



# Comparative analysis of energy cooperatives in the Netherlands and Ireland

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## **Abstract**

This research studies the attributes towards what makes successful energy cooperatives, focussing on political aspects and sociological aspects. Two countries are studied and compared, The Netherlands a country that has a relatively well-developed energy cooperative network and Ireland a country that has struggled to see successful energy cooperatives. The objective of the study is to identify how policies and social aspects affect the success of renewable energy cooperatives. The research question for this paper is “How do policies and sociological aspects between The Netherlands and the Republic of Ireland concerning citizen involvement in producing renewable energies affect the success of renewable energy cooperatives? This question was answered by conducting four in-depth semi-structured interviews with members of energy cooperatives two in the Netherlands and two in Ireland, and a study of existing literature and policy papers. The results from this research show that the policy aspects have far more influence on the success of the energy cooperatives than societal aspects. Even when an energy cooperative has a lot of community support and a large membership, without strong supporting policies the cooperative will struggle to be successful and reach the goals of the members.

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# 1 Introduction

## 1.1 Background

Climate change is a topic in today's world that is unavoidable. According to the Intergovernmental panel on climate changes (IPCC) fifth assessment report "human influence on the climate system is clear" and that recent greenhouse gas emissions (GHG) are the highest in history (IPCC 2014). GHG emissions get released into the atmosphere from burning fossil fuels and they trap heat as they surround the earth like a blanket that becomes excessively thick causing climate change (Le Treut, et al. 2007). The world at this moment is in a transition from conventional fossil-fuel based energy towards a renewable energy (RE) system. This transition is necessary to minimise the negative effects of climate change and to no longer be dependent on finite energy sources. The knowledge on the technology and on the behavioural change's society have been available for many years yet renewable energies still fulfil a rather low percentage of the world's energy usage (Van der Heijden, et al. 2019).

Although RE sources are superior methods for reducing carbon emission problems, most of them are not currently techno-economically competitive with fossil fuels as well as the social acceptability causing limitations to their rise. For the time-being the development of most renewable energies requires governmental support which can be limited by the population's acceptance of these technologies. A major example is that people do not want to have a wind or solar farm erected close to where they live. The most common term used for this is known as "not in my backyard syndrome" (NIMBY) (Burningham, Barnett, & Thrush, 2007). Encouraging citizen involvement and investment in local projects has been identified in a wide range of literature as one means of gaining acceptance for distributed renewable technologies (Bolton, R et al, 2011). Therefore, involving citizens in RE is an important factor to see an increased use of renewables and consequently, less GHG emissions released into the atmosphere contributing to climate change.

## 1.2 Aim and research questions

The research aims to investigate is what policies and sociological context of countries leads to more citizen involvement in producing renewable energy? By taking a comparative approach between Netherlands (a country that does it well) and The Republic of Ireland (a country with limited number of community investment). Based on the finding's, recommendations are given on what works to bring citizens together to get involved in such projects. The aim will be met by answering the following research question and sub-questions:

- "How do policies and sociological aspects between The Netherlands and the Republic of Ireland concerning citizen involvement in producing renewable energies affect the success of renewable energy cooperatives?
  - What motivates the citizens to invest in renewable technologies?
  - What regulatory framework is in place that affects the opportunity to create a successful renewable energy cooperative?
  - Do the renewable energy cooperatives receive any incentives from any level of government?

### 1.3 Scientific and societal relevance

As previously mentioned, climate change is an unavoidable topic and one of the largest and most complex problems of this time. The global climate is changing which we know is caused by human activities releasing GHG emissions into the atmosphere (IPCC, 2014). Carbon dioxide (CO<sub>2</sub>) is the most dominant GHG emitted into the atmosphere at 76% (IPCC 2014). Three-quarters of CO<sub>2</sub> are produced by burning fossil fuels while the remaining amount is attributed to land-use changes such as deforestation (Houghton, 2001). The whole world will feel the effects of climate change, including The Netherlands and Ireland who are likely to see increased temperatures, heavy rainfall, an increased likelihood and magnitude of river and coastal flooding, periods of drought and changes in distribution of plants and animal species. There are also health effects linked to climate change and GHG emissions, such as increased rates of cancer from pollutants and UV radiation. Furthermore, changes in temperature, humidity and precipitation lead to more infectious diseases, such as Lyme disease (Epa 2016, RIVM 2019). Because of climate change effects, it is important to switch from fossil fuels to renewable fuels, to reduce the emission of greenhouse gases. Renewable energy cooperatives (RECs) are concerned with production of RE, so stimulating this concept and getting an understanding of how to make these cooperatives more successful is highly relevant regarding the safety and life quality of Dutch and Irish citizens.

Community Energy bring an added benefit to society which is deeply explored in scientific literature. One identified benefit is community building and self-realisation. Communities involved in community energy are being given more options to make their own decisions which can help communities come together, helping citizens to identify more with their community and raise interest in community activities. Being a part of a community energy project can also provide a high degree of self- realisation resulting in a feeling of pride and happiness from the results that can be achieved (Brummer, 2018). Participating in community energy has been found to increase the awareness of the participants on energy generation and consumption, and RE technologies. This awareness goes beyond the technical aspect of simply understanding how the technology works but raise awareness of energy saving behaviours which lead to changed behaviour and societal norms. The acceptance of renewables is also an added benefit of community participation in energy production particularly when the community can become involved from the beginning of the planning process (Brummer, 2018).

This paper studies a new aspect of community energy by comparing two countries with vastly different success rates in producing community RE. Previous studies have compared countries with high success rates such as Denmark, Germany, and The Netherlands (Oteman, M., Wiering, M. and Helderma, J.K., 2014) but there is a gap in literature on comparisons between strong to weak countries. There is extensive research done on RECs, however little focussing on the effect policies has on the societal aspect of engagement with RECs.

