MASTER THESIS

# BARRIERS AND DRIVERS FOR BUSINESSES TO ADOPT ROOFTOP SOLAR POWER SYSTEMS

## A QUALITATIVE RESEARCH AMONG BUSINESSES WITH, AND WITHOUT, ROOFTOP-PV


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PROGRAMME
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DATE
18 August 2022


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# Abstract

**Purpose** – Countries all around the world are working toward an increase of renewable energy. The Dutch national government set ambitious goals that municipalities have to realise. Due to concerns regarding biomass and wind turbines as renewable energy sources, most municipalities focus on solar power. Many businesses have large rooftop surfaces suitable for solar panels, but most of this potential is still unutilised. This study focuses on gathering insight into the decision-making processes of businesses to help understand which barriers and drivers play a role in the adoption of rooftop solar power systems.

**Method** – In-depth semi-structured interviews were conducted with businesses that already have solar panels on their rooftops and businesses that do not have solar panels yet. Each participant was located in or near the municipality of Enschede (the Netherlands). A total of 15 interviews were conducted, in which topics such as barriers, motives, financial realisation, their stance on sustainability, and their preferred method of information acquisition were addressed. Each interview took between 30 to 60 minutes and was recorded, transcribed, and then coded based on both a deductive and inductive approach.

**Results** – Various barriers and motives play a role in the decision-making process of businesses. Frequently mentioned factors include level of knowledge, financial realisation, technical aspects, and experiencing intrinsic motivation to be sustainable. The lack of knowledge was often solved by hiring an external party to assist in the process and therefore was not a bottleneck in the process toward rooftop solar panel installations. Overall, the influencing factors did not differ greatly among businesses with and without rooftop-PV.

**Conclusion**: The findings show that there is always a multitude of factors that influence the decision-making process. Most respondents wished to install solar panels but had to wait for the right moment to do so, such as rooftop renovations or stakeholder demands. Rooftop solar panel installations are often seen as more complicated than expected due to, for example, rooftop modifications and strength assessments costing more time and money than anticipated. However, this does not seem to stop businesses as their wish to operate more sustainably overshadows financial and operational concerns.

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# 1 Introduction

For decades, countries have been trying to minimize their carbon dioxide (CO2) emission to combat climate change. The high concentration of carbon dioxide in the atmosphere leads to a global temperature increase as the gas absorbs and radiates heat (Lindsey, 2020). The European Union agreed to aim for a European CO2 reduction of 55% in 2050 to combat climate change (Rijksoverheid, n.d.-b). This will mostly be done through increasing renewable energy sources. The Netherlands aims for at least 27% of energy to come from renewable sources in 2030 (Rijksoverheid, n.d.-a), compared to 11,1% in 2020 (Centraal Bureau voor de Statistiek, 2021). The country's objective is to have an entirely sustainable and CO2-neutral energy supply by 2050 (Rijksoverheid, n.d.-a). With these goals in mind and the high share of sustainable technology patents, the Netherlands is one of the leading European countries in promoting an increase in renewable energy (Mata Pérez et al., 2019). The presented goals are set by the national government but the realisation lies with the Dutch municipalities, who work together with each other, social partners, residents, and businesses (VNG, n.d.). Therefore, municipalities carry the responsibility of increasing renewable energy sources. Besides climate change, the Netherlands is also turning to renewable energy due to a decline in available fossil fuels in the country. Using more renewable energy sources will prevent the Netherlands from becoming dependent on other countries for their energy supply (Rijksoverheid, n.d.-b). The main sources of renewable energy are biomass, wind turbines, and solar panels. However, biomass and wind turbines are both controversial as there are concerns regarding the renewability of biomass (Milieu Centraal, n.d.) and the health effects of wind turbines on nearby residents (Rijksinstituut voor Volksgezondheid en Milieu, n.d.; Ekker, 2021). As a result of the concerns regarding biomass and wind turbines, many provinces and municipalities decided to focus on solar panels on large rooftops, such as those from businesses (Centraal Bureau voor de Statistiek, 2022). This focus on rooftop solar power systems (rooftop-PV) is paying off as in 2019, for the first time, rooftop-PV power was greater for businesses than for homes (Centraal Bureau voor de Statistiek, 2020). Even with this increase, however, only 12% of available rooftop surface is equipped with solar panels (Over Morgen, 2021), which leaves much room for improvement.

Concerns regarding the environmental destruction are rising globally, causing businesses and individuals to become more considerate of the effects of their activities (Mukherjee et al., 2016). Other reasons why businesses have started becoming more sustainable is due to a reduction of costs, an improved market opportunity, more waste reduction, continuous innovation and long-term growth, environmental protection, and to build more consumer trust and loyalty (Shafaat & Sultan, 2012). One of the options for businesses that wish to be sustainable is to implement rooftop-PV. However, there are barriers that

complicate the realisation of solar panels on rooftops. For example, industrial halls have large rooftops but they do not save enough money on bills to justify the large investment (Lee et al., 2013). Besides the study of Lee et al. (2013), there is a minimal number of studies toward solar panel adoption by businesses. Existing studies mostly focus on consumer adoption, meaning there is a lack of insight in barriers and drivers for businesses. This study allows more insight for several organisations such as (local) governments and consultancies. This insight could help with the formulation of policies to achieve the national goals for renewable energy yield. It could also help to form a basis for future research that dives deeper into specific barriers and/or drivers determined in this study.

This study explores how Dutch businesses view the prospect of realising rooftop-PV and what factors influence their decision-making process. In particular, this study focuses on the barriers and motives of businesses. The research question of this study is: *Which factors do businesses consider regarding the possible equipment of their rooftops with solar panels?* This study will also add practical knowledge such as how businesses search for information, how they (wish to) financially realise rooftop-PV, and what role a municipality should fulfil in order to stimulate rooftop-PV. Lastly, this study will look into the two options that businesses have when they wish to equip their rooftop with solar panels. Businesses can make the investment themselves or rent their rooftop to an external party. This external party then makes the investment, pays the property owner a fee to rent their rooftop, and then sells the energy. This study includes the reasons why some businesses have chosen for this option, while others have not.

# 2 Theoretical framework

This chapter describes what other studies have written about the subject of rooftop-PV for both businesses and consumers. An analysis of sustainability in businesses is made to provide insight into the development of corporate sustainability and what role rooftop-PV plays in this. Additionally, studies regarding consumers are added due to a lack of studies toward rooftop-PV for businesses.

## 2.1 Sustainability for businesses

More and more businesses are becoming aware of their surroundings in a broad sense and are incorporating pro-active policies in favour of people and the preservation of the planet (Oyevaar et al., 2016). We call this corporate social responsibility (CSR). CSR has a long history and was first written about in literature in the 1950s and 1960s (Latapí Agudelo et al., 2019) and has continued to evolve since then. In the 1990s, the international perspective toward sustainable development and social responsibility was influenced by significant international events, and began spreading globally (Latapí Agudelo et al., 2019). Topics that fall under CSR are the workplace, marketplace, environment, community, ethics, and human rights (Moir, 2001). There are several benefits that arise when a business decides to implement CSR, which include a reduction in employee turnover, an increase in customer satisfaction, and a more positive reputation (Galbreath, 2009). When a business decides in favour of CSR, the largest differences are seen in a reduction of pollution and a more efficient usage of resources (Mathis, 2004). Therefore, implementing CSR leads to benefits for businesses, as well as the environment.

Sustainability is part of CSR and is often referred to as corporate sustainability. A few factors positively influence this corporate sustainability, including the level of competitiveness of markets and the enforcement of corporate sustainability by governments (Chih et al., 2010). Business performance regarding sustainability is determined by the size of an enterprise (Aritach et al., 2010; Bansal, 2005; Chih et al., 2010), its capacity for growth (Aritach et al., 2010), media pressure (Bansal, 2005), social responsibility, and the availability of senior management (Akisik & Gal, 2011). The presence of these factors lead to a better sustainability performance. Furthermore, the available financial resources do not play a role for leading sustainability enterprises globally (Aritach et al., 2010), while this factor does play a role for businesses in emerging markets (Khaled et al., 2021). A study by Chih et al. (2010) studied the relationship between CSR and financial performance among 34 countries in Europe, Asia, South America, North America, and Africa and, overall, found no significant relationship. These varying results among studies could indicate that the impact of financial resources varies among different markets. A last influence is that of gender diversity of boards, as businesses

with a high gender diversity tend to operate more sustainably (Kamarudin et al., 2021). However, this relationship is weaker in highly competitive industries, indicating that both gender diversity and competitiveness have an impact on a company's sustainability performance.

In order to continue operating sustainably, sustainable business models are often implemented to "create deliver, and capture value that benefits the company and its stakeholders in concert with the environment and society" (Piscicelli et al., 2017, p. 1). More businesses have started implementing sustainable business models due to external pressure, coming from organisations advocating for sustainability (Nosratabadi et al., 2019). External pressure is a cause for sustainable business models, but its success is determined by other factors, including having constant innovation, being profitable, and having intrinsic motivation to be sustainable (Long et al., 2018). When one or more of these factors is not present, it is unlikely that a business will succeed in operating sustainably.

A part of a business' sustainability plan could be to produce their own electricity with, for example, wind and solar power (Armaroli & Balzani, 2016). Electricity is deemed as "the most flexible and convenient form of energy" (Armaroli & Balzani, 2016, p. 48). Therefore, an electricity-powered world is a suitable option in ending the use of fossil fuels. According to Breyer et al. (2016), solar power will likely be the biggest and most cost-efficient energy source globally.

