

The essence of energy: On how energy cooperatives can contribute to energy poverty alleviation in The Netherlands



Thijs Habets

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Author: Thijs Habets

Student number: S1043367

Institution: Radboud University

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Supervisor: Maria Kaufmann

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Preface

This thesis is the result of almost a year of committed research. Conducting this research was a great learning experience and has definitely given me insight into where my interest lies to start my career. I want to give a special thanks to particular people who have helped me throughout this journey.

I want to start off by thanking Maria Kaufmann for supervising my thesis. She has given me valuable feedback and gave me new insights whenever I felt stuck.

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Abstract

Background: Energy prices and energy poverty have risen in The Netherlands because of the COVID-19 pandemic and the Russian-Ukrainian war. Energy poverty impacts people's capabilities and their overall ability to be who they want to be. At the same time, the number of energy cooperatives in The Netherlands has increased rapidly since 2005. The question remains how energy cooperatives can help alleviate energy poverty in The Netherlands. This is analysed according to the capability approach.

Methods: The methods used are interviews and a document analysis.

Results: Energy poverty affects people's capabilities. Energy cooperatives offer different measures against energy poverty. However, during implementation of these measures they experience certain barriers that complicate implementation and certain opportunities for them to make use of. These barriers and opportunities function as conversion factors.

Conclusions: The effectiveness of the measures that energy cooperatives provide, should be assessed along four indicators: the extent to which the measure saves energy, the extent to which the measures save money, the amount of information about personal energy usage that is retained and the degree of personal contact. The more indicators that are present, the more adequate the energy help and the more capabilities are improved.

Keywords: energy poverty, energy cooperatives, capabilities, indicators

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1. Introduction

The importance of energy to human society cannot be overstated. As Vaclav Smil accurately put it, “energy is the only universal currency” (2017, p.1). Access to energy is a must for comfortable living and a lack thereof means not being able to fulfil basic social needs (Gaye, 2007).

Recently, the Dutch energy market has been affected by two major crises, which have had impactful consequences for energy provision and energy prices; the COVID-19 pandemic and the invasion of Russia into Ukraine. COVID-19 but especially the Ukrainian-Russian war resulted in sharp increases in energy prices (Berben et al., 2022). After the COVID-19 pandemic, the Dutch energy market needed time to recover from the shocks it had to absorb from the pandemic. During this recovery phase, Russia invaded Ukraine. The Netherlands has traditionally been very dependent on fossil fuels and oil imports from Russia (Luo et al., 2022; Martínez-García et al., 2023). In response to the invasion, many European countries sanctioned Russia and ended their trade agreements with Russia. The Netherlands followed, which caused rises in energy prices and subsequently in energy poverty (Mulder et al., 2023). Whereas previously energy poverty did not receive much attention, The Netherlands has started monitoring energy poverty since the beginning of 2022 (Van Tilburg et al., 2024). Energy poverty affects the quality of people's well-being. It affects their overall health and in general their ability to be who they want to be. Understanding energy poverty from an income-perspective does not highlight the effects that energy poverty has on people's capabilities. Hence this research uses the capability approach to assess energy poverty alleviation.

A relevant development to the recent increase in energy poverty is that of the liberalisation of the Dutch energy market. This liberalisation, that started at the beginning of the 1990s, meant an energy market with more room for commercial parties (Koster, 1998). Additionally, in 2006 the Dutch energy market was vertically separated, which means that the distribution and production of energy was split. The distribution and production of energy could not be owned by the same company anymore (Mulder & Shestalova, 2006). The Dutch government took control over the distribution while the production of energy could now also be carried out by private energy companies (Kooij et al., 2018).

This privatization was introduced in the Dutch energy market to stimulate the production of energy at the lowest societal cost. That is something that public energy companies did not always succeed in (Nieuwenhout, 2022). It was believed that the privatized energy companies would succeed in this as they seek for the highest profit margins and lowest possible

prices (Oteman et al., 2017). However, providing energy for the lowest price manageable, does not translate to producing energy at the lowest societal cost. Both the internationally owned energy companies, like Vattenfall and Essent, and the Dutch energy companies, want to keep their profit margins as large as possible while neglecting the societal interests of The Netherlands (De Bijl & Fourie, 2019). This is especially a concern because the energy companies are one of the leading actors in long term sustainability transitions like decarbonization and the energy transition.

This development gave way for a bottom-up approach to energy production: energy cooperatives. Through energy cooperatives, citizens have taken a more active role in the energy transition by providing their own means of energy provision (De Bakker et al., 2020). Rather than the energy transition being handled by larger energy companies, energy cooperatives allow citizens to participate and realize a just energy transition (Končalović et al., 2023). In The Netherlands, the number of energy cooperatives has increased from 13 energy cooperatives in 2005 to 702 energy cooperatives in 2024 (Schwencke & De Graaff, 2025). Based on an estimation, 131.180 people are part of these energy cooperatives.

1.1 Research problem statement

The above-mentioned rise in energy prices and the privatization of energy production in the Netherlands, have put pressure on the Dutch energy market. Subsequently energy poverty has risen in The Netherlands, putting the accessibility and affordability of energy for citizens under threat (Day et al., 2016).

Energy cooperatives have shown to be promising, and wind cooperatives especially have proven to be successful in seriously contributing to the overall sustainable energy production in The Netherlands (Hufen & Koppenjan, 2015; Germes et al., 2021). They are bottom-up initiatives and are rooted within communities (Van der Schoor et al., 2016). Hence energy cooperatives are, or have, become socially involved within the social domain of energy, which includes energy poverty.

Overall, 42 percent of all energy cooperatives, in one way or another, provide measures to save energy (Schwencke & De Graaff, 2025). Seventeen percent of all energy cooperatives address energy poverty and fifteen percent of all energy cooperatives educate and / or provide energy coaches. The measures that energy cooperatives provide to alleviate energy poverty, are fragmented depending on the capacities of the energy cooperatives (Young & Halleck Vega, 2024). There is a large variety of measures being implemented with varying success. This varying success can be resolved if energy cooperatives get a better grip on the effects that the

measures they implement have.

1.2 Research aim and research questions

To get a better understanding of energy poverty alleviation by energy cooperatives, this research will look at what measures are being implemented by energy cooperatives, the barriers they face while implementing, the opportunities they face while implementing and the effects that these measures have on individuals. The aim of this research is to analyse how energy cooperatives are able to contribute to alleviating energy poverty in The Netherlands, while focusing on the effects it has on people. This will be done according to the capabilities approach (Nussbaum, 2000). This research aim leads to the following main research question and subsequent sub-questions:

Main question: How can energy cooperatives help alleviate energy poverty in The Netherlands?

1. What measures do energy cooperatives provide to address energy poverty?
2. What barriers do energy cooperatives face when implementing measures against energy poverty?
3. What opportunities could energy cooperatives make use of when implementing measures against energy poverty?
4. How do the measures provided by energy cooperatives affect the capabilities of those living in energy poverty?

1.3 Scientific and societal relevance

1.3.1 Scientific relevance

Previous research has already focused on energy cooperatives and their measures regarding energy poverty alleviation. Hanke et al. (2026) and Parreño-Rodríguez et al. (2023) have researched the role of energy cooperatives in energy poverty alleviation within Europe. Hanke et al. (2026) emphasize the role of energy cooperatives within energy poverty alleviation, along the social innovations that they provide. Addressing the importance of social relations and the ways in which those enable or prevent energy cooperatives from alleviating energy poverty. However, the measures from energy cooperatives that they mention are kept unspecific. Parreño-Rodríguez et al. (2023) are more specific in the measures they address but lack depth regarding their analysis of energy poverty. Young & Halleck Vega (2024) have also researched the role of energy cooperatives in energy poverty alleviation. They are, as of yet, the only

authors that have researched this topic specific to The Netherlands. They provide a detailed list of measures that Dutch energy cooperatives provide but do not research the effectiveness of said measures.

This research will address these gaps by providing an overview of energy poverty alleviation measures, identifying barriers and opportunities within the implementation of said measures and, most importantly, assessing what makes a measure effective or not.

In addition, earlier research has focused on assessing energy poverty using the capabilities approach. Day et al. (2016) have researched broadly what energy usage means to people, regarding their capabilities. Chipango (2021) and Pelz et al. (2018) argue in favour of the capability approach instead of utilitarian approaches to energy poverty. Utilitarianism as a rationale, looks at energy poverty in the sense of the societal costs and benefits of addressing energy poverty. The capabilities approach however, seeks to understand the consequences that energy poverty has on individuals. By using the capabilities approach, this research will take the individual person as a starting point. Bartiaux et al. (2021) and Pellicer-Sifres et al. (2021) describe the consequences of energy poverty, through a capability lens.

There is yet to be research done about energy cooperatives regarding energy poverty alleviation through the lens of the capability approach in The Netherlands. Additionally, the above-mentioned studies barely touched upon the dynamic of conversion factors within energy poverty. This research will contribute to that conceptual gap by framing the measures, its barriers, the opportunities and its effectiveness through the conversion factors.

1.3.2 Societal relevance

Energy cooperatives pursue greater societal interests apart from financial and private interests, particularly combatting energy poverty (Dudka et al., 2024). Depending on the degree to which governments take a prominent role in providing public services, energy cooperatives take more or less responsibility upon themselves in addressing energy poverty. To provide adequate help, energy cooperatives have to supply adequate measures. This research will create a better understanding of what makes certain measures effective. In this way, energy cooperatives can use this information in energy poverty alleviation.

Additionally, governments can struggle addressing energy poverty (Bouzarovski et al., 2021). Although there is progress made in the way that municipalities allocate financial means, a structural approach to combatting energy poverty is missing (Van Tilburg et al., 2025). This research will create a clearer picture of what constitutes adequate energy poverty alleviation. This can be useful for governments when allocating financial means which in turn could create

a more structural plan for energy poverty alleviation.

2. Literature review and theoretical framework

To create a better understanding of the context that this research finds itself in, a literature review will be conducted to analyse the current trends and existing literature within the field. Afterwards the framework around which this research surrounds itself will be introduced, the capabilities approach. The framework lays the basis for the assumptions made in this research and contextualizes the results.

2.1 Literature review

Energy poverty

Energy poverty is context dependent and hence the definition also changes based on the region in which energy poverty is being measured. This research will make use of the following definition of energy poverty, maintaining a capabilities-lens: "an inability to realise essential capabilities as a direct or indirect result of insufficient access to affordable, reliable and safe energy services, and taking into account available reasonable alternative means of realising these capabilities" (Day et al., 2016, p. 260). On the one hand, this definition is fitting because it understands that energy is a crucial component for people to function in their everyday lives. On the other hand, this definition is kept general, to make it applicable to differing contexts. Thus, this definition is not specific to the Dutch context. A definition specific to the Dutch context can be found by Batenburg et al. (2025). Although their definition centres around the income of individuals, and thus approaches energy poverty from a utilitarian standpoint, they do mention a factor relevant to the Dutch context, namely houses of low energetic quality. Within the Dutch context in general there seems to be an emphasis on an utilitarian approach to energy poverty. Batenburg et al.'s (2025) definition is also used by other prominent knowledge institutes, like Klimaatstichting Hier (Sellis, 2025) and Milieu Centraal (2024). This research steps away from this trend by dismissing a utilitarian approach and focussing on what energy poverty means for people's capabilities.