## 2. Theoretical framework

### 2.1 Decentralised energy systems

In recent years, many scholars have highlighted the importance of transitioning from centralised energy system towards a more decentralised energy system (Goldthau, 2014; Morris & Pehnt, 2016; Wolsink, 2012). Traditionally, the energy grid in most cases is driven by large energy plants running on fossil fuels. This system of commercial energy has brought along problems, such as inequalities, external debt, and environmental degradation (Hiremath, Shikha & Ravindranath, 2007). However, with the emergence of RE sources the electricity grid has become more decentralised (Wolsink, 2012). Goldthau (2014) states that there are numerous advantages to offer in decentralised systems over centralised ones. Mentioning factors such as *“reduced costs for transmission systems, efficiency gains and lower grid loss, enhanced reliance on distributed generation involving local small-scale providers, and a larger share of renewables in the local energy mix”* (Goldthau, 2014, p. 136) Furthermore, he states that decentralised systems, infrastructure, and networks can be regarded as an essential element in reaching the low carbon transition.

### 2.2 Energy Cooperatives

The way in which community initiatives are organised can take many different organisational forms for instance community charities, development trusts and shares owned by a local community organisation (Charnock & Alexander, 2007). This research is focused on the term ‘energy cooperative’. Cooperatives are organisations that are owned by the members rather than investors. They are a very democratic form of governance with two main characteristics: the profits of the cooperative are usually divided among the members; and members have a vote which is on a ‘one vote per member’ basis. Being so democratic could also lead to slow decision making or inefficient outcomes if the members do not share a common interest or have the same ideology and goals (Huybrechts & Mertens, 2014).

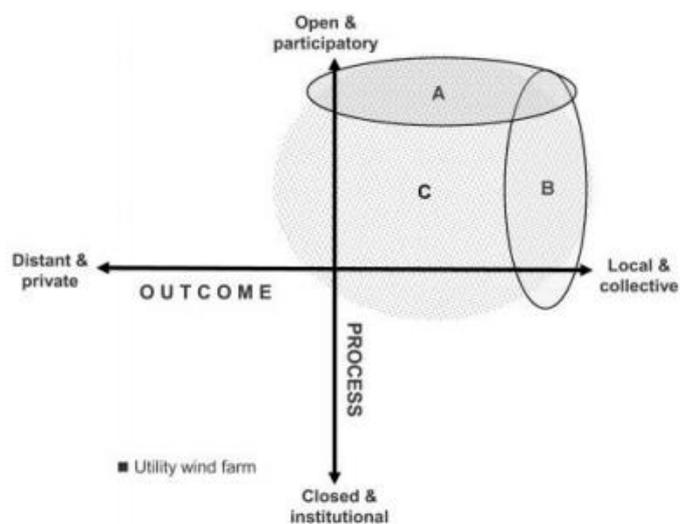


Figure 1 – Different viewpoints on community initiatives. (Walker & Devine-Write, 2008. P.498)

Walker and Devine-Write (2008) created a graph representing different community initiatives’ viewpoints (figure 1). Ideally, RECs are situated in the upper-right area of the diagram where the viewpoint (A) and viewpoint (B) overlap. This point on the graph represents an area where the cooperative is open for all community members to participate (vertical) and that the benefits are flowing back into the community (horizontal). These benefits are not just for instance produced green energy or the financial gains, but represent aspects such as increased employment rate or educational gains. Yildiz et al. (2015) describes cooperatives as economic and social enterprises that are striving for economic, social, and cultural improvements for their members.

Besides the advantages local RECs have for their members, they serve as potential agents of change (Hajer et al., 2015). Local RECs can be useful in reducing the resistance against RE projects (Huybrechts & Mertens, 2014). The well-known term for this is NIMBY (Not in my backyard) which is mostly regarding wind energy. NIMBY means that people are not fundamentally against wind energy, however, are against having the negative externalities near to their residence (Dear, 1992; Wolsink, 2000). Energy cooperatives have been seen to reduce this resilience by providing open participatory planning practices (Wolsink 2000) and by providing some positive externalities of having the RE site nearby (Huybrechts & Mertens, 2014).

### 2.3 Societal aspects

In the field of Environmental psychology four key factors have been distinguished that can influence sustainable energy behaviour. These factors can be broken up into two broad categories 'self-regarding motives' such as *knowledge, ability, and motivation*; and secondly '*social influence*' (Schultz, 2002, Ajzen, 1985, Steg, Perlaviciute, & Van der Werff, 2015, Ostrom, 2003). I relate these four factors to participation in RE cooperatives.

#### Knowledge:

Knowledge refers to how much somebody knows about a specific topic. The knowledge-deficit model suggests that people lack knowledge about a specific environmental problem, such as the need to move from fossil fuels to renewable, or specific knowledge on how they can contribute to a sustainable energy transition (Schultz, 2002). Accordingly, it is often assumed that reducing knowledge deficits by providing information may help to encourage behavioural changes. The same applies for knowledge about RE cooperatives, society may not be properly informed about the existence or the actions of the cooperative (Hargreaves et al., 2013). While people need to be aware of the need for and possible ways to contribute to a sustainable energy transition, knowledge is oftentimes not enough to change behaviour. Hence, knowledge is a precondition for sustainable energy behaviour. Knowing that one should act, does not automatically mean someone will act. Notably, knowledge will have limited effects when people are not motivated to engage in sustainable energy behaviour, or when they do not feel able to engage in such behaviours (ibid).

#### Ability:

A second factor that can influence sustainable energy behaviour, in this case to join an energy cooperative, is the extent to which people feel able too. This ability is generally not limited by access to cooperative itself which are very open organisations, as discussed previously. However, can be limited by things such as lack of financial investment into the cooperative and a lack of time. However, even when people do feel like they can join an energy cooperative, they do not always do so which comes down mainly to the two remaining conditions (Jans, L et al. 2019).

#### Motivations:

Whether or not people engage in sustainable energy behaviour will depend on their motivation. People will be more motivated to engage in sustainable energy behaviours when they evaluate the consequences of such behaviours more favourably, when they perceive the behaviour to have relatively more benefits and fewer costs. Many sustainable energy behaviours have positive collective consequences as they benefit the environment and the quality of life for future generations, as they result in a reduction of CO<sub>2</sub> emissions (Steg, Perlaviciute, & Van der Werff, 2015). However, sustainable energy behaviours generally have negative individual consequences too. For example, investing in energy-efficient technologies and cooperatives can be costly as well as a hassle. The values of individuals affect how important people find different consequences of

sustainable behaviours. There are four types of values linked to decision making in the environmental domain that would provide the motivations to join an energy cooperative:

1. Hedonic values (Focus on seeking pleasure and comfort)
2. Egoistic values (Focus on safeguarding and promoting one's personal resources, such as money and status)
3. Biospheric values (focus on the well-being of nature and the environment)
4. Altruistic values (focus on the well-being of other people and society)

(De Groot & Steg, 2008; Steg & De Groot, 2012; Steg, Perlaviciute, Van der Werff, & Lurvink, 2014).

