additional assets as energy sources.

The President of Energie Samen identified, during the interview a few factors which enabled the high number of cooperatives in the Netherlands. Firstly, the long history of cooperatives, as also mentioned in the previous section, helped to establish trust and knowledge for those organizations among citizens and governmental bodies. Furthermore, while in the liberalization period of the energy markets RE transition gained a significant role even though the support was inconsistent at the national level, lower prices for PVs and the net metering scheme, and, later on, SDE+ and Zipcode rose subsidies, encouraged the spread of ECs. Thus, as also underlined by Oteman, et al. (2017), policy schemes are deeply linked as enablers to the flourishment of those communities. Then, the factor which was acknowledged also by a large part of the interviewees as enabler of ECs, especially in the earlier stages of their development, is the presence and availability of retired professionals, i.e., pensioners, with a lot of experience, and mostly the time and financial support to get involved in these initiatives.

Moreover, TNO (The Netherlands Organisation for applied scientific research), as well as universities, e.g., Wageningen University, is currently focusing its research on ECs, mainly regarding the consumer engagement, and, thus, via demand response products and flexibility services offered to individuals and ECs as well. From the perspective of two researchers, additional factors than the ones already mentioned support the boost of those communities in the Netherlands. Firstly, here, ECs are not just about energy, they also provide other services and improve the quality of life, mobility, health care, green in the neighborhood and well-being in general. Furthermore, two policy measures were identified as facilitating the spread of ECs: 1) the Postal Code scheme, for which a group of local citizens is needed, promoting really bottom-up initiatives; and 2) the 'regulatory sandbox', which allowed experimentation and innovation for green projects.

The actors that were not mentioned yet are energy companies. Overall, those businesses have the role, if they are grid operators, to connect to the energy network ECs' new power plants, PVs or wind turbines, or to buy the energy produced by these communities, mainly through Power Purchase Agreements (PPAs). However, a green energy supplier, Greenchoice, provides also other services for those communities through a dedicated team. For instance, they support ECs by giving aid in the business plan, supporting the accounting, as well as the installation of RES, and networking among members to promote these communities. However, the TSO and DSOs, have currently more significant issues at the moment, e.g., net congestion problems. Nevertheless, ECs are under the attention of those organizations, because they could be relevant if energy production is exchanged at the local level, without the exploitation of a large part of the grid, e.g., as researched in the GridFlex project promoted by Enexis. The latter study, through derogations provided with the 'regulatory sandbox', aimed at analyzing the reduced stress on the grid with changes in the flexibility of batteries and members.
However, those companies have underlined mainly two difficulties, which are hindering the collaboration with ECs: the reduced size of the communities, and the lack of professionalism in few of them.

Those latter factors, the reduced size and the lack of professionalism, are few of the barriers still existing in the Netherlands. However, others were appointed during the interviewing process, as summarized in Table 10. ECs which are in the developing phase, have to go through the whole process of concluding the feasibility study, making a business plan, and getting the permits. This is a period with high uncertainty, since the funding schemes at the national level are only available when the production starts, and the resistance in society is still consistent, especially for wind turbines. Thus, due to the fragmentation of policy support on the municipal and provincial levels, discovering funding available, if any, is another time-consuming task. Furthermore, for the Postal Code scheme, the community is bounded geographically, and, hence, finding people which are willing to put effort into it is not straightforward. Once the community is established, starts making a profit, and, thus, thinking of including more services or expanding the ones already present, members should not undermine the risks or the competencies available: they should be able to ask for advice, as one of the interviewees mentioned being herself a member of an EC. Additionally, few stakeholders were identified as mostly not cooperative to ECs. Energy suppliers and distributed system operators (DSOs) are missing in the environment of those communities, while, if they are involved, the focus is at the household level, not the community, or in developing their own propositions without the benefits that should be brought to a community, and that a community could bring to them, e.g., congestion

management. On the same line, few consultancy firms are considered by the interviewees to produce well-done reports, excel sheets, and websites, and then nobody is using them, since they lost the connection to the local level. Furthermore, municipalities were identified as in their own 'silos', thus, closed in their boundaries, without cooperating with one and another, as well without collaboration with local communities, and hence ECs.

Table 10: Main Barriers in the Netherlands.

BARRIERS
High risks in both the early stages and in the widening phase of an EC
Funding schemes at the national level only available when the production starts
No administrative facilitations for ECs
Lack of professionalism
Difficulties in understanding stakeholders' roles (who to address)
Ineffective engagement from the regional level
Fragmentation of policies support on the municipal and provincial levels
Time consuming
Lack of engagement of energy suppliers and grid operators
Congestion
Detachment of few institutions from the local context

6.3 Conclusion

Overall, ECs in the Netherlands have been flourishing for the past thirty years. And, after the EU Directives, REDII and IEMD, have been enforced at the European level, new regulations were not included in the Dutch law apart from the mandatory delineation of ECs as legal entities. Moreover, without those Directives, the ECs in the Netherlands are currently more than 600. However, few obstacles are still concerning the further development of these communities.