In short, businesses are becoming more aware of the effect of their operations on the environment. This has led to an increase in businesses implementing corporate social responsibility policies, as well as sustainable business models. For this to succeed, various factors have to be taken into account. Solar power is proven to be a good option to replace fossil fuels and therefore, rooftop-PV is an important aspect of the energy transition.

## 2.2 Factors that influence rooftop-PV adoption

### 2.2.1 Influencing factors for consumers

Various factors influence the decision-making of consumers regarding the adoption of rooftop-PV. Previous studies have shown that attitude has a significant effect on the intention to adopt solar panels (Abreu et al., 2019; Ahmad et al., 2017; Perri et al., 2020; Ru et al., 2018; Srivastava & Mahendar, 2018; Zulu et al., 2020). Having a positive attitude is based on a consumer's social status, self-sufficiency, and financial gains, while a negative attitude is based on cost, effort, and risk (Korcaj et al., 2015). Furthermore, consumers are heavily influenced by social norms (Tanveer et al., 2021) and social pressure from their surroundings, such as neighbours, friends, and family (Abreu et al., 2019; Korcaj et al., 2015; Lau et al., 2020; Srivastava & Mahendar, 2018; Tanveer et al., 2021; Wolske et al., 2021; Zulu et al., 2021).

This is supported by Palm (2016) who found that local factors, such as person-to-person information channels, are crucial for raising interest in solar panels and these local factors heavily influence one's decision to adopt solar panels.

Besides these general influences, there are more factors that play a role in the decision-making process of consumers. There are various factors that are seen as obstacles by consumers and therefore make the adoption of solar panels less appealing. One of these barriers is the financial aspect, such as the fear of losing money when moving (Balcombe et al., 2014), not saving enough money with the investment (Balcombe et al., 2014), and the initial investment (Best et al., 2019; Palm, 2018; Tanveer et al., 2021). Additionally, consumers also experience the perceived risk of safety and security as a barrier (Balcombe et al., 2014; Tanveer et al., 2021), which is fuelled by the difficulty of finding trustworthy and professional firms (Palm, 2018), that consumers face. Furthermore, not all homes are suitable for solar panels due to the surroundings such as tall buildings or trees, but even if homes are suitable, the realisation of solar panels is seen as a hassle (Balcombe et al., 2014).

On the other hand, there a number of factors that can positively influence consumers to adopt rooftop-PV. They feel motivated by the belief in the benefits of rooftop-PV and social norms (Tanveer et al., 2021), as well as their knowledge on subsidies and the required investment (Vasseur & Kemp, 2015). In line with consumers' knowledge of the existence of subsidies, is the actual availability of subsidies that motivates consumers to realise rooftop-PV (Asano & Aoshima, 2017; Hughes & Podolefsky, 2015; Palm, 2018), as these studies determined that municipalities who offer subsidies see a larger increase in solar panel purchases than municipalities who do not offer subsidies. In addition, multiple studies (Asano & Aoshima, 2017; Balcombe et al., 2014; Hughes & Podolefsky, 2015; Palm, 2018) determined that the financial benefits of purchasing solar panels play a large role. Financial benefits mentioned are the value increase of one's home (Balcombe et al., 2014), price reductions of solar panels (Crago & Chernyakhovskiy, 2017), and becoming (more) self-sufficient (Balcombe et al., 2014; Korcaj et al., 2015; Tanveer et al., 2021), which leads to the benefit of lower energy bills (Balcombe et al., 2014). In short, consumers are influenced by a wide range of factors, which include many financial factors such as investment, subsidies, and house value.

### 2.2.2 Influencing factors for businesses

Businesses are influenced to be sustainable by factors similar to those seen in consumers. However, there are some slight differences and various new factors are added that also have an influence. In general, local and provincial measures influence a business' decision, as well as the available grid capacity and an optimal rooftop orientation regarding shade (Naber et al., 2020). In addition to these general influences, businesses run into various obstacles that reduce the likeliness of them realising rooftop-PV. One of the main barriers is the lack of

knowledge, which is caused by unreliable sources, inadequate advisory, and a lack of transparency in the process (Strooper et al., 2020). Furthermore, businesses with a high energy consumption often pay low prices for their electricity (Strooper et al., 2020), which makes solar panels unappealing as the payback time increases (Veenstra, 2015), while the initial investment is still significant and a large barrier (Lee, 2013). It can be difficult for businesses to get permission from the head office to place solar panels on their rooftop, but if they are convinced, the energy yield may be too low, or the required rooftop modifications may still make a business decide against solar panels (Gemeente Utrecht, 2019), which shows that multiple factors play a role in the decision-making process.

Businesses' motives could be used in project approaches and policies to stimulate more businesses to adopt rooftop-PV. A large factor is that of the profitability of solar panels, as well as the willingness to invest (Naber et al., 2020). There are no additional studies that contain motives for businesses, which also proves the lack of knowledge on this subject, which means that this study is of added value to this field and will likely present new findings that could be used in future studies.

## 2.3 Overview of influencing factors

Table 1 shows an overview of the influencing factors mentioned in paragraph 2.2.

**Table 1**

*Overview of influencing factors*

| | Consumers | Businesses |
|---|---|---|
| General factors | • Attitude<br>• Social norms<br>• Social pressure | • Grid capacity<br>• Local and provincial measures<br>• Rooftop orientation |
| Barriers | • Difficult to find trustworthy and professional firms<br>• High initial invest<br>• Losing money when moving<br>• Not saving enough money with the investment<br>• Perceived risk of safety and security<br>• Process is a hassle<br>• Unsuitable home | • High initial investment<br>• Lack of knowledge<br>• Long payback time<br>• Low energy prices, which makes solar panels not profitable<br>• Low energy yield<br>• Requiring head office permission<br>• Rooftop modifications |
| Motives | • Availability of subsidies | • Profitability |

| | | |
|---|---|---|
| | • Being self-sufficient<br>• Belief in benefits<br>• Home value increase<br>• Level of knowledge regarding subsidies and required investment<br>• Lower bills | • Willingness to invest |

# 3 Methods

## 3.1 Research design

Qualitative research has been conducted to gather more insight into the barriers and motives that businesses face when they wish to realise rooftop-PV. The data was gathered using in-depth interviews with 15 businesses based in and around the municipality of Enschede (the Netherlands). A qualitative research was preferred over a quantitative method due to the desire to gather more in-depth arguments to support the answers given by respondents. This provides more insight into participants' thought processes and offers them the opportunity to give more detailed answers, which was of great value to the study. The interviews were semi-structured, indicating that no definitive question order was determined, but rather a list of topics and a few key questions. This method leads to a more natural conversation between researcher and participant (Babbie, 2014), which was preferred.

## 3.2 Case study: Municipality of Enschede

The case study of this research is the municipality of Enschede, which counts 160,000 inhabitants (Kennispunt Twente, n.d.), falling just outside the top 10 biggest cities in the Netherlands. The municipality is the largest in the province of Overijssel, which counts a total of 25 municipalities.

Each province has developed a 'solar ladder', which describes which areas should be covered with solar panels, before moving on to the next location. The solar ladder of the province of Overijssel consists of three steps (Provincie Overijssel, 2020): (1) stimulate solar panels on rooftops, unused space (e.g., parking lots), small field on agricultural estates, and local initiatives on city edges; (2) realise solar parks that that use 80% of the area for solar panels and 20% for greenery and water; and (3) limit solar parks on agricultural land and on water. This way, agricultural land will be spared as all other options on the solar ladder should, preferably, come first.

The municipality of Enschede has approximately 450 hectares of rooftop surfaces that are (very) suitable for solar panels (Gemeente Enschede, 2021). By 2030, 20% of this available potential must be utilised. Enschede stands at place 96 of 355 when it comes to how many additional megawatts were realised through rooftop-PV between 2018 and 2019. Between these years, Enschede saw an increase of 3,91 megawatt for rooftop-PV on business rooftops (Centraal Bureau voor de Statistiek, 2020). For context, the lowest increase was 0,03 megawatts and the highest increase was 107,94 megawatts.

According to the Benchmark 'Zon op bedrijfsdaken 2021' by Over Morgen (2021), the municipality of Enschede has 1,025 business rooftops larger than 1,000m$^2$, with a total surface area of 2,953,113m$^2$. This would annually produce a sufficient amount of electricity for 29,531

households. In terms of potential utilised, Enschede currently ranks 297 out of 355 Dutch municipalities and stands at place 25 out of 25 within the province of Overijssel. As described in the solar ladder, one of the first focus areas of solar panels should be on rooftop surfaces. The municipality wishes to utilise the potential of large rooftops and due to the large potential of rooftop-PV, this municipality is taken as a use case.

## 3.3 Instrument

Before conducting the interviews, two interview guides and a codebook were formulated. This was done based on the literature regarding barriers and motives presented in the previous chapter. The interview guides, which can be found in appendix 1, contained various topics such as motivation, financial realisation, and level of knowledge. The interview guide for businesses with rooftop-PV focused on how the respondent experienced the process of realising rooftop-PV. Questions regarding their financial realisation, what their biggest motivation was, what stakeholders influenced their decision, and how they knew what steps to take were asked. On the other hand, the interview guide for businesses without rooftop-PV contained questions regarding obstacles refraining them from realising rooftop-PV, what knowledge they are missing, and if they need additional help in order to decide in favour of rooftop-PV. In both cases, follow-up questions were asked based on answers given by respondents to get a full understanding of what respondents experienced.

