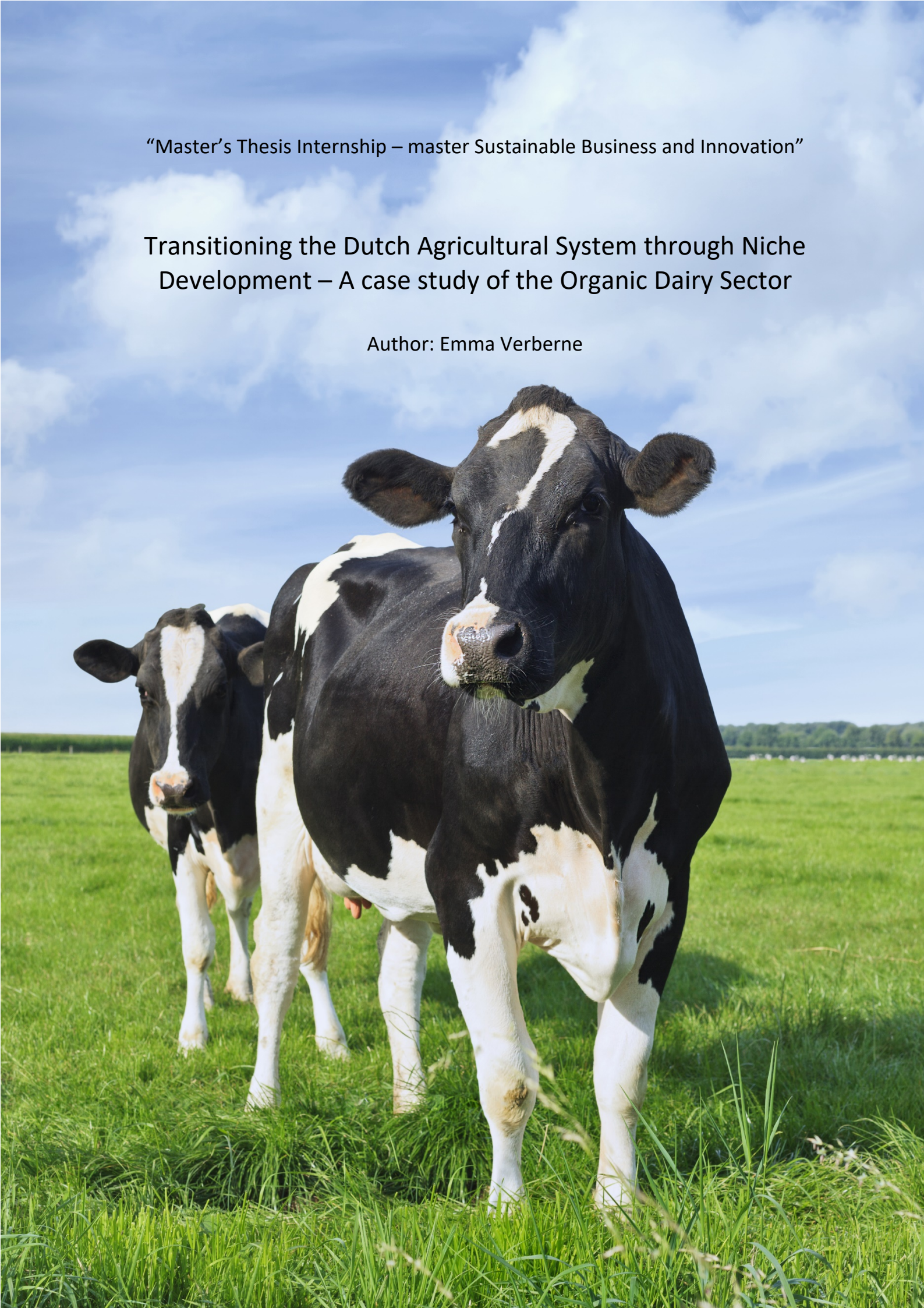
"Master's Thesis Internship – master Sustainable Business and Innovation"

Transitioning the Dutch Agricultural System through Niche Development – A case study of the Organic Dairy Sector