When applying the MLG framework concerning the openness and transparency dimension, the main findings are that, from one side, are present information and procedures for consultation, due to the wide development of those communities, which also enables networking among those. On the other side, regarding the transposition process, since nothing has practically changed, almost none of the relevant stakeholders knows about the EU Directives. Moreover, the decentralization of the policies is achieved, since few national funds are available, but the Provinces and Municipalities play a key role in the expansion of this community. However, the fragmentation of those institutions and the lack of an effective monitoring process for the policies could lead to diverse outcomes in different areas. And this is reflected in the policy coordination, which, as underlined by few interviewees, sometimes is missing both vertically and horizontally among those institutions, and at the national level. Nevertheless, ECs managed, in order to succeed in their deployment to interface with the national level, to receive the national subsidies, and to the regional level, for support in the start-up phase and, afterward, in the widening stage. Furthermore, cooperation among energy cooperatives, which at times, results in the merging of multiple ones, has been appointed and supported by few stakeholders as described in the previous section. Regarding accountability, the division of responsibilities is overall definite at the national level, e.g., when applying for funding schemes; however, on the local level understanding which institutions are in charge, e.g., for the permits or regional subsidies, is not quite straightforward. One of the goals of the EU when defining ECs as legal entities is to allow, for those communities, facilitations in the administration and bureaucracy; and this intent is not enforced yet in the Dutch legislative frameworks. And, on the same line of reasoning, no specific

supporting schemes were defined for ECs. However, due to the success factors mentioned before, regulations, decision-making process, which is mainly bottom-up, finance in terms of funding programs and innovative instruments, those communities flourished. In fact, not when referring to the transposition of the IEMD and REDII Directives, but regarding the alignment of national policies and European ones, the Netherlands is frontrunner and, thus, those targets boosted the development of those communities across the country.

In summary, this chapter aimed at, firstly, identifying and delineating relevant stakeholders in the ECs and energy sector. Furthermore, the outline of those communities in the Dutch legislation and the supporting schemes was provided, and, to conclude, finding based on the conducted interviews were outlined, with a focus on the five MLG dimensions, Openness and Transparency, Participation, Accountability, Effectiveness, and Coherence, presented in Chapter 2. The latter findings will be presented again for the comparative analysis, which will be addressed in the next chapter.

7. Results of the Comparative Analysis

In this chapter, the two case studies are analysed in a cross-case manner and, hence, the fifth sub-question is answered: insights based on the dimensions of the MLG framework, Openness and Transparency, Participation, Accountability, Effectiveness, Coherence, are compared. The results can be used to answer the main RQ, and, thus, to provide a policy advice. Then, a conclusion to the analysis is presented.

7.1 Findings from the Multi-Level Governance Analysis

In Table 11, the overview of the results of the MLG applied to ECs in the Netherlands and Italy is presented. And, hereby, those results are further analyzed, to address the sub-question via the lessons learned by those two case studies, as well as the mutual best practices which can be beneficial for those countries.

Table 11: Comparison of Italy and the Netherlands through the MLG framework.

Dimension	*Italy*	*Netherlands*
Openness and Transparency	– Information and consultations are available, due to the high involvement of public institutions. However, detachment of citizens regarding the topic. – The networking process is not used well enough: only after two years local governments start understanding ECs as a relevant topic.	– Availability of information and procedures for consultation, due to the wide development of ECs, as well as networking among ECs. However, limited knowledge of the EU directives, REDII and IEMD among members of governmental bodies and private organizations, as well as citizens. – Decentralization of the policies because few national funds are available. For this reason, the provinces and municipalities play a key role for the expansion of ECs. However, the fragmentation of those governmental institutions and the lack of an effective monitoring process for the implemented polices at the regional level, e.g., by municipalities, could lead to diverse outcomes in different areas.
Participation	– Participation takes place both horizontal and vertical. – Interaction between private and public stakeholders, in different stages of ECs development. – Temporary phase hindering new relevant actors to enter the EC market.	– Policy coordination sometimes missing both vertically and horizontally among Provinces and Municipalities, and to the national level. – Development of cross-connections between different communities and/or in different geographical areas, e.g., Participation Coalition.
Accountability	– Clear division of roles at the national level, however still difficult for a group of citizens with the aim of establishing a local community and without the support of, e.g., the PA,	– Division of responsibilities overall definite at the national level, e.g., when applying for funding schemes; however, on the local level understanding which institutions are in charge,