The first question of most interviews was to explain what a business does (e.g., what industry they are in, when it was established). Almost all respondents quickly switched to the topic of solar panels and why they decided to adopt solar panels or why they did not. This led to most respondents already answering a large number of questions without the researcher needing to ask specific questions. The respondents were allowed to simply tell their story in the way they wished to present it. During two interviews, the respondent talked too much about irrelevant topics and intervention from the researcher was required. Both respondents reacted well to this and immediately recognised they indeed strayed away from the research topic. Overall, respondents were excited to talk about the process they went through or about future plans regarding sustainability and therefore answered most of the questions before they were asked.

## 3.4 Participants

To partake in the study, participants had to fulfil two requirements: own their business property and be located in the municipality of Enschede or in a surrounding municipality. Participants have to own their property due to the property owner making decisions regarding solar panels. If a participant would be renting their property, they would have little to no say in this decision

and therefore would not be of added value to this study. A distinction was made between businesses that already had solar panels on their rooftop and businesses who did not have solar panels yet, which resulted in two different interview guides as described in the previous paragraph.

Participants were found through the network of the municipality of Enschede, the researcher's personal network, and the online tool 'Zonnedakje'[1]. This tool gives more insight into what properties already have solar panels, and which ones do not. Rooftops were selected at random and were then approached to participate in this study. Contact was made by phoning businesses and often, an e-mail with more information was requested before businesses agreed to participate. A handful of businesses approached in this manner turned out to not be the property owner as majority of businesses rent their property and therefore did not comply with the requirements to participate. A total of 35 companies were approached, leading to a sample size of 15. Reasons why not all approached businesses were able to participate was because they simply did not want to or because they never responded after calling and sending e-mails. An overview of all participants can be found in table 2. The table shows the industry in which each participant operates, whether they have rooftop-PV or not, their rooftop surface area, and in which municipality the participant is located. Some participants have several locations throughout the Netherlands or globally. This table only looks at the location(s) in the municipality of Enschede and, in one case, in the municipality of Hengelo. Furthermore, the rooftop surface area is their total rooftop. This means that the surface area suitable for solar panels may be smaller. Lastly, one of the participants (nr. 8) had solar panels on one rooftop but was unable to realise this on their other rooftops. This respondent was therefore included in both groups (with and without rooftop-PV).

**Table 2**

*Overview of interview participants*

| Nr. | Company industry | Rooftop-PV | Rooftop $m^2$ | Municipality |
|---|---|---|---|---|
| 1 | Agriculture | Yes | 2,600 | Enschede |
| 2 | Textile | Yes | 3,100 | Enschede |
| 3 | Business park | Yes | 3,410 | Enschede |
| 4 | Manufacturing | Yes | 4,640 | Enschede |
| 5 | Digital agency | Yes | 540 | Enschede |
| 6 | Digital agency | Yes | 630 | Enschede |
| 7 | Manufacturing | Yes | 930 | Enschede |
| 8 | Construction | Yes / No* | 3,720 | Enschede |

[1] https://www.zonnedakje.nl

| | | | | |
|---|---|---|---|---|
| 9 | Hospitality | No | 310 | Enschede |
| 10 | Manufacturing | No | 10,400 | Hengelo |
| 11 | Software | No | 710 | Enschede |
| 12 | Software | No | 610 | Enschede |
| 13 | Software | No | 490 | Enschede |
| 14 | Carwash | No | 2,000 | Enschede |
| 15 | Architect | No | 560 | Enschede |

* This business has solar panels on one rooftop, but is unable to equip their other rooftops

## 3.5 Procedure

Once someone agreed to participate in this study, a face-to-face meeting was scheduled. Due to the COVID-19 virus, not all interviews were able to be conducted face-to-face. This was often due to the participant or the researcher having to spend a few days in quarantine due to infections in their surroundings. A total of 9 interviews took place face-to-face, 5 took place online through Microsoft Teams or Zoom, and one took place through the phone.

When a participant was contacted, they were informed about the topic of this study, what their interview would add to the study, the expected duration of one hour, and the wish of the researcher to record the interview for research purposes only. Right before the interview, this information was once again given to the participant and they were asked to sign an 'Informed Consent' form. This form contained information regarding privacy and data archiving and was signed by all participants. None of the participants withdrew their participation prior to, or during, the interview.

At the end of each interview, participants were given the opportunity to make any last remarks that they were not able to mention during the interview, but that could be relevant to the study. They were also able to address any concerns or ask any remaining questions.

## 3.6 Analysis

After conducting the interviews, the information was analysed. All interviews were transcribed according to the intelligent verbatim method, meaning the interviews were transcribed without filler words and description of emotions. The transcripts were analysed thematically by coding the interviews according to the codebook, which can be found in appendix 2. The codebook was formulated based on the literature and the interview guide. Both inductive and deductive analysis took place as the codebook contained certain codes, but a few more were added after completing the interviews. The coding took place in Atlas.ti.

The codebook, used to code each interview, consisted of six themes: barriers, motives, information acquisition, how they view sustainability, financial realisation, and role of a

municipality. Each theme had various sub-themes, which can be found in the codebook (appendix 2). The reliability of the codebook was tested using an intercoder reliability check. This check was done using a second coder that coded the same text sample as the researcher. The results were compared by calculating a Cohen's Kappa. The original codebook contained insufficient Cohen's Kappa's for three themes and thus required adjustments. These adjustments were made to the subthemes of motives, information acquisition, and sustainability. The intercoder reliability check was repeated with the adjusted codebook, which resulted in sufficient Cohen's Kappa's. The Cohen's Kappa that shows the reliability between the main themes in the codebook is 0.79, which indicates a substantial agreement between the two coders. Table 3 shows each sufficient Cohen's Kappa that was calculated.

**Table 3**

*Intercoder reliability using Cohen's Kappa*

| Theme | Cohen's Kappa |
|---|---|
| Between main themes | 0.79 |
| In barriers | 0.69 |
| In motives | 0.69 |
| In information acquisition | 0.82 |
| In sustainability | 0.68 |
| In financial realisation | 0.69 |
| In role of a municipality | 0.81 |

# 4 Results

This chapter presents the interview results according to a table that gives a clear overview of the results and the frequency of different motives and barriers. Based on this table, each following paragraph dives deeper into individual motives and barriers and provides more context. After looking into the motives and barriers, a paragraph is dedicated to presenting the wishes of respondents regarding the role of a municipality in the process of stimulating businesses to adopt rooftop-PV.

## 4.1 Overview of motives and barriers

An overview of what motives and barriers were mentioned by most respondents, and which were most commonly referred to, can be seen in Table 4. This table differentiates between respondents with and without solar panels, as well as the number of respondents that mentioned the specific motive or barrier and how often it was mentioned in total. The table is sorted from the most frequently mentioned motives and barriers, to the least frequently mentioned.

**Table 4**

*Overview of motives and barriers*

| | **With solar panels** | | **Without solar panels** | |
|---|---|---|---|---|
| | *Number of respondents* | *Total frequency* | *Number of respondents* | *Total frequency* |
| *Motives* | | | | |
| To be sustainable | 7 | 28 | 7 | 14 |
| Building/renovating | 4 | 4 | 6 | 13 |
| Cover energy consumption | 4 | 9 | 5 | 7 |
| Improved image | 3 | 4 | 4 | 5 |
| SDE++ subsidy | 4 | 5 | 3 | 3 |
| Certifications/tenders | 5 | 9 | 1 | 1 |
| Stakeholders | 3 | 3 | 3 | 4 |
| Financial gain | 3 | 7 | 1 | 1 |
| *Barriers* | | | | |
| Insufficient knowledge | 7 | 13 | 5 | 5 |
| Initial investment | 4 | 7 | 5 | 11 |
| Additional costs | 5 | 8 | 3 | 4 |

| | | | | |
|---|---|---|---|---|
| Meter box adjustments | 5 | 6 | 2 | 2 |
| Insurance | 5 | 7 | 1 | 2 |
| Rooftop adjustments | 3 | 4 | 3 | 3 |
| Net congestion | 2 | 2 | 1 | 4 |
| Quick advancements | 0 | 0 | 3 | 5 |
| Uncertain payback time | 0 | 0 | 3 | 5 |
| Ownership | 1 | 1 | 2 | 3 |
| Time | 1 | 1 | 2 | 2 |
| Strength assessment | 2 | 3 | 0 | 0 |

The paragraphs 4.2, 4.3, 4.4, and 4.5 will dive deeper into the results presented in the table above. Paragraph 4.2 will look into the motives of respondents with solar panels; 4.3 will look into the barriers respondents with rooftop-PV faced; 4.4 will look into barriers experienced by respondents without rooftop-PV; and 4.5 will look into what motives could play a role in the adoption of solar panels for businesses that do not have rooftop-PV yet. Lastly, paragraph 4.6 will describe the role of a municipality, as envisioned by the respondents.

## 4.2 Motivating factors in realising rooftop-PV

The reason why eight respondents had realised rooftop-PV was never based on a single motive. In all cases, it was a combination of motives that led to the decision. The motivation to be sustainable, coming from within the company, was clearly emphasised by all respondents as it was becoming an integrated part of running their business. It overshadowed all other factors as it was the most commonly referred to motive in the interviews. This motivation to be sustainable was described based on the measures respondents had taken besides rooftop-PV. These measures range from using heat pumps and having a well-isolated building, to energy-efficient lighting and a paperless office environment. All participants were motivated to be sustainable in general, however, one did not feel intrinsic motivation to install rooftop-PV. This business owner had to comply with requirements from their largest client. However, stakeholders were not a trigger to install solar panels for any other respondent. In accordance with respondents' claims of having intrinsic motivation to be sustainable and realising rooftop-PV, none of the respondents indicated that improving their image was a trigger to implement sustainability measures. In addition, none actively communicated about being sustainable on their website and social media channels.

