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# BACHELOR THESIS

A Farmers Perspective on the position of  
the Betuwe

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# 1. Introduction

## 1.1 Research problem and objectives

The Betuwe is a Dutch agricultural region that consists of the following types of horticulture: fruits, trees and mushrooms (Jukema and Ruijs, 2011). The Betuwe is located in the Netherlands in the southern part of the province of Gelderland, between the river Neder-Rijn in the north and the Waal river in the south.

Horticulture is a part of the agricultural industry that focusses on the production of fruits, vegetables and ornamental plants (Isaak et al., 2021). Ornamental plants are produced for their decorative value, while fruits and vegetables are produced for consumption. This thesis will be focussed on the middle part of the Betuwe called 'Neder-Betuwe', known for its fruit farming of apples and pears, which are the most important horticulture products of the Betuwe (Jukema and Ruijs, 2011).

The province of Gelderland has started a project called Greenport Betuwse Bloem, with the aim of putting horticulture in the Betuwe on the map, and improving its economic position (Province of Gelderland, 2005). This project is still ongoing with a new name, Greenport Gelderland, which has created public-private partnerships for the different clusters in the Betuwe in the form of so called 'pacts' (Greenport Gelderland, 2023). In the case of the fruit sector this pact is called the Fruitpact. However, this project and research on this project is very much a top-down approach.

Regional development is very important, it can be used as a tool for a region to distinguish itself from others. Since states are organised more decentral the competition between regions increased therefore to stay ahead and in order to link to the global economy, regional development is used (Soja, 2009). In the case of the Betuwe this distinguishing of the region is assisted via the organisation Fruitpact.

This regional development has been created by the local and regional government, prompting a closer look at the effects it has on the local level and in the case of the Neder-Betuwe on farmers in particular. Another thing that is important to consider is the pressure on farmers because of extreme weather as a result of climate change and increasing operational costs, but also other developments of the current era such as technological developments that have impact on the yields and profits (Manhas, 2022).

This research will focus on the development of the Betuwe from a farmers perspective, from a geography point of view, with a focus on policy, economy and the climate. This will be done with the use of the livelihood approach. This approach can be used to give an insight in how people make a living (Scoones, 2015). Farmers are an important part of society. However this is often overlooked, so by focussing on fruit farmers in the Netherlands their importance and their struggles will be highlighted. In the Netherlands and in the European Union, there is furthermore a big focus on livestock farmers, since they are responsible for what is called 'the manure problem' (*DPG Media Privacy Gate, 2024*). There are however many different farming sectors, with the fruit sector being one of them. Each sector of course has their own unique story. By focussing on fruit farmers their perspective and challenges will be highlighted to a broader public. The main research question and the sub-questions are shown below.

## 1.2 Research questions

The main research question is the following: 'How are the livelihoods of fruit farmers in the region 'Neder-Betuwe' positioned in the Dutch, European and global context?'

To answer the main research question three sub-questions below will be answered:

- How are fruit farmers from the Neder-Betuwe positioned in the Dutch economy?
- How are fruit farmers from the Neder-Betuwe positioned in the European economy?
- How are fruit farmers from the Neder-Betuwe positioned in the Global economy?

## 2. Theoretical framework

This chapter will provide insights and background on the theory of regional development and of studying farmers.

A variety of projects aimed at the development of the Betuwe region have been embarked upon in the recent years (Poot, 2012) (Jukema and Ruijs, 2011). This creates the interest in a concept for the case of the Betuwe: regional development. For countries it is important to create an international competitive advantage. The creation of an international competitive advantage is often done via specialisation of certain industries (Harzing and Giroud, 2014). In the case of the Betuwe the specialisation is horticulture. Regional development in the Netherlands is part of multiple policy implications such as development that goes across the municipal borders, and that areas are becoming more and more intertwined with each other (Altes, 2006).

The creation of the Greenport Gelderland can be seen a part of regional planning, which is closely related to regional development. The need for a cooperative project in the Betuwe region is part of the trend that has been present in regional planning from the 1980s onward described by Soja (2009) as Entrepreneurial Regionalism. The decentralisations caused a situation wherein regional governments competed for scarce resources and investments (Soja, 2009). But instead of regional competition it was decided to cooperate via the project Greenport Gelderland.

Farmers are an important part of society, as they provide the core of the food system. It is however important that farmers have a sufficient income to continue producing food.

According to Finger and Benni (2021) there are 3 key aspects of farm income. First, it is important that the average income level is stable and sufficiently high to allow technological innovation. Secondly, the variability of income of farmers is important to consider. The increase in extreme weather conditions due to climate change will have an impact on the harvests, which in turn affects the income of farmers. The third important aspect of farmers income is the inequalities between farmers as well as inequalities between farmers and non-farmers. This needs to be considered since this will influence the effectiveness of agricultural policies. Another important thing to consider is the economic aid farmers in the EU receive. Farmers can receive direct payments that are tied to specific environmental objectives which are part of EU policies (*ibid*). This shows that farmers are involved in both the EU agenda while at the same time trying to make a living in an industry that is affected by climate change. In the supermarket nowadays there are products from all over the world, even perishable products such as fruits and vegetables. This raises the question if the farmers in the Betuwe also supply their fruits for countries outside of Europe.

To take a deeper look at how farmers actually make sure their business stay healthy the livelihood approach can be used. Livelihood is considered as the activities that are needed for a means of living, 'sustainable livelihood' is when a livelihood can deal with set backs and maintain or enhance its capabilities (Scoones, 2015). The livelihood approach has traditionally been used to do research on the poor people in the Global South (Scoones, 2015) (De Haan, 2012). Farmers in the Betuwe however are not considered poor. But the livelihood approach is also used to create an insight in how the poor are able to meet their needs or in other words 'survive', and thus to discover in which ways the poor can be assisted with meeting their needs (De Haan, 2012). The same can be done for the farmers, by analysing how farmer are able to meet their needs the strengths and weaknesses of their livelihoods can be discovered. This livelihood approach consist of different forms of capital as described by De Haan (2012). The first one is human capital, this consist of labour but also skills, experience and knowledge. This human capital is for every person and thus every farmer unique. A second form of capital is natural capital, this consists of land, water, forest

and pastures. In the case of fruit farmers in the Betuwe this natural capital will be most visible in the form of land, and the amount of hectares they have. The third form of capital is physical capital, this consist of machinery and tools, but also farm equipment. Most likely every farmer has this form of capital in order to run their farm. The fourth form of capital is financial capital, this consists of money in for example a savings accounts, loans or credit. Of course every farmer has this form of capital, in this research however, there will be no deep dive into the financial situation of farmer. However, the topic of income will be broadly discussed. The final version of capital is that of social capital, this focusses on the relationship people have.

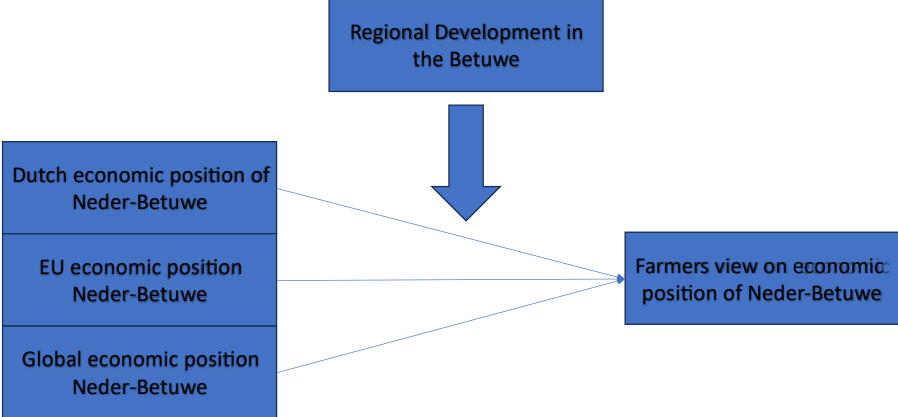


Figure 1 Conceptual Framework

### 3. Societal and scientific relevance

This thesis aims to provide municipal policymakers and others closely involved with the development of the Betuwe with bottom-up based insights. These new insights will come from farmer based perspectives, which will help policymakers gain a deeper understanding of the local context of the Betuwe. It will also help discover the possible challenges that farmers experience in this rapidly changing world. Furthermore, the role of Neder-Betuwe farmers in particular for the position of the Betuwe as a whole will be illustrated. By using the livelihoods approach, the possibility of using this research as part of a meta analysis about farmers livelihoods is created. There have been multiple articles about the Betuwse Bloem and the Greenport Gelderland. However most of these articles are from a top-down policy perspective that does not sufficiently consider the farmers' point of view and experience, (Poot & Vellema, 2013; Jukema and Ruijs, 2011; Dragstra 2022). Farmers fulfil an important role as food producers, and are often seen as vulnerable group, their dissatisfaction has been displayed multiple times recently with protests. These protest had to do with new EU legislation, mainly directed at environmental demands (NOS, 2024a). These protest where among others in the Netherlands, France and Belgium. The top-down perspective in policy making is often in cooperation with Dutch ministries or the province of Gelderland.

Another concept that has to be kept in mind when discussing the development of the Betuwe, is the concept of public-private partnerships. This is a cooperation between government and the private sector with the goal of creating initiatives that will benefit both the companies and the community involved (Valaguzza & Parisi, 2020). These public-private partnerships are at the core of Fruitpact and Greenport Gelderland (Poot & Vellema, 2013). This concept is brought in practice via the 'pacts' that are part of Greenport Gelderland. In the case of Neder-Betuwe this is the 'Fruitpact' (Fruitpact, n.d.). The goal of the Fruitpact is to improve and expand the Dutch and international competitive position of the Betuwe (*ibid*). The 'Fruitpact' public-private partnership focuses on the firms and networks in the Betuwe, thereby emphasizing the economic perspective of the Betuwe (De Beer, 2015). While this network is mainly based on the fruit sector, the view of farmers is not always incorporated, and thus following a top-down perspective.

Another topic of development for the Betuwe is 'sustainability'. This topic has impacted farmers for many years. For farmers it is of crucial importance to generate a sufficient durable income for farmers, which is reflected by a high yield per hectare. In the past this was the main focus. However, in the last couple of years, sustainability of farming has also been part of the focus, mainly to ensure that the food production is capable to meet the sustainability requirements and to adjust it to be more future proof.

#### 4. Methodologies and research methods

This research was conducted using qualitative methods focusing on semi-structured interviews with involved actors with the aim to give a detailed description of the regional developments in the Betuwe related to horticulture. Furthermore, there was also a focus on the narratives of farmers, their opinions and experiences were a central part of the research. This narrative style approach helped to better understand farmers' personal views, emotions and understanding regarding their work in relation to the regional developments in the Betuwe, thus providing a more complete understanding of the current situation. In addition, it helped to understand how the views of farmers might have changed over time. The interviews were transcribed and coded with Atlas.ti to help find the most important findings of the interviews.

