New Clean Energy Communities in a Changing European Energy System (NEWCOMERS)

Deliverable 2.3

Common analytical framework

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Summary of NEWCOMERS

In its most recent Energy Union package, the European Union puts citizens at the core of the clean energy transitions. Beyond policy, disruptive innovations in energy sectors are challenging the traditional business model of large energy utilities. One such disruptive, social innovation is the emergence of new clean energy communities ("newcomers"). The possible benefits of these "newcomers" for their members and for society at large are still emerging and their potential to support the goals of the Energy Union is unclear. Using a highly innovative holistic approach – drawing on cutting edge theories and methods from a broad range of social sciences coupled with strong technical knowledge and industry insight – the NEWCOMERS consortium will analyse European energy communities from various angles. By taking an interdisciplinary approach and through employing co-creation strategies, in which research participants are actively involved in the design and implementation of the research, the NEWCOMERS project will deliver practical recommendations about how the European Union as well as national and local governments can support new clean energy communities to help them flourish and unfold their potential benefits for citizens and the Energy Union.

Summary of NEWCOMERS's Objectives

As subsidiary objectives, the NEWCOMERS project aims to

- provide **a novel theoretical framework based on polycentric governance theory**, combined with elements from social practice theory, innovation theory and value theory, in which the emergence and diffusion of new clean energy communities can be analysed and opportunities for learning in different national and local polycentric settings can be explored;

- develop a **typology of new clean energy community business models** which allows to assess the different types of value creation of "newcomers" as well as their economic viability and potential to be scaled up under various conditions;

- identify the **types of clean energy communities that perform best along a variety of dimensions**, such as citizen engagement, value creation, and learning, and their potential to address energy poverty, while being based on sustainable business models;

- investigate the **regulatory, institutional and social conditions**, at the national and local level which are favourable for the emergence, operation and further diffusion of new clean energy communities and enable them to unfold their benefits in the best possible way;

- explore **how new clean energy communities are co-designed with their members' (i.e. citizens' and consumers') needs**, in particular whether new clean energy communities have the potential to increase the affordability of energy, their members' energy literacy and efficiency in the use of energy, as well as their members' and society's participation in clean energy transition in Europe;

- deliver **practical recommendations based on stakeholder dialogue** how the EU as well as national and local governments can support new clean energy communities to make them flourish and unfold their benefits in the best possible way;

- offer citizens and members of new clean energy communities a **new online platform 'Our-energy.eu'** on which new clean energy communities can connect and share best practices and interested citizens can learn about the concept of energy communities and find opportunities to join an energy community in their vicinity.

Find out more about NEWCOMERS at: https://www.newcomersh2020.eu/

NEWCOMERS Consortium Partners

Logo	Organisation	Type	Country
	Institute for Environmental Studies (IVM), Vrije Universiteit Amsterdam (VUA)	University	The Netherlands
	International Institute for Industrial Environmental Economics (IIIEE) at Lund University (LU)	University	Sweden
	Environmental Change Institute (ECI), University of Oxford (UOXF)	University	United Kingdom
	Institute of Social Sciences, University of Ljubljana (UL)	University	Slovenia
	Institute for Advanced Energy Technologies "Nicola Giordano" (ITAE), National Research Council (CNR)	Research organisation	Italy
	Leibniz Institute for Economic Research (RWI)	Research organisation	Germany
	Consensus Communications (CONS)	Private for Profit (SME)	Slovenia
	GEN-I	Private for Profit (Large company)	Slovenia

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HIGHLIGHTS

This deliverable

- provides a glossary of terms based on a common understanding that will be used in the NEWCOMERS project
- links the research questions of the WPs to the set of 12 research propositions developed in deliverable D2.1 through a process of mutual adjustment
- visualises the connections between WPs and case study research
- presents the selection of 15 case study communities that will be the focus of the analysis in the WPs 4, 5, and 6

1 EXECUTIVE SUMMARY

This deliverable outlines the overarching analytical framework for the NEWCOMERS work packages and case studies. First, it presents a glossary in order to ensure that key terms and concepts, which will be utilized throughout the project are specified. Second, it links the research propositions formulated in D2.1 (Theoretical framework focusing on learning in polycentric settings) to the research questions to be asked in the work packages and case studies. Third, it presents the 15 case study communities that will be the focus of the analysis in the different work packages and visualises how they are embedded in the overall project design.