Bauwens (2016) and Fraj and Martinez (2006) study the motivations and environmental values that influence societies involvement into community RE. While Dóci, G. and Vasileiadou, E., (2015) study the individual motivations for investing into renewables at a community level by taking case studies from the Netherlands. Curtin et al 2019 examines what motivates Irish people to invest into distributed renewable energies.

#### Social context:

Lastly, people are embedded in various social contexts and are members of various groups- friendship, professional, and community that have the potential to influence our energy-related attitudes and behaviours. Literature on community-based cohesion of natural resources argues that trust is an essential ingredient for building a highly cooperative community (Ostrom, 2003). Similarly, when people see themselves as part of the same social identity, they are more likely to influence each other and cooperate with each other to pursue their group's interests (Seyranian, 2014). A spatial factor plays a role here, Bauwens 2016, studied RE cooperatives in Flanders and found that the more concentrated spatial locations of some RECs over others were associated with higher frequency of social interactions. Which, in turn, facilitates exchanges of information and enhances trust and other social norms among members. Thus, spatial closeness further facilitates the activation of energy cooperatives.

## 2.4 Policy aspects

### Definition of policies

Policy making involves both a political and technical process of articulating and matching actors' goals and means. Thomas Dye gives an often-used simple definition of policies as "anything a government chooses to do or not to do" (Dye, 1972). Thus, policies are actions which contain goals and ways to reach them. While many organisations and various actors create policies, this paper focusses on "public" policies made by governments that influence and affect every member of the nation. Dye's definition given above clearly specifies that the primary agent of policy making is a government, rather than any other actor(s). Government bodies enjoy a special status in public policy-making due to the unique ability to make authoritative decisions on behalf of their citizens (Howlett and Cashore 2014). Dye further notes that public policy at its simplest is a choice to undertake some course of action made by a government. Dye highlights that public policymaking involves a fundamental choice on the part of government to act or not to act, which are done by government officials.

## Centralisation/Decentralisation

Centralisation is an approach and method of administration that manages all power and services from the centre. This requires that there be a unification of control and activities under a state authority. Decentralisation in comparison is a method and approach in which responsibilities and powers are transferred from a central administration (national) to a lower level of administration (provincial or municipal) (Ciner C.U (2016)).

## 2.5 overview of cooperatives in NL & IRE

### The Netherlands

Energy cooperatives have grown significantly in the past decade in the Netherlands. Since 2009 more than 500 new RECs have been founded, represented in figures 2 and 3. These cooperatives are producing a total of 313 MW of renewable electricity which is enough to provide 70,000 households (HIER opgeweekt, 2019). The Netherlands focusses on the collective buying of RE, and the self-production of RE (De Moor, 2014). They have high ambitions putting on the climate agreement that 50% of all newly built wind and solar parks will be cooperative owned. There was one or more cooperative in two thirds of all Dutch municipalities.

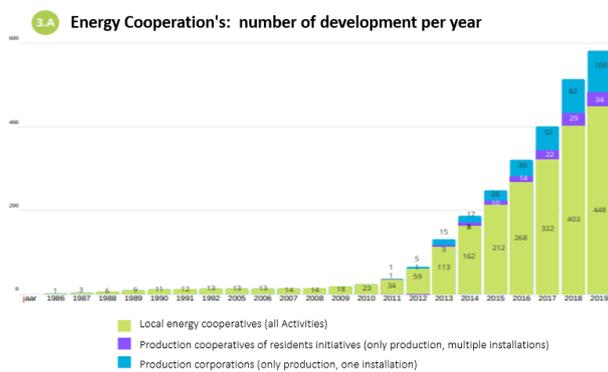


Figure 2 – energy cooperation's: number of developments per year. (HIER opgeweekt, 2019)

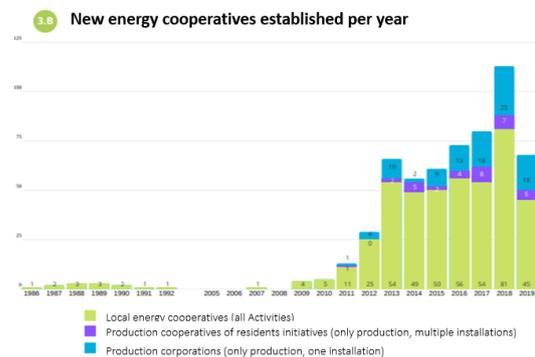


Figure 3 – energy cooperation's – newly established per year (HIER opgeweekt, 2019)

### Ireland:

Energy cooperatives in Ireland are not as successful as in the Netherlands. Although there are over 200 energy communities registered in Ireland to date only 1 (Templederry community windfarm) has been able to produce their own RE on a community scale (Watson, 2020). Ireland is lacking the supports needed for RECs to invest in creating their own RE (Watson et al 2020, Comhar 2011). Watson et al 2020, highlighted 5 main challenges facing RECs in Ireland as:

1. The institutional barriers to creating community renewable energy;
2. The level of voluntary input and personal time required;
3. Managing group dynamics and conflict;
4. The lack of experienced, supportive intermediary agencies across the country;
5. Difficulties in engaging members of the public.

A spokesperson from the Templederry community windfarm stated at an open forum that until these barriers were addressed, they would not recommend other groups try to replicate what they achieved.

## 2.6 Conceptual model



*Figure 4: conceptual model*

### 3. Methodology

#### 3.1 Choice of methods

A qualitative research approach was chosen for this paper as it allows for an in-depth analysis of the view and opinions of participants (Punch 2014). Primary data was gathered using semi-structured interviews with members of RECs. Semi-structured interviews were chosen as they are regarded to be the most suitable to do the type of research conducted in this paper. This is because this type of interview can be coded easily and because it leaves room for open responses (Longhurst, 2016). As this research is looking for motivations of the members to participate in an energy cooperative, the semi-structured interviews with the members of energy gave a deeper and new insights into the topic.