As the most relevant actors are the farmers, the aim was to interview farmers with different farm sizes, creating an opportunity to compare the various views of farmers. The farmers are able to give a more complete and bottom-up perspective of the regional development in the Betuwe, and may provide new insights that have been overlooked in previous research. Furthermore, a deeper understanding of how farmers position themselves in the economy is created. By getting to know the everyday practices of the farmers, a better understanding of how their experience certain developments and how they position themselves with regard to certain similar issues is created. This is done with getting more information about their lives, reasoning and their farm management. This is all connected to discover the difference between the livelihoods of the farmers.

The interviewed farmers were chosen based on location. They are all located in the same part of the Betuwe; the Neder-Betuwe, within a 2 km mutual distance. The interviewed farmers have differences in activities, mainly in crop types. This diversity is with the aim of getting a more complete overview of how farmers specialized in certain crops differ in their views on the Dutch, European and Global market. It however turned out that all farmers were well informed about both apples and pears, despite their specialization in either one of them.

The interviews each had similar interview guides and were set up in the following order. First, the interview started with general questions about the farm itself. This included crop types, farm size, but also the farmers opinion about their income. The next part covered the Netherlands, this included questions about policies, both regional and national, as well as possible subsidies the farmers make use of. Then questions about familiarity with the regional initiatives such as Fruitpact or the Betuwse Bloem. Next, there was a question about if the farmers noticed the impacts of climate change on the operations on their farm. This was followed by a question on the Dutch economy and the European economy, with questions on export to the European market, including the specific countries they export to. A specific question addressed which region or country in Europe is seen as a major competitor. Also in this section, questions were asked about European policies, and the potential impacts on the farmers' work, and whether subsidies from the European Union were used. Finally, questions were addressed at the global market, aimed at getting insight into the possible countries outside of Europe that products from the Betuwe are exported to and also if the farmers themselves export outside of Europe.

After the interview with farmer 2 and his wife, a small 'tour' through the orchard was made, in order to show the unique trees that farmer 2 has created, and also to look at the growing pears and their hail damage. Then the machinery shed was visited, to take a look at the crop protection sprayer. Farmer 2 and his wife told about their Pluk-O-Trak machine, and how it worked. During this 'tour', some pictures were taken, image 1 and 2. Image 3, that was provided by the farmers wife, shows what the picking machine looks like during the harvest.

All interviews were held in Dutch. This has been done to make it easier for the farmers to tell their stories and to prevent that things might get lost in translation. Afterwards, the quotes from the interviews were translated to English.

After the farmers were interviewed an additional interview was held with Fruitpact. This interview was mainly aimed at getting more insights into the way of working of Fruitpact, in order to get a clear view of how this relates to what the farmers had told. The interview was held with Frank Engelbart, the contact person for Fruitpact.

## 5. Results

In this chapter the results of the interviews will be discussed.

In section 5.1 the farmers that have been interviewed are introduced. In section 5.2 the following sub-question will be answered: “How are fruit farmer from the Neder-Betuwe positioned in the Dutch economy?”. This is done via the topics that arose during the interviews when discussing the Dutch economy and politics.

The first topic in section 5.2.1 is the Betuwe itself, including a more detailed explanation about Fruitpact, based on the interview with Frank Engelbart from Fruitpact. Subsequently, in the following sub-section the view of these farmers on government, on climate change and the impact of climate change on the farm are discussed. The next part of this section the topic of crop protection, also known as pesticides, is presented. Related to crop protection, a specific case will be discussed, ‘the cherry-case’. This case is a great example of how the government and farmers interact related to crop protection. Then a second case will be discussed, again related to crop protection, from the view of Fruitpact.

In section 5.3 the farmers’ perspective on the EU economy will be discussed in 3 sub-sections. The first section is about competition from other countries in Europe. Next Poland is discussed, since this country is named by the 3 interviewed farmers when answering different types of questions, and thus is considered to have a big influence on the famers. Then the export destinations that are mentioned by the farmers are discussed.

Finally, in section 5.4 the view of the farmers on the global economy is presented, This is done by addressing the two countries that appeared when the farmers were asked about this topic. The countries China and Russia, will also be discussed in this order. At the end of this section a brief conclusion about the position of the Betuwe in the global economy is presented.

### 5.1 The Farmers

The 3 farmers that have been interviewed all have different views on and methods of working on their farm. This is in general related to the following: the crops they grow, the farm size, their selling methods and their experience with climate change. To give a short overview of each farmer their unique characteristics are briefly explained below.

#### 5.1.1 Farmer 1

What makes Farmer 1 unique is his farm shop, where he sells his products but also other regional products. He therefore also sells multiple different crops, such as strawberries, cherries and berries, but also multiple species of apples and 2 species of pears.

*‘Apples, pears, strawberries, raspberries, cherries and a very small part of berries. [...] I have a Wellant, Elstar and [...] how do you call it, [...] Delbare, a really early one. That is important for the shop, then you also have apples in August.’ – Farmer 1*

Farmer 1 also plays into the fact that there actually is an European market for fruits. He does this by growing an additional species of pears with the sole purpose of selling it in Europe.

*‘And the Lucas. But they are not [...] actually growing for Europe, they are all eaten in Eastern Europe, you could say. [...] There is no market for them in the Netherlands’ - Farmer 1*

1

### **Farm size**

Farmer 1 has a lot of diversity in his crops, as he explains, this is because he has his own farm shop. His answer to how big the farm is, is a total of 11 hectares, 8 hectares of which he grows pears on, the Conference type. He has 2 hectares of apples, and 3000m<sup>2</sup> of strawberries.

*'Eventually everything together it is 11 hectare. [...] 8 hectares Conference. [...] And apples is around 50 tonnes per hectare. I have two hectares of them' [...] And then strawberries, \*phone stops ringing\* well I only have 3000m<sup>2</sup>.' – Farmer 1*

### **Selling method**

He sells most of his own products in his shop. But he is also a guest member of a local auction system in order to keep the shop stocked. He mentioned that he is dependent on cooling cells for storage and that he has limited time to sell his products. In order to still meet the demand of his shop he also buys apples from a colleague nearby who just opened his cooling cell. And when he has too much of a certain item, he sells it to a distributor, and when he needs more he goes to the auction.

*'Yes, as much as possible. I can't always sell my own apples. Because [...] they are stored in cells for 100.000kg or more. [...] And if a cell opens now, then they need to be gone within 4 weeks. Yes, I can't do that, those amounts.' – Farmer 1*

### **Climate Change**

Farmer 1 talked mostly about the crop protection and about heat, wetness and decreasing or uncertain yields. He tries to use as less crop protection as possible because it is expensive. Farmer 1 sees little potential in an electric future, and foresees practical issues with electric tractors. He says that he has a fully electric household, however.

### **Subsidies**

This farmer doesn't make use of subsidies. He explains that he believes that the government is against agriculture and says that the government does not help farmers at all. He has bought solar panels, with the available non-farmer specific government subsidy.

### **Employees**

During the interview with farmer 1 he was working in his greenhouse with strawberries, he has various local employees (3-5) helping him. He also has seasonal workers for the pears and apple harvests. The seasonal workers come mainly from Poland, and he arranges housing for them at the nearby campground.

#### 5.1.2 Farmer 2

Farmer 2 mainly grows pears, as he states the pears are the easiest to grow for him and he has developed his own way of growing the pear trees. The farm still partly consist of apple trees but he is planning on replacing them with pears. Next to his farming business he and his wife also sell sprayer machinery. These sprayer machines are used for crop protection and are designed to work in the orchards.

## **History**

Farmer 2 inherited the farm from his parents. He first thought that his brother would take over the business but at the time his brother decided not to do it, farmer 2 took over the business.

*'My father and mother, they had a fruit business, this business. And first, my brother would take over the business. But my brother decided he did not feel like taking over the business. And I thought myself, well this is too small for the two of us, because at first it was the case that we would do it together. And then I thought, I will become a truck driver. But then my brother decided not to do it.'* – Farmer 2

## **Farm size**

The total farm size of farmer 2 is 10 hectares, pears and apples. Farmer 2 has his own way of growing the pears with a higher yield. He has multiple plots of land, including one directly behind their house.

## **Selling method**

He has his own cooling cells so he can store his product and wait for better pricing. He is not a fan of the auction, he sells his product to a retailer nearby.

## **Climate Change**

He uses an electric automatic irrigation system. In order to protect against heat, he also has installed extra drainage to manage with wetness.

## **Subsidies**

He makes use of the hectare subsidy which is part of the Common Agricultural Policy (CAP) of the European Union. He says that this subsidy does not have a big impact. He also believes a healthy sector doesn't need subsidies. He also has solar panels.

## **Employees**

They contract seasonal employees from Poland and Romania, and they have housing on their own farm. This is partly related to past experiences where they had difficulties with finding employees. They need these employees during the harvest, to operate the machinery that is described below.

In the images 1 and 2 below a picking machine, called the Pluk-O-Trak is shown. This is a good example of how the different capital relate together, physical capital (the machine itself) and human capital (the labour and knowledge of how the machine operates), both capitals are required in order for the farmer to have a successful harvest. This machine has its own engine and thus can run by itself through the orchard, without a tractor needed. In picture 2 you can see that there is place for 4 people, 2 on each side and on each side one person stand on a lower platform and the other person stands on a higher platform. This ensures that also the high fruit is being harvested. The machine has a conveyor belt and at the end there is room for a crate which collects all the picked fruits. Behind the Pluk-O-Trak there is a trailer with crates attached, so when a crate is full, it can be dropped and a new crate from the trailer goes into the machine. The trailer is build in such a way that it is capable of driver over the crates.



*Image 1 The Pluk-O-Trak picking machine in storage*



*Image 2 Pluk-O-Trak in action*

### 5.1.3 Farmer 3

Farmer 3 grows mainly apples, and is part of a partnership with Albert Heijn which is also part of the reason why he mainly grows apples. As a extra income he also owns a sorting and packing business, which is part of his family history. What makes farmer 3 unique is that he actually doesn't work in the field but has employees who are in charge of the farm and in turn he can focus more on the sorting and packaging business.

*'No, I have employees [...]. I don't do anything outside myself. I am almost always working in the hall.'* – Farmer 3

*'[...] We are also a yes, that is called an AH protocol farmer so we are registered as a Albert Heijn farmer and we also taking part in a program called 'Better for farmer and nature' and that is something specifically from Albert Heijn. [...]'* – Farmer 3

#### **History**

The farm has been in the family for a long time, his grandfather started with a mixed farm, which was both cattle and fruits. Later on, his dad and uncle took over the business and decided to grow apples and start a sorting business. Then farmer 3 took over the farm and continued the family legacy.

#### **Farm size**

The farm is in total 26 hectares, mostly apples and some pears. The land is spread out over different plots of land spread out across the Betuwe.

#### **Selling method**

He uses the Albert Heijn partnership to ensure a steady income. He receives a payment to fulfil the requirements of the partnership. The prices that Albert Heijn gives for apples, even with high quality requirements are way better than anywhere else according to him. For pears however, it pays off to not meet the quality requirements of Albert Heijn, and just sell them normally.