2 INTRODUCTION

2.1 Background

This deliverable sets out to develop a common analytical framework for the work packages (WPs) and case studies. It uses the overarching theoretical framework developed in 'Deliverable 2.1 - Theoretical framework focusing on learning in polycentric settings' as a starting point. It is meant to provide guidance concerning crosscutting issues and research questions that have to be dealt with in the project in order to enable the synthesis of research findings and formulation of policy recommendations in WP7. In effect it ties WP2 - Theoretical framework, typology and case study guidance, WP3 - National polycentric settings: mapping and comparison, WP4 – Emergence and operation of newcomers, WP5 – Potential to stimulate conservation behaviour and demand response, WP6 – Current and potential benefits for energy community members and society, and WP7 – Synthesis and co-creation of policy recommendations together.

Case studies focusing on specific clean energy communities form the heart of the NEWCOMERS project. WP4 will employ a series of in-depth case studies to analyse the emergence, operation and future potential of emerging business models by energy communities. WP5 will investigate in-depth in one or two of the case study communities whether membership affects daily energy-related behaviour and what incentives are effective as steering mechanisms. WP6 will examine the current and future potential of energy communities to meet people's needs, to tackle energy poverty and increase energy literacy. For each of these WPs, specific case study protocols will be elaborated in addition to this common analytical framework.

2.2 Role of this deliverable in the project

This deliverable sets out a common analytical framework to guide the research in WP3, 4, 5, 6 and 7. It uses the overarching theoretical framework developed in deliverable D2.1 as a starting point, aiming to provide guidance to the work to be done in the WPs and case studies as well as to enable the synthesis of research findings and formulation of policy recommendations in WP7.

2.3 Approach

The content of this deliverable has been developed in a collaborative manner involving various consortium members. As a first step, a WP2/WP3 Task Group was set up to discuss definitions of core terms in order to enhance conceptual clarity and a common understanding. Examples of such terms included new forms of clean energy communities, business models, and energy services. As an outcome of this process, proposals were done for the definitions to be used in the project. The resulting definitions have been included in the glossary that is presented in this deliverable. However, during the process of formulating definitions, it became clear that they may need to be further fine-tuned in the course of the project and that new ones may need to be added. The consortium members therefore decided to consider this glossary as a living document that will adapted according to their latest insights and understanding throughout the project. To ensure follow-up, one of the team members volunteered to take responsibility for the updating process and the communication about this between consortium members.

As a second step, the WP leaders were asked to explore the relationships between on the one hand the research propositions developed in D2.1 that are envisaged to be tested in the WPs and on the

other hand the research questions guiding the analyses in their respective WPs. This exercise was considered necessary, because at the time the project was conceptualised the propositions still needed to be developed. As a consequence, the research questions for the WPs were inspired to a large extent by disciplinary background, and research expertise and interests. As a starting point, the WP leaders used the research questions as formulated in the project description belonging to their respective WPs and brought them in line with the requirements put forward by the research propositions. At the same time, the research propositions were adapted to the realities of the research already planned for each WP. The resulting back-and-forth process led to better identifying the specific foci of the WPs as well as to better connect them to the overall project goals. As such, this explorative step is expected to contribute to the overall coherence of the NEWCOMERS project.

As a third step, a WP's 4/5/6 Task Group was established to develop a plan how to embed the case studies in the respective WPs and to make a definite selection of case study communities to be included. With regard to the latter, a distinction has been made between core communities and other communities. Core communities are those that are studied in all three WPs, whereas the other communities are only partially involved in the research tasks of WPs 4 to 6, as well as in national workshops. The decision to partially involve the communities in certain research tasks is based on the characteristics of each case study community, which make some of the case studies particularly suitable to study a certain aspect but less suitable to study other aspects. The combination of core and other communities allows to carry out all planned research tasks in WPs 4 to 6 with manageable effort while ensuring the comparability of results across the core communities. In the selection process, attention was paid to the coverage of the relevant dimensions. The final selection of core communities includes local and rather traditional communities as well as purely virtual and non-traditional communities.