Author: Emma Verberne



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Transitioning the Dutch Agricultural System through Niche Development - A case study of the Organic Dairy Sector

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Summary

Many sustainable agricultural grassroots movements and niches are failing to scale up. (Hermans et al., 2016) This issue is also seen in the Netherlands were the sustainable niche; organic agricultural sector is underdeveloped, this in comparison to other EU countries as Austria and Denmark. Therefore, this research will use the Dutch organic dairy innovation system as an example of why niches are failing to scale up within the agricultural regime. The research question is as followed: *What is hindering the development of the Dutch organic dairy innovation system and what are the possible solutions to scale up?* To find an answer to this question a Technological Innovation System (TIS) approach was used. By using a structural-functional analysis the barriers which are hampering the development of the Dutch organic dairy innovation system emerged. Simultaneously, factors which have increased the development of Austria and Denmark (development factors) were found through a literature review and confirmed though semi-structured interview.

The results of the TIS analysis portray that the lack of development within Function F4 Guidance of the Search are mostly hindering the development. This is mainly due to a hard-institutional problem: the lack of a long-term policy vision. The lack of long-term policy vision within the Dutch organic dairy innovation system negatively influences all other functions due to the interrelationship between the functions. In Austria and Denmark two development factors were discovered related to the long-term vision. The continuous implementations of organic action programs (OAPs)is one of them. These programs set goals to support and develop the organic sector (Schmid, et al., 2015). Another important factor that increased development are the transition and maintenance subsidies for farmers. Since sustainable development is a long-term process (Markard et al., 2012), it can be concluded that development of the Dutch organic dairy innovation sector will only be enhanced through the realization of a long-term policy vision. Thereby, it can be argued that development of a sustainable agricultural niche is dependent on the development of Function F4 Guidance of the Search.

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1. INTRODUCTION

The Netherlands is one of the leading agro-food exporting countries in Europe (Bojnec & Ferto, 2017). The modern agricultural sector has evolved over the years to become a system where increased productivity plays an important role (Smith et al., 2005). This agricultural system can be seen as an industrial form, which consumes many natural resources. Farming can be very water intensive, has a high demand on the quality of topsoil and requires many fossil fuels for machinery (Horrigan et al., 2002). Production and consumption within the agricultural sector are occurring at an unsustainable rate (El Bilali, 2018). This has led to many economic, environmental and social issues as climate change, resource depletion, biodiversity loss, ecosystem degradation and water and air pollution (El Bilali, 2018; Golijan & Dimitrijević 2018; Horrigan et al., 2002). These challenges need to be considered within the agricultural sector. The world's population is predicted to grow with two billion people over the next thirty years (United Nations, 2019). Therefore, a transition towards more sustainable forms of agriculture is necessary (El Bilali, 2018). "There is a need for innovations towards sustainable agriculture that provide enough food, reduce the negative impacts on the environment" (Hermans et al., 2016 p.285) To accomplish this, many different agricultural grassroots innovation movements arose to promote sustainable agriculture, e.g. permaculture (Ingram et al., 2018). Often these movements function well on a small scale however, almost all grassroots innovation movements fail to accomplish widespread transformative change (Hermans et al., 2016).

Transition studies often describe a niche is as a "place or community such as grassroots innovation movements where novelties are developed" (Ingram et al., 2018 p.117). In this study the organic sector will be seen as a niche within the agricultural sector. The origin of organic agriculture can be traced back to 1924 in Germany. Around 1940 Sir Albert Howard started the organic movement (Shi-ming & Sauerborn, 2006). Organic farming is a method that offers an alternative to conventional farming. Organic farming is defined as "a system aimed at producing food with minimal harm to ecosystems, animals or humans" (Seufert et al., 2012 p.229). This type of farming is seen as less harmful to the environment due to its contribution to environmental protection (Darnhofer, et al., 2010). Currently organic farming is one of the fastest growing food sectors worldwide (Seufert et al., 2017). This sector gained popularity in the 1980s due to its positive impact on the environment and health concerns (Morgan & Murdoch, 2000; Seufert et al., 2017). Organic farming maintains biodiversity, conserves soil and water, decreases emissions and minimizes environmental pollution (European Commission, n.d.a). These are reasons why organic farming is seen as more sustainable than conventional farming (Smit et al., 2009; Darnhofer et al., 2010).