#### 3.2 Primary Data

Semi-structured interviews were conducted with four members of cooperatives, an overview of the interviews is given in table 1 below. Conducting more interviews would have been favourable, however, the lack of respondents is due to lack of responses to invitations to participate. Comparative case study analysis was used to find the differences in community involvement between Ireland and The Netherlands. Interviewees were recruited by email. Face-to-face interviews would have been the most ideal form, however, with the research taking place between two countries and due to the corona virus pandemic, it was not desirable to travel or to meet people in person. Therefore, all interviews were conducted using online telecommunication programs (WhatsApp, Skype, Zoom). The interview questions are seen in the appendix (9.2). Figure 5 shows how the primary data was analysed. The transcribing and coding were done by hand.

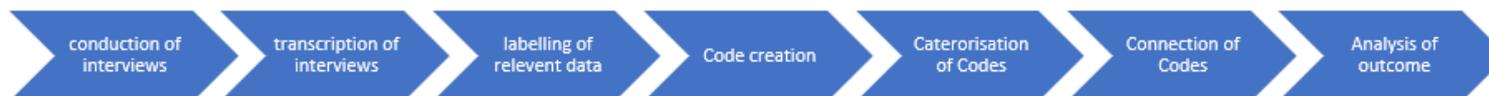


Figure 5 – Primary data analysis scheme

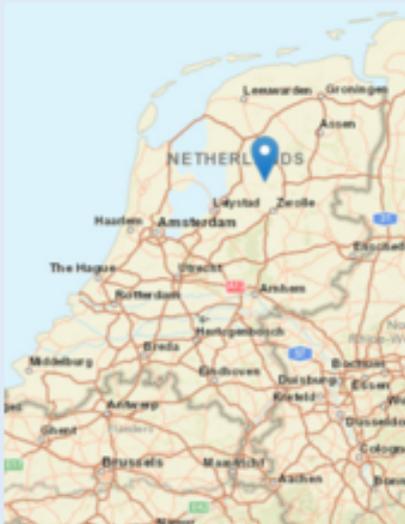
**Table 1: Overview of interviews**

Cooperative	interviewee	Role in Coop	Date & time	Interview Length
Kerry Sustainable energy cooperative	Anne-Marie Fuller (Respondent A)	Board Member	13 <sup>th</sup> Nov 2020 @10am	50minutes
Anan Islands energy cooperative	Avril Ní Shearcaigh (Respondent B)	Manager	13 <sup>th</sup> Nov 2020 @11am	40minutes
Oldemarkt energy cooperative	Hans Schiphorst (Respondent C)	Leading member	12 <sup>th</sup> Nov 2020 @8pm	30 minutes
Energie Van Ons	Wouter Galien (Respondent D)	Employee	17 <sup>th</sup> Dec 2020 @ 1pm	25 minutes

## Overview of studied cases

Name & location of Cooperative	Overview
<p data-bbox="153 320 711 394"><b>Case study 1 (Ireland)– Kerry Sustainable energy cooperative (KSEC)</b></p> 	<p data-bbox="821 320 1458 1178">KSEC was founded in 2014/15 and it spun out of a group called Transition Kerry who had been operating 5-6 years before that date. Transition Kerry had gotten lead funding to do a report on how to get 100% renewable energy in Kerry by 2030 one of the recommendations from that report was to set up an energy cooperative that's where KSEC was founded. The focus for the group is "To substitute our reliance on imported and non-renewable energy with locally sourced and owned energy while educating and assisting ourselves and the wider community on how to reduce energy wastage as we seek to fulfil the vision of a 100% renewable energy Kerry by 2030". To date KSEC has been focussing on retrofitting homes and community buildings to reduce energy demand. They are also now focusing on setting up a number of educational workshops to provide knowledge to the community on what is involved in becoming a sustainable community.</p>
<p data-bbox="153 1187 711 1261"><b>Case Study 2 (Ireland)– The Aran islands energy cooperative</b></p> 	<p data-bbox="821 1187 1458 1697">Established in 2012 as a sub-group of the Aran Development Company, the Aran Islands Energy Co-op aims to secure energy independence for the Aran Islands by 2022. By 2017, 250 homes and community buildings had been retrofitted and over 50 heat pumps, 35 photovoltaic (PV) systems, 9 electric cars, a Tesla battery, light-emitting diode (LED) lighting and energy monitoring had been introduced under the SEAI BEC scheme. There has been a 24% reduction in imported heating fuel. The group is an SEC and is keen to progress its wind energy potential.</p>

**Case study 3 (Netherlands) – Oldemarkt energy cooperative**



Initially investigated exploiting a solar system of about 450 solar panels on the roof of an industrial building on the outskirts of the town. This plan fell through due to none of the roofs of the industrial estate having the load capacity to hold the panels. The cooperative managed to negotiate a public private partnership with the local municipality of Steenwijkerland and together they have developed a 4000-panel solar farm on a patch of land owned by the municipality on the same industrial estate as the initial plan. The park was completed in February of 2020.

**Case study 4 (Netherlands) – Energie Van Ons**



founded in 2014 energie van ons is a cooperative energy company that links 114 local energy cooperatives and supplies electricity to over 6000 customers. The aim of the cooperative is to make sure that money that is made from electricity production in the north of the Netherlands stays within the region and does not go to national government or large energy companies.

Table 2: overview of case studies created by author. Maps created by author using ESRI.

### 3.3 Secondary data

Secondary data was also used in the form of policy papers, they were used to illustrate what policies are, and will be in place from the governments of countries. The policies were broken into codes relating to what level of government they are set and what they provided. Existing academic literature was analysed in the form of literature review, to provide an insight into existing theory on RECs aspects and environmental psychology to see what motivates people to act sustainably and the attitudes towards RE. Some background information was taken from the websites of the selected RECs and previous papers they had produced.

### 3.4 Ethical Considerations

The research handles some sensitive topics such as the motivations to get involved in an energy cooperative are personal motives, relating to economic capability and link to the community. There are also critical reflections of policy makers and other governmental bodies. Therefore, the answers of the interviews must be handled with care. This was done by keeping the information provided confidentially in a locked password protected computer. The interviewees were informed and understood that their participation was fully voluntary and that they had the right to decline any questions they were uncomfortable in answering, furthermore could withdraw from the study up to three weeks after the interview was conducted. The interviewees were given a consent form stating these aspects which is available in the appendix 9.1.