2.4   Structure of the deliverable

This deliverable is structured as follows. Chapter 3 presents the core elements of the analytical framework, including the core concepts of the project, and the research propositions linked to research questions and work packages. Chapter 4 embeds the various case studies in the work packages, whilst Chapter 5 provides a brief overview of the 15 case study communities.

3 ANALYTICAL FRAMEWORK

This chapter aims to present the core elements of the analytical framework for the NEWCOMERS project. Section 3.1. provides a glossary of terms and formulates the definitions to be used throughout the project. Section 3.2 gives an overview of the set of 12 research propositions developed in deliverable D2.1 and proposes linkages with WPs and research questions.

3.1 Glossary

Concept	Definition in **NEWCOMERS** project
Action arena	An action arena entails the combination of actors and the action situation with-in E. Ostrom's Institutional Analysis and Development (IAD) Framework (E. Ostrom, 2011).
Business models	Sets of assumptions about how actors produce and distribute value
Benefits	Benefits defined in its broadest sense, including economic, environmental and social benefits
Citizen Energy Community	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.[1]
Citizen engagement	Citizen engagement in policymaking represents an increasingly popular mechanism for civic rejuvenation and policy innovation; its application in many different policy fora from city budgeting to housing and energy systems across various national contexts provides, in theory, space for the public to feel empowered, connected to new policy spaces and positions them to aid in design and implementation of more effective solutions to complex social and environmental problems (MacArthur, 2016).
Community energy (CE) projects	Projects where communities (of place, or of interest) exhibit a high degree of ownership and control, as well as benefit collectively from the outcomes (Seyfang et al, 2013). According to Devine-Wright (2019), in the last years there has been a shift from community energy (CE) to local energy (LE), which entails a reduction in this sense of community-based ownership and control, due to government backed PPPs bringing substantial private sector interests into the localized provision of energy.

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[1] Provisional text adopted by European Parliament legislative resolution of 26 March 2019 on the proposal for a directive of the European Parliament and of the Council on the common rules for the internal market in electricity (recast) (COM(2016)0864 – C8 - 0495/2016 – 201 - 6/0380(COD)) (Provisional Recast Electricity Directive).

Concept	Definition in NEWCOMERS project
Clean energy communities	Associations of actors engaged in energy system transformation for reduced environmental impact, through collective, participatory, and engaging processes and seeking collective outcomes
Demand response	An action that shifts and/or reduces energy use in response to a price signal or other stimulus. Demand response may be voluntary/manual or automated. It is viewed as important to energy systems that rely heavily on supply from new renewable generators with fluctuating output, because it can help to keep a power grid stable by balancing supply and demand in real time.

The term also refers to programmes that encourage consumers to make short-term reductions in energy demand, initiated by the Transmission or Distribution System Operators (TSO or DSO). Demand response can operate on many timescales, from absolute demand reduction (long term, to avoid investment in new generating capacity) to fast frequency response for grid stability (short term, to balance the grid from second to second). It is closely linked to system flexibility and to the rollout of time-of-use tariffs and forms of direct load control.

From the customer standpoint, demand response is achieved through users' responses to dynamic pricing or other signals, direct/automated load control, or some mix of the two. Demand response is consequently a form of distributed energy resource that can be drawn upon to improve system efficiency and reliability. |
Energy conservation	Absolute reduction in energy consumption
Energy efficiency	The ratio between energy output (energy service) and energy input. Or put simply, it means squeezing as much useful power out of as little energy as possible.
Energy poverty	A situation in which a household lacks a socially and materially necessitated level of energy services in the home (Bouzarovski, 2013)
Energy service business models	Any type of emerging business models that provide a service and therefore value (broadly defined) to energy users, energy companies, energy systems and/or wider society
Energy system	Any system, which aggregates a variety of power producers, distributors, and consumers.
Financial Model	The financing model, which ensures the financial viability of the new clean energy communities. This can entail public sources, crowd funding, member financing, grant funding, government investment, and private investment (Walker & Devine-Wright, 2008), among others.

