

# Sustainable farming policies

Farmers' preferences regarding policy approaches  
towards sustainable arable farming in the  
Netherlands

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Farmers' preferences regarding policy approaches towards  
sustainable arable farming in the Netherlands  
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## Abstract

Scholars have made clear for several decades that changes have to be made to the global food system in order to prevent climate change and other negative effects on the environment. Nevertheless, recent numbers on the effects of Dutch agriculture on the climate and nature show that the sustainability goals in agriculture are very hard to reach and current policies are not working fast enough. In the media and literature, the focus around sustainable farming is often completely on livestock farmers. In this research, the focus lays on arable farmers, who also face policy changes regarding sustainable farming. Interviews were held with Dutch arable farmers to examine which type of policy approach could work better in the transition towards a sustainable agricultural system. The interviews show that the whole food system needs to be included in the creation of sustainability policies to create the highest chance of success. Thereby, the farmers themselves need a seat at the table to share their field experience with other actors in the food system.

## Preface

In the years that I have studied, I have spent much of my time learning about and working on a more sustainable food system. During this time, my work was mostly focussed on consumers and other actors at the end of the production chain. For this thesis, I knew I wanted to change my focus and for once have a look at the production side of the food system. I had heard so much about angry farmers and their unwillingness to change to more sustainable practices. I was curious to see if they were really this angry and unwilling and I wanted to learn more about the views of the farmers themselves on what they would want to change.

Half a year later, I do not regret this decision. I had the chance to visit farmers throughout the Netherlands and learn about their farming practices and views. I learned about the variation in arable farming, both in the practices and the views (and I even got to ride a tractor for the first time in my life!). After writing this thesis, I have a much better understanding of Dutch food production and I hope to continue learning about this topic in my further career.

Of course, this thesis would not have been possible without my supervisor Kees Jansen, who provided clear guidance and pushed me to get the thesis to the next level. I also want to thank Marcel Oosterhek and Bart Roozen for helping me with the data processing part of my thesis. Lastly, I want to thank all the people that have participated in this research for providing me with all this interesting information and insights.

I hope that this thesis will interest you like it did me and that you will gain some new insights on the best ways to reach a sustainable farming system in the Netherlands!

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# 1. Introduction

On October 1st of 2019, thousands of farmers throughout the Netherlands got into their tractors and drove to The Hague. The farmers were protesting against the strict rules in Dutch agriculture, which are often related to the sustainability of the food system. The farmers were specifically angry at the policy makers in the national and regional governments in the Netherlands because they felt too many policy decisions were made that would negatively impact the farmers and thereby the Dutch food production (de Vries, 2019). Two years after these initial protests, some of the farmers noticed that they had become more involved in the decision making process (Rooyen, 2020). Nevertheless, the new protests in June 2022 show that Dutch farmers still believe unfeasible plans are created by the government (Keukenkamp, 2022). Research at the end of 2021 also showed that about 70% of the Dutch livestock farmers do not have faith in government agencies. The most common argument for this low trust is that the government creates top-down policies which do not fit with the actual field (i&o research, 2021). In a different research, farmers stated that governmental policies can be inconsistent and unfavorable for both the farmers and the climate change related goals (de Greaff and Hillebrand, 2021).

The protests have made clear that many farmers are not satisfied with the policies that are created by the Dutch government. At the same time, research shows that something needs to happen to create a more sustainable food sector. The latest IPCC Climate Change Assessment report showed that we are currently on our way to a 3.2 °C temperature rise (compared to pre-industrial times) in the year 2100, instead of the maximum 1.5 to 2.0 °C temperature rise most countries have agreed to aim for in the Paris Agreement (Pörtner et al., 2022). If the temperature rises more than those 2 °C this could lead to devastating and irreversible effects on the whole world (Morrow, 2022). The worldwide agricultural sector is one of the biggest contributors to these temperature rises. In 2018, the global food system was responsible for 21 to 37% of the annual global emissions and thereby hugely contributed to the climate change issues (Mbow et al., 2019). Moreover, the worldwide agriculture uses half of the worlds habitable land and 70% of the fresh water, it causes 78% of the global water eutrophication and has a highly negative effect on biodiversity (Ritchie & Roser, 2021).

The last decades, many efforts have been made by the government, farmers and other actors to improve the sustainability of the Dutch agriculture sector. Although some improvements can be noted, many sustainability goals are not yet met. For example, in the last couple of years, the Dutch agricultural sector has become a relatively bigger contributor to the emissions of greenhouse gases, the amount of water used for agriculture has strongly grown and the amount of meadow birds has been decreasing (Berkhout et al., 2021). Therefore, different actors keep trying to find ways to improve the sustainability of the farming system. Currently, discussions in the media and literature regarding sustainable agriculture are mostly focussed on the livestock farming sector. This includes research about farmers' opinions on sustainable farming practices and policies (Hofman, 2017; i&o research, 2021). However, arable farming is also contributing to climate change and therefore subject to many policy changes in regard to sustainable arable farming practices (Schouten, 2018). Therefore, it is important to widen our focus and increase our insights into the opinions of arable farmers on sustainable farming policies.

This research analyzes the wishes of Dutch arable farmers regarding the sustainability efforts in the Dutch arable farming system. Through interviews with arable farmers, it is examined what kind of policy approach towards sustainable arable farming they would prefer. Based on these interviews and literature research, it is argued that Dutch arable farmers would prefer a system approach in which everyone in the food sector works together on a more sustainable world and in which farmers get the possibility to share their knowledge with the other actors in the system.



## 2. Research context

The sustainability of the Dutch arable farming sector has been hugely impacted by different sustainability approaches from both the public and the private sector. To understand how farmers currently think about different approaches, it is important to first understand the history of this case. This chapter describes the different policies that have been implemented in the last century, the response of the farmers and the initiatives for sustainability from the private sector. Moreover, it is explained to which research objective these (failed) approaches have led and with which methods and in which context this is examined.

## 2.1 Research background

The Netherlands is a very important country in terms of agriculture. Not only is the Netherlands one of the biggest exporters of agricultural produce (van Velzen & Weel, 2020), but the country has also spread their extended knowledge of agricultural technologies and practices around the world (Viviano, 2017, Whiting, 2019). Nevertheless, it has become clear over the last few decades that the food system that has been created in the Netherlands since the second World War, is now leading to many negative effects on the surrounding climate. Over the last decades the government has tried several different policy approaches to change the agricultural sector. In the 19<sup>th</sup> century, farmers were relatively free in deciding on their farmer practices without much interference from the government (Karel, 2010) and the interference that did take place was on a local level (Frouws, 1994). Farmers could most often decide their own practices and plans, partly dependent on the market. In the beginning of the 20<sup>th</sup> century, the Dutch government increased their interference in the agricultural sector. At first, they tried to improve food security and later they wanted to increase sustainability and nature conservation. Throughout the 20<sup>th</sup> and 21<sup>st</sup> century, the government shifted between top-down policies regarding agriculture and collaborative policies in which they tried to work with the farmers and other actors.

### 2.1.1 Radical shifts in the food system

After the second world war, Europe needed to be rebuilt. It was in this time that the Dutch government, in collaboration with other European governments and the government of the United States, created the highly efficient farming systems that still dominate the agricultural sector today. After the second World War, the Marshall plan helped to rebuild Europe, including the agricultural system, in an accelerated pace (Van den Noort, 1972). This plan led to a quick growth of production and stimulated technological development in the agricultural sector. However, these developments - which created higher yields, better prices and economic freedom for the farmers - led to a saturation of the food market and thereby a decrease in food prices. Around twenty years after the Marshall plan had been implemented, the prices of food products in the Netherlands had become lower than the production costs. Therefore, a new plan was created by politicians, the Mansholt plan, which was focussed on more efficient farming (Van den Noort, 1972). Overall, the different plans and investments in the agricultural sector in the decades after World War II led to large scale, modernized and technological advanced farms where enough food could be provided for low prices so that there would never again be hunger in the Netherlands and farmers would have a decent income (Harms et al., 1987).

According to many rural sociologists the shift to this new way of farming after the second World War was not just an acceleration of modernization. It demanded a completely new behaviour, way of thinking and food system (Somers, 1998). This way of thinking, behaviour and farm management did not fit with the sustainability goals that were set in the last few decades of the 20<sup>th</sup> century. To reach these sustainability goals,

the agricultural sector had to change completely, again (Somers, 1998). Therefore, efforts were made by the Dutch government to improve the situation and find sustainable solutions in collaboration with farmers. In the seventies, for example, the Dutch government started to combine nature conservation policies with agricultural policies. In this period, agri-environment schemes were implemented that were supposed to stimulate farmers to improve nature conservation (Runhaar et al., 2017). One important example of these schemes was the option farmers got to become managers of nature parks. While this first led to disapproval from farmers, the financial compensation that was offered for this type of job convinced many farmers to comply (Karel, 2010). Moreover, agricultural land was taken out of action and transformed into nature zones during this time (Runhaar et al., 2017).

In the eighties, the agricultural department and the nature conservation department were integrated in the same ministry and the two sectors became even more intertwined (Karel, 2010). In this same period, the Dutch government shifted from a system in which they collaborated with farmers to a more top-down system. This meant that new policies, like restricted manure production, were imposed on farmers by the government (Arnouts, 2010). These new environmental demands, combined with price decreases of products, created a decrease in income for farmers (Horlings, 1996). At this point, only the most large scale farmers were able to keep up with the market and smaller farming companies mostly disappeared from the Dutch agricultural scene. Dutch farmers in this time stated that the poor policy choices in the Netherlands did not give them enough possibilities to make changes towards sustainable agriculture (Somers, 1998).