The definition of energy poverty by Day et al. (2016) already alludes to the concept of energy justice, but not explicitly. Bartiaux et al. (2018) acknowledge that having insufficient access to energy, has broader consequences than just those related to energy. In their paper they see energy poverty as a deprivation of capabilities, like overall health.

After COVID-19 there is more attention for the term "hidden energy poverty" (Cong et al., 2022). Hidden energy poverty is the situation in which people underconsume energy to decrease their financial stress. Underconsuming energy often means that too little energy is

used, which creates an uncomfortable living situation. It also means that those households that underconsume energy, are not classified as energy poor. Because technically, their energy expenditure is not disproportionately high to the household's income. This ties in with Herrero's (2017) critique of using single-indicator approaches to identifying energy poverty. Their critique revolves around the idea that purely comparing a household's income to its energy expenditure, is not sufficient. Since households underconsume energy to keep the energy expenditure down, it would not classify as energy poor when comparing income to expenditure. In The Netherlands, among low-income households living in energy-inefficient homes, hidden energy poverty has increased from 24 percent in 2021 to 49 percent in 2024 (Batenburg et al., 2025). Hidden energy poverty is relevant to this research, because it makes identifying households in need of help more complicated.

Living in energy poverty affects overall health negatively. Both physical and mental health deteriorate when people live in energy poverty (Ballesteros-Arjona et al., 2022; Churchill & Smyth, 2021). Because of inadequate heating, and subsequent cold homes, energy poverty can, in many cases, lead to respiratory problems. It can create or worsen conditions like asthma. Chronic diseases also worsen as a result of energy poverty. Especially for those with chronic diseases, mortality is a relevant consequence of energy poverty. Mental health is affected by conditions like financial stress, sleeping problems and coldness, which can lead to depression. In general, energy poverty magnifies already existent health inequities (Thomson et al., 2017). Which makes people energy vulnerable. Individuals with already lacking health, suffer disproportionately from those that do not live in energy poverty. Additionally, children in energy poverty are more vulnerable for the effects of energy poverty than adults (Schuurman Hess & Van der Wal, 2025). Children's risk for asthma is twice as big as for adults and their education suffers because of the uncomfortable environment at home. Energy poverty is a limiting factor in the development for children, with its effects being present later in the children's lives.

Households living in energy poverty, are most often houses of housing associations (Batenburg et al., 2025). 75 percent of energy poor households are in houses of a housing association, 66 percent of them are one person households and the majority live off of benefits or a pension. Living with a housing association means that larger energy saving adjustments are left to the housing association. People are dependent on the means available and the willingness of housing associations, to make adjustments to the energetic quality of a house.

Energy cooperatives

As the name indicates, energy cooperatives follow a cooperative model. In general, this means that the organisation is owned by a community of local stakeholders (Rupp et al., 2025). Who those local stakeholders are, and what the ownership looks like can differ greatly. The cooperative might be fully owned by local individuals or there might be a co-ownership with a local private party. Those that are part of these cooperatives, are both paying members and users of what the organisation has to offer and have an equal vote in deciding the direction of the energy cooperative (Huybrechts & Mertens, 2014). There are three different legal structures according to which energy cooperatives can be differentiated; energy consumption cooperatives, energy production cooperatives and energy service provider cooperatives (Hentschel et al., 2018). Energy consumption cooperatives coordinate energy purchases for its members, which leads to a better overall energy price. Energy production cooperatives produce and sell energy together. Energy service provider cooperatives bundle resources of already existent cooperatives, for energy related activities. The most common form is that of the energy production cooperative. Oftentimes these are seen as an investment by its members, and the energy sales function as revenue.

Since the first pioneers of energy cooperatives in 1986, energy cooperatives have fought a battle against regulations and dominant actors in the energy market (Oteman et al., 2017). Energy cooperatives struggle with having to compete with major energy producers, in the case of The Netherlands, examples of those are Vattenfall and Essent. Energy cooperatives may fight this regime of rules and regulations, or they might adhere to the existing structure. However, they often fail in collectively strategizing against established energy regimes (Proka et al., 2018).

In recent years, the Dutch energy market has been facing net congestion (RVO, 2025). That is the situation where the Dutch energy infrastructure is overloaded with too much supply or too much demand of energy. There are instances where there is not enough capacity to transport the amount of energy that is being asked from or delivered to the network. As a result, the energy network becomes congested. This also means that there are moments when energy companies and energy cooperatives cannot deliver their energy to the energy network (Schwencke & De Graaff, 2025). This results in them having to temporarily shut down their energy production and leads to them missing a part of their income. This has consequences for the other activities of energy cooperatives, like energy poverty alleviation, as the energy cooperatives will have less finances available. Net congestion could be mitigated by developing an energy storage, but technologies regarding this are yet to emerge at a large scale.

Brouwer et al. (2025) show that energy cooperatives involve local communities more in the process of development. Oftentimes when sustainable energy production is being developed, the project experiences backlash from the local community. Especially in the case of building wind turbines for a wind farm. Wind turbines are big in size, make noise and cast shadows over local neighbourhoods. In this case it is important for the developer of the wind farms to actively involve local communities, to create understanding and to prevent backlash as much as possible.

Energy cooperatives regarding energy poverty alleviation

As mentioned before, Young & Halleck Vega (2024) are the only researchers that have, as of yet, studied energy cooperatives in relation to energy poverty in the Netherlands. They indicate four measures that energy cooperatives take to alleviate energy poverty. Namely financial assistance, improving the energy efficiency of houses, advice and knowledge endorsement and support on neighbourhood level.

Drawing on research from other European countries, it can be seen that energy cooperatives can reduce energy poverty in various ways. Hausner et al. (2025) see that energy cooperatives in Poland can reduce energy poverty in two ways; by lowering the energy costs for its members and by financing and setting up new energy cooperatives with the revenue they generate from their energy production. Končalović et al. (2023) researched how in Southeastern Europe, the energy transition was falling into the hands of large privatized energy companies, with no role left over for citizens. They saw energy cooperatives as a crucial place where citizens can get acquainted with and empowered for the energy transition. In Germany, energy cooperatives alleviate energy poverty by distributing cheaper energy and providing energy efficient measures (Hanke et al., 2021).

The barriers that energy cooperatives face in energy poverty alleviation, boil down to three categories, according to Boostani et al. (2024) and Hanke et al. (2026). First, there are barriers in the organisational structure of the energy cooperative. This entails that the energy cooperatives do not have clear guidelines nor the knowledge available to know and understand how they should tackle energy poverty. Tackling energy poverty means that new organisational structures have to be created, new employees have to be hired, and those employees need to be taught new skills. Energy poverty alleviation requires a certain expertise that is not present yet within the energy cooperative. Second, there are financial barriers. Acquiring this new organisational structure, employees and expertise costs money, which is often not readily available. Third, there are barriers regarding the people living in energy poverty. This target

audience often have lacking knowledge of where and how to receive help regarding energy poverty. So even if the above-mentioned barriers are passed, a barrier lies in getting the help to the people that need it.

There are also two opportunities that energy cooperatives could make use of. First, energy cooperatives could be a community driven initiative that creates opportunities for women and unskilled people (Standal & Feenstra, 2022). This in turn could create a boost for the local community, as more citizens are supported. Second, an overall increase in participation in the energy transition is needed, which energy cooperatives can play a meaningful role in (Kanellou et al., 2023). The energy transition can be inaccessible for some groups in a society. If energy cooperatives are able to involve more people, the energy cooperatives themselves could benefit from this. With more involvement comes a more accessible target audience and potentially an increase in members.

2.2 Conceptual framework

To analyse how energy cooperatives help alleviate energy poverty, this research will use the capability approach. The capability approach is a theory created by Amartya Sen (Sen, 1980) and further developed by Nussbaum (2000). It focuses on the capacity of people to live a life they value.

The capabilities approach assesses people's ability to essentially be who they want to be. It analyses how *capability inputs* are converted into a *capability set* which leads to certain *achieved functionings* (Robeyns, 2005). Capability inputs are the goods that an individual has, to achieve certain functionings. Functionings are the actions and activities that people want to partake in, to be the person they want to be. Capability inputs are the material and non-material characteristics that shape the capability set of an individual (Robeyns, 2005). The capability set is the freedom that an individual has, to choose certain opportunities to achieve certain functionings. Achieved functionings are the realized capabilities that will lead to a more valuable life specific to an individual's personal context.

To take a good and translate them into functionings, is influenced by conversion factors. There are internal and external conversion factors. Internal conversion factors, or personal conversion factors, influence the way that a person can translate the characteristics of a good into a function, this includes physical conditions, sex, reading skills, intelligence etcetera. A person living in energy poverty generally experiences negative health effects (Ballesteros-Arjona et al., 2022; Churchill & Smyth, 2021) and impairments to their education (Katoch et al., 2024), making their internal conversion factors weaker. External conversion factors

emphasize the social and environmental context where an individual lives. According to Robeyns (2005), this constitutes to social conversion factors and environmental conversion factors. Social conversion factors include institutional context, economic structure and social culture. The institutional context and economic structure in The Netherlands are dominated by private energy companies and rising energy prices, as mentioned in the introduction. Social culture, which includes social networks, is impacted by energy poverty. Individuals feel they are deprived of their moral status in society and feel they are missing their dignity. Subsequently people fall into loneliness as they do not upkeep their social relations because of shame (Grossmann & Trubina, 2021). Conversely, good social relations can enable access to energy and can also be a product of access to energy (Middlemiss et al., 2019). Environmental conversion factors emphasize the physical reality that surrounds a person. This includes the geographical location of a person, the infrastructure available and also the climate in which a person lives.

While energy poverty impairs conversion factors, energy cooperatives provide conversion factors and goods and services. Goods and services should be seen for what they mean to people. A good or service has certain characteristics which enables a functioning. For example; a bicycle is not only an object made out of certain materials, but also provides mobility to individuals. Energy cooperatives provide knowledge and information, improving people's critical thinking skills. This allows people to make better decisions in their choice of energy contract, reducing their energy bills (Belda-Miquel et al., 2020). By improving the energy efficiency of houses, energy bills are reduced and a decline in health-related issues, caused by energy poverty, can be seen. Through supporting neighbourhoods, social cohesion and trust is enhanced. Social cohesion and trust are precisely something that energy poverty impairs. When energy cooperatives provide financial assistance, they provide people with discounts on energy saving measures, a loan or sometimes even a reduced membership fee for the energy cooperative (Hanke & Guyet, 2023). These are all a form of a conversion factor or goods and services.

It should be made clear however, that there is a difference between having the freedom to a certain capability and the actual realization of said capability. If one has the freedom to a capability but no adequate goods to attain the capability, it does not lead to an achieved functioning. Once an individual has the freedom to a capability and adequate means to attain the capability, there is an environment and context in which people can strive for a life they value. Essential to the capability approach is the concept of agency. Agency means that individuals not only have the freedom to decide what opportunities they make use of but also

which ones they decide to pursue. Overall agency is when well-being is combined with commitments, which are actions that do not benefit the agent themselves (Robeyns, 2005). Energy poverty on the other hand limits the agency of individuals. People have less freedom to choose opportunities and are as a result deprived of a capability (Bartiaux et al., 2018). When an individual is denied access towards a capability, they cannot attain said capability which leads to less well-being. The ability to use energy means that individuals can use energy services, the use of energy services is in turn a quest for particular capabilities (Day et al., 2016).