## 5. Results

In the following section, the findings from the interviews and policy documents are presented. This is divided into two sections, policy results and social aspects results.

### 5.1 Policy results

Firstly, the results from the analysis of policy documents are presented which are divided into two sections: the Netherlands and Ireland. Followed by a comparative between the policy aspects provided by the interviews.

#### The Netherlands

The Dutch national government has introduced three policies that help RECs to produce energy. These three policies include the Salderingsregeling, the Regeling Verlaagd Tarief and the SDE (Stimuleringsregeling Duurzame Energie) regulation (RVO 2018). These regulations are explained in table 3.

Policy name	Explanation
<b>Salderingsregeling</b> (balancing scheme)	Meant for small energy consumers. Produced surplus solar energy will be fed to the grid, can be subtracted from the energy taken from the grid. Consumers will pay for the energy they used from the grid by their energy supplier, minus the energy they produced by themselves.
<b>Postcoderoosregeling</b> Also called - Regeling Verlaagd Tarief (reduced rate scheme)	This regulation is meant for energy cooperatives, producing renewable energy. Members of energy cooperatives who jointly own a production installation and live within the postcode in which the installation is located, plus the post code areas immediately adjacent to it entitles you to a discount on your energy tax. This is a reduction to zero for the first bracket of energy tax applied to the personal energy bill of the members up until a maximum consumption of 10,000kWh per year.
<b>Stimuleringsregeling Duurzame Energie (SDE)</b> (Sustainable Energy Incentive Scheme)	The SDE is an incentive scheme to produce renewable energy. The SDE is an operating (feed-in-tariff) subsidy. Producers receive a guaranteed payment (subsidy) for the energy they generate from renewable sources. The production of renewable energy is not always profitable, as the cost of production is higher than for fossil energy. SDE compensates for the difference between the cost price of renewable energy and the market value of the energy supplied.

Table 3 – overview of current policies in Netherlands. Table created by author. Source of data RVO

Further, the provinces and municipalities of the Netherlands often have stimulating regulations for RE production, however, these will not be delved into as this paper focuses on national policies. In the autumn of 2020, the ministry of Economic affairs and climate signed an agreement to provide

resources for the Development fund for RECs. This fund will allow RECs to borrow money from this fund for 1, personnel support and 2, out-of-pocket costs for specialist research or other necessary sub-steps to arrive at a financeable business case and an irrevocable permit for the projects.

## Ireland

Ireland being a very centralised governmental structure the policies are decided at a national level. The sustainable energy authority of Ireland (SEAI) has the leading role in transforming Ireland into a society based on sustainable energy technologies and structures. SEAI is financed by Ireland's Structural Funds Programme, which is co-funded by the Irish Government and the European Union (EU). Irish policies are seen in table 4.

Policy Name	Explanation
<b>The Better Energy Communities programme (BEC)</b>	<p>Better Energy is Ireland's national retrofit initiative aimed at upgrading building stock and facilities to high standards of energy efficiency and renewable energy usage, thereby reducing fossil fuel usage, energy costs and greenhouse gas emissions. The programme focusses on improving the energy efficiency of Ireland's building stock and supporting the use of renewable energy through:</p> <ul style="list-style-type: none"> <li>• Delivering a cost-effective approach to boosting the energy efficiency of low-income houses in mixed ownership estates.</li> <li>• Demonstrating sustainable financing mechanisms to fund retrofits and harness project savings.</li> <li>• Creating innovative partnership approaches that facilitate community access to existing local resources, thereby boosting and sustaining the impact of BEC support.</li> <li>• Stimulating employment through sustainable energy upgrading projects.</li> <li>• Supporting small scale renewable energy projects.</li> </ul>
<b>Renewable energy support scheme (RESS) (New)</b>	<p>The RESS is currently on a trial period with seven communities around Ireland. The RESS is characterised by increasing community participation in, and ownership of, renewable energy projects. Policies and support measures that are put in place to ensure:</p> <ul style="list-style-type: none"> <li>• Financial support for community-led projects across early phases of project development including feasibility and development studies (grants, legal and technical assistance).</li> <li>• Community Benefit Fund and Register standardised across the sector. It is proposed that this contribution is set at €2/MWh for all RES-E generation produced and seeking support via RESS auctions.</li> </ul>

Table 4: overview of current policies in Ireland. Table created by author. Source of data SEAI

The policy results relating to policy from the interviews are presented below. The question asked was *what policies do you receive, and do they help or hinder your energy cooperative?* Table 5 visualises these results and compares The Netherlands and Ireland on whether the policy contributes or limits the organisation.

			Netherlands	Ireland
<b>Policies</b>	<b>Current</b>	<b>Contributing</b>	<ul style="list-style-type: none"> <li>➤ The Postcoderoosregeling</li> <li>➤ Stimuleringsregeling Duurzame Energie (SDE)</li> <li>➤ No permit is needed to develop a solar roof.</li> <li>➤ Energie Samen is a national cooperative lobbying for all energy cooperatives in the Netherlands in parliament.</li> <li>➤ In the Dutch climate agreement, it is stated that there should be 50% local ownership of renewables.</li> </ul>	<ul style="list-style-type: none"> <li>➤ The Better Energy Communities programme (BEC)</li> </ul>
		<b>Limiting</b>	<ul style="list-style-type: none"> <li>➤ Lack of grid connection</li> <li>➤ Permits for land use take a long time.</li> </ul>	<ul style="list-style-type: none"> <li>➤ No funding available for the day to day running of the COOP.</li> <li>➤ No support for setting up a RES.</li> <li>➤ No feed-in-tariff</li> <li>➤ Very difficult to get planning permission.</li> <li>➤ Lack of grid connection</li> <li>➤ Centralised government makes it hard to get things done locally.</li> <li>➤ The BEC scheme has a lot of “red tape” and rushed timelines.</li> </ul>
	<b>Future</b>	<b>Wants</b>	<ul style="list-style-type: none"> <li>➤ Development money</li> </ul>	<ul style="list-style-type: none"> <li>➤ Funding for paid workers</li> <li>➤ Renewable energy support scheme (RESS)</li> </ul>

Table 5: overview of interview results relating to policy aspects.