From 2000 on, the focus on sustainability became even bigger in the European Union. In the 21st century, the European policies focus mostly on circular agriculture. The goal of the proposed circular agriculture is to work collectively – with policy makers, farmers, consumers, scientists and business – towards new economic models in which nature is no longer exhausted (WUR, 2018).

### 2.1.2 Demand for better farmer representation

The various policies in the agricultural sector in the 20<sup>th</sup> century led to dissatisfaction among Dutch farmers and therefore the farmers demanded to be more included in the policy creation. When the government started to intervene more with the agricultural sector in the beginning of the 20<sup>th</sup> century, the farmers first responded by taking their place in the government with several political parties. One important political party was the Boerenpartij (Karel 2013), which was established in the year 1950. This party fought for the interests of the farmers. Outside of the political system, farmer organization arose which also had a chair at the policy table. In these decades, the farmers had a strong influence on the farming policies. However, in the seventies, a slight decrease in influence of farmers organizations was noticeable. Munters (1989), for example, examined the participation of farmers in the public administration and found that the position of farmers changed in the seventies. He believed that this was mostly due to the decrease in importance of farmers in the local governments, since the percentage of farmers decreased in most towns. Although the direct impact within the government decreased, the Dutch farmers still had a strong impact on the policies through the farmer organizations. In the nineties, for example, three out of four farmers were still member of the local farmer organization. While there were many different farming organizations during this time, the members and board members were often part of multiple organizations and could therefore represent a large part of the farmers in dialog with the government (Frouws, 1994).

In the last few decades, the farmers trust in the farmer organization decreased. This was caused by the less continuous agricultural policies and the feeling that farmers opinions were no longer seriously taken into account by policy makers (Karel, 2013). In response to these developments, new farmer organizations arose (Runhaar et al., 2017). The goal of many of the organizations was still to represent the farmers within the food system and during the creation of policies (LTO, 2022). Other organizations had a more agri-environmental focus. Their goal was for the farmers to take more responsibility in their own sustainability and to have more control over the sustainability efforts in the agricultural sector in general (Runhaar et al., 2017).

Many behavioural studies on farmers have shown that the participation of farmers in policy drafting is very important. When farmers are part of the policy drafting, the chances of them accepting the policies increase significantly (Dessart et al., 2019). This is not only the case for the farmers who are part of the drafting of the policies but also for other farmers. The source that provides information on sustainability strategies largely influences whether the farmer will adopt these strategies (Serebrennikov et al., 2020). If the policies are co-created by farmers, the other farmers will have better trust in the policies. Moreover, Fraser et al. (2006) note that involvement of local actors is needed to create better insights into the situation on a local level. Farmers can provide more insights into their possibilities and boundaries for sustainable farming which can be taken into account in the creation of policies.

The Dutch and European governments are aware of these benefits of including farmers in policy drafting. Therefore, many of the plans around sustainable farming include initiatives to involve farmers. Among others, the agricultural vision of the Dutch government and the Farm to Fork strategy from the European Commission focus on the inclusion of different actors in the food sector, including farmers. Nevertheless, many farmers in the Netherlands still believe that the sustainability policies are forced upon them. Which becomes very clear from the latest protests in June and July 2022 (Keukenkamp, 2022). The measures that are currently often protested are the measures taken to decrease nitrogen emissions. Many farmers do not understand why the government makes decisions that hugely effect the agriculture sector, up until involuntary buy outs of farmers (Hofs, 2022), while farmers were not involved in the decision making (Voorwaarts, 2022). Furthermore, the Zevende Actieprogramma Nitraat (a guideline of the Dutch government that aims to reduce the water pollution that is caused or induced by nitrates) (Schouten, 2021) has let to criticism of arable farmers. They stated that this plan creates a system in which the government completely decides how they need to farm and that the intended measures, like the imposed rules on which crops need to be cultivated in what time frame, endanger the future of the Dutch agriculture sector (LTO, 2022).

Although several organizations were already advocating for farmers, in the last few years, many farmers believed that these organizations did not do a good enough job during the debate about the nitrogen emissions. They believed that organizations like LTO no longer represent all farmers and that they make the wrong decisions for farmers in collaboration with the government (FDF-bestuur, 2021). Therefore, new farmer organizations like Farmers Defence Force and Agractie were established. These organizations also state to represent the farmers and thereby state to go against the unrealistic wishes of the environmental organizations and the government. However, other farmers in turn state that these organizations are not the right advocates for them since they do not use the right methods to start a constructive conversation (Goudsmit & Straver, 2021).

### 2.1.3 Sustainability initiatives outside of the public domain

In response to the wishes for a more sustainable food system and the dissatisfaction about collaborations with the government, many farmers and other actors started bottom-up projects in which sustainability was created without the influence of governments. An important initiative and an example for farmers in the last twenty years was the project of Stichting Veldleeuwerik (Elema et al., 2020). This organization consisted of farmers throughout the Netherlands who collectively decided on sustainability efforts, without interference of the government or other actors. The participants actively worked on their sustainability through knowledge sharing and a certification system. Many actors, including the government, made use of this initiative to develop their knowledge.

Since the end of the 20<sup>th</sup> century, the number of bottom-up projects regarding sustainable agriculture has been growing (Van der Grijp et al., 2004). The types of projects are very diverse and have various different initiators and leading organisations, including knowledge institutions, farming organisations and NGOs. The projects are often focussed on knowledge development and collaboration in the production chain. Other projects are focussed on the marketing of sustainable products. These types of projects are often based on the idea that sustainable production is worth more for the consumer and can therefore create higher prices and income for the farmer (Oerlemans et al., 2006). Many of these types of initiatives can be found - sometimes initiated by farmers, sometimes by consumers and sometimes by companies – and include local farmer markets, shops and online services (Arkenbout et al., 2014).

## 2.2 Theoretical framework

In the last century, many different policy approaches towards sustainable arable farming could be seen in the Netherlands. Some were based on the idea that the government should make all decisions, some were focussed on collaboration between governments and farmers and yet others tried to exclude governments from the process. In the literature about these policies, these various policies are roughly divided into three categories: top-down, bottom-up and integrated policies.

A policy approach that is focussed on decisions from the overarching political systems is called a top-down approach. The assumption in a top-down approach is that the international or national politicians set the goals for sustainable arable farming and local actors directly execute the imposed approach to reach these goals (Urwin & Jordan, 2006). In the 20<sup>th</sup> century, this could for example be seen when the government implemented restrictions on manure production and pesticide use (Arnouts, 2010). Another example of top-down policies is the involuntary buy out of farmers that was discussed by the Dutch government in the last two years (Hofs, 2022).

The opposite approach is the bottom-up approach in which other actors are included in the creation of sustainability policies (Urwin & Jordan, 2006). In a bottom-up approach, the focus lays on local actors to decide on the necessary policies. International and national policies are still possible in a bottom-up approach but they are limited and do not determine the concrete actions on the local level (Rayner, 2010). The Stichting Veldleeuwerik was a clear example in which farmers took a bottom-up approach to sustainable farming (Elema et al., 2020). They made their own decisions on sustainability practices and shared knowledge about this without any influence of the government. Bottom-up approaches can also be market-based (Scoones, 2016). These approaches can include shared selling points for sustainable produce or certification that helps farmers to get a higher price for their sustainable products.

Top-down and bottom-up approaches are often seen as opposites that exist next to each other. However, several scholars note that there are either intermediate levels needed

or the top-down and bottom-up approaches need to be integrated to be successful (Cairns, 2003). Both the top-down and the bottom-up approaches have several obstacles and cannot be deployed individually. By creating intermediate levels or integrating the top-down and the bottom-up approach, these obstacles can be overcome. In an integrated approach the government could for example decide on the policies but thereby make use of the input from local actors. Another way that bottom-up and top-down policies can be integrated is when the government initiates an organization in which different local actors work with the government to improve sustainability.

## 2.3 Research scope

### 2.3.1 Research objective

When examining the Dutch agricultural system in the last century, it becomes clear that many efforts have been made to improve sustainability. The government has tried many policy approaches and farmers and other actors have created their own initiatives to increase sustainability. Nevertheless, the Netherlands is far from reaching their sustainability goals and the transition to a sustainable farming system is going slower than anticipated and needed (Howes et al., 2017; Bui et al., 2016). The problems with reaching the sustainability goals leads to the question why the current policies are not working. To get better insights in the efficiency of different policy approaches, this study focusses on the perspective of arable farmers in the Netherlands. It has become clear from many behavioural studies that it is important to include farmers in the creation of sustainability policies to increase the chances of adoption of these practices (Dessart et al., 2019). Therefore, in this study, it is examined how Dutch arable farmers believe that the process of developing and implementing policies towards sustainable farming should look like. This objective leads to the following research question and sub-questions:

*What should the process of developing and implementing sustainability efforts in the arable farming sector in the Netherlands look like according to Dutch arable farmers?*

- *What is sustainable arable farming according to Dutch arable farmers?*
- *What do arable farmers in the Netherlands think of the current sustainability efforts in the Dutch arable farming sector?*
- *What do Dutch arable farmers think about top-down, bottom-up and integrated policy approaches towards sustainable arable farming in the Netherlands?*
- *Who should be involved in the process of developing and implementing sustainability efforts in the arable farming sector in the Netherlands according to Dutch arable farmers?*

### 2.3.2 Sustainable policies: two case studies

This research focussed on arable farmers in the Netherlands. In 2021, the amount of arable land in the Netherlands was 535,520 hectare (CBS, 2022). This land was managed by around 18000 farming companies. The Dutch arable land can be split in eight areas based on soil type. The most important crops that are cultivated on the Dutch arable land are potato's, sugar beets, vegetables (mostly onions) and cereals (CBS, 2017).