In Europe, the development of the organic sector went hand in hand with the implementation of laws and regulations at a national and European level. These regulations provide each EU country with a clear guideline for the production of organic goods across Europe (European Commission, n.d.a). In 1962 the Common Agricultural Policy (CAP) was implemented in Europe. The main goal of this policy was to provide affordable food for European citizens, and a fair income for farmers (European Commission, n.d.b). In 1991 the first European wide organic regulation was established; EC Regulation 2092/91 (Michelsen, 2001). This replaced most national policies which were established in the 1980s. (Seufert et al., 2017). Several shifts occurred within the policies overtime. Starting with the MacSharry reform in 1992, the subsidies shifted from price and market support to farmer support. This support was given when farming became more

environmentally friendly (Läpple & Van Rensburg, 2011). This was followed by a reform in 2003, where more emphasis was put on environmental protection (Gay et al, 2005). Farmers received direct payments when implementing regulations to improve food safety, consideration of the environment and animal welfare (Gorton et al., 2009). The regulation of 1991 was repealed, and the current organic legislation falls under COUNCIL REGULATION EC NO 834/2007 (Council Regulation, 2007). For the period from 2014 – 2020 the CAP provides funding through the European Agricultural Fund for Rural Development (EAFDR). Each EU country implements their own Rural Development Programme (RDP) specifically tailored to their own challenges and capabilities (Meredith et al., 2018).

To become an organic certified farmer in Europe, one has to abide to the strict European and national laws and regulations. These regulations such as; no artificial pesticides, no antibiotics in animal feed, high animal welfare and crop rotation have to be implemented at a farm (Smit et al., 2009). A farmer will undergo a transition period whereby a farmer abides to all the rules and regulations of organic farming practices. The process contains several stages as awareness, evaluation, trial and adoption (Morgan & Murdoch, 2000). After the transition period the farmer will become a certified organic farmer (Skal, 2019). In the Netherlands these regulations are checked once a year by Skal Bio Controle, the Dutch certification organization. Inconsistent implementation or withholding of any of the regulations can result in losing the certification (Skal, 2019). The transition process is a costly process for a farmer since they have to implement the new regulations. In addition, a farmer only receives conventional prices for its products (Smit, 2011) However, after the transition period a farmer will receive premium 'organic' price for its product which in the long run will be more profitable (Seufert et al., 2017).

In 2014 the global organic agriculture production accounted for approximately 1 percent worldwide. At that time, organic agriculture was already seen as mainstream in some European countries (Niggli, 2014). When looking at the share or organic land in comparison with the total agricultural area, and the organic sales per capita we see that countries within the European Union as Austria, Denmark are developing much faster in comparison with the Netherlands Figure 1 & Figure 2. Austria has the highest share of organic farmland with 24% and Denmark has the highest organic sales. The Netherlands does not perform well on either one, factors which clearly show the lack of growth and development of the Dutch organic agriculture sector.