*'Because Albert Heijn, they have high quality requirements. And yes, in the case of the apples it is then still, even though the quality needs to be very high, is it still the best to supply them to Albert Heijn, with other buyers you never get that price. And with pears, we think that they have such high requirements, with lower quality, per saldo, it always has a higher income.'* – Farmer 3

#### **Climate Change**

He uses irrigation, mainly to prevent sun burn on apples and to protect against night frost. He also notices that it is getting more difficult to have a steady yield because of the increased heats and droughts.

#### **Subsidies**

He uses the same hectare subsidy that farmer 2 uses. Just like the other farmers, farmer 3 also has solar panels installed.

#### **Employees**

Farmer 3 has outside workers which take care of the orchards, while farmer 3 is mainly focussed on the sorting and packaging business. He hires around 30 to 35 seasonal workers

for picking. He also hires loan workers for some activities in the orchard. For the sorting and packaging business, he has 10 workers. He explains that his seasonal employees mainly come from Poland, for whom he has housing on his farm.

Based on what is discussed above, you could say that every farmer has natural capital. This the land they own, they all have different amounts of land but they rely on it, since the land is used to produce the crops. Another form of capital the farmer have is human capital, this is in the form of labour, since they are also working themselves. But they also have plenty of experience with farming and knowledge about fruit farming. Another form of capital that the farmers have is that of social capital, they have good connection with distributors in order to sell their products. In the part below there will be a deeper dive into the financial capital of the farmers, this will be done via the 3 aspects of a farmers income.

#### 5.1.4 Aspects of farmers income

There are three aspects of a farmers income to consider, namely 1) the income level, 2) the stability of the income, 3) the inequality between farmers and between farmers and non-farmers (Finger and Benni, 2021). The farmers that were interviewed, all answered a question about what they think of the income they have as a farmer.

Farmer 1 explains that a failed harvest might mean the end of your business as a farmer. He is, however, able to still exist as a farmer with a harvest failure of 40%.

*‘Yes, you should see it like that. [...] In the Netherlands you cannot have a failed year. As a company you can no longer have a year that, well yeah I had this year 40% failure, yeah well [...] that is not really a big disaster, that will compensate. No, [...] you have no option. You either do well or not. Because, [...] if you don’t have good products, then you immediately [...] you are immediately done. Then [...] that is so extremely expensive. You can’t make it, the fixed costs have become very high. [...] You cannot permit a failed harvest’ – Farmer 1*

Farmer 2 and his wife are more worried about their income, but according to farmer 2 have not much to complain about. But his wife adds that in some years they had a very low income.

*“Farmer 2: ‘Yes, it fluctuates. But it is all explainable but on the other hand well. We don’t have much to complain about. The one year it is more than the other, and we can do what we want to do, so in that regard.’*

*Farmers wife: ‘Yes, but there also have been years that is was really miserable.’” – Farmer 2 and his wife*

Farmer 3 is more positive about his income, but this has mainly to do with the high and stable prices of the past couple of years.

*‘Yes, at the moment the asking prices are good, so I have no reason to complain at the moment. It however has been different, but at the moment in the last couple of years it is pretty good.’ – Farmer 3*

The second thing important to a farmers income is its stability. Both farmer 1 and 2 have methods of sustaining an additional income, while farmer 3 has two ways of sustaining a more stable income. First of all he decided be partnering with Albert Heijn. Secondly, his main focus is actually on the storing and packaging business, that his dad and uncle have started. Farmer 1 uses his shop to have a more stable income, it even provides half of his

income all year round. Farmer 2 and his wife have a separate business, namely the sale of fruit sprayers for orchards, however they explain that this income is also related to how well it is going financially in the fruit sector. Farmer 3 has some people that actually work in the field, so he can focus on the sorting and packaging business. Interestingly, farmer 3 has an insurance policy on multiple of his plots, to secure an income also when the whole harvest fails.

*'Yes, that is by now half of my income. Look, you don't only sell your own products but also some more products. Altogether, it creates a second income you could say. It is also an added second business'* – Farmer 1

*'Yes look because if in the fruit sector the earnings are low then there is also no money. Then everyone needs all their money to keep their business running. Then there is no additional money available to buy a new orchard sprayer. And this year there has been more money earned and then you directly see that people are going to invest.'* – Farmers wife

*'No, we have different parcels and I just have a couple of the bigger plots, we have picked out and then we have insurance on them.'* - Farmer 3

The third aspect to consider for a farmers income is the inequality between farmers and between farmers and non-farmers. One thing that is noticeable, is the difference between tree farmers and fruit farmers, since tree farmers are able to have a higher income of a smaller plot of land compared to fruit farmers. This in turn has resulted in a higher land price.

*"Farmer 2: 'Look, they drive up the price of a plot a lot.'*

*Farmers wife: 'They need less land per, need less hectares to get a good income out of it.'*

*Farmer 2: For them the land is worth more."* – Farmer 2 and his wife

Regarding the inequality between the income of farmers and non-farmers, you could say that these farmers have to work two jobs in order to get a suitable income, but this does pay off for them as the farmers seem to be content with their income even with the income uncertainties. It however might not be the case that every fruit farmer has to work 2 jobs, this is of course dependent on the amount of hectares and the type of fruits that are grown.

Overall, the financial capital of the farmers can be considered uncertain. But this also differs per farmer. Farmer 2 has more difficulty with ensuring a steady income while farmer 3 is able to ensure a more steady income. This shows that the livelihoods of the farmers can differ. And the capital that some farmers worry about the most, is financial capital.

## 5.2 The Dutch economy

When discussing the Dutch economy some interesting topics appear, such as the unique advantage of the Betuwe, the government, climate change and crop protection.

### 5.2.1 The Betuwe

The Betuwe itself plays a big role in the Dutch economy, when talking about the Dutch fruit sector. This has to do with two unique characteristics of the Betuwe. Which is mainly the soil, and its long history of fruit farming. Then there is also Fruitpact. Fruitpact will be discussed first below. After that the farmers perspective on the Betuwe and the Dutch economy will be discussed.

### 5.2.1.1 Fruitpact

Fruitpact acts like a middle man to bring specific developments to the attention to the involved parties in an attempt to improve the fruit sector in the Betuwe. These involved parties consist of governments, companies, research- and educational parties, and organisations such as the NFO, the Dutch fruit farmers organization. During the interview, there was a clear emphasis on the fact that Fruitpact itself actually does not take any actions, it has as main goal to raise awareness of the current developments in Regio Rivierenland, and start the conversation between the involved parties.

*'Fruitpact is actually a voluntary partnership. Between what is commonly known as the 3 O's also called the Triple Helix. The entrepreneurs, the government and the research- and educational parties, that through partnership try to make the fruit cluster in regio Rivierenland even stronger.'* – Frank Engelbart, Fruitpact

Before we take a further look at Fruitpact it is important to know that Betuwse Bloem is the name that was used more than 10 years ago, and now exists with a new name of Greenport Gelderland.

*'No, the Betuwse Bloem was the old name of Greenport Gelderland. So in the first years it was called Betuwse Bloem and some after 2010 or 2011, I think, in that period it was renamed to Greenport Gelderland.'* – Frank Engelbart, Fruitpact.

In the interview with Frank Engelbart from Fruitpact, he explains that the strength of the Betuwe is connected to the fact that for a very long time there have been fruit farmers there. This is because the availability of water, from the Neder-Rijn in the north and the Waal in the south. Next, the Betuwe has extremely good soil for the cultivation of fruit trees. This is explained by the riverbanks (Dutch: 'oeverwallen') and the riverbed ridges (Dutch: 'stroomruggen'). Riverbanks are the raised part behind the winter dike, and a riverbed ridge is an abandoned river bank so there is no active river nearby. The deposited clay provides the soil in these areas that is very suitable for fruit trees.

*'And the strength of that area has to do with that traditionally, de Betuwe of course is already known for its fruit, also traditionally and that has to do with that fact that we have water over here and good soil. So, the separations of the rivers make, the 'oeverwallen' and 'stroomruggen', which have very fertile soil on them that is good for growing trees or fruit trees. So, that is the reason why historically there has always been a lot of fruit.'* – Frank Engelbart, Fruitpact

But not only the soil and the water make the Betuwe a strong region, also the fact that many other parties that have a role for fruit farmer are also present nearby. This shows that the fruit sector in the Betuwe is a real cluster. This is visible by the presence of distributors, suppliers for equipment for the fruit farmers as well as knowledge parties and advisors. All stakeholders are represented in this same geographical area and thus in each other's vicinity.

*'Well, we are also the biggest fruit area in the Netherlands. Also, what makes this region so special is that not only the farmers are here, but also a lot of parties that, you could say, eventually also have a role at the fruit farmers. Think of distributors, such as the cooperation Fruitmasters, and the auction in Zaltbommel. Think of suppliers of cool cells or packaging*

*materials, but also think of suppliers for equipment in the tree orchard. So big sprayer manufacturers are in our area. There are suppliers and knowledge parties, cultivation technical advisors, they are all in our region and that actually makes the power of the economic cluster.* – Frank Engelbart, Fruitpact

Next to the locational factors, the Betuwe is also a strong region because of the presence of collaboration organizations. In the following part Fruitpact will be explained. Fruitpact is a collaboration organization, which is part of Greenport Gelderland. A collaboration organization does not take action itself, it mainly connects actors and lets them solve the issue. Greenport Gelderland facilitates 5 pacts organised on basis of the different agricultural sectors. For the fruit sector, this pact is called the Fruitpact, which is focussed in Regio Rivierenland. This region consists of 8 municipalities in the south of Gelderland.

For various cluster regions in Gelderland a pact is present. The tree sector and the mushroom sector have a pact, while the greenhouse sector (consisting of flowers, vegetables and fruits) covers two regions. The pacts, as mentioned before, are all connected to Greenport Gelderland, this is the bigger overarching organisation.

*'Well, fruit works together with fivesome, sorry, four other clusters in the same region. That is among others, the trees [...] they come from the part of Opheusden and Dodewaard. [...] Also the mushrooms [...] in Maasdriel is also a cluster. [...] Then you have to greenhouse areas. One is in Zaltbommel, so in the Bommelerwaard are also a lot of greenhouses where they grow flowers, vegetables and fruits. That is the same for the region between Arnhem and Nijmegen. [...] Well, those 5 together, so Fruitpact and four other pacts, they form together Greenport Gelderland and that represents the total horticulture in Zuid-Gelderland.'* – Frank Engelbart, Fruitpact

What also was explained during the interview is how Fruitpact gets its funds in order to fulfil their role of middle man for the fruit sector. Fruitpact has two methods of getting their funds, the first is mainly used for 'operating' Fruitpact, so for example salaries and communication. This is half financed by the Province of Gelderland and half financed by the parties in the steering group. Then there is a fund provided by Greenport Gelderland that is directed towards financing projects. The funds for Greenport Gelderland in its turn are determined for a period of 4 years by the parties in the Provincial government during their coalition period, this has been stable over the past years. These funds are then evenly divided between the different pacts of Greenport Gelderland, in order to fund projects that support the development of each sector.