Concept	Definition in NEWCOMERS project
Intermediaries	Individuals, organisations or networks that create spaces and opportunities for others (to learn, share knowledge, access opportunities), who mediate (i.e. work between, make connections) between other actors and technologies and who broker resources, knowledge and relations (Stewart and Hyysalo, 2008; Hodson and Marvin, 2010). Intermediaries are subsequently defined by their 'in-betweenness', operating between others performing relational work (Warbroek et al, 2018; Barnes, 2019). Intermediaries can perform a variety of roles in the development of energy communities, including but not limited to aggregating knowledge, sharing information, capacity building, brokering relationships, developing business coordinating and framing visions as well as advocacy and lobbying (Warbroek et al, 2018).
Learning	The process of acquiring new, or modifying existing, knowledge, behaviours, skills, values, or preferences. The NEWCOMERS project distinguishes various types of learning. Cognitive learning leads to new knowledge and an improved structuring of existing knowledge. Normative learning results in changes of perspectives, goals, or priorities. Relational learning results in changes in trust, ability to cooperate, and understanding of other stakeholders' ideas and values.
Local energy communities	Energy communities, which in spatial terms are place-based (Moroni et al., 2018) and local in scale.
Middle actors	Individual or institutional actors with the expertise and experience to enable and facilitate activities by others, e.g. accountants, electricians, housing associations, lawyers (Parag and Janda, 2014). Note there is some crossover here between the term intermediaries and middle actors, with the latter used to describe the capacity (often overlooked) of some actors to influence others through their everyday activities. For instance the important role an electrician plays in helping a household understand how to interpret and work with a new smart meter or smart radiator.
New clean energy communities ('newcomers')	Clean energy communities that are novel in at least one of the following respects: scope, purpose, technologies, actors, and mode of operation.
Overarching rules	A set of rules, which provide means to settle disputes and reduce the level of discord between units to a manageable level (Jordan et al. 2018). The explicit nature of these rules is not yet sufficiently studied – are they informal norms and values or codified rules set by state organizations for example?
Patterns of interaction	Patterns of interaction entail the processes through which actors within an action arena interact with each other to produce outcomes within the IAD (E. Ostrom, 2010; 2011).
Polycentric governance	A system of governance that operates at several loci, with multiple sub-units each, with their own semi-autonomous decision-making centres, and which usually has an issue-specific focus. The concept is related to network governance and experimental governance. It contrasts with hierarchical forms of governance, which are monocentric and operate using a centralised decision-making structure.

Help

Themes	Research propositions as defined in the literature	Research propositions as defined in the **NEWCOMERS** project	Research Questions as defined in WPs
			WP4 - What themes emerge from the narratives of how each place-based community formed and developed?
Mutual adjustment	Constituent units are likely to spontaneously develop collaborations with one another producing more trusting interrelationships (Jordan et al., 2018)	Energy communities are likely to spontaneously develop collaborations with one another, and engage in processes of mutually adjusting to each other	WP2, WP4 - What actors and technologies are necessary for the emergence and operation of new clean energy communities? - Are there opportunities for place-based and virtual energy communities to cooperate, for example through federation? - May place-based and virtual energy communities sometimes be in competition for physical resources and members?
Experimentation	The willingness and capacity to experiment is likely to facilitate governance innovation and learning about what works (Jordan et al., 2018)	Energy communities' willingness and capacity to experiment is likely to facilitate governance innovation and learning about what works	WP2 - What new energy service business models are emerging in the field of low carbon energy? WP4 - What risks do communities take when they innovate in different ways? - What have been the main ways in which the CSCs have learned? -how much have CSCs learned from the experiments of others?