	to address the right stakeholders in the right phase. – Public institutions, at a Regional and Communal level, are (only recently) understanding how and what schemes to implement, with more customization on the territory and with the aim to not overlap with the national framework, while private organizations and utilities are still holding back, waiting for the definitive legislation to define their role.	e.g., for the permits or for regional subsidies, is not quite straightforward.
Effectiveness	– Funding schemes are available nationally, and there are also a few examples of regional schemes. – Lack of competencies, which can be also noticed from the gap to ECs established and the ones operative. – Fully bottom-up decision-making processes not achieved yet, since facilitators, e.g., PA, are still needed in the early stages of ECs establishment. – Innovation is not supported at the local level, even though research institutes are starting new approaches to ECs, e.g., optimization of self-consumption. – Overall, the number of ECs are quite low (around 30, but only ca. 10 operative); however, a growth is expected by the Italian stakeholders after the definitive legislation is settled.	– No specific supporting schemes were defined for ECs by the national government after the two directives on ECs were published by the EU; however, those communities can apply for national subsidies for RES projects and reduction of taxes; and at the regional level, for support in the start-up phase and, afterwards, in the widening stage. – Decision-making process mainly bottom-up. – Innovation supported with regulatory sandbox experiments scheme – Barrier of net congestion in the electricity grids. – Overall, there are over 600 ECs, thus, supporting policies reached satisfactory results.
Coherence	– Coherent alignment of the Italian legislation with the European Directives regarding ECs characterization. – Customization on the territory still work-in-progress, but encouraged by the national government. Institutional bodies at lower levels, while waiting for the definitive framework at the national level, are implementing supporting schemes, e.g., financial aid to PAs involved in ECs' projects. However, a further step to enable those communities to undertake other services, e.g., energy efficiency or EVs, as well as car sharing, was not achieved yet.	– Partial transposition process of ECs definitions. – Frontrunners regarding the alignment of national policies and European ones. – Diversification of supporting strategies between national level and regional ones; however, more difficulties in the policy alignment were highlighted among municipalities and provinces, as well as, sometimes, a lack of communication among those governmental bodies.

Regarding openness and transparency, both case studies perform better in the latter factor than the former. Information and procedure are available in both countries; however, for different reasons. On one side, in Italy, ECs are starting to develop nowadays, with the mediatic and legislative support of the national

government, which has been responsive to the Directives of the EU regarding those communities. On the other, the Dutch ECs have been existing for the past thirty years, with a wide increase in the last ten years, and that created a wide knowledge of the latter, as well as trust in the institution. However, due to this long history and lack of change in the legislation, the knowledge of the REDII and IEMD Directives is limited among Dutch stakeholders, as well in the Dutch legislation, where ECs were only transposed partially. Furthermore, the support and/or the use of networks for decentralised policies are not implemented properly, even though the key governmental actors have been identified in both countries at the regional level. In Italy, this is mainly due to a lack of expertise among the members of the regional government, and to the marginal communication with higher levels; while, in the Netherlands, the fragmentation of those regional institutions and the lack of an effective monitoring process for the polices could lead to diverse outcomes in different areas. Moreover, it is relevant to notice that the Dutch communities established networks to cooperate with each other and, sometimes, they are also appointed by their municipality to support others in the development phase.

When addressing citizens and stakeholders' participation, the findings of the MLG analysis in the two countries are not entirely different, even though considering the different stages Dutch and Italian communities are in. However, due to the characteristics of ECs, thus, a bottom-up process from local initiatives, in both countries those communities have to interface with different stakeholders, mainly governmental ones. For instance, in Italy, to create an energy community the steps require the establishment of the community as legal entity, then the approval and validation by the GSE and installation of RES through renewable developers, and, if needed, banks for loans. Moreover, due to the novelty of EC as a topic, Italian ECs need support in the initial phase, and, thus, they need to cooperate with governmental institutions at the regional level, e.g., Regions, or private organizations or utilities, as well as universities, to get the aid they necessitate, from know-how to ancillary services. Other stakeholders, mainly in the energy sector, and banks too, are nonetheless still waiting for the definitive legislation to add their assistance to those communities' exploitation. In the Netherlands as well, the communities have to interact with different stakeholders, e.g., the authorities for the permits or municipalities for additional funding, if available. However, there is often a lack of collaboration vertically, e.g., between provinces and municipalities, and horizontally, within different municipalities, which leads to a lack of support for ECs. On the contrary, the development of cross-connections between different communities and/or in different geographical areas has started, also due to land constraints which do not allow ECs to expand and/or utilize different RES; while since the start of those communities, merging of cooperatives have been registered, e.g., the federation of Energie Samen, to gain more relevance on the local territory and at the national level, as well as more finance available. Thus, differently in Italy, Dutch citizens cooperate more, within and among different ECs.

In both countries, regarding accountability, the overall division of roles is clear, at the national level. However, in both case studies, due to the decentralization of the policies at the regional level, additional funding or support schemes are more difficult to retrieve. Furthermore, in Italy, since ECs are not widely developed on the territory, difficulties are encountered for a group of citizens, not supported by, for instance, the region or municipality, to address the right stakeholders in the right phase; and additionally, due to the temporary phase, new stakeholders, who could potentially play a role and have further responsibilities, are still holding back.

In terms of effectiveness, Italian and Dutch governments operate differently. In Italy, national funding schemes are available directly to ECs, while in the Netherlands there are not, even though in the latter country the communities can apply for national subsidies for RES projects and reduction of taxes. However, in both countries, the regional government can and, often, does support ECs: regions and communes for Italy, and provinces and municipalities for the Netherlands. However, the Italian ones are still lacking competencies, and this finds its outcome in the gap between ECs established and the ones operative. Thus, as an example, the Lazio region, provided funds to the La Sapienza University of Rome to support those initiatives for multiple reasons, and one of those is the absence of know-how within the institution. In the Dutch communities, the process is mainly bottom-up. Nonetheless, as in Italy, few ECs still require support from stakeholders who can act as facilitators, e.g., the Dutch federation Energie Samen, in the early stages of EC's establishment, as well in the subsequent phases. Moreover, the lack of a precise regulation for ECs