As mentioned before, energy poverty is experienced in diverse ways by different people and the intensity at which it is experienced also differs. The capability approach acknowledges this and sees that certain incomes and goods do not lead to the same outcomes for all people, because of the great diversity among people (Robeyns, 2005). It focusses on how people's well-being is impaired by energy poverty and how this affects different people differently. When analysing energy cooperatives, it can be assessed how measures can improve well-being at an individual level. The capability approach goes beyond a purely utilitarian approach, where energy poverty is analysed upon income (Chipango, 2021). It takes into account the context of people's lives and looks beyond absolute metrics. That is why the capability approach is a suitable theoretical framework within this research. However, it is important to mention that, like every theory, the capability approach is not perfect. An issue with the capability approach is that, in the same way Nussbaum (2000) did, there is a tendency to create a set list of capabilities that can be achieved. This is limiting and not necessarily applicable to all contexts. This research will work around this by letting the research define its own capabilities. By looking at what abilities people in energy poverty gain or are restricted in.

Looking at energy poverty through a 'capability-lens' ties in with the concept of energy vulnerability as assessed by Bouzarovski & Thomson (2018). They have a holistic approach to energy poverty and see energy poverty as an outcome of larger injustices that already exist in a society. Energy poverty is the result of not being able to attain a necessitated level of domestic energy services. The already existent injustices that perpetuate inequality regarding energy, also negatively influences capabilities.

2.2.1 Operationalization and conceptual framework

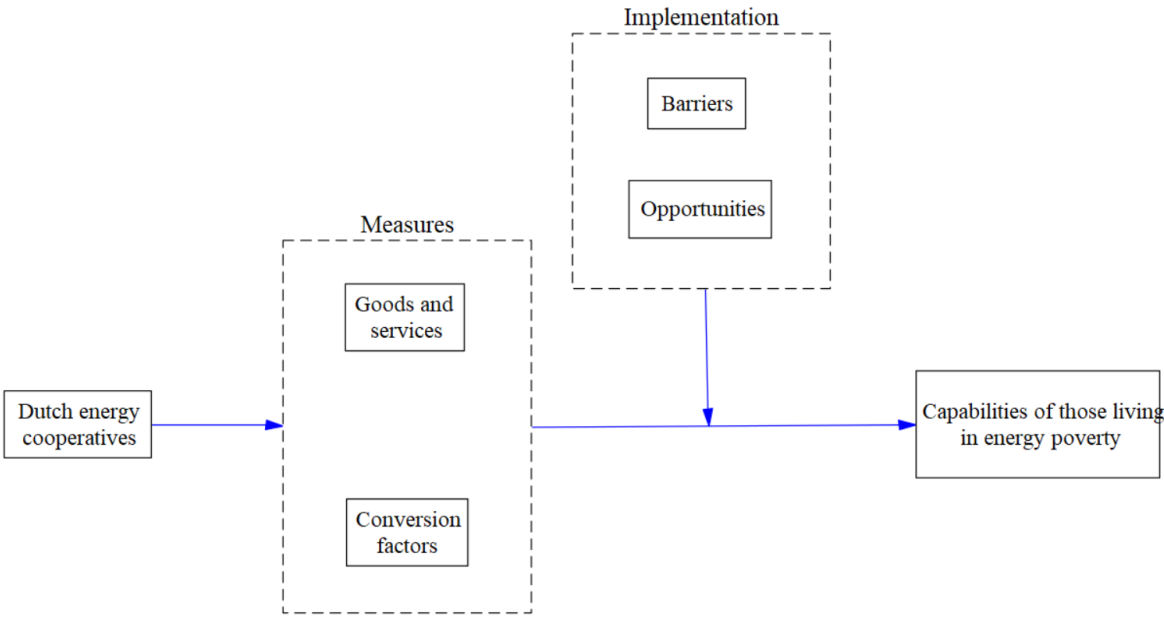


Figure 1: Conceptual framework

This conceptual framework combines elements of the capability approach, like discussed previously, with the concepts of energy poverty and energy cooperatives. Energy cooperatives provide certain types of measures regarding energy poverty alleviation, that may be goods and services or conversion factors. During the implementation process of the measures regarding energy poverty alleviation, energy cooperatives will face barriers and opportunities. The barriers complicate the implementation while opportunities are certain options that energy cooperatives can make use of. Both the barriers and opportunities are, conceptually, seen as conversion factors. The help that energy cooperatives provide, lead to people in energy poverty gaining capabilities and subsequently experiencing less or no energy poverty.

The arrows in the conceptual framework represent the influence that the concepts have on each other. ‘Capabilities of those living in energy poverty’ is the dependent variable, while the other variables are independent. The barriers and opportunities are mediating variables to the measures.

3. Methodology

This chapter will delve into the methodologic strategy used in this research to answer the sub-question and main question. It will show the methods that are used, what their strengths and weaknesses are. It will elaborate on the way that the data will be analysed and the validity and reliability of the chosen research methods.

3.1 Research philosophy

The research philosophy of this research is that of critical theory. Critical theory examines power structures and looks at history to explain its evolution, which is influenced by social, political, cultural, economic, ethnic and gender factors (Guba & Lincoln, 1994). Research philosophies are structured along ontological and epistemological paradigms. The ontology of a research philosophy answers questions about what the form and nature of reality is. What kind of world is assumed and what is there to be known about it? The ontology concurrent with critical theory is that of historical realism. Reality was shaped over time and influenced by different factors. This reality is wrongly assumed to be the truth or 'real'. On the other hand, the epistemology describes the relationship between the knower and what can be known. In the case of critical theory this relationship is transactional and subjectivist. The researcher and the research object are linked whereby the values of the researcher influence the findings. This makes the findings value mediated.

The current threat to the accessibility and affordability of energy, is partly the result of the privatization of the Dutch energy market that started in the beginning of the 1990s. The privatized companies in the Dutch energy market have societally suboptimal effects as they do not contribute to long term processes like the energy transition. Not contributing to the energy transition also means that energy poverty is not being addressed. Thus, people in energy poverty depend on other parties to help them.

The goal of critical theory is to create social change and empower marginalized groups. In this case, social change could be created by energy cooperatives. They are local energy producers that involve themselves with the energy transition. They can address energy poverty and subsequently empower marginalized groups.

3.2 Research strategy

A research strategy constitutes the plan according to which this research is structured. Van Thiel (2014) specifies four research strategies; an experiment, a survey, a case study and a desk research. This research will use both a case study and desk research.

This research makes use of five embedded case studies, these are five different energy cooperatives. Although there is a large variety in which energy cooperatives are legally structured, like described in chapter 2.1, this research does not focus on one legal structure specifically. Subsequently, there were also eight embedded case studies conducted on supporting organisations. These supporting organisations are linked to one or more energy cooperatives in different ways, and support in various ways. They are bottom-up organisations and are involved in the energy transition or energy poverty alleviation in one way or another.

The embedded case studies are displayed in the tables below. They are described, their size and geographical location is given, and a small overview of the interviews themselves is given. The information about the size is either displayed in terms of the employees, the members or not at all. The information was gathered from the websites of said organisations, who sometimes had differing statistics available.

| Energy cooperative | Description | Size | Geographical location | Specifics of interview |
|---------------------------|---|------------------|------------------------------|-------------------------------|
| Zutphen Energie | Energy cooperative in Zutphen that produces and delivers sustainable energy and helps people with saving energy | 80-100 employees | Zutphen | 2 hours, offline |
| Agem energie experts | Organisation that strives towards affordable energy security. They work together with multiple | 40 employees | Wehl | 30 minutes, online |

| | | | | |
|---------------------------|---|--------------|-----------|--------------------------------|
| | municipalities and energy cooperatives in De Achterhoek. | | | |
| Wind farm Nijmegen-Betuwe | Wind farm in the region of Nijmegen that has four wind turbines. | 1013 members | Nijmegen | 1 hour and 30 minutes, offline |
| Zonnig Zieuwent | Energy cooperative in Zieuwent that primarily produces and sells sustainable energy. | - | Zieuwent | 1 hour, online |
| deA | Energy cooperative in Apeldoorn focused on producing sustainable energy and saving energy. They also help citizens save energy. | 1123 members | Apeldoorn | 1 hour, online |

Table 1: Interviewed energy cooperatives

| Supporting organisation | Description | Size | Geographical location | Specifics of interview |
|--------------------------------|--|--------------|------------------------------|--------------------------------|
| Sterk uit armoede | Organisation that addresses poverty. Employees have experience with poverty and try to have a bridge function between system- and lifeworld. | 11 employees | Haren | 1 hour, online |
| FIXbrigade | Organisation that helps with saving energy in multiple cities. | 12 employees | Utrecht | 1 hour, online |
| Energiebank Arnhem | Organisation that helps with saving energy in households in and around Arnhem | - | Arnhem | 1 hour and 30 minutes, offline |
| Klimaatbureau HIER | Foundation that activates people to participate in the fight against climate change | - | Utrecht | 30 minutes, online |
| LSAbewoners | A network of neighbourhood initiatives that shares knowledge and | 15 employees | Utrecht | 1 hour, online |

| | | | | |
|-----------------|--|--------------|----------|---------------------|
| | advocates for the interests of these initiatives | | | |
| Wiek-II | Develops and/or supports energy communities in Nijmegen and nearby municipalities | - | Nijmegen | 30 minutes, offline |
| Milieu Centraal | Knowledge organisation that provides information on how to live a sustainable life | 90 employees | Utrecht | 1 hour, online |
| Energie Samen | Umbrella organisation of energy cooperatives in The Netherlands that provides support and advocates for the interests of energy cooperatives | 34 employees | Utrecht | 40 minutes, online |

Table 2: Interviewed supporting organisations

As part of these case studies, interviews were conducted. Once the first interviewees were established, a snowball technique was used to gather more interviewees (Parker et al., 2019). That means that the interviewees would recommend other people that they deemed relevant for the research and would be open for an interview. Although this is an effective way to gather interviews, it has its limitations. Particularly the lack of randomness of the interviews and

representativeness are an issue. The lack of randomness comes from the fact that it would have been unlikely that an interviewee would recommend someone that has completely differing viewpoints than them. Additionally, they could only recommend people within their own social network. That means that there might have been a suitable interviewee, who never got recommended. The interviewees were asked about their perception of the role that energy cooperatives have in alleviating energy poverty, the barriers and opportunities they encounter and the ways that their energy cooperatives alleviate energy poverty.

Additionally, a desk research was conducted, comprising of a document analysis. The document analysis consisted of an analysis of secondary data, which relates to individuals living in energy poverty. Reports were used to gather information on what individuals in energy poverty are missing and how that compares to the help that the energy cooperatives provide. It gave insight into whether the measures that energy cooperatives provide, are useful to people in energy poverty. These documents were of particular interest because of what they could tell about the impact that certain measures have on people’s capabilities. In the table below, the list of the used documents is displayed.

| Documents selected | Data analysed |
|---------------------------|---|
| Van der Wal et al., 2025 | The social and financial effects of energy help |
| Van der Wal et al., 2024 | What makes effective energy help |
| Batenburg et al., 2025 | Risks of high energy prices for energy poverty and hidden energy poverty |
| Van Tilburg et al., 2025 | Most recent monitoring on energy poverty |
| Straver et al., 2017 | Insight into energy help before Dutch government concerned itself with energy poverty |

Table 3: Documents used in document analysis

3.3 Research methods

3.3.1 Research methods & Data collection

This research used thirteen embedded case studies in total, with two groups of embedded case studies. One group of five sub-units of analysis and one group with eight sub-units of analysis.