Themes	Research propositions as defined in the literature	Research propositions as defined in the NEWCOMERS project	Research Questions as defined in WPs
			WP5 -What pricing structures are being used to reward generation/storage/load-shifting/conservation within energy communities? -Which instruments (price-based and/or non-price-based/ behavioural interventions) are successful in stimulating conservation and load-shifting behaviour (within energy communities)?
The importance of trust	Trust is likely to build up more quickly when units can self-organise, thus increasing collective ambitions (Jordan et al., 2018)	Trust is likely to build up more quickly when energy communities can self-organise, thus increasing collective ambitions Trust requires people that are acknowledged to be trustworthy, and rules to safeguard community members if there are breaches of trust (people not behaving in a trustworthy way).	WP4 - What are the rules that establish accountability and trust for place-based and virtual energy communities? - How confident are community members in the rules for each community? - Does trust take different forms in place-based and virtual communities?
Overarching rules	Local initiatives are likely to work best when they are bound by a set of overarching rules that enshrine the goals to be achieved and/or allow conflicts to be resolved (Jordan et al., 2018)	Energy communities are likely to work best when they are bound by a set of overarching rules that enshrine the goals to be achieved, define or shape processes for achieving them, allow for conflict resolution and set penalties for actions that compromise the effective working of the community.	WP3 - How do national polycentric settings and multi-level patterns of governing influence the emergence of new forms of energy communities?

Themes	Research propositions as defined in the literature	Research propositions as defined in the **NEWCOMERS** project	Research Questions as defined in WPs
			WP4 - What policy and regulatory conditions promote the emergence and continuance of effective new clean energy communities, place-based and virtual? - What local rules have been seen as especially effective in promoting emergence and continuance of place-based new clean energy communities? - What responsibilities and obligations towards the electricity system/network do energy communities have now? - How might responsibilities and obligations change in the future?
Governance for new business (service) models	A system of polycentricity is assumed to offer potential to generate innovative business models through the devolution of powers in line with the subsidiarity principle and collaborative community-based governance, and in particular a high adaptive capacity to deal with socio-economic changes (Marshall, 2009; Marshall, 2015)	Polycentricity is likely to lead to the emergence of new energy service business models used by energy communities in the field of low carbon energy	WP2 -What new energy service business models are emerging in the field of low carbon energy? WP3 -Which factors hinder and enable new energy communities in different settings? WP4 -What is a suitable analytical framework for studying the emergence and operation of new clean energy communities?

Themes	Research propositions as defined in the literature	Research propositions as defined in the **NEWCOMERS** project	Research Questions as defined in WPs
Social acceptance of renewable energy	Social acceptance is important for gaining support and developing greater citizen engagement for renewable energy projects (MacArthur, 2016)	Energy communities are likely to stimulate through citizen engagement the social acceptance of low carbon energy technologies, new business models and energy transition policies	WP4 - Are some people more likely to accept involvement in place-based than virtual energy communities, and vice versa? Why? WP6 - How do new forms of energy community meet their members (i.e. consumers' and citizens') needs for clean, secure and affordable energy in their everyday life settings (existing values and practices)?
Embeddedness of technology in society	Energy systems are socio-technical in their characterization, meaning that both the material and social/human parts of a system need to be considered to understand its functions and possible development paths (Palm, 2006)	Energy communities are subsequently hindered or facilitated by local social, political, cultural and geographic factors that collectively amount to local 'technological styles' (Hughes, 1987)	WP4 - What actors and technologies are necessary for the emergence and operation of new clean energy communities? - What distributed energy resources are available to the selected case study communities (CSCs)? - What knowledge and skills are needed to operate them? - What are the benefits and challenges associated with introducing smart technology to community energy initiatives? - What are the gender considerations and how can they best be addressed?

| Themes	Research propositions as defined in the literature	Research propositions as defined in the NEWCOMERS project	Research Questions as defined in WPs
			WP5 -What pricing structures are being used to reward generation/storage/load-shifting/conservation within energy communities?
Potential for up-scaling / Transfer of knowledge, skills, and practices	Up-scaling can take form in horizontal and vertical pathways – the former describing spatial expansion and the later institutional embedding (van Doren et al., 2018). Understanding the interactions of actors within a system of polycentric governance may offer the means to identify why certain initiatives were successful.	Transfer of knowledge and skills between and within energy communities and through intermediaries is likely to enhance the potential for up-scaling, both in horizontal and vertical pathways.	WP4 - How replicable/scalable are the different CSCs likely to be? - To what extent are horizontal and vertical pathways to up-scaling of CSCs possible? WP4, WP6 - What knowledge and skills, needed by energy communities, are most easily transferable, and which are most challenging? - How specific are different types of knowledge and skills to particular places?
Multi-level learning	A polycentric network is considered to have the potential to facilitate learning, by enabling the diffusion of relevant knowledge to be transferred to a variety of stakeholders (E. Ostrom, 2010)	Energy communities are likely to provide opportunities for learning by their members at the cognitive, normative and relational levels	WP3 - What are the potentials for learning between different polycentric settings? WP4 - What sort of formal knowledge and practical know-how do stakeholders need to run energy communities? - What knowledge and skills of the wider energy system are required for effective operation? - How do different actors interact and learn from one another? - What can be done to improve learning?