Both the Dutch government and the European Union have created a vision of what to accomplish in terms of sustainable arable farming in 2030. The European goals include the decrease of pesticide use, the reduction of nutrient loss and the increase of organic farming (EC, 2020). The Dutch goals partly overlap with the European goals but are more specifically focussed on sustainable energy production, precision farming and the cultivation of protein and rest crops. Two of the goals for sustainable arable farming, one

from the European Union and one from the Dutch government, will be used as exemplary cases in this research.

The first case is the increase of organic farming. The European Union has set a goal that 25% of the arable land in every country will be organic in 2030. This goal is part of the European Farm to Fork strategy and should, among others, contribute to the increase of biodiversity and the decrease of climate change (van Tilburg, 2022). In the Netherlands, currently only 4% of the arable land is organic (Berkhout et al., 2022). Although the amount of organic farmland has been growing in the last decades, the growth pace is not nearly high enough to reach the 25% in 2030 (Skal, 2021). This entails that many Dutch farmers will have to switch to organic farming in the coming years to reach this goal. However, research of Skal in 2020 showed that the increase in organic farmland in the Netherlands is stagnating (Smit, 2021).

The second case focusses on the increase of cultivation of protein crops. The Dutch government would like to reach 100,000 hectares with protein crops in the Netherlands in 2030 (Sikkema, 2021). In 2020 around 9100 hectare of Dutch arable land was used for the cultivation of protein crops (Esselink, 2020). The cultivation of protein crops has the goal to increase the intake of protein from local sources and to improve the options for a plant-based diet in the Netherlands (CBS, 2020). Protein crops that are viewed as suitable for cultivation in the Netherlands are, among others, soy, field beans, lupine and peas. Many organizations have indicated that the goal to go to 100,000 hectares of protein crops is extremely ambitious and might not be achievable in 2030. The doubts around this goal are mostly due to the competition with other countries where the costs for cultivating protein crops is much lower (Sikkema, 2021).

## 2.4 Research methods

### 2.4.1 Method of research and analysis

To answer the research question, qualitative research was executed. Since not much information was yet available about the specific opinion of Dutch arable farmers on policy approaches towards sustainable farming, the focus of this research was explorative. A qualitative research method provided the possibility to discuss the topic of this research in an open and detailed way (Scheepers, et al., 2016). This created the possibility to discover new aspects of the farmers' opinions on policy approaches towards a sustainable arable farming sector. Moreover, it provided the possibility to discuss a complex system in a detailed way.

An interview guide with some broader questions and topics was used to guide the interview and make sure all relevant topics were discussed while leaving enough space for the participants to provide their own input. The interviews took between 40 minutes and 75 minutes. Although an interview guide was used as a basis for the interviews, the interviews were approached as a conversation between the researcher and the participants. Therefore, every interview had different questions and a different order of topics. Moreover, the interview guide was adjusted after every few interviews to increase the quality. The last version of the interview guide can be found in Appendix 1. The general structure of the interviews was as followed: the interviews first discussed some basic characteristics of both the farmer and the farm. The topic of the research was then brought in by asking the farmer about their definition of sustainable arable farming. This was followed by a discussion on the definition of arable farming from the government and the current policies around sustainable farming. Depending on the availability of the participant and the speed of the interview, either one or two of the cases (organic farming

and protein crops) were discussed. The interview was ended with a discussion on the ideal policy approach towards sustainable arable farming in the Netherlands.

The interviews were recorded and later transcribed. The transcripts were then coded<sup>1</sup>. The grounded theory of Glaser and Strauss (1967) was used as a basis for the analysis. The interviews were first coded individually after which the assigned codes were further examined and relations between the codes were noted in a diagram. With the coding diagram in mind, the interviews were once again read through and codes were added or adjusted as needed. This way of analysis enabled a structured analysis that narrows from an open view to the specific results needed in the research.

#### 2.4.2 Participant characteristics

Participants for this research were found through the researcher's own network, internet research and snowball sampling. Moreover, around ten Dutch farming organisations were contacted to see if their members wanted to join the study. Among the participants there was also one member of the "Eiwitboeren" and three organic farmers to fit with the two cases of this study. To make sure the participants would represent the diversity of Dutch arable farmers, variation was sought in age of the farmers, position of the participants on the farm, location in the Dutch agricultural regions, size of the farm (in amount of people working on the farm), side line activities and cultivated crop types.

The farmers that participated in the research were between 21 and 65 years old, with an average age of 45. The vast majority of the participants was the owner of the farm, in most cases in partnership with other family members. Other positions of the participants were family member of the owner and cultivation assistant. The size of the farms varied between 6 and 450 hectares, with an average of 135 hectare, and between one and nine people working on the farm (including the participant), with an average of three people. Dozens of different crops were cultivated on the farms, the most common crops being starch potatoes, sugar beet, onions and cereals. Most of the participants performed one or multiple side line activities. Dozens of these activities were mentioned, the most common once being contract work and energy generation. The eight most important arable farming regions were included in this research. These regions were determined by the Wageningen University and Research based on land use and number of arable farmers (Smit & Jager, 2018). Each region has its own typical landscape, soil type, building plans and cultivation systems. From each of the regions, two to four farmers participated in this research. A more comprehensive overview of the participant characteristics can be found in Appendix 2.

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<sup>1</sup> In two interviews, the recoding had failed. The interview notes of these interviews were used for the coding.



### 3. Results

The 21 interviews provided good insight into the farmers' wishes regarding the process of developing and implementing sustainability efforts in the arable farming sector in the Netherlands. On some topics, like the definition of sustainable arable farming, the farmers were quite consentient. On other topics, like the farmers' representation, there were some differences between the farmers' opinions. This chapter first goes into the definition of sustainable arable farming. It then discusses the current sustainability efforts and policies and the changes that the participants would like to see regarding these efforts. Lastly, the participants perspective on the ideal policy approach towards sustainable arable farming is discussed.

### 3.1 The definition of sustainable arable farming

Most of the participants in this research viewed sustainable arable farming in the same way. They believed that for arable farming to be sustainable, it needs to be durable. All participants found it important that they would be able to keep farming for many more years, as this participant clearly explains:

*Participant 4<sup>2</sup>: "Sustainable arable farming is arable farming that you can keep doing a long time without it decreasing. That if you do the same thing for thousand years and the production is the same and the input and output did not change or worsened".*

Many participants also noted that their successors needed to be able to keep farming too. Some of the participants described that a sustainable farmer would make sure the quality of the farmland would be at least the same and might even be improved over the years. For the arable farming to be durable, most farmers focussed on the soil. Some participants noted that the farming soils should be compared to the human body, which entails that you would take all the necessary actions to keep such a complicated system healthy:

*Participant 14: "Well, the basis of sustainable is the soil. The soil is the basis of our company. So, if the soil is not good, I won't have any income next year. So, we do everything we can to keep the soil in optimal condition. It is the same as what you try with your body, which has to be in good condition. So that's what we try with out soil too."*

Other participants summarized this as being efficient with all resources, which included the soil, the chemicals, fertilizer, crops and all other necessities.

A few participants noted other important aspects for sustainable arable farming besides the durability of the soil. Some participants believed that a sustainable arable farm would have a good revenue model which would make it possible for the farmers to keep farming for a long time. A few other farmers mentioned that a sustainable farmer would not only have the best interest for its own soils but also for the people working on the farm and for the surrounding nature.

Many participants noted that sustainable arable farming was the type of farming that they were already practising. Most of these participants believed that the majority of Dutch arable farmers were already being sustainable. A few participants believed that they were being sustainable themselves but the general farmer in the Netherlands should become more sustainable. A few of the practices that were often mentioned as part of sustainable arable farming and that the participants were already doing were: sowing the

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<sup>2</sup> All the quotes from the participants are translated from their original language (Dutch). Although it is tried to provide the best translations, it needs to be taken into account that some of the specific feelings or nuances could be lost in translation, due to the use of proverbs and other Dutch specific statements or words.

field margins, trading soil or other resources with local livestock farmers and making use of green manures.

The participants believed that their definition of sustainable arable farming differed from the definition of the government. The participants mentioned different aspects that were different. Some participants stated that their overall definition was the same but that the government used measures to reach these goals that did not fit the definition of the participant. Some participants thought that the definition of the government had some good points but was carried on too far. The majority of the farmers believed that the definition of the government on sustainable farming was completely wrong. The most given argument for this was that the government decided what sustainable arable farming should be based on theoretical information and that this did not fit the actual situation of farmers. Moreover, several farmers indicated that the definition of sustainable farming depends very much on the area and other circumstances. They believed that it was therefore not possible to decide on a definition for sustainable farming for the whole country, as the government did in their eyes.

A few participants indicated that the definition of sustainable arable farming from the government was not sustainable enough. These participants were both organic farmers. Among others, they believed that an actual sustainable farm would not use the amount of chemicals that are currently used in general farming.

## 3.2 Current sustainability efforts

### 3.2.1 Government policies

When discussing the definition of sustainable arable farming with the participants, the participants all started to mention many aspects of the policies around sustainable farming, both national and European, that were not working. The most mentioned problem with the policies was that the policies are created on paper in someone's office and do not fit the practical situation. The participants also stated that the policies were too much based on all kinds of measurements, like the amount of nitrate in water surrounding the farms, which they thought was not the right kind of information. The overall opinion among the participants was that the people who create the policies did not have enough knowledge of the farming practice and therefore had to make their decisions based on measurements and models:

*Participant 2: "I hope that in the future, the people that will be drafting policies will actually know what is happening in the arable farming sector and in the full cycle of arable farming. Because currently there are people working that have no idea what they are doing."*

Several participants also noted that some of their efforts to be sustainable were actually countered by the current sustainability policies. Part of the reason that these policies counteracted the participants sustainability was that the policies were not specified to the specific circumstances per area or farm. Therefore, the participants thought that some of the policies would perfectly fit one area or farm but not the other.