in the Netherlands enables innovative projects to be developed, e.g., the SDE++ scheme rewards projects which allow a large decrease in CO_2 emissions, and, thus, ECs' projects could not only involve energy production, but also car-sharing services, or EVs. As mentioned by one of the interviewees, the success factor of the Dutch ECs is the wide range of services they exploit simultaneously. Furthermore, the projects that are functioning under the 'regulatory sandbox' support innovation scheme as well. In Italy, innovation is not supported yet in this sector, even though, nowadays, research institutes are analyzing new approaches to ECs, e.g., optimization of self-consumption, or token economy.
One of the main factors hindering the Dutch ECs' deployment is the congestion in electricity grids; and, sometimes, to get the connection to the grid for new plants or RES, few years can pass before achieving it. On the other side, this issue is stimulating research institutes and grid operators, as well as energy companies, to study these communities to understand whether they can be an aid in solving this congestion problem.

Finally, the Italian legislation is coherently aligned with the European one regarding the ECs characterization, as explained in Chapter 5. On the other side, the Dutch government transposed only the most essential principles from the Directives REDII and IEMD EU Directives, not incorporating the two different entities of REC and CEC, but a comprehensive one. However, the Netherlands is considered a frontrunner in setting stringent targets on RES and reduction of CO_2, as underlined in Chapter 6. And this Dutch initiative, e.g., setting the target of 50% of RES owned locally, was underlined by an interviewee as one of the elements which is allowing ECs to develop even more nowadays.

7.2 Conclusion

This chapter addressed the fifth sub-question, regarding insights on ECs based on the MLG framework. Through both case studies, few key successful factors were acknowledged, and they are in line with the literature review on the MLG, as summarized in Table 12. In fact, both in Italy and the Netherlands, the use of this framework underlined how stakeholders in the multiple levels are interacting, between different ones and within the same one. And, in line with the literature available, due to the bottom-up approach with which ECs should develop, the local level, as well the interaction of this level with the higher ones, is fundamental for achieving their full deployment. In Italy, Regions and Communes are the ones enabling the establishment of those communities without losing the sight of the main purpose of ECs as defined by the EU: achieving benefits for the community's members and its local context. In the Netherlands as well, the provinces and municipalities support those communities with additional funding schemes, with which they can lower the financial risks for citizens. Furthermore, one aspect which was recognized as relevant but in both countries is still not in place, is the mobilization of the stakeholders. Thus, more specifically, understanding who the key actors are and opening a communication and cooperation channel with them. In fact, the MLG does not comprise only governmental and public stakeholders, but private sector actors, as well, in order to achieve a sustainable transition. Thus, the stakeholders identified at the local level should broaden their cooperation, as identified in both countries. In Italy, this could encourage the spread of the know-how and competencies, which are currently fragmented among different stakeholders, e.g., technical entrepreneurship for buying the RES, and banks for the investments, without a straight cooperation among those. Moreover, the Dutch cooperatives could benefit from this cooperation in the early stages, with fewer risks in the investment and business plan, with easier access to the right stakeholders, e.g., for requiring permits, and with the possible involvement of grid operators in the topic. However, it must be noticed that few best practices exist in both countries, and they could be beneficial for one and the other. For instance, the cross-interaction between Dutch ECs, as well as the engagement of the citizens (e.g., energy breakfasts for developing sustainability topics), could be significant to be adopted by the Italian ones, also due to the lack of inhabitants' participation. On the other side, the involvement of the Italian universities and their cooperation with ECs in the field, not only while researching but as active stakeholders which could bring knowledge, as well as the students' engagement in sustainability topics, is one of the few factors which in the Netherlands is still not happening; but it could both support citizens in the ECs development, both the research field in understanding the key issues that the local territory is suffering, e.g., congestion. Thus,

overall, the use of the MLG enlightened a number of barriers in both countries (See Table 9 and Table 10); however, it also supports recommendations and solutions.

Table 12: Verification of claims from the MLG literature when compared to the comparative case studies' results.

VERIFICATION OF SUCCESSFUL FACTORS FROM THE MLG LITERATURE
Horizontal and vertical coordination
Active participation of stakeholders
Relevance of regional and local authorities
Relevance of networks
Clear communication
Clear division of responsibilities
Stakeholders' mobilization
Evaluation of the policy design
Customization of policies on the territory
Bottom-up perspective

8. Conclusion and Discussion

8.1 Conclusion

The interest in how to reduce CO_2 emissions while supporting a more sustainable way of producing (and consuming) energy is arising, achieving a central role in the European debate. And, hence, ECs have been acknowledged as one of the means to reach this transition. However, these communities have the potential to develop not only decentralization the electricity production, but also a change in people's behavior and awareness due to their bottom-up approach to decision-making. However, several are the barriers that are still affecting ECs, as explained in Section 1.1.2, e.g., lack of a supportive policy framework, no new business models, and necessity of intermediaries. However, an analysis through MLG lenes of ECs is still missing, leaving a gap in the body of academic knowledge. Thus, the aim of the research was to look into the different levels of governance an EC has to comply with, in order to formulate a comprehensive policy advice. Specifically, the focus was on two case studies, Italy and the Netherlands, as well a previous analysis of the context settled by the EU. In this section, the key findings are analyzed in order to answer the research questions. The last sub-question will be answered and summarized at the end of this chapter, through the formulation of policy recommendations.