This was analysed through interviews and document analysis. By using at least two different research methods, also known as triangulation, issues with validity and reliability were reduced (Van Thiel, 2014).

A case study is a research in a real-life setting which is representative and will serve as an example within this research. The choice for a case should always depend on the specific problem under study and its specific circumstances (Flyvbjerg, 2006). Embedded case studies on the other hand, include more than one sub-unit of analysis and are not bound to qualitative methods (Scholz & Tietje, 2002). Having embedded cases allows for a deeper insight into the case study (Yin, 2003). Energy cooperatives are diverse and differ in the way they approach energy poverty alleviation. Researching a multitude of energy cooperatives and supporting organisations, who differ in size, geographical location and in approach, gives a broader and more in-depth overview than a singular case study might.

An interview is a conversation through which information can be gathered about the topic that is being researched (Van Thiel, 2014). The choice for a qualitative research method like the interview, is according to the argumentation of Zimmermann (2006). Who argues that qualitative methods should be used when researching capabilities. There are two different types of interviews, open interviews and semi-structured interviews. This research will make use of semi-structured interviews, as they offer more structure to the conversation.

Desk research by means of a document analysis is used in this research because it provides context to the data gathered in the interviews. The document analysis will show the perception that individuals in energy poverty have of the measures that energy cooperatives provide. Consequently, the measures of energy cooperatives can be assessed on whether they contribute to energy poverty alleviation or not. It made clear whether the measures are effective and if people in energy poverty see the help as adequate.

3.3.2 Data analysis

The interview was analysed according to the steps mentioned in Flick (2013). First, the operationalized concepts were used to apply codes to what has been said in the interview. A code is “most often a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of narrative or visual data” (Saldaña, 2021, p. 151). The codes were developed abductively. The starting list of codes was made deductively from the concepts, later on they were filled in with inductive codes. The coding was done with Atlas.ti. Second, the findings were reorganized and sorted. The findings were put into categories in which they can be compared. Through this process, conclusions were

made about the key concepts of this research. With special attention to information that might contradict the assumptions that this research has made. Third, the main conclusions from the interviews were made using the interview data. Subsequently they were connected with existing literature used in this research.

All the interviews were conducted in Dutch while this research is written in English. The codes given to passages in the interview, are in English. The quotes used in the results-section were translated into English as accurately as possible. Whenever a quote was used which at some point had an irrelevant passage, '['...' was used. If a passage needed more context, this was given by adding the context between two ']'-signs.

Document analysis consists of skimming, reading and interpreting data (Bowen, 2009). This also involves a thematic analysis, just like the interview analysis. Themes, based on the concepts, were used to categorize the text into meaningful data. It is a form of pattern recognition which comes from reading the document multiple times (Fereday & Muir-Cochrane, 2006). Just like the interview analysis, Atlas.ti was used for the document analysis.

Just like the interviews, all documents were Dutch. To ensure that they were usable for this research, they were given English codes.

3.4 Validity and reliability of the research

This research makes use of embedded case studies instead of a single case. This has a few consequences for the validity of the research. The efficiency of data gathering and the confirmability of the research, is higher than in a single case study design. Moreover, the transferability, the extent to which results from one context are applicable to another, is also higher (Bass et al., 2018). However, the internal validity is lower because the multiple cases make it harder to say something about cause and effect.

Issues with reliability and validity were partly dealt with by making use of triangulation. By diversifying the research approach, the data gathered is more valid (Van Thiel, 2014). Because data was collected through multiple ways, the data could be compared. By presenting findings to fellow students and a supervisor, the findings were reviewed. This led to a higher (internal) validity.

This research has chosen to use semi-structured interviews, because they provide more structure than open interviews do. Generally, the more structure the more reliable and valid the findings will be (Van Thiel, 2014). Interviews are however time consuming and labour intensive, which means it is not feasible to have a large sample population. To make up for this an additional research method was used, document analysis.

Document analysis has the advantage of being a stable and exact form of data. A document does not change form and is not altered based on the presence of a researcher (Bowen, 2009). It is an efficient way of doing research, because document analysis is less time-consuming than for example conducting surveys, and is unobstructive. However, the lack of detail that some documents might have, combined with its potential biased selectivity, are the limiting factor of document analysis. Documents might solely be made to serve a certain corporate agenda, making it hard to use in an independent research context. This was made up for by using additional research method, namely interviews.

Generally, regardless of the manner that the interviews and documents will be analysed, they will always be coded through the eyes of this researcher. That means that the findings will be value mediated which, despite efforts for objective research, will have consequences for the reliability of the research.

4. Analysis and results

This research made use of, in total, thirteen embedded case studies. As part of these case studies, thirteen interviews were conducted and five documents were analysed. Findings and quotes from the interviews and documents are presented in the following chapter. The research questions surround the measures that energy cooperatives provide, the barriers and opportunities they face and the effects that these measures have. This lays the basis for the structure of the following chapter.

4.1 Measures

Gathering from the interviews, energy cooperatives implement a variety of measures against energy poverty. Below they are described and elaborated upon.

4.1.1 Goods and services

The goods that energy cooperatives provide, vary greatly. Take the "witgoedregeling", white goods arrangement, of Energiebank Arnhem. They supply vouchers to people with, for example, an old dishwasher or washing machine, which gives them a discount on a new machine. Through this arrangement people are able to replace their old machine which uses excessive amounts of electricity and causes their energy bill to rise. As interviewee 1 describes: *"[a new machine] really matters. Not only in the sense of getting a huge present, [...] but you are also able to take the worries away"*. With a new machine, people experience less stress over the machine potentially breaking down which would require an expensive replacement or a high energy bill. They do not have to do their dishes or washing by hand, saving them from mold in the house or physical issues because of the intensive work.

Another example would be the share car offered by energy cooperative Zonnig Zieuwent. In a municipality where public transport leaves a lot to be desired, a share car means that people are able to travel independently of others. It gives people a radius of action which they did not have before and they can use a car without having to own one. This has added benefits, that came to light in the interview with Zonning Zieuwent: *"they can use that car without having to pay for it, [...]. Which means that socially they are also not deprived, or that someone loses social contacts because people will not invite you over anymore."* The share car prevents social isolation.

Additional materials that are offered by energy cooperatives, are a budget for energy saving products. This lowers people's energy bill and making their home more comfortable and sustainable. Energiebank Arnhem provided an infrared lamp which lowers the energy bill and

also alleviates rheumatic issues. Wind farm Nijmegen-Betuwe started a fund to create local support and also to give back to people who were negatively affected by the placement of wind turbines. People are also supplied with basic energy saving measures. These generally include radiator foil, a water saving showerhead, energy saving light bulbs and sometimes weather strips. Measures against coldness and mold in houses are the most effective. The effectiveness however is dependent on the quality of the house. Houses with severely lacking insulation will not benefit much from these smaller energy saving measures.

Apart from providing goods, energy cooperatives oftentimes gravitate to providing services where employees provide advice to citizens. There are four different types of employees to be distinguished according to interviewee 2. First energy advisors, who have expert knowledge about what needs to happen in a house to make it more energy efficient. Second, energy fixers, who are responsible for small scale adjustments at home. They install for example radiator foil, a water saving showerhead, energy saving light bulbs and sometimes weather strips. Third, energy coaches are there to support citizens and give them advice on energy efficiency at home. Compared to energy fixers, energy coaches usually visit multiple times. Fourth, energy ambassadors who know how to reach certain target audiences.

Gathering from the interviews, the most offered service are energy coaches. Being an energy coach requires the coaches to go further than just giving advice. People are unaware about their energy usage or are stressed, so an energy coach needs to be able to show compassion and understanding for the situation. Energy coaches are able to take stress of people's mind and serve as a "reminder" for people to take action. Through positive reinforcement and context specific help, people are helped and their situation gets better. This all gives people more confidence. Asking for help from an energy cooperative is not stigmatising and tends to open people up, or so at least the Zutphen Energie experiences. As such, the interactions between client and energy coach can be meaningful to people in various ways. Especially for older people, the interaction between them decreases their loneliness (Van der Wal et al., 2024). It requires more than technical knowledge to be an energy coach. As the figure below prescribes, energy coaches should have a majority of social- and education skills.

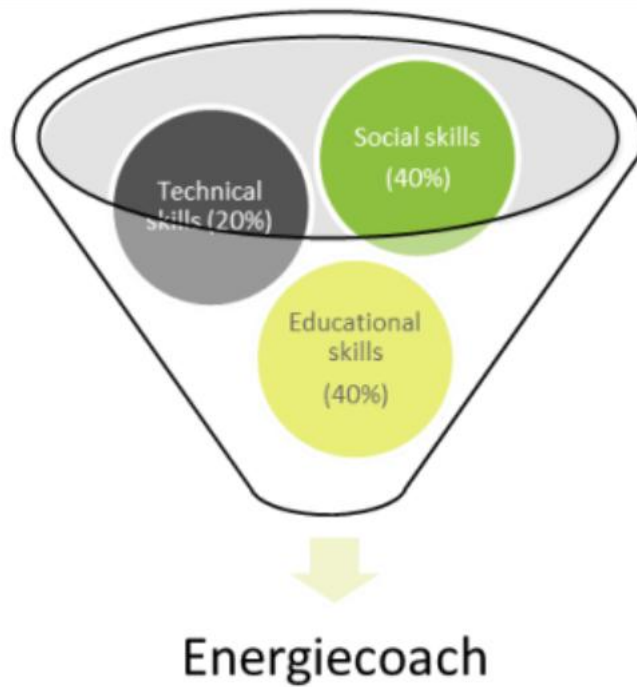


Figure 2: The ideal energy coach (Straver et al., 2017)

Other services are for example workshops created by Zutphen Energie. They provide sewing workshops to create awareness about the energy help that is available but also to empower women. These women do no longer participate in society and the workshops are a reason to go outside again and meet other women. Talking about the workshops, interviewee 4 mentioned how: *"it is not about energy in any way, but about social cohesion, [...] We tell them [who we are], and slowly they also start to see that"*. So in the first place, the purpose of the workshops is not anything related to energy but rather it is about social cohesion. Once the participants get familiar with the organisation, they also will open up for the possibilities regarding energy help.

4.1.2 Conversion factors

As mentioned earlier, energy poverty impacts people's conversion factors negatively. Because of the context of their living situation, they are already vulnerable, which is accentuated by energy poverty. Energy poverty impacts cognitive capabilities, people are able to function less and even experience cognitive decline (He et al., 2025). Individuals become prone to cognitive bias, which influences their decision making (DellaValle, 2019). Their IQ can drop and people become susceptible to poverty traps (Barrett & Carter, 2013). A commonly mentioned issue for people in energy poverty is a loss of confidence. With a worse health, potential unemployment and loneliness makes people lose confidence in their abilities.