### Contributing Policies.

There are major differences between the supporting policies between the Netherlands and Ireland that affect the success of RECs in the countries. The Netherlands has higher ambitions for community owned renewables, it is stated in the climate agreement that 50% of RE production should be owned by the community (climate agreement 2019). Energie Samen, a cooperative who represents most cooperatives and private energy generation in the Netherlands to the ministries and in the house of Representatives. They lobby for improvements for the position of sustainable energy production within the current possibilities and make proposals for new laws and regulations regarding local energy production. They also put pressure on the network operators to improve their performance and contribute ideas about the future of the energy system (energie samen). From my semi-structured interviews, the postcoderoosregeling subsidy is found to be the most used Dutch national policy. Respondent D describes this “The postcoderoosregeling is especially built for cooperatives, it is the most used national subsidy which makes it very easy for cooperatives to start

a solar roof and also make it very profitable for their members”. In comparison the Irish BEC scheme, supports RECs in retrofitting properties to reduce energy demand rather than produce RE.

#### Limiting policies.

The results show that Ireland lack the supporting policies that are in place in the Netherlands described in the previous section.

*“So, at the moment we haven’t set up a RES or anything like that simply because actually the support isn’t here in Ireland for us to be able to do that” – Respondent A*

Support is needed in terms of financial support in the form of grants and subsidies. There is very little funding available to initiate a RE system as the SEAI, who provide the funding to Irish RECs have not been focussing on promoting this as stated previously their goals are on retrofitting homes, energy upgrades and reducing energy demand. It has been mentioned that it is difficult to build a business case as there is no feed-in-tariff, meaning that any excess electricity you generate becomes wasted and you get no financial gain from it.

*“they have removed the incentive for micro-generation”- Respondent A*

Furthermore, another major constraint highlighted in Ireland is the lack of supporting knowledge and experience. The SEAI provide mentors to do an energy masterplan and help the energy communities by providing knowledge and expertise in the field. However, respondents have indicated that it can be difficult to secure a mentor due the high demand of mentors being needed, and the mentors do not have enough knowledge to provide.

*“We need more technical and legal supports; we know all the basics ourselves but it’s the next layer when you really want to do it that’s lacking. I think it’s because it hasn’t been done much here before”. – Respondent B*

Cooperatives in the Netherlands did not mention that they were short on knowledge in fact the opposite was stated.

*“So, there is a lot of knowledge floating around from people on how to start a local solar cooperative; so, all that knowledge is floating around so what we did was just acquire that knowledge”. - Respondent C*

These differences in quotes highlight the different levels of experience with successful RECs between the Netherlands and Ireland.

#### Wants

When asked what could be implemented to help the cooperatives reach their potential development funding was mentioned as the most important from both the Netherlands and Ireland. By having access to a development fund, a lot of risk would be taken away from the cooperatives and they would have much more security in the investment. This development fund has been recently introduced in the Netherlands and as a trial in Ireland. Therefore, it will be interesting in the future to see what impact it will serve.

## 5.2 Societal aspects

Societal Aspects	Netherlands		Ireland	
	Characteristics of members	<ul style="list-style-type: none"> <li>➤ Most prominent are retired males.</li> <li>➤ Increasing number of young workers when the cooperative has the finance available to pay staff.</li> <li>➤ Middle class</li> </ul>	<ul style="list-style-type: none"> <li>➤ Most common are part-time and retired.</li> </ul>	
	Motivations	<ul style="list-style-type: none"> <li>➤ Financial</li> <li>➤ Community support</li> <li>➤ Sustainability</li> <li>➤ lower resilience to RES</li> </ul>	<ul style="list-style-type: none"> <li>➤ Sustainability</li> <li>➤ Community support</li> <li>➤ Sustainable employment</li> </ul>	
	Constraints	<ul style="list-style-type: none"> <li>➤ Lack of paid workers</li> <li>➤ Large amount of work</li> </ul>	<ul style="list-style-type: none"> <li>➤ Lack of knowledge</li> <li>➤ Value action gap</li> <li>➤ Large amount of work</li> </ul>	

Table 6: overview of results of societal aspects

### Characteristics of members

The members of RECs studies in the Netherlands and Ireland have similar age and occupations characteristics. There is a wide range of ages and mixed working status of members of the RECs; however, the active volunteers and board members in the studied cooperatives are all predominantly retired or part-time workers. The clear reason stated for this is that it takes a lot of time to be involved in an energy cooperative respondent C stated, "It's basically a part-time job". All respondents to the interviews state that they spend a lot of time on administrative work, but also on educating themselves on the possibilities and constantly advancing field of RE. An interesting statement from one of the Dutch cooperatives state that the members are primary middle class giving the explanation of how you needed a little bit of money to be able to invest.

### Motivations

The most noticeable difference in motivation to join an energy cooperative between the cases in The Netherlands and Ireland is that in the Netherlands egoistic values were mentioned i.e., Receiving a financial gain, while in Ireland they were not.

*"people join the cooperative is if you put money in the bank you get an interest rate of more less 0% but if you put it into the cooperative your return on investment will be about 6% so for some people that was the reason, financial reason" – Respondent C.*

Biospheric motivations such as "just want to improve the planet" Respondent C and "Reducing CO2 emissions" -respondent D were mentioned as causes of motivations for every case in Ireland and the Netherlands.

Altruistic motivation was also mentioned in every semi-structured interview as a motivation to join an energy cooperative "doing something for the community" - respondent C. Energie van ons stated

the reason that they decided to set up the energy cooperative was to make sure that the money generated from local electricity generation did not go to the national government or to big energy companies but stay in the community. They stated that they were sick of the national government and large companies exploiting the Northern Netherlands such as the case with the Groningen gas field. Hedonic motivations in Ireland and Netherlands mainly focuses on the opportunity to get to know the community better and the option of having fun while working together and being creative.

When asked about what they feel would entice new members to join their energy cooperatives two commons answers were provided. Firstly, communication. The Aran islands energy cooperatives noted themselves that by providing more communication about their work the more members became involved. They noticed that the work that goes on in an energy cooperative is often behind closed doors doing administrative work and people “almost forget your there”. Which is why they started publishing a newsletter every three months, and people started to read it and engage with which provided knowledge to the community about the work that is being done, and people wanted to get more involved to contribute to the programme. Energie van ons also stated that communication would help through some online marketing or media coverage as they note that the cooperatives are not known by the broader sense of society, particularly young working people.