Most participants stated that the policies from the Dutch government and European Union hugely affected their work. Some participants stated that the government was taking over their role as entrepreneur since they believed that a farmer they could only follow rules in their work and not decide on their own practices. Several participants mentioned that the policies around sustainable arable farming made them quite

pessimistic and unhappy. Many participants also worried about the survival of arable farming in the Netherlands and specifically their own farm.

### 3.2.2 Other sustainability efforts

Besides the efforts from the government, the participants mentioned several other actors that currently influenced the sustainability of arable farming. As discussed above, many participants believed that the arable farmers themselves already did a great job in regard to sustainable farming. Other actors that were mostly mentioned in regard to the sustainability efforts were knowledge institutions, retailers, trading houses, consumers and NGOs. Knowledge institutions were mentioned both because they influenced the policies around sustainable farming and because they provided useful insights for the farmers. The participants believed that the knowledge institutions could have both a positive and a negative effect on sustainable farming. Retailers and trading houses were both mentioned as actors that sometimes demanded extra sustainability efforts from farmers, on top of the demands from the government. Moreover, many participants mentioned that these actors could determine in how far the farmers could be sustainable by paying them the right price for their products. Most of these participants, however, believed that this was in turn dependent on what consumers would be willing to pay for sustainable products. Finally, several participants mentioned that NGOs have a big influence on the attitude of both the government and the consumers towards farming, which in turn influenced what kind of policies are created and what products the consumers buy. There was some difference in opinion between the participants if this was a positive or a negative influence, which depended on whether the participant believed that the NGOs strived for the right kind of sustainability.

### 3.2.3 The goal of 25% organic farmland

When discussing the policies around sustainable arable farming, two cases were used to examine the opinion of the participants. The first case, organic farming, was often already mentioned by the participants themselves as an example of an unrealistic goal. The participants noted that the goal of reaching 25% organic farmland was a perfect example of policies that were created in an office but did not fit the actual practice.

Most of the participants also believed that the goal was not necessary. Some of the participants stated that general arable farming is currently so close to organic farming that changing to organic farming would not have much effect. Other participants believed that organic farming is not sustainable. These participants believed, among others, that organic farming decreases biodiversity and creates a worse soil due to all the extensive motion on the soil that is needed when no chemicals are used. A few participants thought that greatly enlarging the amount of organic farming land in the Netherlands would be a good idea. These participants were organic farmers themselves and believed that less chemicals would be better for the environment and for the resistance of the crops.

Almost all participants agreed that the goal of 25% organic farmland in the European Union and the Netherlands was not realistic. Some participants noted the farming circumstances and climate as a reason for this but the most mentioned reason for the infeasibility of the goal was the lack of buyers of organic produce. The participants did not have any confidence that the organic produce would actually be bought. These statements were mostly based on the stories from other organic farmers that already had trouble selling their produce for a good price. Moreover, the participants believed that there are not many consumers in the Netherlands that are willing to switch to buying the organic produce for a higher price than the average produce.

Part of the participants stated that the amount of organic farming land should not be decided by the government. This was either because they did not believe in organic farming at all or because they believed that the amount of organic farming should be based on the demand from the market. Other participants believed that the government could set these goals regarding organic farming but only if they would also stimulate the market in some way to make sure that the produce would also be bought. One of the participants explained that more needed to be done about consumer awareness:

*Participant 15: “The demand needs to be created and that starts with the clueless consumer. The consumer needs to be made aware and yeah you will need to put some more effort into that.”*

The participants found it strange that the goal is mostly focussed on the production side while they will not be able to produce something that they cannot sell. Some participants believed that some changes to the market could be made with the use of tax changes and by increasing the awareness of sustainable products among consumers. Nevertheless, not many participants believed that the market could actually be stimulated enough to make the selling of that much organic produce possible.

### 3.2.2 Protein crops

The other specific case that was discussed in the interviews was the government’s goal to increase the amount of protein crops in the Netherlands. This goal was a bit less known and less of an issue among the participants. The participants also had a much more positive attitude towards this goal than towards the organic farming goal. They were mostly enthusiastic about the idea that Dutch protein crops would replace imported crops and that the protein crops would absorb nitrogen. Nevertheless, all participants had some doubts about the feasibility of the goal. The participants believed that the goal was not feasible for several reasons. The most important reason mentioned was the high costs of growing protein crops in the Netherlands compared to other countries. The participants noted that there was no level playing field and expected that supermarkets and other supply chain actors would choose the cheaper crops from, for example, South America. Moreover, several participants doubted if the climate in the Netherlands was suitable for these types of crops and if the current crop breeds were developed enough to grow here.

As with the organic farming case, the participants were split in their opinion about the government setting a goal regarding protein crops. One part of the participants believed that the government can, or in some cases even should, set these goals but that they needed to implement supporting measures to make it possible. The participants noted two aspects that needed to be stimulated before more protein crops could be grown in the Netherlands. The first important point was that more research, and specifically field research, was needed on these types of crops. Thereby, it was very important for many of the farmers that not only the crop itself but also its effect on the rotation schedule would be examined. Some participants were afraid that the research would be limited to the crops itself while it might affect the soil and thereby the crops planted in the same soil the next year. The second point that the participants stated to be very important to stimulate was the market demand. The participants noted that in the current market, there was no level playing field, so the Dutch protein crops would never be bought since they would have a higher price than crops from other countries. Some of the participants believed that the government could make a change on this issue by changing the importing fees and creating a better infrastructure for the Dutch trade. Other participants believed that the government should not set goals related to protein crops at all but that

this should be left up to the market. Most of these participants believed that the market would eventually come to a place where more protein crops would be demanded on itself.

Some of these participants believed that farmers would at some point start cultivating more protein crops in the Netherlands. This would happen when more people become vegetarian or when farmers hear positive experiences from other farmers. Other participants believed that this would never happen and several participants stated that it is actually more sustainable to make sure crops are grown in the suitable environment in other countries instead of forcing it into this environment.

### 3.3 Changing the policy approach

#### 3.3.1 Farmers' representation

In both of the discussed cases, it became clear that the participants believed that the Dutch and European government set goals that are not feasible according to the Dutch arable farmers. Most participants believed that this would be better if there would have been more field research and farmers' experience used during the creation of these policies. The participants believed that farmers did not have enough chances to share their opinion and knowledge with the policy makers. Some participants noted that they did have the chance to share their opinion but the policy makers did not actually use their field experience and opinions for the creation of policies, as this farmer stated:

*Participant 4: "I think that many arable farmers have the feeling that it doesn't matter if you're part of that [participation groups], the policy continues anyway."*

Moreover, several participants noted that farmers are loners, which makes it hard to have a strong voice in the food sector. These participants believed that other actors, like the retail and NGOs, have a stronger voice because they are bigger and have more money. Several participants believed that the sustainability policies are mostly based on the wishes of the actors with the loudest voice and the most money. Furthermore, several participants mentioned that the farmers that are included in the process of policy creation are often involved at the final stage when the plans are nearly ready. The participants noted that this felt more as a way to meet the farmers' wishes to be heard and see their first reaction than as a way to actually include farmers in the process.

At the same time, there were also several farmers who did currently or had in the past participated in projects in which they could share their opinion with the policy makers. Some of these participants had a role in a farming organization which gave them this possibility to share their own and other farmers' knowledge. Others had joined projects individually to share their knowledge with policy makers and other actors. These participants were a bit more critical in regard to the farmers that noted that they had no chance to share their opinion. Several participants noted that there were more than enough chances to share their knowledge, either directly with the local or national policy makers or through farming organizations. They stated that many farmers did not know about these possibilities or did just not want to participate. Some farmers explained that they knew many farmers that would not want to participate because the policy makers would not implement their exact advice. The participants believed that these other farmers were being unrealistic because they were not looking for an open conversation about the policies but for policy makers to copy their exact opinion. Some participants also indicated that farmers never have time to join gatherings where they can share their knowledge and opinion. These farmers agreed that this created a difficult situation since

they wanted better farmer participation in policy making on the one hand but on the other hand believed that farmers did not have time for this.

Some participants believed that farmers representation was already arranged quite well while others believed that much improvement was needed. There was some difference in opinion between the farmers regarding the way farmers should be represented. Many participants mentioned the organization LTO, the Dutch entrepreneurial organization for farmers, as a good representative. Other participants mentioned that LTO was definitely not a suitable organization to represent arable farmers. The participants that were pro LTO believed that they did a good job representing the whole farming sector in the Netherlands while the other participants had low trust in the capabilities of LTO or believed that LTO was too much focussed on the interests of the livestock farmers. A few participants mentioned the product organizations that existed in the past and represented arable farmers as a better option. Other organizations, including the Akkerbouw Vakbond and Farmers Defence Force were also mentioned as suitable organizations to represent farmers. Some other participants thought that these kinds of national organizations were less suitable to represent the specific circumstances of the farmers and would therefore rather be represented by a local organization. Lastly, a few participants stated that the government should take the initiative to contact several individual farmers in every area when creating policies instead of going through any organization.

### 3.3.2 Financing

A second aspect that the participants mentioned that needs to change regarding sustainability is the financial situation of farmers. Many farmers indicated that it is only possible for them to be sustainable when enough money is paid for their products. This is because sustainable farming practices often cost more or at least create start up costs for switching to these new practices. Many participants indicated that they get a very low price for their produce in general. They believed that this was both because the produce was sold for a very low price and because other supply chain actors took a bigger margin than what was left for the farmer.