An illustrative statement by one of the respondents was: *"My business philosophy is that you have to be a good company with good profits and good sales. You do not get rich but our*

*children will still have an earth thanks to those solar panels. The future of the company is not dependent on solar panels. However, if everyone says 'no', we will never make a difference. Global warming is important and we all have to contribute something and solar panels is an easy step."* – business nr. 7

Another factor to install solar panels, that played a role for half of the respondents, was the possibility to construct or renovate their property. Two respondents explained that building a new property gave them the opportunity to become more sustainable and realise rooftop-PV. When respondents used to rent properties, they were not able to make such decisions as those were made by the property owner. Besides constructing a new property, renovating properties also came with opportunities to be more sustainable. Older buildings could be demolished and rebuilt, while other buildings could combine maintenance, such as the replacement of roofing, with installing solar panels. In short, while all respondents were motivated to be sustainable, some of them had to wait for the right time to act on this.

A commonly referred to topic was the energy yield of rooftop-PV. Covering (a part of) the business' energy consumption was a motivating factor for half of the respondents. The time it took to get a return of investment was not important as respondents believed that purchasing solar panels was a smart financial decision. It was explained that having money at the bank, would not generate enough interest while solar panels would turn profitable overtime without any effort. The financial gain of solar panels played a role in the decision-making process for minority of respondents (2 out of 8) as it would be more difficult to decide in favour of solar panels if it were not profitable. Even though the financial gain played a role, it was not a main motive for most, but did help pull the trigger in realising rooftop-PV.

A factor that played a large role for half of the respondents was the availability of the government subsidy (SDE++). This financial assurance was essential to decide in favour of rooftop-PV. It was explained that the subsidy led to more solar panels than one respondent needed to cover their own energy consumption, so they could feed energy back to the grid. Respondents that yield more energy than their own consumption also saw charging stations for electric vehicles as an option, especially with these vehicles becoming more popular. Once again, the option to install charging station was never a main motive, but an additional benefit of having solar panels.

A respondent, for instance, stated: *"We knew the business model. At the time, we were not able to make the investment. Now we can and the subsidy is still available. The future of the subsidy is uncertain. If we wanted to do something, we had to do it now; that was the trigger."* – business nr. 4

Obtaining an ISO certification was one of the main motives for one respondent, while tender applications were more commonly mentioned. Respondents were occasionally questioned about being sustainable when they applied for tenders. However, tenders mostly focused on social sustainability, rather than environmental sustainability. Therefore, even though solar panels helped them with tenders from time-to-time, this was not a main factor that motivated respondents to get rooftop-PV.

None of the participants felt influenced by other businesses to realise rooftop-PV. However, it was mentioned that some looked at other companies to see how they experienced the process or to determine what steps competitors were taking. This last factor had to do with the fact that businesses often compete in trying to obtain tenders. However, their decision for solar panels was not triggered by these competitors.

## 4.3 Barriers faced in the realisation of rooftop-PV

Although eight respondents realised rooftop-PV, it did not always go without any hiccups. Some obstacles that were not foreseen arose during the process. The most commonly referred to factor that respondents faced was their lack of knowledge on solar panels, as it turned out to be more complex than respondents expected. A variety of topics on which respondents would like to get more information on beforehand were mentioned, which included the criteria for rooftop constructions, adjustments to meter boxes, and the responsible party in case of malfunctions. Participants expected to gain this knowledge from their solar panel supplier, but this was not always the case and led to difficulties. One of these difficulties was that of their insurance. Issues related to insurance that were mentioned were simply not having enough knowledge about the effect of solar panels on one's insurance; increased insurance fees; the long list of requirements to act in accordance with; and experiencing different insurers applying different rules and requirements for the same solar panels installation. Due to the complexity of solar panels, majority of the respondents asked an external party for help with gathering information. They also asked these parties for help with their subsidy application and the technical assessments of the rooftop constructions.

Before asking an external party for help, respondents tried to find information themselves to become more knowledgeable on the topic. They mostly gathered information by searching on the Internet; asking for information within their own network; and reading professional journals. However, an overload of information made it difficult to find trustworthy sources. Additionally, calculating the price for which respondents could sell their yielded energy for was seen as difficult. This was due to the different calculation methods used by energy companies, which complicated the process of comparing options and choosing the most beneficial one.

On this topic, one respondent explained the following: *"It was a jungle to see who sells the solar panels, who installs them, and who is responsible for the quality of the installation. We took a good look at that because that was really not self-evident. There are so many parties on the market."* – business nr. 6

Furthermore, each participants dealt with both technical and financial barriers, whereby both aspects were often mentioned in connection with each other. Frequently mentioned barriers were the processes of performing a strength assessment of the rooftop and determining what adjustments had to be made to the rooftop construction, as well as the meter box. These often-required undertakings cost businesses more money than anticipated. These additional costs were commonly referred to during the interviews and therefore were one of the largest financial barriers among respondents. These additional costs were added to the investment required to purchase the solar panels, which was also seen as a large financial barrier as solar panels were costly. Hence, the actual investment required to realise rooftop-PV was often higher than anticipated. This led to some respondents having to wait longer before being able to make the investment.

One respondent explained their difficulties as follows: *"We had to dig in the forest. There is a meter box next to the street near the mailboxes. The meter box had to be replaced and they had to dig. Then they came across asbestos. It went well, but just barely. Besides that, there were no real obstacles. Except that the digging and cable work is also very expensive."* – business nr. 3

Since the investment formed a large barrier, two respondents decided on a different option that removed this barrier entirely. This option allowed businesses to rent their rooftop to an external party. This external party purchased the solar panels and gave the respondents a financial compensation to place the solar panels on their rooftop. This way, respondents could have a sustainable property with solar panels, even if they did not have the financial means to realise it all by themselves. The external party then sold the yielded electricity to nearby residents. The reason why none of the other participants opted for this option was because they saw risks. Respondents explained they wanted to remain the sole owner of their property; they did not want to have the obligation to have solar panels on their rooftop for at least 10 years; and they did not want to discuss all decisions regarding their rooftop with an additional party. Furthermore, the financial compensation was seen as insufficient and respondents would rather purchase solar panels themselves if they could afford to do so.

Obstacles that were mentioned less frequently were net congestion, time, and solar panel upkeep. None of the respondents had dealt with net congestion yet, but some feared

that this might occur in the near future as they saw it happening elsewhere. Moreover, respondents indicated they saw other businesses not realising rooftop-PV due to a lack of time. Realising rooftop-PV was no one's core business and may therefore not always be prioritised. Lastly, a respondent with an agricultural business stated that the upkeep of their solar panels was something they did not anticipate. Dust from the barn landing on the solar panels had to be cleaned yearly, which was an extra expense that affected their return on investment. This knowledge would not have stopped them from purchasing panels, but it would have been good to know upfront.

## 4.4 Barriers refraining businesses from realising rooftop-PV

Eight participating businesses did not have rooftop-PV yet and they all had their own reasons. Three reasons were mentioned by most respondents. These were insufficient knowledge, the initial investment, and the technical barriers that included meter box adjustments and rooftop adjustments. The first, and most frequently referred to, factor was having insufficient knowledge about solar panels. This lack of knowledge was often caused by the quick technological advancements in the solar panel industry, such as how much energy panels could yield. Furthermore, respondents felt they had insufficient knowledge about the type of subsidies available for purchasing solar panels, the impact of solar panels on insurance fees, possible hazards, and the different types of solar panels that could be chosen from. This lack of knowledge could make businesses doubt whether they wanted to realise rooftop-PV or not. To tackle this barrier, majority of respondents (5 out of 8) were working towards realising rooftop-PV with the help of an external party. However, a respondent indicated that they consulted two external parties, who gave opposite recommendations, which led to great uncertainty and doubt. Besides gathering information from external parties, respondents also gathered information on the Internet, within their own network, through newsletters, and through articles published in the media and in professional journals. Even with the combination of different information resources, respondents did not always feel certain about their level of knowledge.

One respondent gave some insight in the consequences of a lack of knowledge: *"Five years ago, we were awarded the SDE++ subsidy. Then we started to calculate and the electricity prices were completely different and the payback time longer. Then we realised that the developments happened very fast and we wanted to wait a little longer. We then let the subsidy expire."* – business nr. 14

Another factor that was mentioned by majority of respondents was that of the required investment. This was the most frequently mentioned barrier in interviews. This barrier was

fuelled by the additional costs that arose when businesses had to adjust their meter box and their roofing. An example was a respondent who needed to replace its rooftop to make it suitable for solar panels, which required an additional investment of €80,000. Another factor that worked against the realisation of rooftop-PV was the low energy prices for businesses with a high energy consumption. These low prices led to a prolonged payback time, which made solar panels less appealing to those with cheap ongoing energy contracts. Additionally, some respondents (3 out of 8) were unsure about the projected payback time of their investment and as a consequence had not decided in favour of solar panels yet. Renting a rooftop to an external party would remove the barriers of the initial investment and uncertainty regarding payback time. However, respondents would rather wait to install rooftop-PV, than choose an external party. Only one respondent was willing to possibly rent their rooftop. All other respondents stated they either did not think about it, found the financial compensation insufficient, or could finance it themselves and therefore would not need outside help.

One respondent said the following regarding the barrier of additional costs: *"My roofing is over 20 years old. Ideally, you should look at the rooftop before making a large investment in solar panels. So, then you have to make another investment and that is what stopped me. This is in terms of cost, but I really want solar panels."* – business nr. 15

A few smaller barriers included fire hazards of solar panels, other rooftop installations causing shadow, possible net congestion, ownership of a property, and time. Businesses that previously rented their property indicated they now had more freedom to apply sustainability measures, including solar panels. Lastly, two respondents explained that they did not have enough time to focus on solar panels as they were too busy or had already implemented all small sustainability measures and therefore did not prioritize solar panels.