Energy cooperatives can play a meaningful role in alleviating or preventing the abovementioned consequences. The conversion factors they provide are multi-faceted. They can give people confidence in their own abilities again and make people believe that there are solutions to the problems they experience. Because oftentimes, energy poverty makes people lose confidence and generally get sad because of their living situation. As interviewee 1 put it: "*sincere attention is already a medicine*". Indicating that by paying well-meant attention to the stories and troubles, people feel heard and seen. By making people aware of their own talents, through for example workshops, their confidence is increased. Through the goods and services, energy cooperatives are able to teach people how to use certain products and learn about their energy expenditure and how to minimize that. This also increases confidence and shows people they are capable. That is one way how energy cooperatives provide people with conversion factors.

Energy cooperatives are also able to make the energy transition more accessible. For people in energy poverty, the energy transition can be overwhelming. They are already struggling and most often do not know how to get involved (Van Tilburg et al., 2025). Energy cooperatives help through sharing knowledge and showing the benefits of energy saving, this way people get more motivated for the energy transition.

Neighbourhoods that experience a lot of energy poverty, oftentimes have lacking social cohesion. By stimulating meetings between people, social connections and social cohesion is created. This lifts people out of loneliness and provides them with a social circle. This social circle subsequently makes people feel like they matter again and are able to participate in society.

4.2 Barriers

The barriers that energy cooperatives face when implementing energy help, is fourfold. The barriers surround the people that receive the help, the barriers can be experienced from within the energy cooperative, in their collaboration with housing associations or while working together with governmental institutions.

4.2.1 People that receive the help

To get a better understanding of the barriers that energy cooperatives face when trying to alleviate energy poverty, the people on the receiving end of the help should be described. People are oftentimes already struggling in multiple areas of life, which is worsened by energy poverty. They might be hard to reach as a result of this, or there might be more going on in a household

other than energy poverty. This ties back in with the concept of energy vulnerability as described by Bouzarovski & Thomson (2018).

A group of individuals in energy poverty that previously were underrepresented in energy poverty alleviation, are individuals in energy poverty with a migration background. When addressing this group, a concern is that traditional media does not seem to reach this group. An advertisement for energy help in the newspaper or on social media often does not reach these groups, neither do flyers to people's houses or posters in the neighbourhood. This is caused by lacking proficiency in Dutch or the fact that these forms of media are not used by the target group. Many do not read newspapers and flyers are thrown away. The lacking proficiency in Dutch also means that there are little Dutch people in their social circle. This works isolating and prevents people with a migration background from knowing what help is available. That means that people do not reach out for help themselves, but rather they have to be sought out proactively by energy cooperatives. This also has the suboptimal effect that the middleclass, who does make use of the energy help, reap the benefits of the measures available. This is also known as the 'Mattheus-effect' (Straver et al., 2017). Rather than those in energy poverty who need the help. Interviewee 3 describes how: *"In Syria for example and in Afghanistan you get free electricity from the government. So you never had a bill from that, you never have an idea of how much [energy] you use. It also does not matter at all."*

When people have fled their country, adjusting to the new society and processing possible traumas is hard enough. To then also ask them to understand the Dutch energy system is a tall order. Additionally, not all help is applicable to all cultures. Different cultures have different rituals, which in different ways leads to high energy bills. Again interviewee 3 gives examples of how; *"Moroccan people and also Turkish people love long curtains. [...]. Most of them have those long curtains in front of the radiator, which means that heat flies out of the window and does not end up in the room"* and how *"there lived Muslim people [...] that were used to having a carpet on the floor. So on the floor heating they put carpets everywhere and no one was able to heat their home."*

A migration background thus has negative consequences for people's conversion factors. Their migration background works as a barrier in receiving adequate help.

Another barrier that people might face, is unawareness about energy or mistrust (governmental) institutions. An issue which is mentioned often is how citizens might be appointed a house with proper isolation or might be given many energy saving measures. However, if they do not know

how to save energy or use these energy saving measures, it still does not lead to a decreased energy bill or more comfortable living. In general, people from low-income households are not interested in climate issues. They are focused on "surviving" and getting through the month, as interviewee 3 put it.

Mistrust in relation to this research, relates to not trusting energy cooperatives as well as governments. People with a migration background might have fled from a corrupt government where they did not trust the government. This translates into mistrust in the Dutch government. However, mistrust is also prevalent among Dutch people. As displayed of how interviewee 10 thinks about the Dutch government:

"That is because the government is doing it all wrong. [...]. They are not trustworthy and repairments are still waiting. The repairments are not going well, it takes too long [...]. They hide behind everything, so yeah, they are not trustworthy anymore"

Interviewee 10 is someone who lived in energy poverty in the past and has experienced what it is like to mistrust the government. When they received an energy meter to measure energy usage at home, interviewee 10 did not trust it. Their social circle labelled the meter as part of "big brother". Referring to the government exercising total control and spying on its citizens with this meter. Combined with their already lacking trust in the government meant that interviewee 10 did not use the energy meter.

Unawareness about energy or mistrust impacts people's conversion factors. To mitigate this, energy cooperatives have to gain the trust of citizens, which takes time. Citizens need to get acquainted with an energy cooperative first before they will start to trust them. Energy cooperatives need to have a presence in the neighbourhood. They need to somehow connect to citizens before they will accept the help. Although governments, municipalities and housing associations have the best intentions, they are not always translated well. It is crucial that they understand how to navigate this or providing energy help will be more complicated.

4.2.2 Energy cooperatives

In the case of energy poverty, it is debated upon whether energy cooperatives are the right organisation to provide alleviation measures and if the cooperative model is the right way to structure the help. Energy cooperatives might face barriers during implementation of their energy help because of their disconnect with the target audience, because of the approach the energy cooperative takes towards energy as a whole or because of the employees that are

responsible for implementing the help.

The interviewees shared differing perspectives on whether energy cooperatives are the right organisations to tackle energy poverty. Interviewee 2 stated that:

"The moment you want to focus on saving energy, then you also need an organisation which makes sure you will not go into debt. That your activities are financed, but then there is no reason to start a cooperative. You could do that just fine with a foundation or an association or even without a legal form. [...]. Especially when it is about energy poverty. [...]. That comes from community work, from the social cultural work."

They highlight the social side of energy poverty alleviation here. As long as the energy cooperative wants to focus on helping people in energy poverty, interviewee 2 does not see the need to start a cooperative. In contrast, interviewee 7 noted that: *"I just believe that energy poverty is the responsibility of a society and an energy cooperative is a real part of society. So in that sense I think it is the most optimal form."*

Elaborating with:

"Especially an energy cooperative that stands in the middle of society is able to speak to network partners of social organisations, not only municipal organisations but also churches, foundations, mosques for them to look at their own network and look at people that need the help. And that in that way, change will be made. [...]. That is not feasible any other way, and that's also my issue when people put it down to the government. They do not have the network. They are bound to rules and legislation [...], which energy cooperatives are not bothered by. [...]. We are also able to communicate in the languages that suit to the target audience. In that way I think that an energy cooperative is better suited to help people than the government."

Interviewee 7 firmly believes that energy cooperatives are the right party to handle energy poverty alleviation, even more so than the government. Which is a complete contrast from interviewee 2. When interviewee 8 was asked whether they thought that energy cooperatives should have a bigger role in energy poverty alleviation, they simply responded with "no". Further elaborating with *"if people want to supply help from the cooperatives to those families in need, that is one thing. But to also involve them to the cooperative is very hard."*

Opinions differ on whether energy cooperatives are the right party to handle energy poverty alleviation. On the one hand, energy cooperatives are embedded in communities. Because they are made up of citizens, they have more local knowledge than a government might have. On the other hand, there is an entry fee to become a part of energy cooperatives. Although energy cooperatives try to keep this fee as low as possible, the price is usually still too high for most citizens. As interviewee 6 accurately put it, it is usually the "well-to-do" who are able to become members of energy cooperatives. Generally, the members of an energy cooperative are men with a high income, who are usually retired. The energy cooperatives are often not diverse. This makes it so that energy cooperatives are not representing society and struggle with relating to the target audience when addressing energy poverty. This is a barrier in energy poverty alleviation, seeing as energy cooperatives might not be able to get as close to the target audience as they would like.

Additionally, smaller scale energy cooperatives rely on volunteers to operate. Energy cooperatives with 500 or more members, usually have paid employees as well (Schwencke & De Graaff, 2025). The dependence on volunteers makes energy cooperatives vulnerable. It is becoming more problematic to find people in general but also finding people willing to do administrative work. When a project within an energy cooperative grows, it puts pressure on the energy cooperative to find more people.

Energy cooperatives have different approaches to energy as a whole and have varying areas of interest. Some energy cooperatives are not involved in energy poverty at all. This is where energy cooperatives face barriers and the reasons are threefold. First, energy cooperatives have either a narrow or broad approach. Energy cooperatives in general have four domains in which they work; producing sustainable energy, supplying sustainable energy, energy saving measures and climate adaptation. A narrow approach means that they are only involved with a singular domain. As interviewee 2 explained: *"there are energy cooperatives that are created purely to manage a solar park or wind farm"*. They have a limited number of employees or volunteers and will not have the capacity to also involve themselves with another domain and have a broader approach. So having a narrow approach prevents them from being involved with energy poverty alleviation. Second, the current form of an energy cooperative, is indicated by the origin of said energy cooperative. Interviewee 9 elaborates by saying: *"you have energy cooperatives that originated out of financial gain, namely developing a solar panel roof and making money that way. Which is a very different way of starting than when you say 'we are going to start an energy cooperative because we feel like we need to do something about the*

energy transition in our neighbourhood”. Indicating that the origins of energy cooperatives are diverse and the way they currently work still reflects that. Third, producing and/or supplying sustainable energy is a complex process. Interviewee 4 explains by saying: *“That [starting an energy cooperative] is a technical puzzle, not only technical but also registration and the like. That has nothing to do with citizens. [...] The people that started are not at the point where they can help citizens”*. This indicated the legal implications that come with starting an energy cooperative. This means that there is less time, people and money available to also be involved within the social domain with a topic like energy poverty.

Another barrier that energy cooperatives face, comes from the employees that are responsible for providing the energy help. Especially when it comes to energy coaches. Per interviewee 1, energy coaches are often: *“people with a more technical background. Who are highly educated, older, with grey hairs and mostly men who just want to talk about products and devices, the numbers, money and payback periods”*. Which alludes to an energy coach that lacks both social and educational skills, two skills which are deemed important according to figure 2.

Additionally, depending on the energy cooperative, energy coaches only come for a short term. This means that they visit once or twice, where they give homeowners all the information they are supposed to need. However, the amount of information that individuals are able to process is limited because of stress. Although with one visit the energy bill can be lowered without homeowners retaining the information, ideally they should understand how the energy at home works and apply it themselves. Energy coaches that visit at least twice, for more than four hours in total, have shown to produce more information retention (Van der Wal et al., 2024).

4.2.3 Housing associations

Energy poverty is often experienced in households of housing associations. The energy coaches can only do so much in a house before the housing association has to step in and make larger adjustments. That includes isolating houses and generally upkeeping the houses. This process is made more complicated by the fact that housing associations are lacking proper funds. In 2026, the housing associations are facing financial shortages of around 20 billion euros (Binnenlands Bestuur, 2026). Interviewee 12 experiences how housing associations are not given the right materials and capacities to tackle energy poverty. So not only is energy poverty alleviation, not taken care of by the energy companies present in the Dutch energy market. The housing associations, a crucial party when it comes to energy poverty, are also not given the

adequate capacities to tackle the issue.