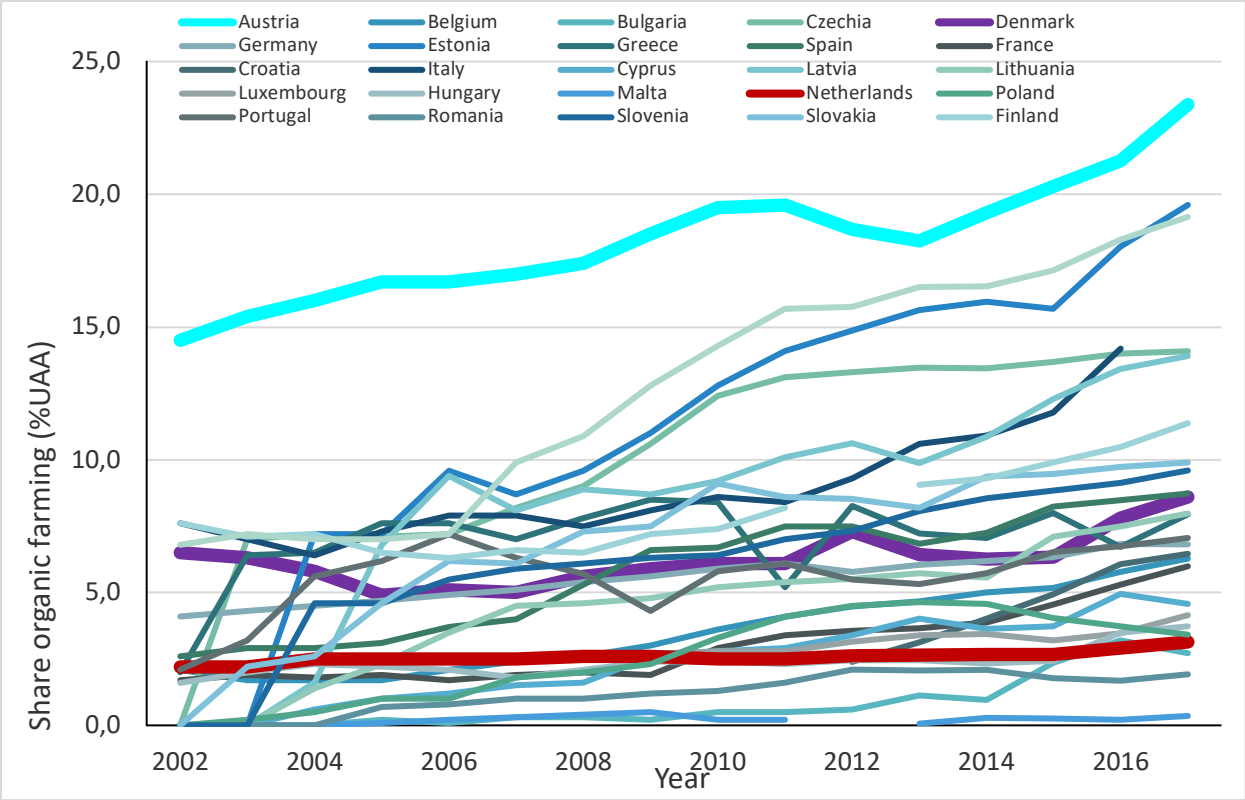

Figure 1.

The total share of organic farmland in Europe in comparison with the total utilized agricultural area (UAA). The results are shown in percentages from 2002 – 2017. Austria has the highest share of organic farmland with 24%.

Note: Eurostat (2019) Share organic farming. Retrieved from https://ec.europa.eu/eurostat/