Most participants stated that governmental funding was not the right way to support the switch to sustainable farming. Some participants believed that governmental funding could be useful but most of these farmers noted that the funding should only support the initial switch and should not be a long term solution. The most important reason not to believe in governmental funding was that the participants thought that the use of governmental funding would create an unhealthy market. They believed that the costs should be covered by the people buying the sustainable product and that otherwise the market would be kept sustainable in an artificial way. Another reason that was often mentioned as a disadvantage of governmental funding is that the government decides which sustainability efforts are most important by deciding which efforts deserve money. As discussed before, most participants believed that those decisions should not be made by the government. Lastly, the participants noted that they did not trust the governmental funding on the long term. Several participants expected that the government might support a certain practice with funding for some time before stopping the funding again and creating a problem for the farmer who has already switched. This was, for example, often mentioned when discussing the possibilities to increase the amount of organic farming in the Netherlands. The farmers were afraid that if they would switch to organic farming because of governmental funding, they would get into trouble when the government would stop its funding and the consumers would still not be willing to buy

organic produce for a higher price. Therefore, most farmers believed that this switch should be demanded by the market and not supported by governmental funding.

Many participants indicated that arable farmers would change their practices spontaneously once a demand for sustainable produce would be visible in the market. However, the majority of the participants did not believe that the market would change anytime soon due to a few reasons. The first reason is the underappreciation of farmers, as discussed in the next paragraph. The second reason is that the Dutch food market is very depended on the worldwide market. The participants believed that other supply chain actors like supermarkets would never buy their sustainable produce as long as the same kind of product is available cheaper from another country. The third reason that was given is that other, bigger, actors like trade houses and supermarkets have too much power. Several farmers noted that these actors decide what price an arable farmer should get for their product without properly taking into account the cost price of cultivating the crop. The participants thought that it was very hard to overrule these decisions since the farmer is only on its own and thereby much smaller than these other supply chain actors.

Although most participants agreed that government funding was not the right way to support sustainable arable farming, a few actions were mentioned that the government could undertake to improve the situation. It was stated that the government could take action to make non-sustainable products more expensive. This could, for example, be done by increasing the prices on things as flying.

### 3.3.3 Underappreciation

Underappreciation of farmers, farming and food products appeared to be a big issue for the participants. As mentioned above, the participants believe that this underappreciation is part of the reason they do not earn much as arable farmers. The participants stated that most consumers have very low awareness and knowledge of how food is produced and what it takes to grow vegetables or fruits, especially in a sustainable way. Several farmers explained that the food system that has been created in the last decades has created spoiled consumers who want food for almost no money. Moreover, the consumers got used to only seeing the most perfect produce in the supermarket. This means that the farmers always need to throw away part of their products but also that arable farmers are focussed on cultivating perfect and cheap products instead of sustainable ones.

Several participants believed that more education on food would help consumers to not only appreciate the work of the farmers more but also make them willing to pay a higher price for the products. Other participants believed that it might improve the appreciation but that consumers would still choose the cheapest option once in the supermarket, not only because consumers do not want to pay more but also because several consumers cannot afford more. These participants were, therefore, pessimistic about selling sustainable produce. They believed that no matter what actions would be undertaken, consumers would never go for sustainable products instead of cheap and convenient products.

Some participants noted that more education about food and farming should happen in schools, initiated by the government. Others stated that farmers could also take a role in this. A few participants noted that the effort to decrease underappreciation should also come from other supply chain actors. They would, for example, like it if the supermarkets would use their budget, which is bigger than that of the farmers, to shine a spotlight on the great work of Dutch farmers and their products:

*Participant 5: "There are quite some organizations who could do something [for the promotion of farmers]. But you do not need a LTO for this. That's like pro farmer since*

*they form the constituency. So that would be tainted advice, like we from WC eend advice you to use WC eend. It should be a more neutral actor, like for example a supermarket.”*

### 3.4 The ideal policy approach towards sustainable arable farming

#### 3.4.1 Government interference

Based on the existing policies and the changes that the participants believed were needed, it was discussed with the participants what policy approach towards sustainable arable farming would work better. Some participants believed that the ideal situation would be that the government would no longer intervene with or create policies about sustainable arable farming. Other participants believed that the government could create policies but that the way these policies were created and what they looked like should change. The participants mentioned a few things that they believed to be the most important in the government's policies regarding sustainable arable farming. The first aspect that the participants believed to be important was that the policies would be feasible within the practical circumstances of the farmers. Thereby, the participants indicated that they needed more long term policies, policies that would not be changed for a few years after their creation and are announced in time, as this participant explained:

*Participant 13: “It is also important that they warn us in time. Often there is no signal at all, or hardly. And then in the moment they say we are not allowed to use that chemical agent anymore. No alternative, so what am I supposed to spray?”*

To make the policies feasible participants also believed that it would be very important to involve farmers at the start of the policy drafting.

The second aspect mentioned is that the international playing field needs to be more equal. The participants wanted to be sure that farmers in all countries, or at least in the European Union, are dealing with the same sustainability measures and make the same costs:

*Participant 9: “We need to strive to, for example on this topic of protein crops, make the rules the same throughout Europe. I have a colleague, in Dutch Flanders, who cultivates beans. And his Belgium colleague receives extra money for his beans. But the Dutch farmer? He is two kilometres away, on the other side of the border. He had to do without the 600 euro's.”*

The participants stated that a level playing field was the only way that they would be able to deal with the sustainability measures without being outcompeted in the market. This aspect was remarkable since the participants had also indicated that sustainability policies should be created on a more local level to make sure they would fit to the specific farming circumstances. When this discrepancy was discussed with the participants, it could be noticed that several participants were no longer sure if they wanted policies on a local or an international level.

Third, the participants believe that the policies around sustainable arable farming should be less specific and mostly focussed on the goals the government wants to reach. In that way, the farmers would be able to decide on their own practices that fit with the area their farm is in and other specific circumstances.

Lastly, the participants would like the policies around sustainable food to be less focussed on the farmers. They believe that including the whole food system would create

more possibilities. As discussed before, the participants indicated to be depended on other actors, for example for the money they need to cultivate sustainable products.

### 3.4.2 Other actors

All participants indicated that the sustainability of agriculture should not only depend on the farmers and government but on many other actors. However, there was a lot of difference in opinion on who should and who should not be involved. Most of the participants thought that knowledge institutions should play an important role in the transition to a more sustainable arable farming sector. However, the participants did find it important that the research would be more focussed on sustainability efforts in the actual arable field. Besides, several participants indicated that the government should no longer be able to influence which research would be done by, for example, allocating money to specific projects or research. Some participants noted that they had better trust in research that was not at all funded or impacted by the government and would therefore prefer to get research results from private organization like crop advisors, accounting firms and seed breeders.

While many participants believed that supply chain actors, like retailers and trading houses, already had some influence on the sustainability of arable farming, they thought that they should have impact in a different way. The supply chain actors mostly had influence by not paying the farmers enough for sustainable products and by creating extra demands for sustainability on top of the governmental policies. The participants would like to see the supply chain actors to change their way of paying farmers. They believed that it would be better if the farmers can let them know how much their cost price is and that the price would be based on that instead of the other way around. Moreover, the participants believed that these supply chain actors could take some responsibility in promoting sustainable food towards consumers. This could not only be done with marketing but also by, for example, placing sustainable food on the eye level of consumers in the supermarket.

As discussed before, the participants found it important that farmers get a more prominent position in the discussion on sustainable arable farming. Some farmers believe that advocacy organizations as LTO or Farmers Defence Force are the right contacts for this. A few participants also indicated that the combination of organizations like LTO, who are at the table with the government, and organization like Farmers Defence Force, who can loudly protest the policies, creates the best possibilities for change. Other participants would rather see that individual farmers or a representative from every area would get the chance to discuss their opinion on sustainable farming.

A few other actors were mentioned by some participants that are important for the transition to sustainable agriculture. The bank was mentioned as an actor that could help by providing advantages for farmers who are farming in a sustainable way. Moreover, some participants believed that NGOs focussed on nature conservation and sustainability could have an important role. Some participants believed that these NGOs had the same goals as farmers but communicated this in a different way. Other participants believed that they had a very different opinion but were important for a constructive discussion on sustainable farming.

Overall, all participants agreed that the transition to sustainable arable farming requires the cooperation of and collaboration between many different actors. The farmers believed that more dialog between the different actors is needed. Some participants believed that project groups with representatives from all these actors would be the best way to get to a more sustainable way of arable farming. Other participants thought that it

was needed to let this transition run its natural course, mostly based on the market demand, in which the different actors could participate when needed.

### 3.4.3 Responsibility

While discussing what the ideal policy approach to sustainable arable farming would look like, it was also discussed which actor or actors were in the end responsible for the sustainability of the arable farming sector in the Netherlands. A few participants believed that this should be the responsibility of the farmers itself since they know what is best for their land and produce. A few other participants believed that the government should be responsible. This was either because they believed that sustainability is a collective issue or because they believed that this is the actor with the best overview of all that needs to happen. Most of these participants believed that the European government would be the best level to put this responsibility so that they could create a more level playing field. In regard to this level playing field, the participants also stated that the Dutch government should stop trying to get ahead of the European goals. At the same time, these participants did find it important that more local governments, like municipalities or regional water authorities, could specify the policies for that region.

Nevertheless, the majority of the participants believed that not one actor should be responsible for the sustainability of arable farming but all actors together. A participant explained why the farmer was not suitable to have the end responsibility:

*Participants 17: “In this instance you will be tempted to say it is the farmer but it is not the farmer. The farmer only has one goal and that is earning money. And if earning money is the goal and there is no money in sustainability, then there is nothing to do for the farmer. So that’s why it comes back to the market.”*

Like this participant, several participants specifically mentioned the market and stated that supply and demand should be the only basis for a transition to more sustainable arable farming. Other participants believed that not just the market actors but all actors in and around the food supply chain should take their own responsibility regarding sustainable food production and work together on a more sustainable food system.