Additionally, the housing associations are, to a certain extent, free to decide where their focus lies. That means that some housing associations prioritize sustainability, like improving the isolation of a house or seeking out parties to alleviate energy poverty, and some do not. In the experience of interviewee 10, they even see that: *"there are housing associations that are doing it well, and some housing associations are completely messing it up"*. The willingness of housing associations to tackle energy poverty and their lack of funding can be a barrier for energy cooperatives to tackle energy poverty.

4.2.4 Government

Another barrier lies within the interplay between energy cooperatives and the government. The government is a crucial partner for most energy cooperatives. Many interviewees agree that without governmental support, there would not be an energy cooperative. Governmental support comes mostly in finances. For wind farm Nijmegen-Betuwe, subsidies from the municipality were important to finance the start-up phase of the energy cooperative. Energy cooperative deA would not have had enough financial resources to finance their activities without subsidies from their municipality. In that way energy cooperatives are dependent on governments for their existence.

That dependency is not all one-way. Energy cooperatives offer something which municipalities struggle with, which is local knowledge and a strong network within a neighbourhood. Energy cooperatives also experience much less mistrust from citizens than governments do. In that way energy cooperatives have an easier time reaching citizens. Interviewee 13 remarked the tensions between energy cooperatives and municipalities:

"The ambition that municipalities have for energy communities, are not always fitting with the capacities that they provide for them. [...]. And that happens a lot. They expect everything from energy cooperatives. They do not give [them] the position, the capacities to actually execute them."

Ending with *"And then they tell you 'you see? You can't do it.'"*. This shows the complicated relationship and dynamic that energy cooperatives and municipalities have. Energy cooperatives however have a larger dependency on municipalities than the other way around, because without their support the energy cooperatives would cease to exist. When energy cooperatives are faced with a municipality that is not enabling them in their activities, they will

face a barrier in implementing their energy help. In that sense, the interplay between energy cooperatives and government is a dynamic that is not fair to energy cooperatives.

Tying in with this, is the discrepancy between the system world and the life world. Governments represent the 'system world', which is bound to rules and has a hard time adjusting to the chaotic world of energy poverty. Interviewees criticize them for the fact that they lack local knowledge which leads to policies that are not appropriate to the target audience. Energy cooperatives on the other hand represent the 'life world' and are the target audience that is being talked about. They are not bound to the same rules as governments. They know how to approach people in energy poverty and know what they need. This is also reaffirmed by the interviewees themselves. When talking about the municipality interviewee 10 mentioned how: *"there are many things which are thought of for the people that need it, but these people are not included [in this process]"*. There is a discrepancy between the policies which are made by governments and what people in energy poverty need. Interviewee 10 continues saying: *"of course if you do not know that world, it will be very hard to have any compassion. [...]. Because I see how people do their best. But it does not always work out in the right way."* The interviewees saw this as an important hurdle and barrier which should be addressed, if energy poverty alleviation should become more appropriate.

There are also commercial parties involved with energy poverty alleviation. Governments are used to work with consultancy companies and to be approached by different parties through public tenders. Here is where commercial parties come into play. The commercial parties apply to the public tenders, offering services for energy coaches. They are profit oriented and funding from governmental institutions are part of their business case. They are seen by multiple interviewees, as in the words of interviewee 1, as a "quick fix". Their strength lies in the fact that they are able to visit and help many households per day. On paper this makes it seem like they are effective at alleviating energy poverty. However, because they have to visit many households a day, they work fast. So their visits are short and they only install a few energy saving measures, without involving the residents. A research from Argos shows that these parties use energy poverty as a way to make money (Delhaas, 2024). They seek out the subsidies and keep a profit margin. These commercial parties are competing with energy cooperatives in energy poverty alleviation. This competition is another barrier that energy cooperatives are faced with.

4.3 Opportunities

Although energy cooperatives face a diverse array of barriers during their implementation, there are also opportunities to improve the energy help they provide.

Energy cooperatives do not only work together with the government and local municipalities but also with other parties. Opportunities lie in finding appropriate organisations to work together with. Some energy cooperatives have sought out collaboration with local poverty networks. An example is Zutphen Energie, who started working together with their local poverty network. The collaboration was easily found because when people save on energy, they save money. According to interviewee 4 the most important value of working together with this network, is understanding how to get closer to their target audience. It does not necessarily need to relate to energy but by creating, for example, sewing workshops, they are able to reach people who usually would not be reached. Through these sewing workshops, the energy cooperative gets to know the people that need help and later can be slowly introduced to the available energy help. Another collaborating party is Vluchtelingenwerk, an organisation focused on supporting refugees. They have a project where collaboration is sought together with energy coaches. So that refugees in The Netherlands are not only supported with their integration but are also helped with how to handle energy in their appointed home.

Seeing as energy poverty is often experienced in houses of housing associations, energy cooperatives also work together with housing associations. Setting up a working relationship with housing associations can be tricky, as described in chapter 4.2.3, but if energy cooperatives are able to, it seems to be an effective way to reach people in need. The housing associations are well aware which of their residents need help and they also know where to find them.

Community workers are mentioned often by interviewees as having an essential role in energy poverty alleviation. Seeking out collaboration with community workers is an opportunity that energy cooperatives can take advantage of. Community workers have a large network in neighbourhoods and bring people together based on similar wishes or needs. They are able to involve citizens and have the voices of more vulnerable citizens heard. Most importantly, they are able to identify issues in households and refer them to other organisations that would be able to help. In that sense they have a signalling function for issues that are present in homes. Interviewee 12 from the FIXbrigade would like to work together more intensely with community workers but seeing as many organisations want to work together with them, it has not happened yet. Interviewee 1 had this to say about community workers: *"I always say that*

the energy transition is completely community work, social clubs. Without community work, the energy transition would get stuck.". The perceived importance, among the interviewees, of community workers within the energy transition, is contrary to how important the energy transition is to community workers. Community workers work with vulnerable people, people that are focused on surviving (Ročak & Lieshout, 2021). They generally focus on short term issues, making sure that people can live more comfortably and with less financial stress. The energy transition is a long-term process and as long as municipalities and housing associations do not address the issue, community workers will also not bother themselves.

Energy coaches, just like community workers, also have a signalling function (Van Tilburg et al., 2025). It is easier for people to ask for help with their high energy bill rather than, for example, help with financial issues. Energy is not considered a stigmatising topic for many people and thus energy coaches, according to multiple interviewees, are able to *"get behind the front door"* more easily. Energy coaches are taught to be open towards the people they help. Energy coaches are able to identify households that need more help than they are able to provide. In that way they are able to signal problems and look for adequate help they could provide. In some cases, they can refer people to other organisations which might be of help. Energy cooperatives that have been in a certain location for more than 5 years, are more experienced with the target audience and thus are better able to reach them. By proactively finding those that need help, the target audience can be identified. From the documents it becomes clear that local integration is the most important factor for providing effective energy help (Van der Wal et al., 2024).

The ability of energy coaches and energy cooperatives to 'get behind the front door', cannot be understated. There are many help organisations that are not able to do so, with the same relative ease as energy cooperatives. 'Getting behind the front door' is something that many interviewees mentioned separately from each other. There are a few ways in which energy cooperatives manage to do so. Milieu Centraal has a project called "vertrouwde kring", meaning 'trusted [social] circle'. Here they reach people through their own network. This is a tactic which is also in some form or another used by FIXbrigade, deA, Zutphen Energie and Energiebank Arnhem. According to the interviews, it seems to be an effective way to reach people. Recruitment is done in multiple languages and energy cooperatives try to find employees with differing cultural backgrounds, to convey their message as best as possible. From the documents, people indeed find the energy help oftentimes through their own social circle. Mentioned by multiple interviewees is that people with a migration background indeed gravitate to people from their own culture. Here is also where opportunities lie. Energiebank

Arnhem, Milieu Centraal, Zutphen Energie and deA, among other energy cooperatives, actively try to recruit people with a migration background. In that way they see that the help which they provide, is communicated by someone of the same or similar culture to those in need. This leads to a better understanding of what energy cooperatives provide because people are more inclined to trust those from the same culture.

Additionally, energy help provided by employees with a distance to the labour market, has also shown to be effective (Van der Wal et al., 2024). FIXbrigade is an organisation that does this. They see the benefits as twofold: *"so you can help people at home save money, and subsequently those that are sitting at home [without work] are able to earn money"*. In this way, they provide meaningful experience to hopefully help people towards a job in the future.

4.4 Affect on capabilities

Measuring what effects certain measures have on people's capabilities can be tricky. When can one claim that a certain capability was reached or not after implementing a certain measure? Through the help that energy cooperatives provide and the claims of interviewees, it can be stated that individuals in energy poverty have learned certain capabilities. Namely capabilities as a result of a change in behaviour, capabilities in regard to social improvements and capabilities to deal with financial stressors better.

A goal that multiple energy cooperatives strive for, is that of behaviour change. If individuals in energy poverty are able to change their behaviour regarding energy, they can save money and are better prepared for the energy transition. A lot of individuals in energy poverty are not involved with sustainability or the energy transition for that matter. Once they are faced with the energy transition, for example when a heating network is installed in their neighbourhood, they are likely to resist this. However, if they were already acquainted with the energy transition, they would resist less and be more willing to cooperate.

Energy cooperatives are able to plant the seed for behaviour change. People benefit from a personal approach and personal contact (Van der Wal et al., 2024). In the case of energy coaches, frequent feedback and multiple visits are essential. The energy coaches are able to get to know the people they are helping well and they are able to give help specific to their context. In this way, people learn about their energy usage and the personal approach makes them retain information more effectively. Small measures have already been proven to increase the living comfort in homes (Van der Wal et al., 2025). When people pick up on those, they are able to live more comfortably. In Straver et al.'s (2017) report, they found that people report to have

changes their behaviour after an energy coach has visited. So investments from energy cooperatives in involving more personal contact in their approach seem worthwhile.

Certain behaviour, that has a negative effect on energy expenses, comes from habits, which in turn come from unawareness or cultural background. An example of this is mentioned by interviewee 3:

"People from the Caribbean are used to 30 degrees and in their country of origin it is dusty and hot. They are used to shower a few times a day, preferably half an hour. [...]. If you say "you can only shower for 5 minutes", they will not take you serious."

Interviewee 3, 4 and 10 all mentioned how it is important to be respectful towards people's culture but by making changes in cultural habits, regarding energy, it is possible to decrease the energy bill. By reducing these habits, for example showering two times a day instead of three times, people will save money. By using heating differently, like by lowering the temperature of the boiler or heating only certain rooms instead of the whole house, people will also save money. Once people are able to change their behaviour in this way, they will gain a sense of control about their situation.

Although energy cooperatives focus their attention on behaviour change in the individual, the responsibility for change should not be on the individual. The people in energy poverty are subjected to an energy market that puts the accessibility and affordability of energy under threat. Rather than expecting the individual to change, a change in the energy market would most likely have more influence. In that same sense, energy cooperatives are subjected to a regime of rules and regulations that does not serve them nor the energy transition. The way that energy cooperatives focus on behaviour change in the individual then, most likely, comes from the fact that otherwise no change is made at all. It stems from a place of necessity rather than that it is the ideal solution.