## 4.5 Motivating factors for businesses without rooftop-PV

All but one of the respondents that had not installed solar panels stated they were motivated to be sustainable. These respondents had implemented multiple sustainability measures, but for varying reasons, had not realised rooftop-PV yet. A few measures that respondents implemented were well isolated buildings, a reduction of gas usage, procurement of green energy, using heating pumps, and having a sedum rooftop. A commonly referred to argument for not having solar panels yet, was because a respondent's building was already sustainable and did not require solar panels. The second-most common factor that helped respondents implement sustainability measures was that of constructing or renovating their property. An example was a respondent that constructed their building a number of years ago and made sure it would be able to carry the weight of solar panels in the future. Respondents indicating

they feel intrinsic motivation to be sustainable was confirmed by statements that respondents did not communicate about being sustainable and did not choose to be sustainable to improve their image. Only one respondent indicated that a sustainable image was a trigger to become more sustainable. However, respondents noticed that more of their clients were asking suppliers to operate sustainably. Therefore, they expected that a sustainable image would likely play a larger role in the future. Even though all but one respondent had intrinsic motivation to be sustainable, two respondents already decided to not realise rooftop-PV due to a small rooftop and already having a sustainable building. Lastly, one respondent simply had not thought about rooftop-PV yet due to the large number of already implemented sustainability measures.

An illustrative statement made by one respondent is: *"When we constructed the building, we immediately had better insulation installed. We directly obtained energy label A, which was abnormal at the time. Label C was normal for an office back then. So, we already pre-invested. The energy standard for offices will soon be label C, which will then be raised to B, and then A. But we already have label A. A+ is the challenge we face, which we are already looking into. Solar panels are on our list, but they are not our priority right now."* – business nr. 13

There were varying motives for possibly realising rooftop-PV among the five respondents that were still looking into solar panels. Factors that motivate this group were the wish to feed energy back to the grid to generate extra revenue; cover (a part of) their energy consumption; and use the excess energy to charge electric vehicles. On the financial side, an important factor was the availability of the SDE++ subsidy. Three respondents specifically mentioned that this subsidy was required to realise rooftop-PV, as without it, it would cost them too much money and would therefore no longer be appealing. Furthermore, recent events could be a trigger for businesses as one respondent explained that the increase of energy prices in early 2022 greatly reduced the payback time of the investment. This event led to them looking into rooftop-PV. Hence, events that directly influence a business' finances could stimulate businesses to act quicker in realising rooftop-PV.

One respondent explained their view on the financial side of solar panels as follows: *"One way or another, you always come back to the financial picture. It does not matter how sustainable you want to be or can be; you always remain a business. The only thing a business wants is to grow and to make a profit. If that does not work, neither will the rest. That is the point, money will always be important."* – business nr. 10

A factor that played a role for a small number of respondents was the influence of stakeholders. These stakeholders could demand businesses to operate sustainably and if that happens, respondents wished to comply. One stakeholder that was mentioned was a bank. To construct a new building, a respondent was required to build sustainably and thus had to look into rooftop-PV to get the loan for their new building approved. Moreover, a factor that did not play a role for respondents were surrounding businesses. The only way for surrounding businesses to play a role would be to jointly purchase solar panels. Lastly, obtaining certifications or tenders did not play a role for any of the respondents.

## 4.6 The role of a municipality

The municipality of Enschede is the case study for this research. Since all but one respondent was located in this municipality, specific questions regarding the municipality were asked. The municipality wished to motivate more businesses to adopt rooftop-PV and was curious to see what is holding businesses back and what they need in order to realise rooftop-PV. To give more insight into this, this study also includes what role a municipality should fulfil according to respondents. The following paragraphs will look into the desires of respondents.

Respondents envision various roles for a municipality in the process of increasing commercial buildings with rooftop-PV. There was no definite answer to what respondents wanted from a municipality. Four respondents expressed that the municipality should not play a role at all. They argued that the SDE++ subsidy was not provided by municipalities and therefore they should stay out of it. Similarly, respondents felt they dealt more with the energy supplier regarding net congestion, than with the municipality and consequently the municipality should not try to take a role in this process. Additionally, it was mentioned that businesses should take more initiative, without the municipality having to intervene. Lastly, the municipality was seen as too 'local' to answer complicated questions as a municipality lacks the required knowledge. These four respondents indicated that if the municipality felt a need to intervene, they could help with the strength-assessment of rooftops by making architectural drawings available; offer joint procurement for solar panels for interested businesses; and facilitate meetings to stimulate an informal relationship between businesses and the municipality.

One view of a respondent was: *"In my opinion, the municipality does not have much to do with it. You could think of some kind of joint purchasing, but I do not know if that is practical. The municipality might not even want to get involved in that process. I have the feeling that the municipality stands on the outside. The SDE++ subsidy is from the national government and you have to deal with the grid operator and many other parties. The municipality is not one of these parties."* – business nr. 1

When respondents did envision a clear role for the municipality, these greatly varied among the different respondents. A few ideas that were mentioned were to require suppliers of a municipality to be more sustainable; require new business properties to have a construction capable to carry the weight of solar panels; covering extra insurance fees; offer free or cheap consultancy to businesses with insufficient knowledge; be less bureaucratic; provide information regarding the safety of solar panels to counter negative news articles; use ambassadors to motivate businesses; and to unburden businesses. This last suggestion was mentioned most frequently by respondents, but they had varying views on how a municipality could unburden them. Suggestions were to make customised proposals for each business; offer isolation evaluations; select external parties that could help unburden businesses and give a small subsidy in return for using these selected parties; and provide an up-to-date and detailed information page on the municipality's website that includes the latest technological advancements, a calculation tool, and information regarding the consequences of net congestion. One last recommendation was to improve the internal processing of businesses' information within the municipality. This would prevent businesses from having to explain their situation multiple times to different employees of the municipality.

A statement illustrating the role a respondent envisioned was: *"If the municipality wants to do something, they have to start approaching businesses. They have to make proposals per company. What you often see is that someone from the municipality visits, but they do not know much. They start asking all sorts of questions and that is a shame because the business still has to do everything themselves. If you approach a business with a plan, they might say yes."* – business nr. 2

Lastly, if a municipality wished to intervene, they would need to be able to reach businesses. Respondents indicated various ways in which they would like to be approached by a municipality. Mentioned methods were visiting businesses, calling, sending e-mails, physical mail, using the municipality's account managers, community meetings, business park associations, newsletters from the municipality, and all advertising options such as billboards on the side of the road. Examples of contradictions were that some businesses tend to not answer emails or phone calls while others always respond. The same applied to account managers, as not all businesses were in close contact with the municipality's account manager.

# 5 Discussion and conclusion

## 5.1 Main findings

This study aimed to provide more insight in the thought process of businesses when deciding whether they want to adopt rooftop-PV. The main takeaway of this study was that businesses feel intrinsic motivation to be sustainable and, overall, have a positive attitude toward rooftop-PV. However, businesses are not always able to realise rooftop-PV even though they see the benefits and need of rooftop-PV. There are always a number of factors that negatively influence a business' decision-making process, which are mostly focused on financial and technical barriers, as well as a lack of knowledge. Barriers that were identified in this study correspond to the barriers found in existing literature, such as the high initial investment and return on investment (Best et al., 2019; Lee, 2013; Palm, 2018; Tanveer et al., 2021; Veenstra, 2015), the perceived risk of safety and security issues (Balcombe et al., 2014; Tanveer et al., 2021), the difficulty of finding trustworthy information (Palm, 2018; Strooper et al., 2020), rooftops not being suitable and requiring modifications (Balcombe et al., 2014; Gemeente Utrecht, 2019), an energy-yield not enough to cover a significant share of one's consumption and therefore not saving enough money (Balcombe et al., 2014; Gemeente Utrecht, 2019; Strooper et al., 2020), a lack of knowledge and capacity (Strooper et al., 2020), maintenance costs (Balcombe et al., 2014), and rooftop-PV being a hassle to realise (Balcombe et al., 2014). Barriers mentioned in literature, but not found in this study, include the fear of losing money when vacating the property (Balcombe et al., 2014), not gaining permission from a head office (Gemeente Utrecht, 2019), and a long decision-making process to determine whether or not the investment should be made (Gemeente Utrecht, 2019). Unsurprisingly, not all barriers found in this study were also found in literature. New barriers determined in this study are issues with insurance companies, meter box adjustments, net congestion, ownership of a property, and strength assessments. One of the main barriers of this study is the lack of knowledge among businesses. However, most participants solved this issue by using an external party to guide them through the process. Not only does this solve the lack of knowledge, it also allows the business to prioritize their core business which also removes the barrier of not having enough time that was suggested by some.

Besides barriers, a number of motivating factors were identified. The motives found in this study, that also correspond to the literature, are the belief of benefits of solar panels (Tanveer et al., 2021), the wish to be self-sufficient (Balcombe et al., 2014; Korcaj et al., 2015; Tanveer et al., 2021), financial gains (Korcaj et al., 2015) such as lower energy bills (Balcombe et al., 2014), and the availability of subsidies (Asano & Aoshima, 2017; Hughes & Podolefsky, 2015; Palm, 2018). On the other hand, some motives found in literature, but that were not seen in this study are the influences of social status/norms/pressure (Abreu et al., 2019; Korcaj et

al., 2015; Lau et al., 2020; Srivastava & Mahendar, 2018; Tanveer et al., 2021; Wolske et al., 2021; Zulu et al., 2021), increasing a property's value (Balcombe et al., 2014), solar panel price reductions (Crago & Chernyakhovskiy, 2017), local organisations promoting solar panels (Palm, 2016), available grid capacity, local and provincial measures, and optimal rooftop orientation (Naber et al., 2020). However, not all participants experienced all mentioned factors in this paragraph. For example, image only played a role for approximately half of the participants. The reason why only half of the respondents feel motivated by an improved image could be associated with the absence of social pressure as an influencing factor among businesses. In turn, this social pressure could be absent due to the limited visibility of the participating businesses as they mostly operate in the business-to-business market.