## 4. Discussion

The results of the interviews provide some interesting perspectives on the farmers' opinions regarding sustainable arable farming. In this chapter, these three insights will be discussed and the research questions will be answered. First, there appears to be a big difference in the farmers' definition of sustainable arable farming and the definition of the government. Second, this research made clear that the top-down and bottom-up concepts are not the right terms to examine policy approaches towards sustainable arable farming. Third, there appears to be a big discrepancy in the farmers' perspective of available participation options and the governments perspective.

#### 4.1 A difference in perspective

When discussing the policies around sustainable arable farming, it becomes clear that the arable farmers believe that there is a lot of difference in opinion between them and the Dutch and European policy makers. These differences already start at the basis, the definition of sustainable arable farming. This can be noticed when examining the answer on the first sub-question of this research: *What is sustainable arable farming according to Dutch arable farmers?* The overall opinion from the participants was that sustainable arable farming is durable farming, farming in such a way that people of many generations to come will still be able to farm on that land. For the participants, this mostly concerned the soil quality and the revenue model of the farmers. Only a few of the arable farmers stated that the effects on the surroundings and environment were also important.

All participants believed that this definition, focussed on durability of the soil and income, differed in some degree from the governments definition. The Dutch government focusses its definition of sustainable farming mostly on the decrease of emissions and climate change. To reach these goals, the Dutch government drafted a plan to shift to circular farming in which there will be minimal loss of materials and resources (Schouten, 2018). The Dutch government defines sustainable circular arable farming as: “attuning cultivation to the capacity of the soil with increasing precision and with application of sophisticated farming plans, customised fertilisation and prevention of diseases, pests and weeds.” (Schouten, 2018). Moreover, the government specifically mentions that sustainable arable farming uses “as less chemicals as possible with virtually no emissions into the environment and without residues” (Schouten, 2018). The European Union uses an even broader definition of sustainable agriculture which includes social, economic and environmental sustainability. According to the European Commission sustainable agriculture entails: “agricultural activity that is sustained by good environmental conditions, which allow farmers to harness natural resources, create their produce and earn a living” (European Commission, no date).

The definition of sustainable arable farming that the arable farmers provided clearly differs from the definitions of the Dutch and European government. Two important differences can be noticed. The first is that the arable farmers focussed their definition mostly on the durability of their land while the government looks at the broader situation and environment. Almost all participating farmers discussed the future of their own farm and the corresponding land when explaining sustainable arable farming. In the definition of the government these same aspects can also be found but these are supplemented by aspects outside the farm, like the emissions to the environment. The second difference in the definitions is that the farmers' definition is focussed on the goal that needs to be reached by sustainable farming, the survival of the farm, soil and farming as a practice in general. The definition of the government is more focussed on how to reach a sustainable agricultural system and includes specific practices like precision farming and sophisticated farming plans.

It is remarkable that the difference in these definitions overlap the criticism that the participating arable farmers had regarding the current policies around sustainable farming. The answer to the second sub-question of this research makes this clear: *What do arable farmers in the Netherlands think of the current sustainability efforts in the Dutch arable farming sector?* The arable farmers believe that the current policies are based on theoretical information and measurements and thereby the practical situation of farmers is disregarded. Moreover, the farmers believe that the government has too much control on what their specific farming practices look like. This makes the farmers feel like they are no longer entrepreneurs since they cannot make their own decisions but only follow rules. Furthermore, the arable farmers believe that the government makes very specific rules for the whole country, which leads to rules that do not fit the farm or area. Lastly, the farmers think that the government has a very specific focus on the sustainability of farmers while other actors (in the food sector) get a free pass.

This overlap between the discrepancy in definitions and the dissatisfaction of the arable farmers regarding the sustainability policies seems to indicate that part of this dissatisfaction arises from the different perspective on what sustainable arable farming is. The arable farmers believed that the government policies regarding sustainability, especially in relation to nature areas, are too much focussed on farmers while other actors are disregarded. This could be explained by the fact that the arable farmers believe that arable farming is limited to their farm and other actors need to be held accountable for sustainability outside of the farms. Moreover, the arable farmers believe that the government determines too much of their specific farming techniques. This could also be viewed in the difference in definition since the farmers think that sustainable farming should be defined as a certain result like durability while the government defines sustainable farming in terms of specific farming practices.

It can be noticed that most scholars base their definition of sustainable agriculture on the same idea as the European Commission, that sustainable agriculture is a combination of social, economic and environmental sustainability. Janker et al., (2018) describe that the concept of sustainable agriculture in both the public and the scientific domain is often hugely impacted by the international political discourse, like the Sustainable Development Goals. However, many scholars agree that sustainability is a difficult concept to define (Gorp et al., 2012; Janker et al., 2018). These scholars also note that there are big differences in the way sustainable agriculture is defined by different actors. Hoffman et al., (2014) explain that the definition of sustainable agriculture is very important since it determines the actions that different actors undertake to be sustainable. Therefore, it would be recommended for the Dutch (and European) government to examine how the difference in definition of sustainable agriculture influence the sustainability efforts of Dutch arable farmers.

#### 4.2 From bottom-up or top-down to a food system approach

At the beginning of this research, the goal was to find out if arable farmers in the Netherlands need a more top-down or a more bottom-up based approach towards sustainable arable farming. The existing literature on the history of sustainable farming in the Netherlands is also often based on this idea that policies are either top-down, bottom-up or a combination of the two. Some scholars, as for example Urwin and Jordan (2008), specifically discuss the advantages and disadvantages of top-down and bottom-up policies. Other scholars like Karel (2010) and Rikke (2010) do not specifically discuss these concepts but do examine the effects of different government styles that could be identified as top-down and bottom-up. Yet other scholars specifically analyse the effects

of bottom-up initiatives. This can for example be seen in the work of Runhaar et al. (2017) and Elema et al. (2020).

When using the concepts top-down and bottom-up as these authors did, an answer can be given to the third sub-question: *What do Dutch arable farmers think about top-down, bottom-up and integrated policy approaches towards sustainable arable farming in the Netherlands?* The participating arable farmers can be split into three groups. Some arable farmers believed that the government should stop interfering with the agricultural processes. These farmers believed that the farmers themselves are capable of deciding on their own farming practices and the sustainability needed on their farm and would therefore prefer a more bottom-up type of approach. Another group of farmers believed that the government should decide on sustainability policies top-down and farmers should work within these boundaries. The largest group of participating arable farmers desired an integrated approach in which the government would decide on the policies together with the farmers. Thereby, these farmers believed that broad policies should be created, focussed on the goals regarding sustainability, in which the farmers could decide their own farming practices needed to reach these goals.

Although the question regarding top-down and bottom-up approaches can be answered, it became apparent during this research that these are not the right concepts. There are two reasons why these concepts do not create the right perspective to examine sustainable agriculture. First, the top-down or bottom-up discussion is based on the idea that policies can be created between the actors on the top, the government, and the actors at the bottom, the farmers. However, this research had made clear that such a direct relation between the government and farmers does not exist in regard to sustainable farming. Instead, many other actors are involved and will always influence the relation and contact between the government and farmers. Secondly, arable farmers in the Netherlands are completely depended on the world market. The Dutch or even the European government does not have enough influence on this worldwide market to determine the sustainability practices possible within this market.

All participating arable farmers indicated that their sustainability efforts were depended on many policies and decisions from other actors, but mostly on the market. Other actors that were important for their sustainability were for example the consumers, retailers and trading companies. The arable farmers noted that it is not possible for them to change to more sustainable farming practices when these actors do not support this. Several scholars have also mentioned this dependence. Magrini et al. (2018) and Vanloqueren (2008), for example, state that the agricultural system and the food system as a whole are interlocked in a situation where all actors of the system are interlinked due to the existence of a system in which high-efficient farming is preferred. Many scholars therefore believe that it cannot be expected that farmers change their practises on their own. The whole agricultural system needs to be taken into account when examining the adoption of sustainability practises among farmers (Anibaldi et al., 2012).

It needs to be noted that some farmers seem to use the interdependence as an excuse why nothing should happen in regard to sustainable farming. The participants stated that they could not make a change that would actually make the food system more sustainable but neither could any other actors. Therefore, these participants noted that it would be better not to try to work towards the sustainability goals. Other farmers, however, did want to work towards the sustainability goals but wanted to do it together with other actors from the food sector.

Almost all participating arable farmers indicated that their work, and thereby their sustainability efforts, were mostly determined by the price they can get for their products. It is like several participants said: *“we cannot be green while we are in the red”*. This

expression was used by the participants to indicate that they need enough money to improve the sustainability of their farm. The majority of the arable farmers did not think that the current market was a place where sustainable products could be offered. This became very clear during the discussion about organic arable farming in which almost all farmers indicated that there was not enough demand for more organic produce. According to the arable farmers this was caused by consumers who were not willing or able to pay more for their produce and by retailers and trading organizations that were competing with each other by offering the lowest price for produce.

Yet another problem which relates to both the interdependence on other actors and the low prices, is the globalization of the food market. Most arable farmers believed that many governmental policies and goals did not make sense due to the dependence on the world market. This could, for example, been seen in the case of protein crops. While the Dutch government wants the amount of land with protein crops in the Netherlands to grow, the farmers thought that this would mostly depend on the price of protein crops from other countries. Many participants stated that they would not be able to cultivate protein crops for such a low price as farmers in, for example, South America, and they believed that the retailers would always buy the cheapest crops. The farmers did not think that the government had much influence on this and therefore they would most likely wait for changes in the market before starting to cultivate protein crops.