Themes	Research propositions as defined in the literature	Research propositions as defined in the **NEWCOMERS** project	Research Questions as defined in WPs
Value creation and distribution	In a polycentric system of governance, actors will come up with their own innovative solutions to generate values for local communities and society (Bryson *et al.,* 2016)	Energy communities are likely to generate values for local communities and society	WP4 - What are the energy outcomes and distributional outcomes from the different case study communities? - What services do energy communities provide to their wider energy systems, and vice versa? - What is the value of different forms of flexible demand for each electricity system and for each business model? - How might these values evolve in the future? - What financial rewards are present for the services of energy communities to system operators? - What are the most (a) likely and (b) desirable alterations in market arrangements in order to open up the range of viable business models for energy communities? WP5 - Does membership in an energy community have an impact on household electricity consumption patterns of members? -What pricing structures are being used to reward generation/storage/load-shifting/conservation within energy communities? -Which instruments (price-based and/or non-price-based/ behavioural interventions) are successful in stimulating conservation

Themes	Research propositions as defined in the literature	Research propositions as defined in the **NEWCOMERS** project	Research Questions as defined in WPs
			and load-shifting behaviour (within energy communities)? WP6 - How do new forms of energy community meet their members (i.e. consumers' and citizens') needs for clean, secure and affordable energy in their everyday life settings (existing values and practices)? - Which values, namely self-oriented, other-oriented, extrinsic, intrinsic (for example functional, economical, emotional, social, ecological) related to the new forms of energy communities do members perceive in relation to the alternative energy service models? - What are the relative advantages of new clean energy communities for energy communities' members?
Virtual communities	(Energy) communities can be organized without being place-based and with single- or multi-issue focus differentiating between scopes of activities (Moroni et al., 2018).	Viable virtual communities are likely to be created, usually in a top-down manner, to deliver benefits to individual participants and to energy systems	WP4 - What do participants in virtual energy communities gain from membership? - What objectives are virtual energy communities achieving, and for whom? - What objectives are difficult to achieve via virtual communities, and why?