*'No, you have, we know to funding method. One is, for now you can call it the funds for the Fruitpact, where among other things my salary is paid from, but also a piece of communication and things like that. Well, that funding method is roughly half financed by the province. And the other half by all the parties that are members of the steering group, so you could say that, they all pay a small fee per seat per year. And with that we run the organisation. That is one method. The other method is more about realising projects. Well, and that is a funding method from the past years, that has been a funding method from the Greenport. So our mother organisation gets funding from the province and from those funds all the pacts can do projects.'* – Frank Engelbart, Fruitpact

Fruitpact is focussed on 'strategic conversations'. This is performed with the steering groups that consists of the relevant players in the region, such as mayors, councillors, foremen of the fruit farmers and directors of companies. In these conversations the main focus is keeping the fruit sector viable and successful in the region, mainly from a strategic aspect.

*'Yes, so it is actually the case that we do 3 things you could say. The first thing we do is, we try mainly with the steering group. With the bobo's of the region, so the mayors, the councilors and the foremen of the fruit farms, directors from Fruitmaster and parties like that we try to have the strategic conversation. Like, how do we keep the fruit alive in the area, there is mainly the strategic conversations.'* – Frank Engelbart, Fruitpact

Fruitpact works with 3 different groups. The first group is the steering groups, this group is explained above. The second group is called a 'project group', this is a group of farmers that work together for research or innovation projects. This research can be self initiated by farmers or farmers are gathered to participate in a project. The third and final group is the ambassadors group, this group consists of farmers, and is used as a direct connection with the farmers in the fruit sector. In all these groups farmers are present, in the steering the NFO is present, this is the Dutch fruit farmers organisation and represents all fruit farmers. And there is also a fruit farmer that has joined the regional government.

*'So, fruit farmers can come up themselves with ideas for innovation projects. [...] Or they have an idea regarding a project and they organise a group of farmers as a sort of guiding group, you could say. [...] The second line is with my steering group. The Dutch fruit farmers organisation is part of it to represent fruit farmers. Both a director as well as one of farmer from the area, who is part of the regional government is in the group. So, they also jumped in via the administration they also connected. [...] The third one is that next to the steering group I also have what we call an ambassadors group. That consists of around ten fruit farmers out of the region, and I talk with them 2 or 3 times a year to hear what is playing for them from entrepreneurship, so that we can take that to the steering group.'* – Frank Engelbart, Fruitpact

A second thing that Fruitpact does is that it works on projects that aim at conditional agreements. This is mainly with municipalities, with the aim of creating an equal playing field in the 8 municipalities in regio Rivierenland. The example that is named is that of the height of the hail nets.

*'And that can be projects in the conditional realm, for example make agreements with each other about the height of the hail nets of how big the building block can be in the countryside, in other that there becomes a regional equal playing field, that we don't have some different in the municipality of Buren and the municipality of Tiel.'* - Frank Engelbart, Fruitpact

Another thing that Fruitpact does is the stimulation of innovation, they use the funds they get from the province to invest in innovation projects. They have a strong connection to the test station in Randwijk. This research centre focuses on practical research for the fruit sector to find out if the innovations will work.

*'[...] And then we try it at the test station in Randwijk. Over there a lot of practical tests are done, and there we try if it works. And if it works well then it goes into practice.'* – Frank Engelbart, Fruitpact

The third thing they do is create a sense of connection in the fruit sector. Trying to the people who work in the fruit sector, proud of the fruit sector. This is done via newsletters, their website and meet ups.

*'And the third task that I actually have is ensure that we have, I call it the association feeling. Just like you have at the football club or the hockey club. You know, then you feel at home at that club and you are proud. And we also want that for the fruit. That everyone realises that fruit is important, we have a nice contribution with fruit for citizens, and with the trees we catch CO2 and ensure that oxygen comes into the air and we bring the temperature down. So, we actually do a lot of very nice things and you can be proud of that as a farmer and as a party that works in that sector. [...] Yes, we do that via newsletters, the website, and via gatherings.'* – Frank Engelbart, Fruitpact

In total they have around 10 to 15 projects to make sure the fruit sector stays relevant. In section 5.2.4 an example of a case where Fruitpact had a big influence will be discussed.

With regard to the livelihood approach, Fruitpact mainly creates capital for the farmers. The most noticeable capital is social capital. Since they are focussed on creating contact between the farmers, policy makers and companies to solve potential issues in the fruit sector. The other form of capital that Fruitpact adds for farmers is that of human capital, mainly in the form of knowledge. They are actively facilitating research that helps with improving the fruit sector.

#### *5.2.1.2 Farmers perspective of the Betuwe*

Farmer 2 talks about the historic value of the Betuwe and how the fruit farming is deeply embedded in the Betuwe. He also explains that there is only one opportunity to take over the agricultural business, since it is difficult to start a new one. So, he had one shot at getting into the business. He also mentioned that at first it was not the intention to take over his parents' business because his brother would do it, however his brother did not want to, so then he decided to take the chance and see how far he would get.

*'Yes, that is also traditionally. [...] My father and mother, they had a fruit business, this business. And first, my brother would take over the business. But my brother decided he did not feel like taking over the business. And I thought myself, well this is too small for the two of us, because at first it was the case that we would do it together. And then I thought, I will become a truck driver. But then my brother decided not to do it. And then I thought, it is the case with an agricultural business, that if you not push through over 4 or 5 years you cant decide you still would like to do it. It just doesn't work. You do it and then it works or it doesn't work. But you can't say I will do it later. That doesn't work. So, I then I started with it. Or then I joined in, because my dad passed away very early, I was 21 years old then. So then, from that moment my brother stepped out. Then I continued together with my mom, we will see how far we can get, and yet we are still here. So, apparently we are doing it nicely. \*laughs\**  
– Farmer 2

The reason how farmer 3 became a farmer is similar to farmer 2. Farmer 3 explains that he is the third generation, his grandfather started with a mixed farm, which had both cattle and fruits. Then his dad and uncle decided to specialise in fruit in the early 80s. They mostly grew apples, as farmer 3 now still does. And the pears were cultivated later. Farmer 3 later on also mentions, similar to farmer 2, that there are not a lot of opportunities to start a new agricultural business, so taking over the existing business is a step that makes sense. Farmer 3 also explains that the knowledge and the machinery is already in place, so that also makes it easier to step in and become the next generation farmer.

Both these stories about farmer 2 and 3 show that the Betuwe has long history of fruit

farming. This furthermore shows that the existence of the fruit cluster is something that has been present for a while, but only more recently parties such as Fruitpact try to keep this unique situation of the Betuwe alive.

*'Yes, that happened sometime. It just once began like that. My dad started with it. My grandfather, in the past had a mixed business, he had both cattle and fruit. And my dad and uncle, they started specialising more in fruit. Yes, they saw at that moment, end 70s begin 80s. Yes, they saw the most in apples, at the time. And later the pears were added. [...] Yes, but because my dad and uncle already started with the fruit. And yeah, the whole business is shaped around it. The machinery for it has been purchased. So, yeah then if you invest into it daily, well, you go into that direction. [...] Yes, your business, the cool cells, the machinery, everything is designed towards it. And the knowledge is that has been acquired over time, that is the reason why you continue with it. If I had to start all over again, well I don't know, maybe I would have chosen for something else, but yes.'* – Farmer 3

The Betuwe is well known for its fruits cultivation, this is mentioned by Farmer 1, he states that some people visit his shop to take fruits from the Betuwe to their relatives who live outside the Betuwe. Even though nowadays not everyone is aware of the fact that the Betuwe is a fruit region, in the past 'Flipje' was a very well-known city marketing strategy by Tiel, to get more attention for the Betuwe as a fruit region, this however has faded away over time.

*'People know fruit from the Betuwe [...] and people who go to their family somewhere [...] in the country then they will take cherries or strawberries or stuff or apple with them from the Betuwe.'* – Farmer 1

*'Good soil, [...] you can't grow fruit everywhere. In Brabant you can grow apples, but you don't get the quality that you have over here.'* – Farmer 1

Furthermore, Farmer 1 mentions that they also grow apples in Brabant, but explains that the quality of the apples in the Betuwe are better because of the river soil. Farmer 3 explains why there are fewer apples grown in Zeeland and that there is an increase in the amount of pears grown. This is because the water in Zeeland contains salt which creates brackish water which is difficult to use for irrigation. In the Betuwe they just can use the surface water, this allows the farmers in the Betuwe to grow good quality fruits. Furthermore, he mentions that not only in Zeeland water for irrigation is an issue, this is also the case for fruit farmers in Limburg. This explains why he also mentions that the apple growth in these two provinces has disappeared. This also creates opportunities for the farmers in the Betuwe to focus more on the growth of apples. He adds that it is not the case for him since he was growing apples before this trend appeared, but does acknowledge that the gap in the market is being filled. Farmer 2 also mentioned that the Betuwe has a great advantage with regard to water, he even calls it a luxury position.

*'And that over there in Zeeland they don't have any apples anymore, well, that has mostly to do with the fact that they can't use irrigation, so what we can do in the summer. They don't have good water over there, it is all salty. Brackish water, they call that. And so at a lot of places they can't irrigate. With those hot summers, it is necessary to use irrigation. [...] We have enough water, yes. Yes and, just like in Limburg and Zeeland water is a problem. [...] No, in Zeeland and Limburg. There it is mainly apples growing, it has mostly disappeared over there.'* – Farmer 3

*'We can just grab the water out of the ditch. So, we are in a luxurious position.'* – Farmer 2

The wife of Farmer 2 mentions that what makes the Betuwe a better region compared to Zeeland and Limburg, where there are also fruit farmers, is the abundance of fruit distributors. This shows that also farmers are aware of the special position the Betuwe has, namely its cluster. This is directly related to the existence of Fruitpact.

*'I think that this is an important region. There are a lot of traders, the fruit cultivation is a big area. So, I do think that it is an important region. But yes, look Zeeland also has such an area and Limburg. Only over there are not the traders, that much. They are mainly over here, or actually in [town in Betuwe]. There they are.'* – Wife of farmer 2

But not only the farmers mention the good conditions in the Betuwe, also Frank Engelbart explains in the interview that the Betuwe has a unique advantage compared to other fruit regions in the Netherlands.

*'Well, that combination, that already is a distinguishing factor. Are you a fruit farmer in Zeeland? Well, you don't really have good water, because they mostly have brackish water. Do you live in Limburg? Well, you actually don't have any water at all. Or you need to pump it up from really deep.'* – Frank Engelbart, Fruitpact

Farmer 1 mentions that with regard to pears the Conference is the most grown pear in the Netherlands but also in the Betuwe. He says that this is because the Conference has the most chance of succeeding, meaning that there will be a harvest. And that they are also a good pear to supply for the whole year. This also explains what farmer 3 told earlier about Zeeland, since the Conference is more resistant to weather damage, which makes it easier to grow for the farmers there.

*'Yes, so [...] where you have the most chance of eventually succeeding you could say. So, the Conference, the pears that is 80% of the pears that are grown in the Netherlands and also for sure in the Betuwe, that 80% is Conference. Also because they are well-known everywhere. And you can supply them the whole year.'* – Farmer 1

Farmer 2 goes more into the details about why the Conference is such a popular pear to grow. His wife explains that the Conference is relative resistant to weather damage. But she also explains that possible damage that is done in the earlier grow stages has impact on the income later in the year.