The second was the ability to pay workers. Respondent A noticed that it is hard to rely on volunteer workers and stated that:

*“You come across the same people volunteering for everything”.*

This was also noticed on the Aran islands stating that:

*“A lot of people are on the same committees”.* – Respondent B

These volunteers take on a lot of work that is very time consuming. The work they commit to is mainly administrative work filling in complicated paperwork applying for schemes and access to planning permission, these quotes from my interviews give an example of this:

*“you need to find the times to work outside the board meeting and that’s hard”* – Respondent A

*“it’s basically a part time job”.* – Respondent C

*“I can tell you the BEC scheme is not straightforward yeah I don't know if there's a lot of paperwork or red tape or regulations in other countries but in Ireland there's an excessive amount of stuff”-*  
Respondent A

In the Netherlands it was said by energie van ons that particularly over the past two years the RECs have generated enough money to hire workers and are become more professional. Which has given them the opportunity to employ younger staff members.

## 6 Discussion

As mentioned in the theoretical framework, the Netherlands have seen a large rise in the number of successful RECs in the last decade, as compared to Ireland who have just one successful energy cooperative. In this section the main differences between the two countries will be discussed to find what is driving these differences in success regarding institutional and social aspects.

It is shown in the results that the Netherlands has a better institutional framework to help RECs become successful, than what is in place in Ireland. Ireland has many limiting institutional factors that make it very difficult for RE cooperatives to become successful in producing renewable energy. The biggest influence is that the Dutch policies focus on generating RE while Ireland's scheme focuses on efficiency improvements. The Dutch policies (Postcoderoosregeling, SDE and Salderingsregeling) provide a payment to either the cooperative members or the cooperative itself for the energy that they produce as a feed-in-tariff. These payments add security and make it possible to build a strong business case as a cooperative. In Ireland, as there is no feed-in-tariff available for community energy production, there is no incentive to produce energy and it is very difficult to build a business case. Having access to a development fund which is being brought in with the intention to lower the financial risk on RECs should help making the business case more achievable.

Furthermore, the levels of knowledge differ drastically between the Netherlands and Ireland. Research conducted in the UK illustrated the importance of supporting community energy projects with expertise (Hargreaves et al., 2013). Lack of knowledge was mentioned in both case studies in Ireland as being a major constraint. Watson et al (2020), states that the lack of experience and supportive bodies was a barrier that needed to be addressed. However, Lack of knowledge has not affected the case studies in the Netherlands. Knowledge is built with experience and as stated, most Dutch municipalities have an energy cooperative, meaning that a lot of knowledge has been built up on the challenges cooperatives face particularly in the development stage. Energie Samen also provide knowledge and experience support to energy cooperatives initiatives. Therefore, projects in the Netherlands do not get stuck in the early development stage due to a lack of knowledge as what occurs in Ireland.

As mentioned, most active members of the RECs are retired or work part time due to the workload required to run an energy cooperative, a full-time worker would not have the time. The results show that there is a lot of work put on the cooperatives volunteers who mainly deal with administrative burdens. Previous studies highlight the roles of volunteers to be very challenging. Watson et al (2020) provided quotes from interviews that she had conducted which are supportive of my results "very time consuming, there is a limit to volunteering". Having such workload put on volunteers can cause a burnout, which is why recently Dutch RECs have started to employ staff members. Due to stronger supporting Dutch policies, the cooperatives can make a large enough profit to hire staff members to take the burden off volunteers. Irish RECs are not able to make profits due to the difficulties they face trying to generate their own energy. Therefore, to have the ability to pay a staff member this would need to come from a subsidy. However, the SEAI does not provide this. "Only external labour costs (e.g., consultant costs) are funded under the programme, Internal labour costs i.e., employees, are not an eligible cost" (SEAI 2018). Being middle class was also mentioned as a common characteristic of members in Oldemarkt energy cooperative, this relates to the factor of ability. You need to have the financial resources available to invest into a cooperative. Providing the citizens with a newsletter was seen to increase membership into the RECs. The newsletter is a form of knowledge which is a fundamental factor to change behaviour (Schultz, 2002).

The literature shows four different values that influence motivations to join an energy cooperative Hedonic values, Egoistic, Biospheric and Altruistic values. The respondents from Netherlands and Ireland share three of these values, but egoistic values while mentioned in the Netherlands, were not stated as reasons to join an Irish energy cooperative. Biospheric, Altruistic and Hedonic values are also found in previous literature as motivations to invest in RECs in Ireland and Netherlands (Dóci & Vasileiadou (2015), Curtin (2019), Bauwens (2016)). Dóci, Vasileiadou (2015) stated that financial gains through cutting the costs in energy bills and receiving a profit from the investments were the most important motives for Dutch citizens to invest. Curtin et al (2019), found that the absence of a sufficient return on investment is the biggest obstacle to overcome to increase motivations of Irish citizens to invest in renewables. This shows that to increase investment into RECs the cooperatives themselves need to become more profitable. However, as previously seen in Ireland, there is not the supporting body to enable cooperatives to become profitable by producing RE.

## 7 Conclusions and recommendations

To conclude the research questions will be answered and a list of recommendations that based on the research findings will improve the success of energy cooperatives in Ireland and the Netherlands. To answer the research question of this paper firstly the sub research questions will be answered. Sub research question one asks, "What motivates the citizens to invest and participate in renewable energy cooperatives?". Three main motives were given between Ireland and the Netherlands biospheric motivations, Altruistic motivations, and egoistic motivations. The major difference being that egoistic motivations were only mentioned in Dutch cases, the egoistic motive most mentioned was receiving a financial gain from investing into an energy cooperative. The reason being that Dutch RECs in general are successful organisations that make profits from their investments and that investing is quite a safe. In comparison, as noted before, although there are roughly 300 Irish energy communities, only one of those is successful in generating RE on a community level. Therefore, reviving a financial gain from investing into an energy cooperative in Ireland is less likely and the return on the investment could take a long time.