4   EMBEDDING CASE STUDIES IN THE RESEARCH

To cater to the above research propositions, various energy communities have been selected to serve as case studies in the work packages WP4 to WP6. The selection of the case studies is based on the idea that a wide range of communities – regarding type, size, technologies used, development stage and regulatory context – can be studied. A conceptual outline linking the various tasks, WPs and case study communities is provided below in Figure 1. As can be seen, 6 core communities will be studied throughout WPs 4, 5, and 6. Each of the core communities is located in one of the partner countries, which allows also to take into account the different regulatory contexts and to create some links to WP3.
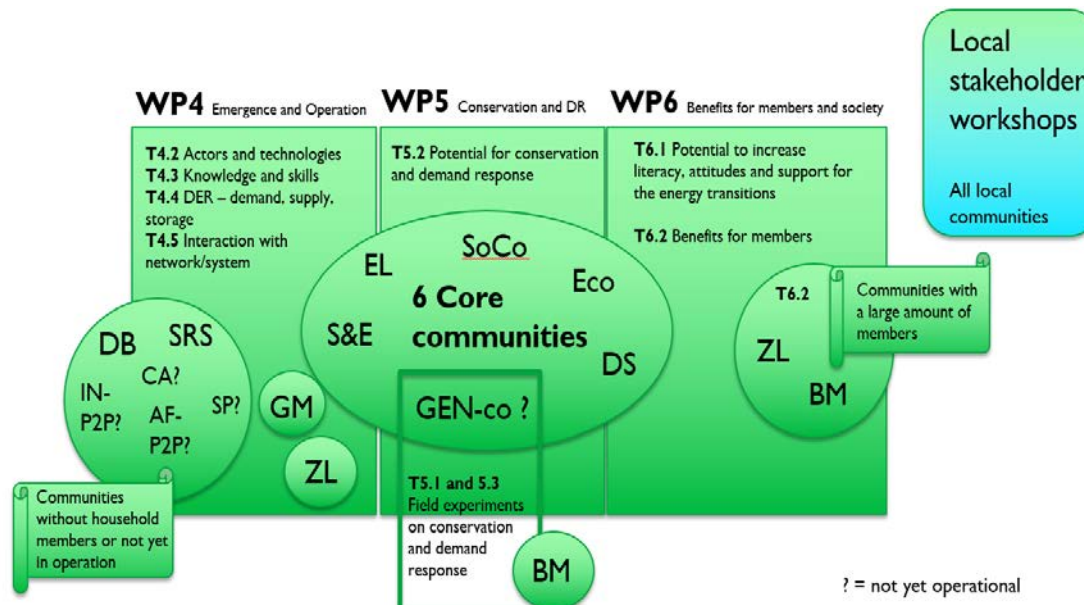
Next to these core communities, a number of other communities will also be studied in the various WPs as they cater to a number of studied aspects – such as membership size, use of certain technologies or being in an early stage of development.

Figure 1. Embedding the selected case study communities in the research

5 SELECTED CASE STUDY COMMUNITIES

As can be seen in the above mapping in Figure 1., 15 case study communities are embedded within the various WPs. A brief introduction to each of these is outlined in the table below. Core communities, which will be studied throughout the WPs 4, 5, and 6, are marked in **bold**.

Case study community	Abbr.	Description	Category	Operational since
Zuiderlicht, NL https://www.zuiderlicht.nu/	ZL	Large Amsterdam-based energy cooperative with about 800 members that bundles individual investments to install PV on large roofs such as schools and sports facilities; combined with engaging in energy education at schools.	„Crowd funding"-based community with additional social value creation (energy education at schools)	2013
Duurzaam Soesterkwartier, NL http://www.duurzaamsoesterkwartier.nl/	**DS**	Neighbourhood in the Municipality of Amersfoort whose inhabitants aim to generate their own electricity and thermal energy from 100% clean sources. It has about 100 inhabitants collaborating to achieve their goals. Further initiatives aim at other environmental improvements in the neighbourhood (recycling, green mobility) and social goals (strengthening the neighbourhood economy).	More „traditional" local energy community, with ambitious goals to generate 100% clean energy (own windmill and heating system) and strong ties with the municipality; in addition, the community has wider social and environmental goals.	2009
Buurtmolen, NL	BM	Community energy initiative by green energy provider Greenchoice and project developer EWT that facilitates local wind energy cooperatives. Citizens can	More „traditional" local energy community, initiated and administered by commercial parties.	2019

Case study community	Abbr.	Description	Category	Operational since
https://buurtmolen.nl/		participate without contributing to the investment. The first buurtmolen in Harlingen/Friesland has about 400 members.		
Sege Park Malmö, SE https://www.eon.se/artiklar/sege-park-i-malmoe-blir-sjaelvfoersoerjande-pa-solel.html	SP	Initiative of E.ON Sweden to establish a self-sufficient city district in Malmö (Sege Park). According to plans, Sege Park will become Malmö's new showcase for sustainable urban development, with 800 new housing units planned over the next ten years. Sharing resources will become a means to create climate-smart and affordable housing.	Self-sufficient clean energy neighbourhood; Micro-grid (?)	2020+?
Solar Region Skåne, SE https://solarregion.se/	SRS	Non-profit association that has around 50 members of various types: municipalities, the church, university, energy companies, PV installation companies; property developers, private citizens. Their aim is to spread knowledge about and support investments in solar energy in Skåne (a county in Sweden).	More „traditional" solar energy community, with new associations of actors and knowledge sharing as additional social value creation.	2007
Energy Local, UK http://www.energylocal.co.uk/?LMCL=Qt2IMU	EL	Initiative to increase installation of local distributed generation as well as smart technologies (demand response), with the aim to make energy more affordable and to enable local value creation. Wide range of (innovative) technologies used, such as solar PV, hydro, electric heating, EVs, batteries, smart meters and smart plugs/appliances.	More „traditional" local energy communities, with innovative technologies and demand response services; knowledge-sharing and local value creation as additional social and economic goals.	2015