How is the European Union hindering or supporting the empowering process of energy communities?

The EU, after more than three years of administrative efforts and negotiations, enforced two directives, the REDII in 2018, which defined the RECs as legal entities, and the IEMD in 2019, in which the CECs were defined. This process was not effortless and entailed the participation of multiple stakeholders, from members of political parties in the European Parliament to the federation of ECs and NGOs from different countries. However, as underlined by an interviewee, those directives are just the starting point: the main challenge is the transposition, before the deadlines of the 31st of December 2020 for CECs and the 30th of June 2021 for RECs, of those directives into national legislation. The lack of specificity of the beforementioned directives, from the MLG side, enables lower levels of government to define their own regulatory system, based on already enforced laws and on the socio-economic context. However, if not supported, some countries could be left behind. However, as resulted from the analysis, this was not the case in Italy and the Netherlands.

How are the Italian national and subnational governments hindering and supporting the empowering process of energy communities: Italy as a case study?

In Italy, with the law 8/2020, a temporary transposition of the REDII was implemented at the beginning of 2020. RECs' definition was similar to the one proposed by the EU, with a few additional constraints: the maximum capacity of the installed plant is 200kW; those plants should be installed after the 1st of March 2020 and energy plants, as well as members of the community, have to be connected to the same low-voltage distribution grid. Subsequently to the enforcement of the definition and the rules, direct incentives for ECs were defined: 8 €/MWh for the reduction of distribution/transmission losses, plus 110 €/MWh for the shared electricity, plus the compensation for the electricity injected into the grid according to the electricity market price. However, after two years of enforcement of the law 8/2020, decentralized governments at lower levels, regions, as well as municipalities, are starting to acknowledge the importance which could have those communities on the local territory; in fact, as underlined by one of the interviewees, in Italy ECs are considered of political matter. And additionally, they started implementing, locally, other supportive measures, e.g., help-desks and financing schemes. Moreover, other private stakeholders still waiting for the definitive phase to enter the EC market as facilitators, like energy utilities, and public ones, such as cooperatives or NGOs, are in the acknowledgment phase on how to support ECs. However, barriers still exist, as summarized in Table 9: for example, lack of competences, and extensive time waiting for the definitive version of the regulatory framework.

Therefore, the process of ECs definitions is therefore still ongoing in Italy: the temporary phase is approaching its end, while new challenges are going to be brought up with the definitive regulation. Few of those possible obstacles are still mainly concerning the roles of public and private institutions. Funding schemes, coming from the EU, from the Italian government and the Italian regions are going to be available for the next twenty years, supporting ECs development. However, an unsolved question remains how to venture those funds valuably, with a lack of know-how among citizens and governmental structures.

How are the Dutch national and subnational governments hindering and/or supporting the empowerment process of energy communities: the Netherlands as a case study?

The Netherlands, on the other side, boasts a history of ECs of more than thirty years, well before the before mentioned European Directives were issued. Partly due to this long history, the transposition process from those Directives into national law, was concluded only partially: the ECs were defined, allowing them to comply with every activity on the market, but clear boundaries, as well as direct incentives and a monitoring entity, were not given. However, other funding schemes are available, for RES projects and, hence, also for ECs, e.g., SDE++ or the Subsidy Scheme for Cooperative Energy Generation (SCE). Moreover, as in Italy, also the Dutch ECs can benefit, if available, from support programs at the regional level, i.e., from municipalities and provinces. The Dutch context is, however, fragmented among the latter two decentralized government layers, since some support, with funds and/or knowledge sharing, the development of those communities (or, generally, RES projects) and others do not. In fact, there are no standard policy guidelines on how those decentralized government entities should participate in or cooperate with ECs: currently it is context specific and organized in an ad hoc fashion for different types of communities. And this can hinder the strategy and operations of ECs. For example, few stakeholders who could play a facilitatory role have not been included, due to the lack of collaboration with governmental institutions regarding this topic.

The few factors that really boosted the spread of those communities in the Netherlands, apart from the subsidies which were made available from 2008 (SDE), are the straightforward access to the electricity market and the wide variety of services that those ECs can offer, since they do not have their specific delineation, but they concur on the market freely (if respecting the code of conduct provided by the regulator; i.e., the ACM). Furthermore, two more social aspects are the trust among citizens of these communities, also due to their long history, and the presence of pensioners, which, differently from Italy, with experience, and mostly the time and financial support to get involved in these initiatives in their early stages. Moreover, one of the interviewees underlined how the establishment of ECs is, currently, one of the only ways to contribute actively to the fight against climate change, and, hence, to a more 'sustainable' future for the next generations to come. However, several barriers have been acknowledged throughout the interviews, e.g., high financial risks in both the early stages of implementation and in the maintenance phase of an EC, no administrative facilitations for ECs, as it should have been established by the EU Directives, and congestion. The latter problem is hindering RES connections to the grid, and thus, further development of those communities.

Overall, the transposition process is not concluded in the Netherlands and whether it will be concluded, is not clear yet. However, few supporting schemes are available, while, until the congestion issue is not solved, or ECs are understood as one of the solutions to this problem, these communities will probably not receive specific funding or support. On the other hand, the targets set by the national government, e.g., the reduction of 49% GHG emission by 2030, are putting ECs on the spot of the Netherlands' renewable and sustainable projects.