Moreover, businesses seem to wait for the right moment to realise rooftop-PV based on a number of circumstances. Participants frequently mentioned their wish to combine the construction of a new property or a renovation with purchasing solar panels. Combining these activities requires businesses to invest more money at once, which leads to businesses having to wait longer before they are able to make the investment. Another factor that affects the moment of realisation is that of clients and/or tenders demanding businesses to operate sustainably. Businesses with rooftop-PV have found their momentum, while businesses without rooftop-PV are still waiting for theirs.

As for the differences between businesses with and without rooftop-PV, there were two large differences. The first one was that respondents with rooftop-PV often mentioned that having solar panels is beneficial when applying for tenders or certifications. On the other hand, businesses without rooftop-PV never mentioned these benefits. The second difference was the insurance. Majority of respondents with rooftop-PV mentioned issues regarding their insurance, while this factor was only experienced as a barrier by one respondent without rooftop-PV. However, it should be taken into account that not all respondents with rooftop-PV had already looked into their insurance. When it comes to the role of a municipality, not many differences were seen among the two groups. Not all respondents were convinced that municipalities should play a role. Respondents saw the municipality as a local organisation and would rather turn toward the province or the government for help. Respondents that want the municipality to play a role had varying views on what this role should include. Suggestions ranged from being more accommodating and providing more information, to completely unburden businesses and using ambassadors to motivate other businesses.

Participants that had decided to rent their rooftop to an external party did so to avoid having to make the large investment themselves. Reasons for not choosing to rent rooftops include wanting to remain the sole owner of the rooftop, not receiving enough financial compensation, and not wanting to discuss all decisions regarding the rooftop with an additional party.

In short, businesses often had to wait for the right moment to realise rooftop-PV and even though there were a great number of studies toward consumer adoption, research regarding business' perspectives was scarce. This was proven by the fact that this study revealed a number of barriers not previously mentioned in literature. Therefore, this study is of added value to existing literature and has implications that are discussed in the next paragraph.

## 5.2 Implications

This study adds knowledge toward better understanding the barriers and motives that influence a business' decision-making process when realising rooftop-PV. On a theoretical side, this study is of great added value as it is a qualitative research and therefore gave more in-depth insight into the thought-process of businesses. This study forms a basis that could help future studies in going even deeper into the barriers and motives of businesses. This was necessary as there was a lack of studies on factors that influence the adoption of solar panels among businesses, as most studies focused on consumer adoption.

A number of practical implications can be addressed. Strategies to increase renewable energy are developed on a local level, rather than national. The responsibility lies with provinces and municipalities. The insights gathered with this study could help these organisations with determining their approaches for both policy making and projects that focus on businesses becoming more sustainable. This study determined that businesses have varying preferences in the ways provinces and municipalities should reach out to them. This insight is helpful as this explains why previous approaches may not have worked and what communication methods could be used in the future.

Furthermore, the financial aspects of realising rooftop-PV were seen as a large obstacle. This does not only include the initial investment, but also the uncertain payback time and additional costs including increased insurance fees, rooftop and meter box adjustments, and strength assessments. Approximately half of the participants felt motivated by the availability of the SDE++ subsidy. However, this subsidy does not help businesses with the costs associated with these additional undertakings. A supplementary subsidy from local governmental organisations could help businesses with these additional costs. Not only does this help in favour of the financial barriers, it could also lead to a different view of businesses toward provinces and/or municipalities. The reason for this is that a number of participants stated that they did not see municipalities as the place to go to with questions as the SDE++ subsidy is provided by the national government. Adding a subsidy, coming from local governmental organisations, could lead to businesses having a more positive attitude toward the level of knowledge and influence of a municipality and/or province. This more positive outlook could be of great added value to speed up the process of increasing rooftop-PV and the overall relationship between businesses and municipalities.

Overall, this study proved that there is not one answer as to what factors businesses consider regarding the possible equipment of their rooftops with solar panels, as it is always a combination of multiple factors. Therefore, it is impossible to successfully implement a one-size-fits-all approach with the intention to persuade majority of businesses to adopt rooftop-PV. This is due to each business having different needs and wishes and it is up to the local governmental organisations to determine what works best for them in regard to available budget and capacity.

## 5.3 Limitations

This study adds new knowledge to understanding the reasons why businesses decide in favour of, or against, rooftop-PV. Although this adds knowledge, there are some limitations that should be taken into account. One of the main limitations of this study is the participating businesses. Almost all participants that already had rooftop-PV were willing to participate once they were contacted. However, businesses that did not have rooftop-PV were less willing. What stood out is that all but one respondent without rooftop-PV felt intrinsic motivation to be sustainable and a majority was already in the process of realising rooftop-PV. It is reasonable to believe that businesses who did not feel any intrinsic motivation, or who were simply against sustainability, refused to participate. This could be due to them feeling like they had nothing to add to this study, not wanting to 'waste' time on this topic or they might have been ashamed for not having implemented any sustainability measures yet. Additionally, the researcher conducted this study in combination with an internship at the municipality of Enschede. This was communicated to participants beforehand to ensure a transparent process and therefore, this could have influenced the decision to participate as well. This study would have likely led to different results if some of the participants were against sustainability in general. This would have led to more insight in why some businesses refuse to participate in the energy transition and what they would need in order to be convinced.

Another limitation of this study is the location of the participants. All but one participant were located in the municipality of Enschede. If, in future research, businesses from other areas of the Netherlands are included, the results could vary. This is due to some municipalities being more proactive toward businesses or having additional local subsidies to stimulate the realisation of rooftop-PV.

A last limitation is that of the COVID-19 pandemic that took place during the time frame in which the interviews took place. Daily life was slowly going back to normal, but the number of infections was extremely high, which affected the interviews. Most interviews were scheduled to take place face-to-face, but in the end, 6 interviews were conducted through other means such as Microsoft Teams, Zoom, and a phone call. Some interviews were affected due to an unstable internet connection, which made interaction between participant and researcher

more difficult. Furthermore, conducting digital interviews also affected the quality of the audio recordings of the interviews and made some sentences difficult to understand and led to a more complicated transcribing process. At the time of the interviews, the pandemic was slowly ending and most businesses had picked up their regular activities. It is therefore not likely that given answers will differ if the study is repeated among the same participants. This is supported by none of the businesses indicating that they still felt held back to be sustainable due to the pandemic.

## 5.4 Future research

Based on the limitations presented in the previous paragraph, there are a number of suggestions for future research. This study mostly included participants that were motivated to be sustainable. Future research could focus more on businesses that are not at all motivated to becoming more sustainable as the results would likely greatly differ from this study. However, it would be a challenge to gather these participants as, speaking from experience, most businesses will refuse. To solve this issue, a different approach could be used, such as an anonymous online questionnaire. This would provide participants with guaranteed anonymity, which is possibly one of the obstacles that prevented them from participating in this study. This is likely due to businesses not being proud of not being in favour of sustainability and rooftop-PV and therefore not wanting to openly talk about it. Even though this study's participants were promised anonymity, having to face the researcher and therefore not being a hundred percent anonymous, could have led to businesses refusing to participate.

As described, this study only included fifteen participants that are all located in and around the municipality of Enschede. Future research could take a larger sample among several municipalities, provinces or even countries since they all have different approaches to stimulate rooftop-PV. With a larger sample, it would be possible to determine if different (local) governmental approaches would lead to different viewpoints among businesses. Additionally, it would be interesting to include business-to-consumer businesses in future studies to determine if that leads to different results compared to the business-to-business participants in this study. An example of a possible difference is the role of a business' image as that often plays a larger role when a business is more visible to the outside world.

Lastly, an interesting approach to similar research would be to not only focus on rooftop-PV, but also other sustainability measures. Examples could be implementing energy-efficient lighting, improving a building's isolation, and implementing all-electric solutions to lower or stop the usage of natural gas. This could provide governmental organisations with more insight into how businesses view these measures and could therefore help with policy making and projects that stimulate businesses to become more sustainable.

## 5.5 Conclusion

The goal of this study was to answer the following question: *Which factors do businesses consider regarding the possible equipment of their rooftops with solar panels?* To answer this question, qualitative research has been conducted among 15 businesses. Findings show that there are always multiple factors that influence the decision of businesses to implement rooftop-PV. The most common factors are a business' desire to be sustainable, their level of knowledge, their financial situation, technical situation of their property, and external events such as building or renovating a property.

One of the main takeaways is that businesses have a desire to be sustainable but are not always able to act on this as they have to wait for the right moment. This could be when they are planning a renovation of their property or when stakeholders or tenders demand them to be sustainable. This trigger could vary among businesses as it also depends on the financial situation. Rooftop-PV does not only include the purchase of solar panels, but also meter box and rooftop modifications, a rooftop strength assessment, a possible increase in insurance fees, and, of course, time. These additional costs could cause businesses to wait longer before they are able to make the required investment. Additionally, insufficient knowledge is a large barrier and apparent in almost all participants. However, participants overcome this barrier by hiring an external party to help them with the realisation of rooftop-PV and all additional undertakings. Businesses that already have rooftop-PV stated they still feel like they have insufficient knowledge, but regardless, were able to realise rooftop-PV. This indicates that this is not a definitive bottleneck in the decision-making process.