*'Yes, you can already see the damage. These pears, the Conference has the tendency to [...] during the growing season, to recover itself. [...] That is with apples and other pears species [...] not possible or way less.'* - Farmer 2



*Image 3 A close-up picture of growing Conference pears*

Image 3 shows the damage that hail can do to the pear tree, there is hail damage visible on the leaves. There are also small dark spots visible on the pears, farmer 2 and his wife told that this is also part of the hail damage. This an example of the natural capital the farmer owns, the fruit trees on the farmers land.

So, are fruit farmers from the 'Neder-Betuwe' positioned in the Dutch economy? Overall, it could be said that the Betuwe in itself is a very strong region in the Dutch economy, with regard to the fruit sector. This is because of the unique location with good soil, but also because of the presence of the economic cluster, related to the fruit sector. And in addition to that there is the efforts done by Fruitpact in order to keep the Betuwe in its good position. However, this is purely based on the locational advantage, the farmers have also mentioned the role of the government and it is also important to consider the role of crop protection. These two factors are explained in the following two sub-sections.

### 5.2.2 Government

What stood out when asked about government policies is the fact that farmers prefer the words 'crop protection' rather than using 'pesticides', despite the fact that these words having the same meaning. Another word used for pesticides is 'resource' or in Dutch 'middel' which is short for the Dutch word 'bestrijdingsmiddel', this is mainly used only in speech. The wife of Farmer 2 corrected the interviewer when pesticides were mentioned. For this reason it is decided that the preferred word for referring to 'pesticides', is 'crop protection'.

Farmer 1 mentions that the government is currently ruining the agricultural sector, this has mostly to do with the crop protection policies and the rapidly decreasing amount of available crop protection types. Farmer 1 also mentions the creation of a water extraction area, the same is mentioned by the wife of farmer 2. However, the wife of farmer 2 does mention that there are currently organisations busy with stepping up for the farmers.

The province of Gelderland has assigned 11 (new) drinking water reserve areas, which are areas that in the future need to provide drinking water. However, these areas are in parts of the Betuwe where there is a lot of fruit farming. The wife of farmer adds that the NFO, the Dutch fruit farmers organization is currently working on it.

*'Well, it is difficult that they remove those pesticides so easily. And also [...] that they are creating those water extraction areas. You actually just notice that the policy is aimed at ruining the agricultural sector. [...] At this moment.'* – Farmer 1

*'Regionally there is now, they are busy with the water. That some points [...] that we are in a protected area. The NFO [...] the LTO is working on that. But we don't have anything to do with that.'* – Wife of farmer 2

Farmer 1 furthermore mentions that the policies are currently not in his favour. This shows that being a farmer can sometimes be made very difficult, because of policy that is made by people from higher up, that sometimes have no or less consideration for the practical issues their policy might create.

*'Yes, you just notice that the whole policy is based on [...] to make it as difficult as possible for me. You just notice, you are not getting motivated to become a fruit farmer.'* – Farmer 1

These two quotes from the interviews with farmer 1 and 2 show that, first of all talking about government policies is a sensitive subject. And secondly that the government has difficulties with creating solid and clear policies that farmers are able to understand and follow. So, there is some sort of disconnect between what the government wants and what is possible for the farmers within the limits of the government to still make a living as a farmer. Furthermore, the farmers comment it is not a specific issue for only the fruit sector, farmer 2 even states that the entire agricultural sector is being ruined because of government policies.

Fruitpact plays an important role here. In the following two quotes by Frank Engelbart, he explains an example of what Fruitpact is capable to realise for both the fruit sector and the whole society. This also shows that Fruitpact is an important part of keeping the government policies up to date in order for the fruit sector to stay alive. Most of the times, policies are made and then never looked at and the people affected by it, in this case farmers, have no real strong method to 'update' these policies according to the developments that have been made in the sector. That is why Fruitpact, and the other pacts are so valuable for farmers and their respective sectors as a whole.

*'Well, a nice example where we were more involved more closely with, is that there has been a motion passed with regard to the 50 meter spraying zone. So, it is the case that, sometime 25 years ago it was decided that housing and orchards needed to stay 50 meters apart from each other, to prevent possible damage from the crop protection products coming down at the houses. Then there was 50 meter decided for that. Well, that was 25 years ago. Nowadays, a lot of harmful resources are gone, so there are more friendly resources and secondly, all the sprayers have been improved very much. That is called drift reduction. In the past you could see big smoke clouds above the orchards. And nowadays you don't see that anymore, that is called drift reduction, this is more than 99% which means that almost everything that is sprayed goes onto the trees. Well, that are two developments, which cause that the 50 meters is not necessary anymore. Everyone is bothered by these 50 meters, because it is an old standard.'* – Frank Engelbart, Fruitpact

*'But how do you get this adjusted? Well, we have had a conversation about this with the fruit farmers organisations and the municipalities. This has caused that with the Association of Dutch Municipalities a motion has passed and now also in the Tweede Kamer to take a closer look at it again. Is it possible to do this differently, because we need the land, farmers want to plant trees and all municipalities really want to build houses. Yes, the last thing you need is strips of 50 meter between them. Well, this is an example of where we ourselves have taken a more active role.'* – Frank Engelbart, Fruitpact

In the images 4 and 5 below, a crop protection sprayer is shown. The system works as follows: there are two fans in the centre part, with the wind they create the crop protection flies out of the nozzles on the sides. As is visible on the sprayer, this method is called drift reduction and is aimed at reducing the amount of pesticides that end up on unintended targets, besides the fruit trees. This is an example of how innovative developments improve the quality of life for both the farmers and the citizens.



Image 4 Crop protection sprayer with drift reduction in a shed



Image 5 Crop protection sprayer in 'action'

The government policies, according to the farmers have a large impact on them. And sometimes even appear to be against the farmers. The farmers however also greatly benefit from Fruitpact. Fruitpact is trying to help the government adjust the sometimes outdated policies. This helps not only the farmers, but also helps the government. The government is however not the only aspect that plays a role for the farmers. There is another factor that plays a role for farmers, this is climate change.

### 5.2.3 Climate Change

All farmers mention that climate change, or more extreme weather has impact on their farming operations. Farmer 2 has invested in optimizing his water supply. He has night frost raining, and also a double drip irrigation, which makes the water usage more efficient. He also has improved his drainage which in case of a lot of rain, can remove the water more quickly from the orchard.

*'So we are in a luxury position and then we decided about 4 years ago that we would make our water supply fully optimized. And that means that we have night frost raining, because coming night it might freeze. But we also have drip irrigation underneath our trees, not singular but double pipes, so that you can irrigate a larger area of the soil. And that [...] against the droughts we are covered actually. And we also have more drainage. So for the wetness that we also have right now, that the water can be sent away more quickly out of the orchard.'* – Farmer 2

This investment also made his work on the farm more efficient. Since he now has an electric automatic system he doesn't have to go to each of his parcel with his tractor, he now can set a timer and it turns on and off automatically. He explains that previously he would run the irrigation system longer than optimal because he was busy, but now he has optimal irrigation which also increases the quality of the pears and thus generates a higher income. Farmer 3 uses the other method, which is placing a tractor with a pump near the orchard and via there pumping the water to the irrigation system.

*'[...] We have 5 plots and then I had a tractor on each parcel and I needed to turn them on and off every time. Sometimes when you are busy you decide to do it tomorrow. Then you leave it running for a little longer. And now we have everything electric so it all goes automatically on and off. Then you can say well in these periods I water them for fifteen minutes, that is plenty. And if it gets dryer then I will just set it to half an hour. So that has evolved in that way.'* - Farmer 2

Farmer 1 is just like farmer 2 more sceptical about climate change. But both acknowledge that it is getting more difficult to grow their fruit, with increasing heat, drought, and rain. All farmers explain that it is getting more difficult to grow their fruit. And that they need to pay more attention to the weather conditions in order to ensure an income.

*Well, you can see [...] or at least if it really is climate change [...] I don't really believe in climate change. The climate changes the whole time. But you do notice that in the last couple of years the weather has become more extreme. Extremely long dry, extremely long wet.* – Farmer 1

*'Yes that is because, they say that everything gets extremer. I doubt it.'* – Farmer 2

*'Yes. It is the past summer, well, the past summers they are getting warmer, so then it is often [...] it is more often that we for example in August need to irrigate to cool the apples. Otherwise they, then they burn, you get those burning spots on the apples. And that was in*

*the past, it was also the case, but it is the last years, it is even more, almost every summer, it is necessary that we, that we need to irrigate to cool the apples in order to prevent them getting burn spots which can cause them to rot. So, in that regard we have to deal with it.'*  
- Farmer 3

Farmer 1 mentions that getting an income is becoming harder. He also says that because it is a natural product that grows outdoors, the weather also has a big impact on his yields.

*'Well it is under pressure. It needs to be flawless and everything needs to go right and it is getting harder. The resource package is getting smaller, illness and plagues are becoming a bigger issue. And it is hanging outside, the weather is becoming more extreme it looks like.'*

Both farmer 2 and 3 mention that they need to reduce the risks. Farmer 3 does that by getting insurance for hail damage on different parcels. Farmer 2 says that his investment in his new irrigation system reduces the risks and attempts to maximize his results.

*'Yes, and [...] maybe that there is slightly more hail than in the past? Yes, we are, we have insurance for that. Then, at least not for the whole company, but different plots we have insurance for them still. It is a risk, you could say.'* – Farmer 3

*'Yes that is because [...] they say that everything gets extremer. I doubt it. But any way, I just wanted to [...] yes as a entrepreneur you are actually trying to rule the risks, to make your results as high as possible. And these things are part of it because your pears are getting rougher and then your quality is better, income goes up.'* – Farmer 2

Farmer 2 and farmer 3 are also the most worried about hail, farmer 3 mentions that with hail the whole harvest can be lost, or damaged in such a way that the fruit is only suitable the juice production which has a lower income. While with the use of irrigation the damage that is done by heat and night frost can be reduced.

*'Yes with hail for sure, if you get hail over it then, well, the whole harvest can be gone. At least well, it goes to the industry for juice but not as consumption fruit. Then is the income, the income is for sure way, way less. [...] For the juice, as an inferior product, yes. And furthermore, this is the sunburn I talked about. Yes, we can use irrigation to prevent it. And for night frost, for night frost we also use irrigation against it.'* – Farmer 3

Another important part of the fruit farming in the Betuwe is the use of crop protection. Without the use of crop protection the fruit farming would become a lot more difficult. All farmers mention that the decrease in available crop protection types has impact on their products. Farmer 2 says that crop protection is necessary for good crops. Farmer 3 is more understanding about the decreasing amount of allowed crop protection types, but he also says that it is getting more and more difficult to create a good quality product.