Since the circumstances in which sustainable arable farming needs to take place are so complex, it would be better to analyse the whole system when finding sustainable solutions. Like Anibaldi et al. (2012) explain, the complexity of the system and the interdependence of all the actors on each other demands a policy approach to sustainability in which all actors are taken into account. Jagustović et al. (2019) explain that a system “renders a set of connected interdependent elements as a web of interrelationships”. All these different elements and their interrelations need to be taken into account when trying to create a transition in a system. System thinking has several benefits. First, it helps to translate complex realities into conceptual constructs, whereby it becomes clearer how change can be created. Second, system thinking creates the possibility to see the world more holistic which makes it possible to implement ideas by engaging with the right stakeholders (Reynolds, 2016). In follow-up research it should be examined which type of system approach fits the best with this case of sustainable arable farming in the Netherlands.

### 4.3 Improving farmers’ participation

While it has become clear that arable farmers would prefer a policy approach that includes the whole food system to reach a more sustainable arable farming practice, there was some difference in opinion on which actors were important for this system. The last sub-question of this research was: *Who should be involved in the process of developing and implementing sustainability efforts in the arable farming sector in the Netherlands according to Dutch arable farmers?* There is no one answer to this question. Some arable farmers believe that the sustainability of arable farming needs to be based on the market demand and specific actions to accelerate this are not necessary or useful. Other farmers state that some responsibility to create a more sustainable farming sector should be put on a certain or several actors. The actors that were mostly mentioned were the consumer, the retailers, trading houses, knowledge institutions, NGOs, suppliers of farming materials like pesticides and the local, national and European government. Moreover, all arable farmers agreed that the arable farmers themselves should have more to say on the topic.

Whether it would be to show how much farmers already do in terms of sustainability, to discuss that the market needs to change or to impact the policy approaches that are created, all participants state that it is important to give arable farmers a voice. As discussed before, research also shows that involving farmers can help to increase the chances that sustainability practices will be adopted by farmers (Dessart et al., 2019). Moreover, including farmers in policy drafting processes increases the bond of trust between the farmers and the governments (Aalbers, 2009). Therefore, both the Dutch and the European government claim to be involving farmers in the creation of agriculture policies. However, many of the participating farmers in this research indicated that their opinion is not part of the policy drafting and they want to be better represented within the policy creation process.

The Dutch government states about their vision towards a sustainable agriculture sector: “The key to success lies in creating links between all parties who play a role in the transition to circular agriculture. ... We need to create space for the ambitions and strengths of farmers, growers, fishermen and their organisations, for other parties in the market and for students, lecturers and researchers.” The creation of links is done through several projects, like the LNV community in which 300 farmers discuss relevant themes with each other and with the government. Despite these efforts it is not clear for many arable farmers in the Netherlands that these initiatives exist. Some farmers that did participate in such participation projects mentioned that you needed to be quite well informed to know about these kinds of initiatives. They noted that farmers that are focussed on their company and do not make an extra effort to come outside of their normal working routine would no know about the participation projects that exist.

Some other participants noted that there are enough options for farmers to participate but that the government does not use their opinions in the creation of policies. Overbeek and Vader (2009) also note that the inclusion of other actors like farmers often has no effect on the actual policy. They argue that politicians want to include different actors but are at the same time afraid that the discussions with these actors will lead to policy changes that will mean that the national or European goals will not be met. This leads to a situation in which the participation of farmers is not actually to get their opinion but more to get their approval of the already drafted policies. This does not only mean that the farmers’ opinion is not included in the policy, but it also diminishes the bond of trust (Aalbers, 2009).

At the same time, some of the participants indicated that farmers have unrealistic wishes in regard to having their opinion heard. They stated that many farmers only want to share their opinion if it will be completely adopted by the policy makers. This shows a very big discrepancy in the expectations of farmers and policy makers. While some of the farmers want their opinion to be completely adopted in the policies, policy makers seem to often only share their ideas without including the farmers’ opinions at all. It seems that these expectations will have to be restored before an efficient collaboration between farmers and policy makers can take place. Overbeek and Vader (2009) believe that a mistake is made by the government in the choice to only involve farmers in specific and urgent situations on which the support base is already very low. In these situations, policy often has to be implemented despite what the farmers have to say, which leads to disappointing conversations. Including farmers in other, less complex situations could show them that their opinion is indeed taken into account and thereby the bond of trust might be restored a bit.

It has become clear that many farmers are not aware of the possibilities that they have to participate in policy making. Many farmers in this research noted that they are mostly focussed on their own farm and might only receive news from other farmers and

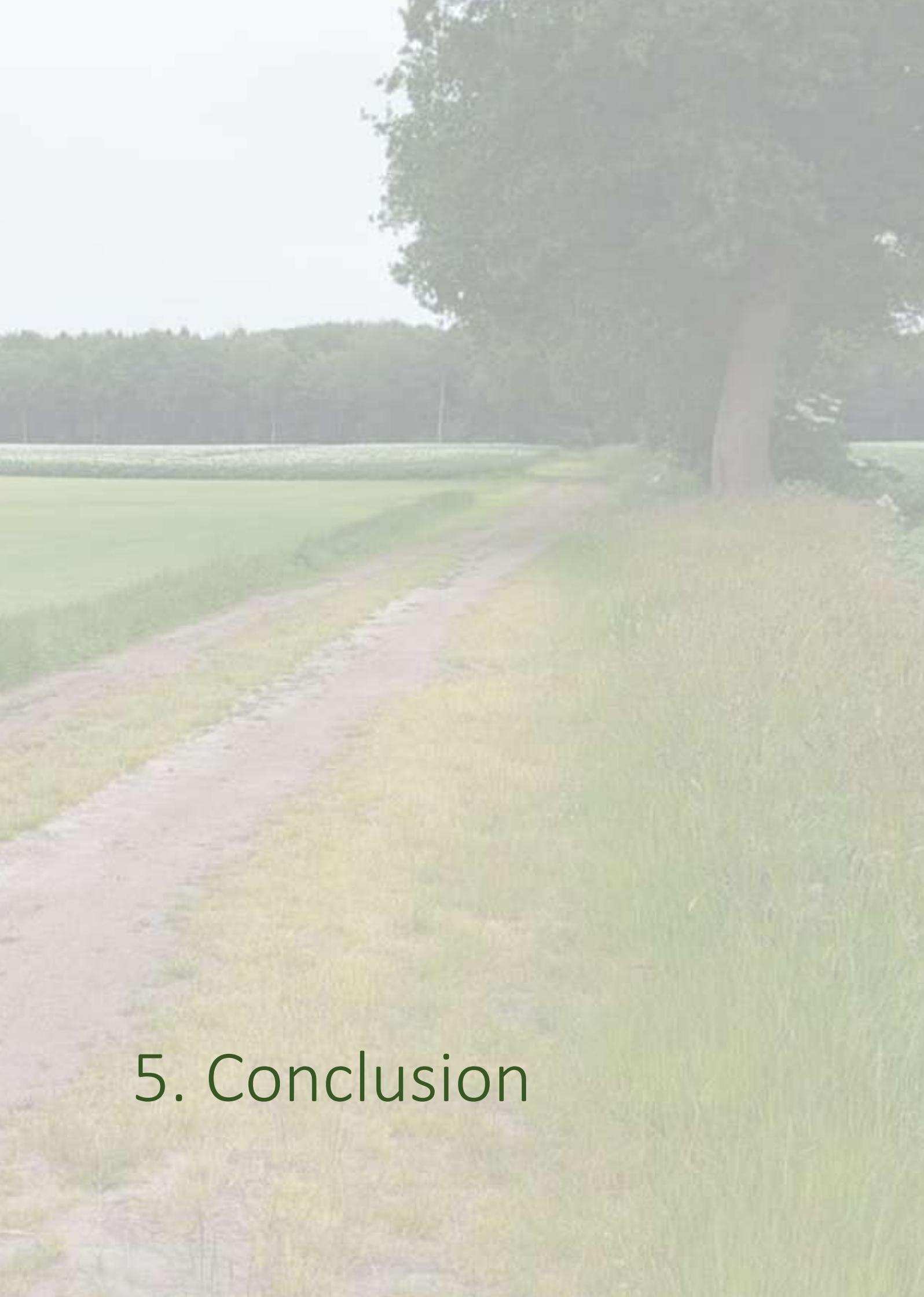
farming media. If the farmers that are aware and are participating in the participation projects are more satisfied with the results, for example due to projects that are about more than just urgent and complex cases, this might also impact in how far other farmers hear about the projects. When the farmers are more satisfied about the projects they are participating in, they might share more of their experience with other farmers, thereby increasing the awareness of these projects among farmers. Nevertheless, it should be taken into account that some of the farmers seem to not want to be included as long as they have no certainty that their opinion would be used in the creation of policies.

Another problem that can be noticed in regard to farmer representation is the wide variation in farmer organizations. Several new organizations have been developed in the last few years, on top of the already existing organizations (Goudsmit & Straver, 2021). Several participants in this research indicated that they would only want to be represented by a specific organization. Since the organizations have different goals at times, it could be difficult to find a way to represent all the different farmers without including all the different farming organizations. If all these organizations would be included, this would make the policy creation process even more complex.