The help that energy cooperatives provide is versatile and even has positive indirect consequences. First of all, even a year after Energiebank Arnhem's last visit, a decrease in loneliness was measured. By being able to ask someone's help without feeling stigmatized, by having this person visit multiple times and being connected to local social networks, people become less lonely. The energy saving measures provide a more comfortable living environment. That also means that people are more willing to invite their family and friends, which also decreases loneliness.

Second of all, apart from a decrease in energy bills, energy cooperatives help people in energy poverty find work, help them with groceries, give them a bike to apply for jobs or an infrared lamp to also decrease rheumatic issues. There are many improvements which can not be summarized in one. It is the context specific help that grants people more than "just" the help with their energy.

Energy help reduces the overall expenditure of energy per month (Van der Wal et al., 2025). On average, households save 215 euros per year on their energy bills after they have received help. People also save on their healthcare bills after receiving energy help. Because their home is more comfortable to live, they have less health issues which means people need less healthcare. Van der Wal et al. (2025) also see that the amount of rheumatic medication that people need, is reduced after the energy help. The 'witgoedregeling' prevents that people have to spend a substantial amount of money on a new washing machine or dishwasher. Energy help that is focused on saving money seems effective.

5. Conclusion

The conclusion first answers the sub-questions and main question. Afterwards the discussion will be presented in which the limitations of this research will be addressed, and this research will be situated within current literature. Then potential options for future research will be given and finally a critical reflection will be made.

5.1 Answers research questions

What measures do energy cooperatives provide to address energy poverty?

Energy cooperatives provide a variety of measures to alleviate energy poverty. The measures they provide can be differentiated between passive and active measures. Passive measures are initiatives that, after they are set up, do not require constant implementation. Once this measure is implemented, it does not require intense upkeep to ensure its positive benefits. Examples of these passive measures are cheaply priced shares in an energy cooperative, providing a share car at a transport hub, installing energy saving measures or creating a fund to stimulate local cohesion and local support.

Active measures on the other hand are initiatives that after being set up, require constant implementation. If these initiatives would stop, its positive benefits would also cease to exist. Examples of these measures are providing energy coaches and/or energy advisors, -fixers, -ambassadors and/or creating workshops.

The way in which the passive and active measures are implemented, varies greatly. To get a coherent understanding of these varying implementations, this researcher has created indicators that determine the effectiveness of the measures and allows for comparison, regardless of their vast differences. The indicators are as follows:

1. The extent to which the measure saves energy
2. The extent to which the measure saves money
3. The amount of information about personal energy usage that is retained
4. The amount of personal contact

Take a passive measure like installing energy saving measures for example. Installing radiator foil, a water saving showerhead and energy saving light bulbs, is a procedure that has to be

done once. It will save energy and water and will thus save money (indicator 1 and 2). Such a measure does not need to be upkeep, because once they are installed, and assuming they do not break down, they will keep being as effective as in the beginning.

An example of an active measure would be the sewing workshop for women, set up by Zutphen Energie. The workshop is set up to empower women, to allow them to meet each other, to teach them skills and to motivate them to leave their homes. These benefits would all stop if the workshop ceases to exist. The workshops score low on indicator 1, 2 and 3 but are highly effective in creating personal contact (indicator 4). Another example of an active measure would be a visit of an energy coach from a commercial party. These commercial energy coaches often provide one short visit, where the energy coach installs energy saving measures and leaves after that is done. This energy coach will make sure that a household saves energy (indicator 1) and subsequently saves money (indicator 2). However, because the visit is short, there is little knowledge about personal energy usage to be retained and there is hardly any personal contact. That means that such a visit scores low on indicator 3 and 4.

The reasons to implement a passive or active measure are not so much conscious but rather a result of a variety of characteristics of an energy cooperative. Their origin, size and approach are examples of these characteristics. There is no hierarchy between passive or active measures.

A remark to be made about the indicators, is that they are created upon the general depiction of people in energy poverty according to the interviews and documents. Energy poverty is experienced at an individual level, which means that people will have different conversion factors to begin with. For example; if a person is neither lonely, nor disconnected from local social networks, they might not need the amount of personal contact that others need. They are more equipped in their conversion factors in that sense. Rather, the personal contact should be structured in such a way that the other indicators are also facilitated. This can be assured by taking a context dependent approach to energy poor households. The measures that are applied should take into account the conversion factors that an individual has.

What barriers do energy cooperatives face when implementing measures against energy poverty?

The barriers that energy cooperatives face during their implementation process of the measures against energy poverty, are fourfold. The barriers impact people's conversion factors negatively because one way or another, the energy help is restricted in reaching the people that need it.

1. People that receive the help

The people on the receiving end of the energy help, are limited in their conversion factors in two main ways. A potential migration background is one of those ways. This could mean that people have fled their country of origin and ended up in The Netherlands. This not only influences their understanding of the Dutch energy system but also it becomes harder to reach people. A lacking proficiency in Dutch means that newspapers or flyers are not read. Additionally, a lack of Dutch people in the social circle of people with a migration background, means that people do not know what help is available.

A second way in which people's conversion factors are limited comes from unawareness about energy or mistrust in (governmental) institutions. This unawareness leads to energy being used in an inefficient way, which causes a rise in the energy bill. Mistrust on the other hand prevents people from accepting the help that is needed. There is help available for them to make use of, which would improve their living situation, but because they do not trust the institution providing the help, they do not make use of it. Thus, their living situation perpetuates.

2. Energy cooperatives

Among energy cooperatives, it is debated whether they are the right party to provide energy help. The main concern regarding their cooperative model, is the disconnect they might experience when addressing energy poverty. The interviewees had differing opinions to share about this topic. On the one hand, energy cooperatives are embedded within communities but on the other hand, usually only the "well-to-do"-members of society are involved in energy cooperatives. This leads to the energy cooperatives not getting as close to their target audience as they might like. This disconnect negatively influences people's conversion factors, as the energy help might not reach them.

Energy cooperatives have different approaches to energy as a whole, which also influences the way they approach energy poverty. Three different factors regarding their approach can be distinguished. First, their approach might be broad, where they focus on more than one domain of energy, or narrow, where they only focus on one domain of energy. Second, an energy cooperative's origin is a determining factor for their current approach to energy. If they have a more social background, they are more likely to be involved with energy poverty now as well. Third, producing and/or supplying energy is a complex process which prevents a potential focus for energy poverty alleviation.

The energy coaches that energy cooperatives employ to provide energy help, decide the

way that the energy help can be received. Some energy coaches lack social and educational skills, which are crucial elements of being an energy coach. Additionally, if they only make short visits, there will be little information retention. This potentially makes them a barrier in providing adequate energy help.

3. Housing associations

Housing associations are an important party when it comes to energy poverty alleviation, and thus an important party to energy cooperatives. Housing associations are responsible for the larger energy saving measures in households. However, they are not getting enough financial funds to do so. This is where energy cooperatives could face a barrier in their alleviation of energy poverty.

Additionally, some housing associations do not prioritize sustainability and are less willing to make energy saving adjustments in their houses. This is another barrier for energy cooperatives.

4. Government

Energy cooperatives and the government have a mutual dependency when it comes to energy poverty alleviation. On the one hand, energy cooperatives cannot survive without governmental funding. On the other hand, energy cooperatives have local knowledge and a strong network with a neighbourhood. They also face less mistrust from citizens. Energy cooperatives experience that the funding from the government is not enough. The government has high expectations from them, but they do not feel facilitated in such a way that they can reach these expectations.

There is also a discrepancy between the system world and the life world. Governments represent the system world and energy cooperatives represent the life world. Both worlds have their own way of communicating and when this is not aligned governmental policies are not adequate. Overcoming this discrepancy will assure that energy cooperatives are not faced with a barrier in this regard.

The commercial parties that are involved in energy poverty alleviation are another barrier for energy cooperatives. The commercial parties are focused on working fast and addressing as many households as possible in a day. The effectiveness of this is questionable and the governmental funds are used as a way to make a profit. The commercial parties are competition for energy cooperatives which is a barrier for reaching as many households as possible.

What opportunities could energy cooperatives make use of when implementing measures against energy poverty?

Despite the barriers that energy cooperatives face in their implementation of energy saving measures, there are opportunities that they could make use of.

Working together with other parties is one of the opportunities. Seeking out collaborations with other organisations has shown to be fruitful. Setting up an activity with another organisation has shown to be a way to get closer to the target audience. Working together with an organisation that supports refugees, also allows for bridging the knowledge gap about the Dutch energy system for those that just arrived in The Netherlands. Housing associations are another relevant party to work together with. Although setting up a working relationship can be tricky, they are close to the target audience of those living in energy poverty which is useful for energy cooperatives.

Community workers provide another opportunity for energy cooperatives. Community workers have a large local network, they can bring people together, involve the more vulnerable citizens and identify households that have issues in general, so also energy related. Just like energy coaches, community workers have a signalling function when it comes to identifying problems. They are able to get close to people in energy poverty and alarm other organisations when they identify issues. Both energy coaches and community workers have shown to be a valuable actor for energy cooperative and they are another opportunity for energy cooperatives to make use of.

Another possible opportunity is reaching people through their own social circle. This is effective and a tactic that multiple energy cooperatives implement. Reaching people in not only Dutch, but also other languages results in energy help also reaching households that previously would not have been reached. People are more inclined to trust someone from the same culture and are more willing to accept help provided by people from the same culture.

How do the measures provided by energy cooperatives affect the capabilities of those living in energy poverty?

As discussed before, energy cooperatives provide passive and active measures to alleviate energy poverty. Their effectiveness can be assessed based on four indicators. When a measure performs well in a certain indicator, specific capabilities are developed.

1. The extent to which the measure saves energy

When a measure saves energy, it creates a more comfortable home. More comfort at home leads to better health because potential mold, excess CO₂, coldness and stress decreases. A more comfortable home will make people less shameful and motivate them to invite friends and family over. That also decreases loneliness.

People's conversion factors regarding their cognitive ability are improved. Improved cognitive ability also allows for more rational decision making. The capabilities that are developed are the ability to save energy, to keep a comfortable home and being able to have good health, physically and psychologically.

2. The extent to which the measure saves money

Being able to save energy goes hand in hand with being able to save money. When a household saves energy, their energy expenditure decreases and they save money. Also being able to have a good health, means that medical expenditure decreases.

However, it is also possible to save money without necessarily saving energy. For example; when using the 'witgoedregeling', a household can receive a new washing machine or dishwasher. This will save this household from having to spend money on this expense, but it does not necessarily mean that that household will also save energy because of it. That is why this indicator needs to be separate.

Being able to keep more money at the end of the month means that people's conversion factors improve. They have more money available for a variety of things. The capabilities that are developed, are the ability to have more money available and making choices more freely.

3. The amount of information about personal energy usage that is retained

For someone to be able to retain information about their personal energy usage, means to be able to get insight into someone's own lifestyle and habits. When people receive advice, they create awareness about their personal energy usage.

This indicator can only be present when indicator 4, the amount of personal contact, is also present. Only through personal contact and multiple visits, people will be able to understand and apply the information that is given to them. Thus, indicator 4 needs to be present for people to retain information about their personal energy usage. Only this way it is possible to give context specific advice, advice suited to the needs of people. Regular feedback is necessary for knowledge retention, which can also only be done with multiple visits.

With the awareness that is created, people's conversion factors improve. With the information that people gained, they will be able to make behaviour changes. This grants them

a sense of control over the energy they use. The capabilities that are gained with this indicator are the ability to gain insight and awareness into one's energy usage, behaviour change and a sense of control.