Additional factors that positively influence business' decision-making process include self-sufficiency by yielding enough energy to cover their own energy consumption, improving their image, and the availability of the SDE++ subsidy. Most motives and barriers found in previous studies were also seen in this study. However, a handful of new influencing factors were discovered that could help provinces and municipalities in the realisation of their renewable energy goals.

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# Appendices

## Appendix 1 – Interview guide

*Bedrijven met zonnepanelen*

| **Onderwerp** | **Vraag** | **Doel** |
|---|---|---|
| Motivatie | Waarom heeft u gekozen voor zonnepanelen op uw dak?<br>- *Wat was de trigger om naar de mogelijkheid van zonnepanelen te kijken?*<br>- *Hoe heeft u het proces van begin tot eind ervaren?*<br>- *Wat waren obstakels en meevallers?* | Opstarten gesprek en knelpunten boven tafel halen. |
| Geschiktheid | Was uw dak geschikt voor zonnepanelen of heeft u de dakconstructie moeten aanpassen? | Invloed van dakconstructie duidelijk maken |
| Financiering | Hoe heeft u de zonnepanelen gefinancierd?<br>- *Welke opties heeft u overwogen? → ook leasen overwogen?* | Inzicht in gedachtegang bedrijven m.b.t. financiering |
| Duurzaamheid | Hoe belangrijk vindt het bedrijf het om te investeren in duurzaamheid?<br>- *Waarom?* | Algemene houding duurzaamheid |
| | Hoe lang is het bedrijf al bezig met duurzaamheid? | Algemene houding duurzaamheid |
| | In hoeverre speelde een duurzaam imago een rol in het realiseren van zon-PV?<br>- *Communiceren jullie hierover* | Rol van imago |

| | | |
|---|---|---|
| | *naar buiten?* | |
| Subjective norms | Hebben omliggende bedrijven met zonnepanelen invloed gehad op de keuze voor zonnepanelen? | Invloed van zonnepanelen zien op eigen besluitvorming |
| | Welke partijen hebben een rol in het proces gehad?<br>- *Hebben zij invloed gehad op de keuze voor zonnepanelen?* | Rol stakeholders |
| | Heeft u advies ingewonnen van andere partijen tijdens het proces om zonnepanelen te realiseren?<br>- *Zo ja, welke partijen waren dit en wat heeft u met dit advies gedaan?* | Rol van andere partijen |
| Kennis | Via welke kanalen heeft het bedrijf informatie ontvangen of opgezocht?<br>- *Welke rol moet de gemeente hierin vervullen?* | Welke bronnen worden gebruikt? Komt informatie vanuit gemeente goed terecht bij bedrijven? |
| | Via welke kanalen kan de gemeente het bedrijf bereiken voor toekomstige duurzaamheidsinitiatieven? | |
| | Welke informatie had het bedrijf nog nodig voordat zon-PV kon worden gerealiseerd?<br>- *Ontbrak informatie over bijvoorbeeld subsidies of technische aspecten van zonnepanelen? Terugverdientijd? Verzekeringen? Etc.*<br>- *Was het duidelijk welke stappen genomen moesten worden om* | Aan welke informatie heeft een bedrijf veel behoefte |

| | | |
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| | *zon-PV te realiseren?* | |
| Overig | Welke rol zou de gemeente moeten vervullen in het proces om zonnepanelen te realiseren op bedrijfsdaken? | Behoefte vanuit de bedrijven naar de gemeente |
| | Zijn er nog zaken die u graag wilt benoemen, maar die nog niet aan bod zijn gekomen tijdens het interview? | Zorgen dat overgebleven zaken vanuit het bedrijf wel aan het licht komen |

*Bedrijven zonder zonnepanelen*

| **Onderwerp** | **Vraag** | **Doel** |
|---|---|---|
| Motivatie | Waarom heeft u nog geen zonnepanelen op uw dak?<br>- *Is dit een bewust keuze of is er nog niet over nagedacht?*<br>  - *Wat was de trigger om na te denken over zon-PV? (Indien van toepassing)*<br>  - *Welke overwegingen heeft u meegenomen om tot deze keuze te komen?*<br>  - *Welke obstakels ziet u voor het realiseren van zon-PV?* | Opstarten gesprek en knelpunten boven tafel halen. |
| | Wat is het grootste obstakel dat u tegenkomt in het proces om zon-pv te realiseren?<br>- *Waarom?*<br>- *Kunnen gemeenten een rol spelen in de vermindering van dit obstakel?* | Maakt duidelijk welk obstakel zo snel mogelijk moet worden verholpen/verminderd |
| Duurzaamheid | Hoe belangrijk vindt het bedrijf het om te investeren in duurzaamheid? | Algemene houding duurzaamheid |
| | Is het bedrijf al bezig met verduurzaming?<br>- *Zo ja, op welke manier?*<br>- *Zo nee, waarom niet?* | Algemene houding duurzaamheid |
| | In hoeverre speelt een duurzaam imago een rol in het realiseren van zon-PV in de toekomst? | Rol imago |

| | | |
|---|---|---|
| Geschiktheid | Is uw dak geschikt voor zonnepanelen?<br>- *Zo nee, wil het bedrijf het dak geschikt maken? O.a. om vanaf 01-01-2023 aan de eis voor energielabel C te voldoen indien dit van toepassing is op hun pand.*<br>- *Zo ja, houden eventuele dakconstructies of schaduw van de omgeving de komst van zonnepanelen tegen? Of komen we weer uit bij de argumenten van de eerste vraag?* | Invloed van dakconstructie duidelijk maken |
| Financiering | Welke mogelijkheden voor financiering van zon-PV ziet u voor uw bedrijf?<br>- *Subsidies, eigen investering?* | Inzicht in gedachtegang bedrijven m.b.t. financiering |
| | Heeft u nagedacht over de optie om uw dak te leasen aan andere partijen?<br>- *B.v. met een lokale energie-coöperatie* | Optie van leasen inventariseren |
| Subjective norms | Als omliggende panden allemaal zonnepanelen krijgen, zou dit u ook aansporen om zonnepanelen te overwegen op uw pand? | Invloed van zonnepanelen zien op eigen besluitvorming |
| | Hebben stakeholders invloed op de keuze om het pand te verduurzamen met o.a. zon-PV? | Rol stakeholders |
| Kennis | Via welke kanalen wil het bedrijf informatie ontvangen of opzoeken?<br>- *Welke rol zou de gemeente hierin moeten vervullen?* | Welke bronnen worden gebruikt? Hoe kan informatie vanuit de gemeente worden overgebracht? |
| | Welke informatie heeft het bedrijf nog | Aan welke informatie heeft |

| | | |
|---|---|---|
| | nodig voordat zon-PV kan worden gerealiseerd?<br>- *Ontbreekt informatie over bijvoorbeeld subsidies of technische aspecten van zonnepanelen? Terugverdientijd? Verzekeringen? Etc.*<br>- *Is het duidelijk welke stappen genomen zouden moeten worden om zon-PV te realiseren?* | een bedrijf veel behoefte? |
| Overig | Welke rol zou de gemeente moeten vervullen in het proces om zonnepanelen te realiseren op bedrijfsdaken? | Behoefte vanuit de bedrijven naar de gemeente |
| | Zijn er nog zaken die u graag wilt benoemen, maar die nog niet aan bod zijn gekomen tijdens het interview? | Zorgen dat overgebleven zaken vanuit het bedrijf wel aan het licht komen |

## Appendix 2 – Codebook

| Code | Omschrijving | Voorbeeld(en) |
|---|---|---|
| **1 Barrière: heeft bedrijven tegengehouden of houdt hen op dit moment nog tegen** | | |
| 1.1 Technisch | Dakconstructie / netcapaciteit / aansluiting (meterkast) / brandveiligheid / dak installaties / technische ontwikkeling zonnepanelen / onvoldoende opbrengst | “Het kan bij ons gewoon niet uit, mede door ons vrij kleine dak met vrij veel schaduw. We hebben warmtepompen op het dak staan die voor schaduw zorgen en die hebben werkruimte nodig om ze te vervangen en te repareren. Je moet kunnen lopen over het dak zodat je ook de lift kan bedienen. Je hebt nogal wat ruimte die je niet kan gebruiken.” |
| 1.2 Financieel | Te hoge investering / wil dak niet verhuren / (hogere) verzekering / te lange terugverdientijd / extra bijkomende kosten / zonder subsidie willen bedrijven geen panelen / belastingdienst | *(Waarom dak niet verhuurd?)* “Het is niet van jezelf. Je bent afhankelijk van een andere partij. Je bent dan contractueel verplicht om die panelen voor een bepaalde tijd op je dak te houden. Je bent niet meer eigen baas over je dak. Dat werd ‘m niet.”<br><br>“Wat het ook is als ondernemer, is dat ik het niet zou doen als die subsidie er niet was. Dan kost het het bedrijf geld en als je het dan hebt over de overheid die wilt verduurzamen, maar als het mij bakken met geld gaat kosten, dan wacht ik er nog even mee.” |
| 1.3 Eigenaarschap | Geen eigenaar van het pand | “We hebben heel lang gehuurd en dan heb je niet veel te zeggen over het pand. We hebben het pand dus recent overgekocht van de vorige eigenaar en nu willen we er wel zonnepanelen op zetten.” |
| 1.4 Tijd | Onvoldoende tijd om alles uit te zoeken | “Ik denk dat men te druk was met de business. Dat ze denken ‘laat maar even zitten’. Ik heb het geopperd bij de directeur en verteld dat iemand een interview wil afnemen. Hij was heel enthousiast en zei ‘ja, |