#### 4.4 Research limitations and follow-up possibilities

Although the performed research provides answers to the research questions, it is important to also see the limitations of the research methods and setting. First, this research consisted of only 21 interviews. While the interviews gave a comprehensive insight into the views of Dutch arable farmers, it is important to note that these 21 participants are not representative for all arable farmers in the Netherlands. This might be reinforced by the way of participant gathering. Since the participants were gathered through channels as internet research, the researcher's own network and snowballing, it is possible that specific farmers were more willing to participate, for example farmers that were intrigued by the topic or shared views with the researcher. Second, the background of the researcher might have influenced the participants answers during the research. It was noticeable that many of the participants reacted to the fact that the researcher was a student at the Wageningen University, which most participants saw as a "sustainable university". This could have created certain expectations and a pressure to answer in a certain way. Third, during the field work, new farmer protests started. There was a lot of discussion in the media at that point about the protests and the policies that had led to these policies. This public debate could have influenced the farmers opinions.

This research has provided a comprehensive insight into the views, motivations and reasoning of Dutch arable farmers regarding sustainable arable farming. To test these results among the broader target group, a quantitative follow-up research could be done among a representative participant group. By creating a quantitative research based on the results of this study, it will be possible to get a better perspective on what the average arable farmer in the Netherlands thinks about policy approaches towards sustainable farming. This could help in the creation of policies around sustainable arable farming. Other research that could help is research that focusses on the other actors in the food system. The current research has made it clear that the whole food system needs to be included in the creation of sustainability policies. By, for example, executing interviews with other actors from the food system, a more comprehensive overview of all the relations and perspectives could be created.



## 5. Conclusion

Based on the performed research, an answer can be given to the research question: *What should the process of developing and implementing sustainability efforts in the arable farming sector in the Netherlands look like according to Dutch arable farmers?* The Dutch arable farmers prefer a policy approach towards a sustainable arable farming sector in which the whole system is taken into account. Due to the interdependence of actors within the current food system, arable farmers can only change to a more sustainable farming practice when other actors also change. Therefore, the arable farmers believe that policy approaches towards sustainable farming that are directed only at the farmers will not have much effect.

Although the arable farmers had some different opinions on which actors needed to be included in the sustainability efforts, it can be concluded that alle actors that are in some way important for the food supply chain can or should be included. Some arable farmers believe that some initiative should be taken by these actors to improve the sustainability of the food system. Thereby, the most important steps to take are improving awareness about food production among consumers, creating a more level playing field for food producers around the world and increasing the margins of food products for farmers so that there is enough money to invest in sustainable practices. Other arable farmers believe that sustainability efforts should be depended on the natural course of supply and demand on the market.

The arable farmers find it important that arable farmers will become more included in the process of developing and implementing sustainability efforts in the arable food system. All participants believed that the current policies around sustainable agriculture had some major flaws. They believed that the inclusion of arable farmers could help to improve feasibility of the policies. Thereby, it would be important to include the farmers from the start of the policy drafting and to actually use the information the arable farmers provide.

Based on the results of the performed research, this thesis advices to include all the actors from the food system when analysing the sustainability of the food sector or creating policies around sustainable arable farming. Moreover, it can be advised to increase farmer participation in projects where actual change in the policies is still possible. This could improve the trust between government and farmers, which in turn could improve the farmers' perspective on sustainable farming policies.

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## Appendixes

### Appendix 1. Interview guide

#### Introductie:

- Bedanken voor meedoen.
- Onderwerp onderzoek uitleggen kort.
- Toestemming vragen voor opname en uitleg anonimiteit.
- Vragen consent gebruik data voor onderzoek.

#### Algemene vragen over boer en boerderij:

- Kun je wat meer vertellen over jouw boerderij?
  - Soort gewassen
  - Groote (in oppervlakte en medewerkers)
  - Nevenactiviteiten
  - Waar/hoe worden producten verkocht?
  - Samenwerkingen
- Kun je wat meer vertellen over jezelf?
  - Leeftijd
  - Functie op boerderij
  - Hoe lang werk je al op deze boerderij?

#### Duurzame akkerbouw:

- Wat versta jij onder duurzame akkerbouw?
- Komt dit overeen met wat de overheid verstaat onder duurzame akkerbouw?
- In hoeverre zijn jullie op deze boerderij bezig met duurzame akkerbouw?
- Om welke reden zijn jullie wel/niet bezig met duurzame akkerbouw?

Korte toelichting onderzoek: In dit onderzoek bekijk ik welke mensen en instellingen volgens akkerbouwers belangrijk zijn voor de duurzame akkerbouw. Ik wil graag weten wie er volgens jou allemaal mee moeten denken over de duurzame akkerbouw. Zo wil ik met je bespreken wie de regels moet bepalen, wie er onderzoeken moet uitvoeren en waar het geld voor duurzame landbouw vandaag moet komen.

#### Huidige situatie:

- Wie heeft er momenteel invloed op de duurzaamheid van jullie boerderij?
  - Denk aan: overheid, bedrijven, kennisinstellingen, boeren, consumenten, milieuorganisaties
  - Verschil lokaal en nationaal, regionaal, Europees
- Op welke manier hebben zij invloed?
- Wat vind je van deze invloed?
- Zou je hier iets aan willen veranderen?

#### Biologische landbouw:

- Wat weet je over de ontwikkelingen naar biologische landbouw in Nederland?
- Wat vind jij van biologische landbouw?

Korte uitleg ontwikkeling biologische landbouw in Nederland.

- Wat vind je ervan dat dit doel is gesteld door de Europese Unie?

- Wie moeten er nog meer worden betrokken bij de ontwikkeling van biologische landbouw?
  - Denk aan: overheid, bedrijven, kennisinstellingen, boeren, consumenten, milieuorganisaties
  - Verschil lokaal en nationaal, regionaal, Europees
- Wie moet er niet bij betrokken worden?
- Op welke manier/wanneer/hoe moeten deze mensen/instellingen worden betrokken?

#### Productie eiwitgewassen:

- Wat weet je over het verbouwen van eiwitgewassen in Nederland.
- Wat vind jij van het verbouwen van eiwitgewassen in Nederland?

#### Korte uitleg ontwikkeling eiwitgewassen in Nederland.

- Wat vind je ervan dat dit doel is gesteld door de Nederlandse overheid?
- Wie moeten er nog meer worden betrokken bij de ontwikkeling van eiwitgewassen in Nederland?
  - Denk aan: overheid, bedrijven, kennisinstellingen, boeren, consumenten, milieuorganisaties
  - Verschil lokaal en nationaal, regionaal, Europees
- Wie moet er niet bij betrokken worden?
- Op welke manier/wanneer/hoe moeten deze mensen/instellingen worden betrokken?

#### Duurzame landbouw algemeen:

- Wie/welke instellingen moeten er volgens jou betrokken zijn bij het verduurzamen van de landbouw? (Ontwikkeling van regels/creëren van adviezen/onderzoek doen/financiering)
  - Denk aan: overheid, bedrijven, kennisinstellingen, boeren, consumenten, milieuorganisaties
  - Verschil lokaal en nationaal, regionaal, Europees
- Wie moet er niet bij betrokken worden?
- Waarom moeten deze mensen/instellingen betrokken zijn?
- Op welke manier moeten zij betrokken zijn?
- Wie moet er eindverantwoordelijk zijn voor de duurzame landbouw in Nederland?

#### Afsluiting:

- Zijn er nog andere zaken waar jij behoefte aanhebt qua duurzame landbouw?
- Zijn er nog andere instellingen of mensen die betrokken moeten worden?
- Heb je nog andere toevoegingen?
- Bedanken voor het meedoen.

## Appendix 2. Participant characteristics

### Participants age

Age	Number of participants
20-29	4
30-39	3
40-49	4
50-59	6
60-69	4

### Participants position on farmers

Position	Number of participants
Owner (in partnership)	18
Family member of owner	2
Cultivation assistant	1

### Farm size in hectare

Hectares	Number of participants
1-99	8
100-199	9
200-299	1
300-399	2
400-499	1

### Farm size in number of people working

Number of people (including participant)	Number of participants
1-2	13
3-4	4
5-6	2
7-8	1
9-10	1

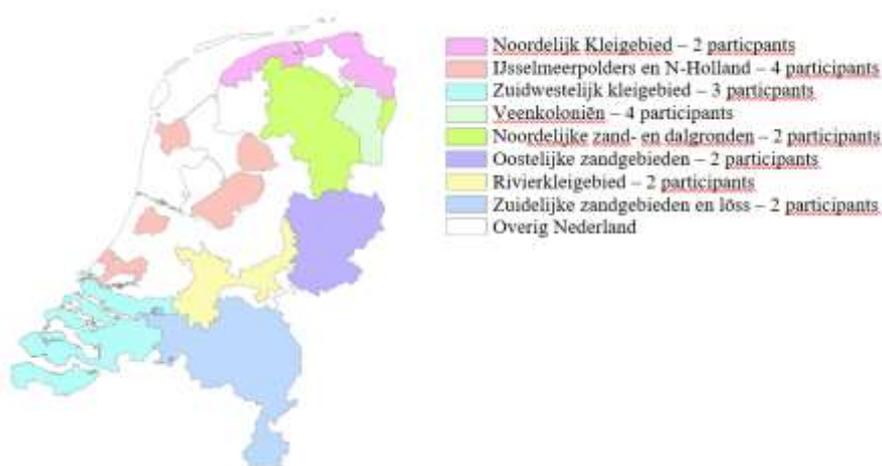
### All crops cultivated by at least two participants

- Starch potatoes
- Seed potatoes
- Consumption potatoes
- Sugar beets
- Cereals
- Onions
- Parisian carrots
- Carrots
- Corn

### Side line activities performed by at least two participants

- Contract work
- Livestock farming
- Hobby animals
- Home sales
- Recreation
- Energy generation
- Other job outside of the farm
- Storage
- Participation in trials
- Position at a farmer organization
- Educational activities

### Location of participants' farms<sup>3</sup>



<sup>3</sup> Image was copied from a report of Wageningen University and Research in which the most important arable farming areas in the Netherlands are indicated with this image (Smit & Jager, 2018).