*'In the last couple of years a lot of pesticides are removed. [...] And then you get a very small and selective resource package. [...] That makes it more difficult to grow a high quality product.'* - Farmer 1

*'[...] But it is not sufficient that is the problem, you are stuck with the chemical resources, they are necessary to have good pest control'* - Farmer 2

*'Yes, in terms of crop protection. It is easier for us to use everything. That would be the easier, but yes, that is simply not possible. We also have to deal with all sorts of other factors and sometimes it is difficult to, well, because on the one hand, we have to get a good product in the shop. And yes, and the resources we can use for that, they are becoming, yes, they are becoming less and less. So, in that way it is becoming more difficult for us. But on the other hand I also understand the policy. Why those resources, that some of those resources are withdrawn from the market.'* – Farmer 3

Farmer 3 is an AH protocol farmer, which means that he is part of the Albert Heijn partnership that is called 'Better for farmer and nature'. He explains he is growing his apples according to a certain guideline related to the 'Better for farm and nature'-program. He receives a compensation for following these guidelines. He explains that most of these guidelines are related to crop protection, such as not using or reducing certain crop protection types, but also the amount of times they spray their orchard with crop protection is less than a 'common' fruit farmer. He also mentions that the prices are pretty good, and that the growing of crops is more difficult, but that is compensated by the Albert Heijn.

*'[...] Yes, we supply our apples to Albert Heijn. We are also a yes, that is called an AH protocol farmer so we are registered as a Albert Heijn farmer and we also taking part in a program called 'Better for farmer and nature' and that is something specifically from Albert Heijn. Yes, we are taking part with that, so we are also growing according to the guidelines from that better for farmer and nature program. [...] Wel, yes, we for example use, certain spraying resources {crop protection}, we are not allowed to use them or use them less often, but they are allowed according to the government, the resources that still are available in the Netherlands to use. The Albert Heijn wants that we for example spray for a maximum amount of times of specific resources thus in that way, we use less crop protection then for example a common general fruit farmer.'* – Farmer 3

Climate change has an impact on the farmers. However, they are capable of adapting to this. Crop protection however, is more of a struggle for the farmers. They are dependent on it to have an income, but at the same time the government is trying to decrease the usage. This puts the farmers in a difficult position and creates an extra factor to keep in mind.

So, it could be said that the way that fruit farmers from the Neder-Betuwe positioned in the Dutch economy has to do with three things. The Betuwe itself, with both the good soils and Fruitpact. Next, there is the impact of policies. And finally there is climate change. And what about the livelihoods of farmers with regard to the Dutch economy? Well, the farmers themselves actually have all 5 form of capital available, human, natural, physical, financial and social capital. However, Fruitpact is able to add additional human capital in the form of knowledge and social capital in the form of contact with other parties in the fruit sector.

A recent example in the Netherlands, shows government policies can potentially have an impact on farmers. This will be called 'the cherry case' and is discussed below.

#### 5.2.4 Cherry Case

A couple of days before the interviews with farmer 2 and farmer 3, the ministry of Agriculture in the Netherlands declined a exemption request from cherry farmers to use certain crop protection types against the invasive insect the Suzuki-fruit fly, which is a big issue for the cherry famers (NOS, 2024b). Both farmer 2 and 3 mentioned this case about the cherries. The wife of farmer 2 also illustrated that the timing for banning the crop protection types was very unfortunate, it was a couple of weeks before the cherry farmers had to use the crop

protection. Farmer 2 and his wife told that the reasoning for the ban, improper use by some farmers, has unrightfully impacted the farmers who had used the crop protection types properly. They also say that this ban could take away the income of the cherry farmers. Farmer 3 also mentions this issue, he even speculates that the whole cherry sector might disappear from the Netherlands, since the cherry farming is impossible without crop protection. Both farmer 2 and 3 also mention that the same crop protection types are allowed in both Belgium and Germany, which makes the ban even more unfair for the Dutch cherry farmers. This case shows how vulnerable the cherry farming sector is, and also that crop protection plays an important role in the production of fruits and how it is impacted by government policies.

*'In the cherry industry, they are bothered by the Suzuki-fly. And it eats 80% of the cherry, actually it lays an egg in them. And then the cherries become unsellable because it doesn't taste well, and if you wait even a little longer then they will start to rot. There are resources for this, they are allowed in Germany and in Belgium and of course the rest of the world. They are allowed to use it, and now there are a couple of cherry farmers that have not applied those resources properly. And now they say for the whole cherry industry, you are not allowed to use these resources this year. [...] That is unbelievable, because there are also people who applied them properly, exactly according to the rules and their income for this year is suddenly taken away.'* – Farmer 2

*'And then is it now a couple weeks, they only have a couple of weeks until they really need to use the resource. So, now they are trying everything to get it done, because otherwise their harvest is lost now. And then you really have 0.0 income.'* – Farmer 2's wife

*'Although I think now for example, we don't have cherries, but in de cherry sector 2 resources were recently banned. And in that way the whole cherry farming, what it looks like for now, cherry farming is made impossible in the Netherlands. And the same resources are allowed in Germany and Belgium. And yes, then look then I think that it is unfair that the Dutch government bans those resources here and actually the whole sector. If nothing changes, and everything continues like this, then the whole cherry sector is being eliminated.'* – Farmer 3

Luckily for the cherry farmers, nearly 2 weeks later the crop protection types were allowed again, but this was after a motion from the political group BBB that was supported by the majority of the Tweede Kamer (NOS, 2024c).

### 5.3 The EU economy

As you can imagine not only in the Netherlands there is fruit farming. There are multiple countries that the farmers see as competition in the European fruit market. Farmer 2 explains that there is a European fruit market, and he states that all of his products go to Europe. This shows that it is important for farmers in the Betuwe to stay competitive, but also for the Betuwe as a whole.

*'Yes, but that is [...] we are actually on a European market with fruit, you know. So, if the apples are bad, then it is bad in whole Europe. And with pears it is just the same, actually. [...] Yes, yes. There actually goes nothing outside of Europe. Everything inside Europe.'* - Farmer 2

### 5.3.1 Competition

In this part multiple countries that the farmers see as competitors are discussed. The first competitor is Belgium, farmer 2 is able to explain this in more detail, *since Belgium is mostly known for its pear farming*. The wife of farmer 2 explains that compared to their situation, in Belgium the pear farmers are struggling more.

*'[...] Yes, yes, yes Belgium of course. At least when we are talking about pears. Then we have Belgium and Italy. Italy is actually the biggest pear country. Always has been.'* - Farmer 2

*'But Belgium, is often hit harder because they have more difficulties with irrigation. They have more trouble over there.'* - Farmer 2's wife

Another competitor that is mentioned is Italy. Surprisingly enough, Italy is mentioned by all three farmers and the farmers have similar stories about Italy. The following is the case in Italy, it is not going very well with the fruit farming. They have issues with pests, and the impacts of increasing heat. All farmers mention that in Italy fruit farms are disappearing. The Conference in Italy is also of a lower quality than the ones from the Betuwe. However, due to the failing Conference in Italy, the prices have increased, according to farmer 3.

*'Conference really likes to grow in the Netherlands. It doesn't like heat. And the last couple of years we notice that also over here it is getting hotter, so it is not getting easy for the Conference. It prefers a cold spring rather than a hot spring. Then the pears also get a different shape. And that is why in Italy the Conference in the last years has been replaced, or cleared. A lot of bent and crooked fruits, the trees can't cope well with the extreme heats. And it gets extremely hot over there, in the last couple of years.'* - Farmer 1

*'But the Conference they have, we have nice rough pears, green ones. And in Italy they are a bit more compact and they are a bit more yellow. And with us that is actually a class 2 pear, so regarding that. And we also see the last couple of years that over there in Italy they have to deal with bugs. And they can't do anything about it. Not even illegally. That is, yes, that is just a really difficult insect. And the heat is also a problem over there with growing Conference. And we see that over there orchards are being removed and that is in our advantage actually. Because they are removing over there quicker than that there can be expanded over here.'* – Farmer 2

*'Just like Italy, we always were a very important pear producer, but because of those hot summers it is getting more difficult to grow pears in Italy. [...] Yes, the Italian supply slowly fades away, and because of that over here the prices rise.'* – Farmer 3

### 5.3.2 Poland

What might be the biggest competitor, based on what the farmers tell, is Poland. Farmer 3 explains that Poland got a lot of EU subsidies to create a strong apple sector. And it even has impacted the apple sector in the Netherlands: because of the increasing apple production in Poland many Dutch farmers decided to grow Conference pears instead. In the past Dutch apples also went across the border, but nowadays most of the apples stay in the Netherlands, mostly sold to supermarkets.

*'Well, with EU subsidies over there a lot of fruit has been planted. That has started 10 years ago. The Polish fruit farmers were already there, but they got a lot of subsidies, so they planted really big blocks with fruit. Before 15 years ago there wasn't [...] 10 or 15 years ago we exported apples to Poland. Yes, that is not needed anymore [...] they export now to the*

*Netherlands and all sorts of other countries. In the past we also exported a lot of apples to Scandinavia, well the Polish have now completely taken over that market.'* – Farmer 3

What farmer 3 explains about the change in Poland, is actually related to their national agricultural policies. In Poland there are a lot of small farms, with sizes up to 5 hectares, which are important for the agrarian structure in Poland (Szumelda, 2019). However, policy makers in Poland want to change this. The result was that it was decided to move away from the small scale farm (*ibid*). Farmer 3 does not name a specific region but this change of agricultural policy in Poland does have some resemblance to what he explains.

*'In the past a lot of Dutch apples went across the borders, nowadays there is nothing left of that. [...] Of the Dutch apples 80% is for the inland markets and 20% goes across the border. [...] No, that has changed in the past, because of the Polish competition, in the Netherlands a lot of fruit farmers stopped with apples and changed or completely stopped, they changed to focus more on the pears. That is why nowadays you have a lot of fruit farmers that only have pears.'* – Farmer 3

Just like what farmer 2 states about the pears from Italy, he does about the pears from Poland, their quality is worse. And he also states that they have more trouble growing the Conference in Poland compared to the Betuwe.

*'That is because of the climate. We have a maritime climate. Because in Poland they also grow Conference. They sometimes have a year that they can make nice pears, last year they could also make some nice pears. But they have a continental climate. And often over here with us they grow in the last 2 weeks, then they grow really quickly. Every day that you can pick you have rougher pears. So, you try to pick as late as possible. But in Poland they miss that, those last 2 weeks. Then it might be the case that they don't get rougher. And then your production per hectare decreases and the quality of pears is not good. So, then they are sold in Poland, because they are their own pears, they are chauvinistic so they pay for that. But the production per hectare is low and the problems are bigger than over here, to grow them.'*  
- Farmer 2

What makes Poland even more interesting is the fact that all farmers say that they have employees from Poland. These employees come mainly during the harvest period, for pears this is around the end of September. For apples this is, of course depending on the type, near the end of the summer. During this period, all farmers have 'temporary' workers to help with picking the fruits. The fruits need to be hand picked to minimize any possible damage, this also makes fruit farming very labour intensive. The amount of employees differ for the farmers. Farmer 2 also has employees from Romania, this change happened recently. This shows again that the EU has a big impact on the way the fruit farmers work. Not only with a European market for fruits is tied to the EU, it is also the availability of cheaper labour that shows that the EU has an impact on fruit farmers. The main way the EU impacts the fruit farmers, is the availability of cheaper employees from different EU countries.