Case study community	Abbr.	Description	Category	Operational since
Solidarity & Energy, IT http://www.fdcmessina.org/index.php/pag-sezione/esco/	**S&E**	Non-profit ESCO aiming to tap efficiency potentials in public buildings and to invest the savings in social projects like education. There are about 500 persons involved in various initiatives and projects. Kind of actors involved: households, business, schools, hospitals, and municipalities. In NEWCOMERS, we will focus on a social housing initiative: innovative system for accumulation and distribution of energy that is installed in a new social house, located in a marginal suburb neighbourhood of Messina, including a demand response device.	Initiative with wider social goals that involves smart energy technologies.	2014
Energy community Casalvecchio, IT http://www.fdcmessina.org/index.php/pag-sezione/esco/	CA	Municipality in Sicily that aims to develop an energy community based on electricity from a PV plant combined with a new storage system. The project addresses households that face the risk of energy poverty.	More „traditional" local energy community, with new associations of actors, use of innovative technologies and wider social goals.	2020+?
Innogy peer-to-peer electricity trading pilot, DE https://iam.innogy.com/fuer-zuhause	IN-P2P	Peer-to-peer electricity pilot of the German energy provider Innogy, with 37 friendly users in the first stage.	Peer2Peer electricity trading initiated by commercial party.	2020+?
GEN-I community, SI	**GEN-co**	Virtual energy community involving households with and without solar PV self-consumption.	Virtual energy community initiated by commercial party.	2020

Case study community	Abbr.	Description	Category	Operational since
Sonnen Community, DE https://sonnengroup.com/sonnencommunity/	**SoCo**	Virtual energy community based on a network of households with solar PV and storage units that jointly form a virtual power plant; aggregator Sonnen offers flexibility services on the market, which create economic value that is shared with the community.	Community based on innovative storage services, initiated by commercial party who serves as aggregator and offers flexibility services on the market.	2016 (?)
Dakenbank 033, NL https://www.dakenbank033.nl/	DB	Citizen initiative that started a broker/market place for rooftops for solar PV installations; aim is to match people with rooftops with those who would like to invest in solar PV.	New type of intermediary („broker").	2019
De Groene Mient, NL http://www.groenemient.nl/	GM	All-electric neighbourhood in the city of The Hague, initiated by citizens in collaboration with Greenchoice (energy provider) and Leander (DSO); newly built energy-neutral neighbourhood that owns its own microgrid (with connection to the grid, i.e. not an energy island); all residents are automatically part of an energy cooperative who will manage the project.	All-electric neighbourhood with wider environmental goals; Microgrid	2017
Solar Eco-Village, SE	**Eco**	Eco-village with solar energy production, with a broad environmental mission.	More „traditional" solar energy community, with wider social and environmental value creation.	?
Amersfoort, Peer-to-peer electricity trading pilot, NL	AF-P2P	Peer-to-peer electricity pilot with about 800 households of a housing corporation that is currently in development stage. Pilot is planned to include 52 households in one neighbourhood.	Peer2Peer electricity trading	2020+?

6   CONCLUSION

This deliverable introduced the analytical framework for the NEWCOMERS project, which is meant to link WPs 2, 3, 4, 5, 6, and 7. It provides a glossary of key terms and concepts to be used throughout the project as well as an overview of 1) the research propositions as found in literature discussing polycentric governance, 2) their applicability to the concept of new clean energy communities, and 3) specific research questions as put forward by WP leaders. In addition, it visualises how the various case study communities are embedded in the WPs and provides an overview of the selected case study communities that will be the focus of analysis in the respective WPs.

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