RQ: *How does Multi-Level Governance support or hinder the empowerment of Energy Communities when comparing Italy and the Netherlands?*

These main takeaways of the research lead to the answer of the main RQ, and thus, how the MLG can facilitate or hamper the spread of ECs in Italy and the Netherlands. On one side, the MLG framework enabled the understanding of barriers still in place in both case studies, e.g., high financial risks, lack of engagement of ESCOs, fragmentation of policies. On the other side, the analysis through this framework facilitated the

elaboration of insights and recommendations on how, once understood the obstacles, MLG could resolve the latter. Significant factors for a successful MLG, among others, the relevance of the local level, and of the private and public stakeholders' interactions, as well as their mobilization, and the necessity to use networks for allowing decentralization of policies in the local context, could support a better identification of roles and responsibilities, e.g., for a citizen who wants to create an EC, and the latter is identified as still an obstacle in both case studies. This could additionally help Italian ECs in being established with a fully bottom-up approach, while this has not happened yet. And, in fact, it was noticed throughout the analysis of the case studies, that MLG implementation can lead to a better alignment of stakeholders and policies at the different levels, and, thus, to a more unhampered development of ECs. However, this research underlined the complex and diverse dynamics established in the EC context, as it is discussed in the conclusion sections for each case study. Those communities, due to their bottom-up approach, require the involvement of all the levels of governance, as well as private and public actors, to factually deploy their full potential.

For both countries, the long-term perspective of the energy transition brings challenges, policymakers should be prepared to face. In the Netherlands, offshore wind farms, as well as solar energy will be key factors to reach the national goals of RES production and carbon-neutrality. By 2030, the capacity installed through offshore wind production has to reach 21 GW, while, currently, according to the TNO, the seven windfarms in the North Sea produce 2.5 GW. Those expectations raised even more with the partnership with Germany, Belgium, Denmark, to install 150 GW of capacity from wind production in the North Sea by 2050. Like for wind power, solar one has to be deployed on a larger scale, as well as on already existing surfaces, to reach a production of 50 GWp by 2030. In Italy, as underlined by (Ref Ricerche, 2022),the target of 55% GHG emissions' reduction by 2050 is challenging, forecasting the increase of 14 times more the use of solar power in the energy production, and 9 times for the wind one. Hence, overall, ECs could have an essential role in the long-term perspective of those countries.

8.2 Academic Discussion

Firstly, the present study contributes to the academic research of both MLG and ECs. Regarding the former, it adds further analysis on energy and climate policies; and it underlines, likewise claimed by Di Gregorio, et al. (2019) and Dobravec, et al. (2021), the necessity, for achieving successful policies on this topic, of all levels' interaction and deployment. Furthermore, and again in line with the current literature, e.g., (Di Gregorio, et al., 2019), (Dobravec, Matak, Sakulin, & Krajačić, 2021), as described in section 2.1.1 and in Table 12, it highlights the importance of the regional and local government levels, which, due to the decentralization of the governmental forms, should have enough administrative power and leeway to deliver stakeholders' mobilization and relevant policies for the topic at hand. In fact, the MLG governance framework provides insights into the performance of the different levels regarding ECs' development. The latter, as acknowledged by different authors, e.g., Capellan-Perez (2018) and Brummer (2018), are still experiencing obstacles and barriers, such as lack of a coherent and supportive policy framework, absence of new business models, and lack of intermediaries. Moreover, the requirement of a policy framework was acknowledged as also partially due to the transposition process that each country has to implement since two EU Directives have been published regarding the topic of ECs (Frieden, et al., 2020). Thus, this research, on analyzing two countries, Italy and the Netherlands, after the official deadline of this process, does not only give insights based on MLG, but also on how those countries are complying with this process. And, furthermore, it examines the aspects and stakeholders which are still hindering those communities after this deadline. Therefore, the findings of this research contribute to a further understanding of Italian and Dutch ECs, as well as the EU context, through the lens of MLG. These results are in line with what was mentioned above regarding energy and climate policies, i.e., the bottom-up approach at the local level, as well as the interaction of stakeholders at this level with the one at the higher ones as fundamental factors for achieving ECs full deployment. Furthermore, the lack of actors' mobilization by representatives at the local level was highlighted by the MLG literature as relevant and, in this research, the lack of it was recognized as one of the main obstacles. The study also supports the identification of actors who could have the role of 'facilitators' or 'intermediaries' in the development of ECs, as well as the importance of clear responsibilities among those stakeholders. Moreover, the use of the MLG framework also enabled the

identification of good practices in both countries, which, if adapted and implemented in other countries in which ECs are still missing, could further improve the development process of those communities.

Overall, the establishment of a theoretical framework based on the MLG's approach for assessing ECs is still a novelty, and it supports the already existing literature on energy and climate policies, e.g., (Jänicke & Quitzow, 2017), (Dobravec, Matak, Sakulin, & Krajačić, 2021), in understanding how to spread in the most suitable way ECs, as well as their environmental and social impact across Europe.