*'[...] During the picking, with the harvest then there are around 30 people, working outside, 30 tot 35 people. [...]'* – Farmer 3

*'I don't have that many people. I also have an employment agency. They supply 4 people. And I have myself around 4 people. Then I can manage the big picking.'* – Farmer 1

*'And then is [...] then is around [...] mainly Polish people. And last year we had a lot of Romanians.'* – Farmer 2

### 5.3.3 European Union

The role that the European Union has is mostly related to general agricultural policies they have created. Such as the CAP, with its hectare subsidy. This subsidy is essentially available for every farmer and provides a benefit, based on the hectares a farmer owns. This is for fruit farmers compared to the arable farmers, who also own more land, it is seen as a little extra but no major benefit. Farmer 2 also mentions that, it is expected that he uses the money to become more 'green', but he says that if he would do that it would cost him more than that it would profit him.

*'You have got the hectare subsidy [...]. And they also want that you sort of become greener. But if I would need to do that, then it would cost me more than that is benefits me. But there are people who do, such as an arable farmer then it quickly gets interesting because they have much more land with their company. [...]' – Farmer 2*

Another way in which the European Union has played a big role is with free travel within the EU. Farmer 1 mentioned it directly, while farmer 2 and 3 mentioned it indirectly. They only explain that they have employees from other European countries. The free travel of goods within the EU may have either directly or indirectly contributed to the creation of the European fruit market.

*'Well, that you at one point could let Polish people work here. I don't know if it is [...] yes it was European policy, I believe.'* – Farmer 1

### 5.3.4 Export destinations

Farmer 3 explains most of the apples are for the Dutch market. Farmer 2 and his wife state that their pears mainly go to Europe, they named the following countries: Germany, France, Poland. Farmer 1 also mentions England and Scandinavia as export destinations.

*'In the past a lot of Dutch apples went across the borders, nowadays there is nothing left of that. [...] Of the Dutch apples 80% is for the inland markets and 20% goes across the border.'* – Farmer 3

*'Yes, to Poland and [...] Germany [...] France and the Netherlands.'* – Farmer 2 and his wife

*'Yes, I believe I do. Apples and pears are sold throughout the whole of Europe. And also strawberries I believe, they also go to mainly Scandinavia and [...] England, yes'* – Farmer 1

All farmers mention that there are taste differences in Europe, regarding the apple and pear types. Farmer 1 mentioned multiple apple species and where in Europe they are the most preferred. They also explain that the species that are preferred in a certain country are also mostly grown there. For example the Abate Fetel, this pear is grown in Italy.

*'They have Abate Fetel and Conference. But their Conference, we have nice rough pears, green ones. And in Italy they are a bit more compact and they are more yellow. And with us that is actually class 2 pears.'* – Farmer 2

Farmer 1 shows how the European fruit market provides opportunities for an extra source of income. He does that by making use of the taste differences inside Europe, by producing a

pear that is not well known in the Netherlands, the Lucas. Farmer 1 grows this pear next to the well known Conference pear, he explains that this pear is easy to grow, and has a reasonable yield and a convenient harvest timing, and since there is no market for this pear in the Netherlands it is exported to eastern Europe.

*'And the Lucas. But they are not, you actually growing for Europe, they are all eaten in Eastern Europe, you could say. There is no market for them in the Netherlands. [...] But it is a pear that is little later than the Conference, easy to grow, not much work, a lot of kilo's. So that fitted next to it.'* - Farmer 1

Based on what is discussed above, the role of the Betuwe in the European economy is quite small, this is because it has to compete with the bigger countries, such as Poland and Germany. However, this does not mean the Betuwe actually has no impact. Since in other European countries, the conditions for fruit farming are so not as good as they are in the Betuwe. This quote of farmer 3 sums up well how the farmers' view of the Betuwe in the European economy is.

*'Yes, seen in Europe, the Betuwe is actually just a [...] Seen in the Netherlands, the Betuwe is an very important fruit region. Yes, the Netherlands in itself with regard to fruit is actually just a small player compared to Poland, Italy, France and Germany.'* – Farmer 3

So, there are multiple countries that have an impact on the position of fruit farmers in the Neder-Betuwe in the European economy. This includes competitors with varying success, such as Italy and Belgium. Poland however has a bigger impact on the farmers, it is a competing fruit producer. But farmers also depend on the labour force that it provides. The European Union is more on the background. The free travel policy exists for a while and the CAP is of less interest of the farmers. The export destinations are to many different countries such as Germany, France and Poland just to name a few.

The capital that the farmers have with regard to their livelihoods in the European market is mainly related to human capital, they have the knowledge, but also the experiences of how the European market operates and changes. The European Union creates mainly financial capital for the farmers, this comes from the CAP subsidy. The financial capital the farmers gain from distributors is more complex. The distributors are connected to the European market and since the farmers are connected to the distributors they depend on each other and the European fruit market to gain financial capital. The farmers also have some great social capital. They have the right connections to ensure that they have enough employees (human capital) during harvest. Overall, the capital that the farmers can use in the European market is mainly human, social and financial. Their livelihoods are getting more sustainable with help of the European market.

## 5.4 The World economy

With regard to the global fruit market, the farmers mention something very interesting. When asked about export outside of Europe the farmers only mention two countries. But the countries they mention are two big countries, also economically, namely China and Russia. For both countries there is a different explanation, in the part below first China will be discussed and after that Russia.

### 5.4.1 China

China is considered a not so interesting export destination for the farmers in the Betuwe. This is because of the transportation. China is according to both Farmer 1 and 2 not an interesting destination. These farmers explained in detail why that is not the case, and this shows that they somehow heard of the possibilities and methods to export to China.

Farmer 1 and 2 mention that fruits are a perishable product, and that they are not suitable for long distance transportation without additional measures.

Farmer 1 and 2 were able to explain why it is more difficult to export to China. This is because the fruits need to be cooled and in addition farmer 2 explains that pears need to be stored without oxygen, in order to be transported to China. Farmer 1 states that it takes 6 weeks to get there, which means that if not stored properly the fruits might be rotten upon arrival. Farmer 1 also states that there are specific requirements for the export to China. He talks about that there is a certain protocol for growing fruit to export to China, mainly related to the crop protection that is allowed.

Farmer 2 also mentioned that there are farmers who grow pears specifically for the Chinese market, he also mentions that the costs for transportation are higher.

*'No, they have tried to China, but then I believe that you need to fulfil special requirements, growing according to a China protocol. They have certain requirements for certain resources, that you are or aren't allowed to use. But furthermore, I don't think that my products end up outside of Europe. [...] Yes, and it stays fresh products. Look strawberries, well apples is a different story. If you ship to China it takes 6 weeks before it gets there.'* – Farmer 1

*'But it is also the case that, if it needs to go further the transport costs are too high. It is a perishable product so it needs to be cooled very well if you go even further. And because sometimes pears are grown for the Chinese market and they go into containers. And they are not only cooled but they also want to remove the oxygen, in order to have it stay fresh longer. And then it arrives better over there, you could say. But we, we just produce for Europe.'* – Farmer 2

### 5.4.2 Russia

Russia was a very important and big market for fruits. But after Dutch boycotts but also boycotts from the European Union the Russian market seems to have disappeared. Farmer 1 states that in Russia people can afford and want to have good quality fruits, this can explain together with that fact that Russia has a big population this can be seen as the reason why the Russian market is considered an important market for fruits. Also, the fact that Russia is relatively close, especially compared to China, might play a role in the importance of the Russian market. Farmer 3 explains that in 2014 there was a decrease in price, because of the fact that the Russian market disappeared, but also mentions that 10 years later the prices are more stabilized. The global economy is often used as a political tool. This can be done by boycotts, what happened to Russia. The current political landscape tries to limit direct confrontations, so instead they use economical tools.

*'Well, look [...] Russia was always a good market but that is not allowed anymore. [...] Over there were still people with money, they just wanted to have quality.'* – Farmer 1

*'Well almost, well yes, in the past of course a lot went to Russia. [...] But that is not the case. In the past Russia was a very important pear client. [...] So in The Netherlands, but also from Europe, boycotts were established and Russia, they started boycotting our products then. Yes, then directly, then the price plummeted. A big market disappeared, that was very noticeable then. But well, that is now, 10 years later, that has stabilized again.'* – Farmer 3

However, both farmers mention that despite the boycotts, there might be some export of fruits to Russia. There is an assumption that this export is done via 'underground methods' or 'via the backdoor'. Farmer 1 even thinks that this 'underground' export is done via Turkey.

*'Well almost, well yes, in the past of course a lot went to Russia. [...] Still some things go via the back door, something still goes over there. [...] But that is not the case. In the past Russia was a very important pear client. Yes, that is actually, yes via dodgy ways.'* – Farmer 3

*'I think that a lot via Turkey still just disappears to Russia. [...] A blind eye is turned, I do think that. Russia was very important sales market, so that was outside of Europe you could say.'* – Farmer 1

Based on what the farmers have told, the Betuwe might not be very well connected to the global market, however this has to do with the fact that the fruits need to stay fresh, and thus long distance export is not, according to the farmers, considered desirable for the fruit market. All of the farmers mention that their product either stays in the Netherlands, this is especially the case with the apples of farmer 3, or that it goes across the border, towards countries in Europe.

*'But furthermore, I don't think that my products end up outside of Europe.'* – Farmer 1

*'But we, we just produce for Europe.'* - Farmer 2

*'Yes our apples stay mainly in the Netherlands. They all go to Albert Heijn.[...] But the pears, they mainly go across the border. And in certain sizes, the smaller ones, in our case they mainly go to Germany. And the bigger pears they go to France or Scandinavia or to the East.'* – Farmer 3

So, how are the fruit farmers from the Neder-Betuwe positioned in the global economy? Well, the farmers overall are well informed of the possibilities to export outside of Europe. Since they don't distribute their fruits themselves, they are not fully in charge to where their product goes. This has to do with the transport possibilities of fruits, they need to stay fresh. So, long distance transport is more difficult.

The capital gain from the global market is considerably less than the Dutch and European market. This could have to do with the human capital of the farmers, they may not have the right knowledge to fully connect to the global market.

## 6. Conclusion

How are fruit farmers from the Neder-Betuwe positioned in the Dutch economy? The farmers of the Neder-Betuwe are part of a strong region with regard to the fruit production in the Dutch economy. It is often compared with other fruit producing regions in the Netherlands. But the farmers see more problems in the other regions than in the Betuwe. Based on the results mentioned above, you could say that the Betuwe is still an important producer of fruits. However, the farmers mention that the whole fruit farming sector in the Netherlands is under pressure. This is related to climate change, but also national policies. However, due to climate change the farmers do face a lot of challenges to keep a stable income. What also puts pressure on the fruit farmers is crop protection. Farmers seem to be dependent on it to ensure an income, while at the mean time the government tries to limit the usage of crop protection. Thus, in order to secure an additional income the farmers are also dependent on side businesses.