4. The amount of personal contact

Having personal contact is a necessity for indicator 3 to be present. However effective personal contact also has other effects. If, for example, an energy coach visits a household multiple times, they are able to get to know the household and the people living in it. They get familiar with the context of this household and are able to connect them with specific organisations that provide other help they need. This help will relieve stress and worries and make people start participating in society again.

Personal contact decreases loneliness and people gain the conversion factor to be connected to local social networks. The capabilities that are developed are a decrease in loneliness, being able to maintain a social circle and participating in society.

Main question: How can energy cooperatives help alleviate energy poverty in The Netherlands?

When energy cooperatives decide that they want to help in alleviating energy poverty, they must understand what they are getting themselves into. Energy poverty is a complex problem, something that exacerbates already existent injustices. For an optimal effect, it requires not only energy saving measures but also personal contact.

Generally, energy cooperatives have local knowledge. This is something that municipalities lack when addressing energy poverty. Energy cooperatives can show to be a valuable partner in energy poverty alleviation by sharing their information. They can serve as a bridge between the system world of the municipality and the life world of local neighbourhoods.

Barriers that energy cooperatives might experience when wanting to help in energy poverty alleviation are fourfold. First, there are barriers regarding the people that receive the help. These people often have a complex background with multiple factors that make providing energy help difficult. Second, energy cooperatives themselves have an array of characteristics that prevent them from supplying adequate help. Third, the housing associations, an important party for energy cooperatives, have a difficult time getting proper funding. If sustainability is a high priority for them, they experience hinder in addressing energy poverty because of the lack of

materials. Fourth, the government has a complicated relationship with energy cooperatives. This complication could prove as a barrier for addressing energy poverty. For energy cooperatives to help in energy poverty alleviation, these four barriers need to be addressed first.

Once these barriers are addressed, energy cooperatives can focus on making use of certain opportunities. The opportunities lie in working together with other parties, making use of the valuable characteristics that community workers and energy coaches bring to the table, and reaching people through their own social circle. When this has been considered, energy cooperatives can focus on providing energy help.

As shown in the first sub-question, effective energy help is dependent on four indicators. Energy cooperatives need to understand which measures have what effects. Some energy cooperatives apply certain measures, expecting a certain effect. However, they turn out to not have those effects because they are hard to use or people do not have sufficient knowledge. Energy cooperatives should consider providing measures that cover all four indicators. Energy coaches that come for multiple long visits are an example of this. They make sure households save energy and money, they ensure knowledge retention and provide personal contact.

5.2 Discussion

5.2.1 Limitations of this research

With regards to the energy cooperatives where interviews were conducted, it was not possible to conduct an interview with one important actor, Betuwewind. Betuwewind is a large energy cooperative that has faced a lot of backlash from the local community because of the placement of wind turbines. Their insight would have been helpful in this research, to better understand the dynamic between energy cooperatives and local residents. An interview could have helped to understand reasonings from Betuwewind and potential grievances from the residents. However, an interview never manifested itself despite efforts from this researcher.

Additionally, although efforts were made to conduct surveys among individuals in energy poverty, this research was not able to get any energy cooperative to comply with this. The main reason that energy cooperatives declined the request was because they get asked to distribute surveys among the individuals that they help, very often. To compensate for the lack of insight from individuals in energy poverty, a document analysis was performed. The documents that were analyzed all had the topic of energy poverty, people in energy poverty, their experiences and solutions to energy poverty. The document of Van Der Wal et al. (2024)

even conducted a survey at Energiebank Arnhem, an energy cooperative where this researcher originally wanted to conduct a survey themselves. In hindsight, the documents turned out to be a suitable alternative. Although it would have been preferable to be able to collect and use primary data, this secondary data contains extensive information that would not have been possible to collect for this research within the time frame. The questions this researcher intended to have answered and the information that was expected to be gathered with the surveys, was all extracted from the documents.

5.2.2 Situating results within current literature

This research gives a view of what energy cooperatives do when it comes to energy poverty alleviation. The indicators give a clear assessment of the help that energy cooperatives provide. Subsequently, when a measure scores low on the indicators, it becomes apparent that not all the help that energy cooperatives provide, is as appropriate or effective as it was first thought. In this way, this research goes beyond that of Young & Halleck Vega (2024). Their research assesses the relationship between energy cooperatives and energy poverty and provides a list of the measures that energy cooperatives provide. However, they do not take the step to assess what the measures do and what the effects of that measure are. Not all measures are equally effective and listing them does not do justice to the measures that are significantly more effective than other measures. On the other hand, it is important to mention that providing measures, although maybe not the most effective, is more helpful than providing no help at all. As also mentioned by interviewee 3.

The barriers in energy poverty alleviation, as found in this research, are not fully corresponding to those stated by Boostani et al. (2024) and Hanke et al. (2026). The barriers in the organisational structure and the financial barriers were not as pronounced in the interviews that were conducted for this research. The different approaches that energy cooperatives have to energy poverty alleviation, as stated in chapter 4.2.2., coincide somewhat with the organisational structure-barrier. However, the approaches stem from more than just the organisational structure. The financial barrier barely came across in this research. Some interviewees noted the importance of governmental funding, and the fact that without this, they would not be able to function. However, those statements are more general about the energy cooperative overall. The fact that this barrier was barely mentioned, could be a methodological shortcoming. The barrier regarding the people on the receiving end of the energy poverty measures, is coinciding with the barriers from Boostani et al. (2024) and Hanke et al. (2026). This research on the other hand, did find barriers additional barriers to those in the literature.

The discrepancy between the barriers found could be explained by the fact that this research focused on The Netherlands specifically and the other research did not.

Overall, the health effects of energy poverty, as described in the results, were surprisingly comparable to the existing literature. Reported effects of energy poverty like stress and depression are concurrent with Ballesteros-Arjona et al. (2022). Even more niche concepts related to energy poverty, like dignity for example, came across in the interviews and are coinciding with Grossmann & Trubina (2021). This reaffirms that the effects of energy poverty as researched by these researchers, is still up to date.

5.3 Recommendations for future research

Seeing as there is a lack of research on the dynamic between the life world and the system world, and its seeming importance to the topic energy poverty, future research should delve more into this dynamic. It will create a better understanding between both worlds. This in turn will make sure that measures and policies from the system world can be made more appropriate and there is a greater empathy created from the life world to those in the system world. As interviewee 10 explained, those in the system world are trying their best. However, their efforts might be misunderstood or directed in the wrong direction. That is also where mistrust towards governments comes from. To get a better understanding of this dynamic also means that it is possible to teach both worlds about each other. To hopefully make them become closer and suppress the mistrust.

The indicators as presented in this research are a guideline along which energy cooperatives can structure their measures. Future research should extend upon these indicators. There are potentially more indicators to be found and more energy cooperatives to be interviewed. This researcher foresees a scoring system that makes the assessment alongside the indicators, more tangible.

Future research should also focus on what the best way is to structure energy poverty alleviation. At this moment energy poverty alleviation is rather diffuse. Municipalities are an important player in alleviating energy poverty but suffer from a lack of local networks and experience low trust from those in energy poverty. Energy cooperatives on the other hand are better integrated into local networks and have more trust. However more than half of all energy cooperatives do not address energy poverty, which makes their overall impact limited. The Dutch government is lacking a long-term plan regarding energy poverty alleviation. A more structured and integrated organisation of energy poverty alleviation will be beneficial.

Lastly, community workers are not involved in the energy transition because they are

more focused on short-term issues. Paradoxically, many interviewees see them as an important actor within the energy transition. Their perception of community workers differs from reality. Future research should focus on ways in which the relationship between energy cooperatives and community workers can be made stronger.

5.3.1 Practical recommendation

A practical recommendation for energy cooperatives is to take the indicators into account whenever they are planning on implementing a certain measure. Assessing the expected effectiveness of a measure beforehand, allows them to already foresee certain barriers or opportunities in their implementation. Additionally, efforts should be made to employ a more diverse group of employees. This will make the energy cooperative more diverse, which makes them better able to get closer to the target audience. This makes the gap between them and the target audience smaller. A more diverse group of employees also empowers those groups that are currently not as involved with energy cooperatives.

A recommendation for governments would be, that they have to be more forthcoming in their relationship with energy cooperatives. They have high expectations for energy cooperatives but without available finances, the energy cooperatives will not be able to fulfil those. A strong energy cooperative could mean a lot for the energy transition and a local community, something that the government will also benefit from.

5.4 Critical reflection

As a researcher it is important to be mindful of the fact that you have an objective approach to the subject matter. This researcher was reminded of that when the first interviewee cried when they were giving an example which touched them personally. The interviewee saw how a couple struggled with energy poverty, and they were able to help. Through their help the consequences were resolved, and the couple was very thankful for that. Although the purpose of the interview was to gain objective knowledge and information. It is crucial to remind oneself of what the energy poverty can do to people.

It was interesting to hear how some interviewees referred to "us" and "them". Usually "us" was used when the interviewees referred to themselves, their colleagues and this researcher. "Them" was used when referring to people in energy poverty or refugees. It seemed to be unintentional but making a differentiation between people serves no purpose. The reason why they made this differentiation remains unclear.

During this research, more men were interviewed than women. Which creates a skewed

representation of men and women. Multiple interviewees noted that the field of energy cooperatives and energy poverty alleviation seems to be dominated by men. Although efforts were made to make sure that more women were interviewed, this research did not succeed in that.

When I reflect on myself, I realize that at the beginning of this research I had too much of an optimistic view on the role that energy cooperatives play in energy poverty alleviation. I thought that the impact that energy cooperatives had and the extent to which they alleviated energy poverty was much larger than the reality. Only seeing the data that 42 percent of energy cooperative are involved with energy saving, made me challenge these assumptions. Together with my internship supervisor Alex we reflected on this and concluded that the role of energy cooperatives in energy poverty alleviation, is less significant than I first thought.

Additionally, this research certainly was a process for me. Coming into it, I thought I knew how energy poverty alleviation and the Dutch energy system worked. I did extensive reading beforehand and thought that that would be enough. As soon as I started my internship and I started taking the interviews and talking to my internship supervisor, I realized how much my own knowledge differed from reality. My knowledge from reading articles was different or not nuanced enough than what was happening. It was a great journey to learn from the interviewees how energy and energy poverty works.

Lastly, throughout this research, my interest was primarily drawn to the topic of energy poverty. I found it interesting to learn about a topic where elements of sustainability, namely energy saving, and a social problem, namely poverty, came together. Throughout the analysis and writing of the results, I had to constantly remind myself that I was mostly writing about energy cooperatives and their relation to energy poverty alleviation. Even though I really wanted to write down the interesting dynamics and examples about energy poverty, I had to refrain from this.

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7. Appendix: AI statement

While conducting this research, the Windows Teams AI-function was used to transcribe the interviews. All online interviews were conducted with Windows Teams. The interviews were transcribed directly at the same time as the interview was recorded. For interviews that were conducted in person, the interviews was recorded on a phone and subsequently played for a Windows Teams meeting. Where the interview was transcribed.

The transcriptions were not perfect but were accurate enough to give a general overview of the content of the interviews. Afterwards, this researcher read through all AI-transcribed interviews and corrected spelling mistakes and grammatical errors as well as possible.

No other AI-tools were used.