8.3 Limitations of the Research

There are a few limitations to the present study, i.e., regarding the research method, the topic, and further impediments. Firstly, the selection of the two case studies was based on objective criteria, however, while developing the research, the Italian and Dutch communities were found to have a different history of ECs. Moreover, similarities were noticed in the barriers and, therefore, in the results and recommendations. However, this difference enabled the suggestion of good practices which were missing in the other country, and which could support ECs flourishment. Additionally, the selection of indicators to measure MLG, even though a thorough literature review was conducted, could be biased by the author's personal perspective; and, hence, to reduce this bias, a validation process was conducted. However, a further review should be processed by other relevant Italian and Ditch stakeholders to increase the validation of the project.

Furthermore, interviewing as a method for retrieving data encountered a few obstacles. Due to time constraints, 22 interviews were conducted; however, the minimum number, based on the characterization of the different levels of governance, was reached, and, at the end of every interview, it was asked if it could've been relevant to interview other actors in the same level. Moreover, for the Netherlands as a case study, the language can be regarded as a barrier, both in the interviewing phase, when the interviewees found some difficulties in expressing their experience, and in the gathering of data from the literature review, where the main legislative and administrative documents are in Dutch. And lastly, due to the semi-structured method of interviewing, the conversation could result in some bias from the interviewee's perspective. Furthermore, due to the presence still of Covid-19 and the geographical distance from the interviewees, the conversations were conducted mainly through online platforms, which reduced the overall understanding of the subject interviewed due to lack of non-verbal communication.

8.4 Suggestions for Further Research

Based on the results of the present study there are a few areas in which future research could be developed. Firstly, due to the temporary legislation still enforced in Italy, further research could replicate the study after the definitive one is implemented. This could lead to more insights on whether the latter regulatory framework enabled to overcome the barriers mentioned in Chapter 5. The research could be replicated a few years as well, to understand if ECs had a central role in achieving the Dutch targets of emissions and ownership, or in solving the congestion problem. Furthermore, to validate the MLG framework the latter could be applied to other European countries, also the less-developed ones, with single case studies or comparative analysis. Overall, the aim of the established framework is to get an overview of the situation of ECs at all the different levels of governance. Thus, it could be also interesting to specify different frameworks for an in-depth analysis of each layer, without, of course, losing the overview and complexity of the topic at hand. Moreover, the role of citizens in this research was assessed, however a further research could consider and include more of their perspectives in the study. And lastly, this research could benefit from more interviews, and, hence, a more extensive stakeholders' list included.

8.5 Recommendations for Policy Makers

This section concludes the thesis research, answering more in depth the sub question 5, and, thus, providing the last insights for the main RQ. As mentioned above, stakeholders' mobilization, relevance of the regional and local level, as well as supportive regulatory frameworks, are a few of the main factors policy makers

have to address. Therefore, the subsequent policy recommendations are made for both countries, base d on the similar barriers which have been recognized:

- Ensure an effective decentralization of the financial and administrative power and competencies to support the regional level in becoming facilitator or enabler of ECs.
- Mobilization of the stakeholders, previous identification of the more significant, is recommended for local authorities, which could detect those stakeholders based on the specificity of the territory.
- Alignment of national, regional and local policies, in order to not overlap already existing frameworks and to establish a wide and comprehensive framework across layers of governance.
- A clear division of roles should be ensured by the national government, in order to facilitate the understanding of the relevant ones for both the local authorities and the citizens.
- A monitoring role should be established, since the dispersion of authority at the regional level could create differences among the different areas of the country.

Then, for Italy, additional recommendations were established:

- Enable networking processes at the local level, e.g., platforms, which support communication among ECs' members, as well as among citizens.
- Access to competences and funding should be made available to enable fully bottom-up decision-making processes, e.g., funding for RES installation, desk-support.
- Measures, financial and administrative, should be available to foster innovation at both the national and regional/provincial levels.

As well for the Netherlands, a few more are acknowledged:

- Access to competences and funding should be expanded lower citizens' financial risks in the early stages, as well as the expansion phase.
- The engagement of energy suppliers and grid operators could enhance and facilitate the deployment of ECs.
- Analyze whether ECs could have a role in congestion management.

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Appendix 1: Success Factors for Energy Communities

Table 13: Enabling factors for energy communities, adapted from (Sperling, 2017).

External Context	*Internal Context*
Governmental technology support	Community spirit
Governmental process support	Local traditions and history of cooperative projects
Expert assistance	Sense of locality and responsibility
Guiding visions and plans	Entrepreneurial individuals
	Networks
	Guiding visions and plans

Table 14: Overview of factors that contribute to the success of community energy collectives, adapted from (Warbroek et al., 2019).

Category factors	*Items*
Factors related to the Energy Community itself	Project champions Human capital Size Availability of time Access to funds Board diversity
Interaction with the local community	Alignment with local values and frames of reference Alignment with the institutional characteristics of the local community Visibility Community involvement Bonding capital Bridging capita
Governance setting and linkage to government	Linkage to government Linkage to intermediaries Supportive governance arrangement

Appendix 2: Measures for Indicators

Table 15: Measures for MLG indicators.