With regard to the Dutch market, the Betuwe is the strongest player. It has great soils, and sufficient water available. Another thing that improves the position of the Betuwe in the fruit sector is the presence of Fruitpact. This organization ensures that the fruit sector in the Betuwe stays relevant and is able to help with solving potential problems for the fruit sector.

The position of farmers with regard to the European economy is more balanced compared to the Dutch economy. They do mention that in the Netherlands, and mainly the Betuwe it is going better than other European countries. Mainly in Italy it is going worse in the fruit sector compared to the Betuwe. The explanation for this is mainly climate change.

With regard to the European market, the farmers mentioned some interesting things. First of all, the collapsing fruit farming sector in Italy, due to extreme heat. But also the big role that Poland plays. Both for the production of both apples and pears, but also in supplying employees for the farmers in the Betuwe. The European economy, also provides opportunities for the farmers, there is a larger labour market, which fills the gap of a lack of Dutch employees.

The fruit farmers from the Neder-Betuwe play a smaller role in the global economy. This has mainly to do with the great connection to the European market, which makes the global market less appealing. However, on an international scale, the farmers mentioned that there is a connection with China and Russia on the global fruit market. Russia has been an important market in the past, but due to boycotts this market disappeared. The case with China is that the export is complex and thus not very appealing for the farmers.

So, with regard to the livelihoods of the farmers it can be concluded that they have more or less sustainable livelihoods. They have access to all the forms of capital, it mainly depends on how they are able to use these forms of capital. What might influence their livelihood is are external factors, such as climate change and policies. These livelihoods are improved via both Fruitpact, which adds human and social capital, and the European Union which mainly add financial capital.

With regard to the future there are some things to keep in mind. This is climate change, since this is an long lasting issue with the effects becoming more and more visible. Then, there is the role of government policies, such as policies related to crop protection. Furthermore, Fruitpact of course will keep playing a role. They either directly or indirectly are keeping the fruit sector in the Betuwe in a good position. At a European level it is important to keep in mind what is happening in the other fruit producing countries, what is going to happen with the fruit sector in Italy, or maybe a new fruit producing country is going to appear? And lastly what will happen with the global fruit market, will China become an attractive export destination and is Russia ever going to appear again? These things all might have various impacts on the position of the fruit farmers in the Neder-Betuwe.

## 7. Reflection

With the use of qualitative research methods meant that the data was more scattered, not everything that has been said was useful or relevant for the research. While collecting data multiple issues appeared, the main issue was finding suitable respondents. The needed to have some similar characteristics but at the same time they still should differ enough to create more unique perspectives from the farmers. One of the challenges was getting in contact with Fruitpact, because right at the time in my research process I had planned to do interviews the Fruitpact respondent was not available, this could be considered as just bad luck. Fortunately, the Fruitpact respondent was very willing to cooperate and was able to add insight to, and confirms insights of what previously was a purely farmer based respondent group. Another challenge was creating a suitable research frame, since my main focus was first on Fruitpact, this shifted to a bottom-up farmers based focus and then later Fruitpact was

added again with a smaller role than envisioned at the start of the research. In further research the insights of a fruit farmer that is connected to Fruitpact could be used. This could create a less farm operation focussed and less descriptive point of view, and can add insights to role Fruitpact plays for the farmers, from a farmers perspective. Another shortcoming of the research is that it hard to generalise the results, the research is very case specific. The livelihood approach however, makes that this research can be considered part of the larger existing research on livelihoods of farmers in the different parts of the world.

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## 8. Attachments

### *Interview Transcript Farmer 1*

The interview took place around on Wednesday the 17<sup>th</sup> of April 2024 in Lienden. The interviewer was Rutger. The respondent is anonymous and is referred to as Farmer in the transcript. During the interview the farmer was working on their strawberry plants in a greenhouse.

#### **Letter and colour coding:**

*Interviewer:* Rutger

*Farmer*

#### **Other notations:**

(...): silence/ no words said.

[...]: inaudible/stutter

\*\* : indicates an action

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*Interviewer:* First of all, I would like to thank you for being here. And that you are willing to participate in this interview. Before the interview starts, I will briefly tell what the interview is about. I am currently doing research about how farmers in the Betuwe experience the effect of government policies aimed at regional development of the Betuwe. The data will only be used for this research. The interview will take approximately 30 minutes maybe a little longer. Furthermore, I would like to record this interview in order to listen it back later is that alright?

*Farmer:* Yes

*Interviewer:* I would like to remind you that this interview is voluntary and that there are no wrong answers, and we can stop or pause whenever you want to.

*Farmer:* Yes, no problem

*Interviewer:* If there is something unclear feel free to indicate. Also, the interview is anonymous. Hopefully you are informed enough. Are there any question from you side?

*Farmer:* No, fire away.

\*Interviewer turns page of notebook\*

*Interviewer:* The first question is what crops do you grow around here?

*Farmer:* Apples pears strawberries, raspberries, cherries and a very small part of berries but that is more for the home sale you could say

*Interviewer:* Yes, ok and why these specifically these crops?

## *Interview Transcript Farmer 2*

The interview took place on Monday the 22<sup>nd</sup> of April 2024 in Lienden. The interviewer was Rutger. The respondent is anonymous and is referred to as Farmer in the transcript. The Farmers wife was also present.

### **Letter and colour coding:**

*Interviewer:* Rutger

*Respondents:*

*Farmer*

*Farmers wife*

### **Other notations:**

(...): silence/ no words said

[...]: inaudible/stutter

\*\* : indicates an action

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*Interviewer:* Heel erg bedankt dat ik hier mag zijn. [...] En dat jullie ook tijd hebben voor het interview. [...] Voordat ik begin met het interview [...] zal ik kort vertellen waar het over gaat. Ik ben een onderzoek naar [...] hoe boeren in de Betuwe de effecten van overheidsbeleid gericht op de ontwikkeling van de Betuwe ervaren. [...] De data wordt uitsluitend gebruikt voor dit onderzoek. Het interview zal ongeveer 30 minuten/driekwartier duren. Verder zou ik graag dit interview willen opnemen zodat ik het terug kan luisteren. Is dat ok?

*Farmer:* Ja.

*Interviewer:* Onthoud dat dit interview vrijwillig is. Er zijn geen foute antwoorden en we kunnen stoppen of pauzeren wanneer u wilt. Als er iets onduidelijk is mag u dat gerust aangeven. Verder is dit interview ook anoniem. [...] Hopelijk heb ik u hierbij genoeg geïnformeerd. Zijn er nog vragen vanuit uw kant?

*Farmer:* Nee begin maar hoor. \*lacht\*

*Interviewer:* [...] Dan begin ik met de eerste vraag en dat is welke gewassen worden hier verbouwd?

*Farmer:* Wij hebben appels en peren, die telen wij.

*Interviewer:* En waarom juist deze gewassen?

*Farmer:* [...] (...) Dat [...] (...) Die liggen mij het beste, de teelt. En vooral de peren. En we zijn ook langzamerhand steeds meer peren gaan telen. (...) En binnen afzienbare tijd, nemen we afscheid van de appels ook. Omdat het [...] te weinig opbrengt. En te hoge risico's met zich mee brengt.

### *Interview Transcript Farmer 3*

The interview took place on Wednesday the 24<sup>nd</sup> of April 2024 in Lienden. The interviewer was Rutger. The respondent is anonymous and is referred to as Farmer in the transcript.

#### **Letter and colour coding:**

*Interviewer:* Rutger

*Farmer*

#### **Other notations:**

(...): silence/ no words said

[...]: inaudible/stutter

\*\* : indicates an action

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*Interviewer:* Kijk, ja allereerst heel erg bedankt dat ik hier mag zijn en dat u tijd heeft voor dit interview. Voordat ik begin met interview, zal ik kort vertellen waar het over gaat. Ik ben bezig met onderzoek naar hoe boeren in de Betuwe het effect ervaren van overheidsbeleid, gericht op de ontwikkeling van de Betuwe. De data wordt uitsluitend gebruikt voor dit onderzoek. En, het interview zal ongeveer 30 tot 45 minuten duren. Verder zou ik graag het interview willen opnemen, zodat ik het terug kan luisteren. Is dat ok?

*Farmer:* Ja, dat is goed, dat is goed

*Interviewer:* Onthoud dat dit interview vrijwillig is. Er zijn geen foute antwoorden en we kunnen stoppen en pauzeren wanneer u wilt. Als er iets onduidelijk is, mag u dat gerust aangeven. Verder is dit interview ook anoniem. Hopelijk bent u hierbij genoeg geïnformeerd. Zijn er nog vragen vanuit uw kant?

*Farmer:* Nee

*Interviewer:* Even kijken ja, welke gewassen verbouwt u hier?

*Farmer:* Appels en peren.

*Interviewer:* Oké, en waarom juist deze gewassen?

*Farmer:* Ja dat is ooit zo. Is dat zo eenmaal ontstaan. Mijn vader is daarmee begonnen, mijn opa, vroeger een gemengd bedrijf, die had ook vee en fruit. En mijn vader en mijn oom, die zijn eigenlijk meer gaan specialiseren in fruit. Ja, die zagen toen op dat moment, eind jaren 70, begin jaren 80. Ja, die zagen toen het meeste zeg maar in, [...] in vooral appels toen der tijd. En later zijn daar de peren eigenlijk bij gekomen.

*Interviewer:* Bent u ook zelf betrokken geweest dat de peren meer erbij kwamen. Of was dat al toen het overnam of hoe is dat een beetje gegaan?

*Farmer:* Ja, dat was ik ook. Toen was ik toch ook al wel bij dat we steeds meer peren zijn gaan doen Omdat [...] die brachten steeds meer op dat was een betere teelt. [...] Als de appels.

# Transcriptie

14 juni 2024, 02:00p.m.

The interview took place on Friday the 14<sup>nd</sup> of June 2024 online. The interviewer was Rutger. The respondent is Frank Engelbart, he is the contact person from Fruitpact.

□ **Wouters, R.P. (Rutger)** heeft de transcriptie gestart

**WR** **Wouters, R.P. (Rutger)** 0:07  
OK. Ja, ik heb dus eerst ja een kleine introductie en dat is heel algemeen.

**FE** **Frank Engelbart** 0:14  
Ja.

**WR** **Wouters, R.P. (Rutger)** 0:15  
En ja daarna.  
Eerst paar vragen voor u over ja, een beetje Fruitpact zelf en uw rol daarin.

**FE** **Frank Engelbart** 0:24  
Ja ja.

**WR** **Wouters, R.P. (Rutger)** 0:26  
En ja dus ja, allereerst heel erg bedankt dat u dit interview met mij wilt houden.

**FE** **Frank Engelbart** 0:36  
Ja graag gedaan.

**WR** **Wouters, R.P. (Rutger)** 0:38  
Voordat ik begin met interviews, zou ik kort vertellen waar het interview over gaat. Ik ben bezig met een onderzoek naar hoe boeren in de Betuwe het effect ervaren van overheidsbeleid, gericht op de ontwikkeling van de Betuwe.

**FE** **Frank Engelbart** 0:42  
Ja.  
Ja.