The second sub question that needs to be answered refers to the regulatory framework that is in place within the two countries relating to community RE production. "What regulatory framework is in place that affects the opportunity to create a successful renewable energy cooperative?". As seen previously, the Netherlands regulatory framework is more supportive to RECs than the Irish framework. This is due to the Dutch national government acknowledging the potential for community energy far more than the Irish government who have been focussing on large wind projects. The Dutch supporting policies in place, (Postcoderoosregeling, SDE and Salderingsregeling) make it very viable to generate RE as a cooperative. Whereas the Irish BEC scheme is not supporting to producing RE at a community level but focuses on reducing energy demand by retrofitting properties.

The third sub question relates to the different levels of government where the supports come from. "Do the renewable energy cooperatives receive any incentives from any level of government?". All studied polices come from national level. However, in the Netherlands, the municipalities and provinces can provide further supports to the RECs in their regions which differ between every municipality and province. In Ireland, the centralised government limits the support that local governments can offer to the energy communities within their areas.

Finally, to conclude the main research question will be answered "How do policies and sociological aspects between The Netherlands and the Republic of Ireland concerning citizen involvement in producing renewable energies affect the success of renewable energy cooperatives?" The research findings show that policies affect the success of RE cooperatives far more than sociological aspects. Without strong supporting policies it is very difficult for RECs to be successful as seen in Ireland. The motives to join RECs are the same in that people are aiming to improve the environment and the community, but with strong supporting policies they can also become profitable which can attract new members who are looking to invest such as seen in Netherlands.

## Recommendations

- Recommend national governments to set high ambitions and targets for local energy production and show encouragement to citizen initiatives.
- Reliable sources of core funding being made available from an early stage of development to help with feasibility, planning and construction.
- Grants and schemes should be straightforward and accessible, without overly complicated paperwork and excessive amounts of 'red tape'.
- Having the availability of funding available for the cooperatives to have the ability to hire members. To take the pressure off volunteers.
- Policies barriers such as lack of feed-in-tariff, difficulty in securing planning permission and obtaining access into the grid should be lifted.
- Cooperatives can provide regular newsletters to the members of the community with current activities and aims.
- There needs to be more intermediary supporting bodies to provide guidance and knowledge to the energy cooperatives.

### 7.1 Limitations and further research

The findings of the research are limited by the lack of studied cases. Due to COVID-19, participant recruitment was only possible via digital means which may have resulted in the limited number of cases. The language barrier between the author and potential Dutch respondents may have also played a part in the difficulties finding interviewees. Therefore, with only two respondents from each country, although the data provided by them was very thorough, it may not be representative for all cases within the two countries. Furthermore, the word count limit, drastically limited the level of detail able to be discussed.

Further research into this topic could be also study counties that are even more developed than the Netherlands such as Denmark and Germany. By studying these countries as well the lessons learnt could be of higher quality than the lessons learnt from studying the Netherlands.

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## 9. Appendix

### 9.1 Participation form



university of  
 groningen

faculty of spatial sciences

research ethics committee

#### **Agreement to participate**

in (Niall Madden) research project: Bachelor thesis

Title: A comparison between The Netherlands and Irelands renewable energy cooperatives.

*This research studies ....*

- I have had the opportunity to discuss this study. I am satisfied with the answers I have been given.
- I understand that taking part in this study is voluntary and that I have the right to withdraw from the study up to three weeks after interview, and to decline to answer any individual questions in the study.
- I understand that my participation in this study is confidential. Without my prior consent, no material, which could identify me will be used in any reports generated from this study.
- I understand that this data may also be used in articles, book chapters, published and unpublished work and presentations.
- I understand that all information I provide will be kept confidentially either in a locked facility or as a password protected encrypted file on a password protected computer.

Please circle YES or NO to each of the following:

I consent to my interview being audio-recorded YES / NO

I wish to remain anonymous for this research YES / NO

#### **IF YES**

My first name can be used for this research YES / NO

#### **OR**

A pseudonym of my own choosing can be used in this research YES / NO

**"I agree to participate in this individual interview and acknowledge receipt of a copy of this consent form and the research project information sheet."**

Signature of participant: \_\_\_\_\_ Date: \_\_\_\_\_

**"I agree to abide by the conditions set out in the information sheet and I ensure no harm will be done to any participant during this research."**

Signature of researcher: Niall Madden \_\_\_\_\_ Date: \_\_12/11.2020

## 9.2 Interview guide form:

After introduction and the agreement to participate has been done.

1. Firstly, can you discuss who you are and what is your role in the organisation?
2. Ask about the specific community.
  - a. *History*
    - i. What type of organisation is it (cooperative, Ltd, charity etc)? And how is the organisation run/operated?
    - ii. How was the organisation founded and when?
    - iii. Why was the organisation created what where the goals?
    - iv. What unexpected disappointments and positives have you experienced along the way to community energy?
  - b. *Future*
    - i. Have your aims or goals changed over time or not?
    - ii. What is the reason for the different goals? (if stated)
  - c. *Type of members*
    - i. How many members are involved in your organisation?
    - ii. What are the different roles that the members involve themselves with?
    - iii. What type of members do you have (looking for different working status (Unemployed, Working, Part-time, retired)/ age/ gender)?
    - iv. What type of people are excluded? And for what reasons?
  - d. *Energy system*
    - i. What type of energy are you utilising in your organisation?
      1. And why?
      2. What is the scale of energy being produced? (number of turbines/panels or amount of energy produced)
      3. Where and how was the site chosen for you to place your renewable energy system?
3. *Is there a strong sense of community in your region?*
  - a. Do you feel that the organisation your involved in brings an added benefit to the community?
4. *Policies?*
  - a. Can you talk about what policies/schemes have helped or hindered your organisation?
    - i. Where these from local, regional, or national level
  - b. Did you receive any financial incentives or grants?
    - i. Can you also discuss how the project is financed?
  - c. How was the process of gaining planning permission for the site?
  - d. Did you get any local resistance to the project?
    - i. Community
    - ii. Politicians
  - e. Ask about what they think will help the most in terms of policies to make them more successful.
5. *Personal incentives*
  - a. On a personal level what is the reason that you decided to get involved in a renewable energy community?
    - i. Do you feel that most the members have the same reasons as you?
  - b. How time consuming is it for you?
  - c. What do you feel could be attractive to get more members involved in such projects?
6. *Finishing*
  - a. Is there anything else that you feel you would like to say about this topic that you have not mentioned yet already?