INDICATOR	MEASURE
OPENNESS	Scale from 0 to 5: the higher the score, the higher the success in supporting/using networks for decentralised communication policies.
TRANSPARENCY	Scale from 0 to 5: the higher the score, the higher the availability of information and procedures for consultation.
POLICY COORDINATION	A grade of: o 1 for Vertical coordination, o 2 for Horizontal coordination, o 3 for both.
WHEN	A grade of: o 1 for Process, o 2 for Design, o 3 for Implementation, o 4 for Monitoring.
WITH WHO	A grade of: o 1 for Within the administration, o 2 for With citizens, o 3 for With Private organizations, o 4 for With local policy-makers
RESPONSIBILITY	Scale from 0 to 5: the higher the score the higher the level of accountability, thus clear division of responsibilities and clear pre-screening and post-evaluations.
REGULATION	Scale from 0 to 5: the higher the score the more formal the administrative structures are, e.g., formal communication, use of contracts, specialized physical structures.
DECISION-MAKING PROCESS	Scale from 0 to 5: the higher the score, the more bottom-up was the initial decision-making process.
SUPPORTIVE MECHANISMS	Scale from 0 to 5: the higher the score, the higher the financial support given.
INNOVATION	Scale from 0 to 5: the higher the score, the higher the support for innovation.
ALIGNMENT	Scale from 0 to 5: the higher the score, the higher the alignment between European Policies, national policies and customization process on the territory.

Appendix 3: Interviews' Questions

- *Part 1*: *Information on the interviewee*
  - Name:
  - Position:
  - Responsibility:
  - Email:
  - Date of the interview (dd/mm/yyyy):

- *Part 2*: *Questions*
  - *General Questions:*
    1. What is your role in the Energy Communities area?
    2. Who/What started the interest in this area?

  - *Participation:*
    3. Who have you partnered with? In which phase? How?
    4. What levels of government were directly involved?
    5. What actors were/are the most/least supportive?
    6. Are there areas of co-operation in emerging or innovative collaborations with neighbor municipalities or the region?

  - *Openness and Transparency:*
    7. How is the communication organized?
    8. Was any management structure set up for collaboration?

  - *Accountability:*
    9. There is a clear division of roles?
    10. Are there any monitoring and evaluative methods in place?

  - *Effectiveness:*
    11. Is the decision-making process bottom-up or top-down?
    12. Is any support (capacity and funds) foreseen at the national/regional level for Energy Communities?
    13. What were/are the principal obstacles to its creation?
    14. What works well?
    15. Is innovation supported?

  - *Coherence:*
    16. What is the reactivity of the national/local regulation to European new directives?
    17. Is there enough customization of policies on the peculiarity of the territory?

  - *End Questions:*
    18. What are some of the foreseeable future developments of the ECs' area you are working in?
    19. Who would you think it would be relevant and available to interview?

Appendix 4: Stakeholders' Analysis

The stakeholder analysis will be based on (Hermans, Cunningham, de Reuver, & Timmermans, 2018), distinctly for the Netherlands and Italy. Firstly, an overview of the actors will be retrieved; then, resource dependencies will be established and a power vs. interest diagram will be obtained. To support the analysis, a hierarchical visualization of the different actors in the different layers of governance will be executed.

The Netherlands

Table 16: Stakeholders of the Netherlands.

CATEGORY	ACTOR
NATIONAL GOVERNMENT	• Cabinet • Ministry of Economic Affairs and Climate policies • Ministry of Internal Affairs • Ministry of Infrastructure and Environment
LOCAL GOVERNMENT	• Regions • Provinces • Communes
NON-GOVERNMENTAL ORGANIZATIONS	• Social community partners • Nature organizations • SME (Small and Medium-sized Enterprises)
GRID ACTORS	• TenneT • Essent, Vattenfall, Eneco, Engie • Renewables developers
ACADEMIC FIELD	• Research institutes (e.g., TNO, PBL) • Universities (e.g., Wageningen University, TU Delft)
RELATED TO ENERGY COMMUNITIES	• Energy Communities • Federation of Energy Communities (e.g., Energie Samen) • Knowledge platforms (e.g., Hier opgewekt) • Support & Advocacy (e.g., REScoop.nl, Participation Coalition)

Italy

Table 17: Stakeholders of Italy.

CATEGORY	ACTOR
NATIONAL GOVERNMENT	• Council of Ministers • Ministry of Economy and Finance (Cassa Depositi e Prestiti SPA) • Ministry and Economic Development • Ministry of Ecologic Transition)
LOCAL GOVERNMENT	• Provinces • Municipalities
NON-GOVERNMENTAL ORGANIZATIONS	• Banks, Poste Italiane • SME (Small and Medium-sized Enterprises) • Social community partners • Nature organizations
GRID ACTORS	• ARERA (Autorità di Regolazione per Energia Reti e Ambienti "Regulatory Authority for Energy, Networks, and the Environment") • GSE (Gestore dei Servizi Energetici "Manager of the Energy Services") • ESCO (e.g., AESS Energy and Sustainable Development Agency) • ENEA • Renewables developers
ACADEMIC FIELD	• Universities (e.g., PoliMI (ESG, Energy and Strategy Group), PoliTo, La Sapienza, UniBO) • Research institutes (e.g., RSE)
RELATED TO ENERGY COMMUNITIES	• Energy Communities • Federation of Energy Communities • Knowledge platforms • Support & Advocacy