| | | |
|---|---|---|
| | | ja, leuk ik ben heel erg voor zonnepanelen'. We zijn dus met z'n allen wel voorstander, maar alleen de uitvoering is er nog niet geweest." |
| 1.5 Onvoldoende kennis | Onvoldoende kennis (informatie) over terugverdientijd / verzekeringen / subsidies / beschikbare partijen | "Terugverdientijd staat wel in de offertes, dus daar zou ik wel een antwoord op moeten kunnen vinden. Maar verzekeringen, daar heb ik echt nog helemaal niet aan gedacht. Dat moet natuurlijk ook verzekerd worden, dus het is goed dat je dat zegt." |
| **2 Motief: waarom bedrijven kiezen om zonnepanelen aan te schaffen** | | |
| 2.1 Eigen verbruik | Het doel van het bedrijf is om (onder andere) de energie die zij verbruiken (deels) te dekken met behulp van zonnepanelen. Zo werken bedrijven richting het energieneutraal uitvoeren van hun werkzaamheden. | "We hebben een serverkamer die altijd stroom verbruikt; dag en nacht. Als we minimaal dat kunnen opwekken, weten we dat we goed bezig zijn." |
| 2.2 (Ver)bouwen | Het bedrijf heeft gewacht – of wil wachten – op een aanstaande verbouwing/renovatie van het pand of het bouwen van een compleet nieuw pand. | "De aandacht voor duurzaamheid is denk ik ook begonnen met spelen bij de bouw van het nieuwe pand." |
| 2.3 Subsidie | In hoeverre een bedrijf hun keuze voor zonnepanelen laat afhangen van de beschikbare subsidies. | "Die subsidieregeling is er nog. Die stopt volgend jaar volgens mij of hij is nog niet vastgelegd. Het potje raakt op een gegeven moment ook op. Als we iets willen, moesten we het nu doen; dat was de trigger." |
| 2.4 Certificeringen/ aanbestedingen | Het verkrijgen van duurzame certificeringen en/of aanbestedingen zijn reden voor zonnepanelen. Bij aanbestedingen kan gevraagd worden naar de manieren waarop een bedrijf duurzaam is. Een aanbesteding wordt ook wel een 'tender' genoemd. | "Het is wel handig voor de ISO certificeringen. We kunnen niet heel veel besparen door ons lage verbruik, dus zonnepanelen was een goede toevoeging." |
| 2.5 Andere bedrijven | In hoeverre het bedrijf wordt beïnvloed door de aanpak van andere bedrijven | "Nee, niet door nabijgelegen bedrijven. Ik was laatst wel een keer bij een rondleiding in de Arena in Amsterdam. Die voorzien volgens mij 70.000 huishoudens of kantoren om hen heen van energie door de |

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| | | panelen op het dak en accu's in de kelder. Dat vond ik wel echt mooi om te zien." |
| 2.6 Opbrengst | In hoeverre de (financiële) opbrengst van zonnepanelen een rol speelt | "Als je na 30 jaar gaat kijken wat zo'n installatie heeft opgebracht, dan is dat gewoon super. Dat is een grote meevaller." |
| 2.7 Intrinsiek | Het bedrijf is intrinsiek gemotiveerd. Dit betekent dat het bedrijf aangeeft dat zij graag uit zichzelf duurzaam willen zijn omdat zij dit belangrijk vinden. | "We vinden het gewoon belangrijk. We scheiden ook netjes ons afval. Al die duurzame dingen vinden we toch wel leuk om te doen en aan bij te dragen. Dat hoort er toch een beetje bij." |
| 2.8 Stakeholders | In hoeverre stakeholders invloed hebben op de keuze voor zonnepanelen. Stakeholders zijn o.a. aandeelhouders, klanten, werknemers en leveranciers. | "Uiteindelijk is het een kleine reden die meespeelt, maar dat heeft niet de grote doorslag gespeeld denk ik." |
| **3 Informatiewinning:** | | |
| 3.1 Externe partij | Het bedrijf wint (onder andere) via een externe partij (adviesbureau/installateur/etc.) advies in over zonnepanelen en bijbehorende zaken (subsidie, verzekering, soorten panelen, etc.) in. Deze code geldt *niet* indien een bedrijf aangeeft dat ze enkel een offerte hebben aangevraagd. | "Je hebt onze energieleverancier, Pure Energie, waar we informatie kunnen inwinnen. Die leveren ook zonnepanelen."<br><br>"We hebben een extern bureau ingehuurd uit Enschede. Die heeft gekeken naar wat we kunnen doen om energiezuinig te werken." |
| 3.2 Internet | Het bedrijf wint (onder andere) via het internet informatie in | "Ik heb eigenlijk vooral op Google gezocht op mijn telefoon. Verder niks volgens mij. Je ziet weleens iets in de krant of iets, maar daar komt het niet vandaan." |
| 3.3 Eigen netwerk | Het bedrijf wint (onder andere) via het eigen netwerk informatie in. Denk aan concullega's, klanten, vrienden, etc. | "Als we het niet weten, schakelen we een systeemontwerper van energie in. Die zitten in ons eigen netwerk. Die breidt alles aan elkaar en helpt ons ook voor klanten." |
| 3.4 Eigen medewerker(s) | Het bedrijf wint (onder andere) via (een) eigen medewerker(s) informatie in. Indien de eigenaar zelf alles uitzoekt, geldt deze code ook. | "Een subsidieaanvraag zal waarschijnlijk bij mij op het bordje terecht komen. Dat zouden we wel zelf kunnen doen. Ik vind het ook wel jammer om daar een bureau voor te moeten inhuren; die vragen weer |

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| | | een bepaald percentage van het bedrag. Wat onze grootte betreft, zouden we het wel zelf kunnen doen. Als we geen tijd hebben, schakelen we wel een bureau in, maar in eerste instantie zouden we het zelf doen." |
| **4 Duurzaamheid** | | |
| 4.1 Imago | In hoeverre een duurzaam imago een rol speelt | "Nee. Laat ik het zo zeggen. Voor mijn klanten maakt het volgens mij niet uit. Die willen gewoon een schone auto en het interesseert ze niet of ik water terug win en hun auto met 'vies' water wordt gewassen." |
| 4.2 Communicatie | In hoeverre er gecommuniceerd wordt over duurzaamheid via de kanalen van het bedrijf | "Eigenlijk te weinig. Met LinkedIn zet je er wel eens wat op; dat je zonnepanelen hebt ofzo. Via aanbestedingen wordt het wel gecommuniceerd. Maar het is niet zo dat we het van de daken schreeuwen." |
| 4.3 Andere acties | In hoeverre het bedrijf bezig is met duurzaamheid naast zonnepanelen | "Qua pand zijn we in 2016 al direct begonnen met de verduurzaming door voor een groen dak te kiezen. We hebben ook zonnecollectoren op het dak die zonlicht opvangen ter vervanging van de lampen binnen." |
| **5 Financiële realisatie** | | |
| 5.1 Eigen investering | Er wordt (in de toekomst) (deels) gebruik gemaakt van een eigen investering | "Ik wilde het gewoon zelf betalen en niet een andere manier van financiering." |
| 5.2 Subsidie | Er wordt (in de toekomst) (deels) gebruik gemaakt van een subsidie | "We hebben ook een SDE subsidie aangevraagd via hen." |
| 5.3 Duurzame hypotheek / lening | Er wordt (in de toekomst) (deels) gebruik gemaakt van een duurzame hypotheek | "De bank heeft daar ook een speciale duurzame hypotheek voor die best goedkoop was. In totaal was het niet heel duur. Vanuit de Rabobank had je een speciale lening om een hypotheek te krijgen." |

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| 5.4 Dak verhuren | Het dak wordt (in de toekomst) (deels) verhuurd aan een externe partij | “Ik heb mijn dak verhuurd aan de corporatie Enschede Energie.” |
| **6 Rol gemeente** | | |
| 6.1 Ja | De gemeente moet een rol spelen om bedrijven te helpen zonnepanelen te realiseren | “Ze kunnen jaarlijks een rondje doen per onderneming en de juiste contactpersoon bij die onderneming spreken. Als je vragen stelt, zoals jij nu doet, en dan met een actielijstje komt die je een jaar later gaat evalueren, ga je gewoon langzaam vooruit.” |
| 6.2 Nee | De gemeente moet geen rol spelen om bedrijven te helpen zonnepanelen te realiseren | “Dus als je vraagt wat de gemeente zou kunnen doen, zou ik zeggen niks. Want de gemeente heeft er niks mee te maken. Als ik besluit om mijn wasmachine uit te breiden, bestel ik wel onderdelen. Dit is een uitbreiding van het bedrijf. Ik heb niet het idee dat er oponthoud zit omdat de gemeente er wat van vindt. Met dit onderdeel moet de gemeente zich er lekker niet mee bemoeien.” |
| 6.3 Contact | Via welke kanalen bedrijven het liefst benaderd worden door de gemeente | “Op onze website staat de algemene informatie mail. Die wordt altijd in de gaten gehouden. Ze kunnen ons ook bellen. Een bericht op elke manier bieden we een luisterend oor. Wat dat betreft zijn wij ook heel makkelijk; we zijn een nuchter familiebedrijf met korte lijntjes. Met één telefoontje heb je bij wijze van spreken mij of één van de andere eigenaren aan de telefoon.” |