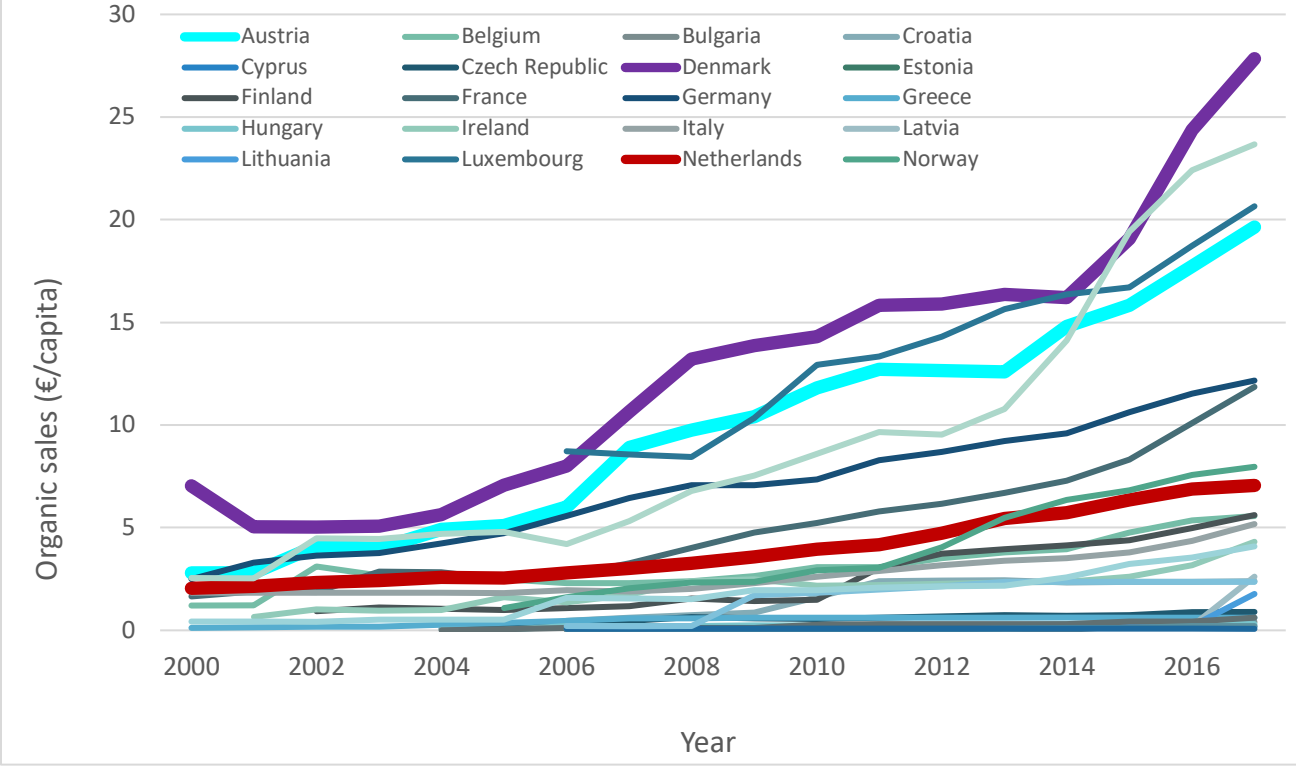

Figure 2.
The organic sales of all European countries in euro per capita, from 2002-2017. Denmark has the highest sales with €27.8 per capita.
Note: Fibl Statistics (2019) Organic sales. Retrieved from: https://statistics.fibl.org/

The Netherlands has a very long history of organic agriculture. Between 1950 and 1960 the production expanded and outgrew the local demand. In the 1920s the 'bio-dynamic farming' approach arose and was the first form of organic farming. In the 1970s 'ecological farming' emerged and this is nowadays the dominant approach of organic farming. (Thongplew et al., 2016). During the rise of the Dutch organic sector several events occurred. Implementation of the Dutch organic label: EKO-keurmerk in 1985 (Skal, n.d.), The enactment of the EU law in 1991 (Michelsen, 2001), subsidies to farmers during the transition phase started in 1994, and the abolition of the milk quota in 2015 (Augere-Granier, 2018). Several covenants were signed on e.g. crop protection and stimulation of market development (Smit, 2011). Another important factor was the vision of the Dutch government. After the implementation of a national organic policy in 2001, the government implemented a new vision in 2009 (Ecorys, 2007; Ministerie LNV, 2009). With this change, the government gave the responsibility on the development of the Dutch organic sector back to the stakeholders. However, the government still had the objective to have an annual increase of 10% for consumer spending and 5% increase for areas under cultivation (Sukkel & Hommes, 2009). Currently the Vision of Schouten is on the increase of circular agriculture and sustainability. Organic agriculture is not mentioned (Schouten, 2018). There are also no subsidies given to the organic farmer for transitioning or maintenance (Rijksdienst voor Ondernemend Nederland, n.d.).

Since organic agriculture exists of many different sectors it was decided to focus on the Dutch dairy sector. This sector claims approximately 29% of total Dutch farmland (Smit et al., 2009), and it generates significant economic value (Thongplew et al., 2016). Even though Schneeberger et al., (2002) state that organic farmers are more likely to engage in animal husbandry, only 1.6% of the total amount of milk produced in the Netherlands comes from organic dairy farmers (Van Der Peet et al., 2018). Interesting since Seufert et al., (2017) states that the yield of an organic farmer is lower but more profitable in the long run. Therefore, this study will compare the organic dairy innovation system of the Netherlands with Austria and Denmark. Besides having a well-developed market and share of organic land, they also have one of the highest percentages of organic dairy cows (Rosati & Aumaitre, 2004)

For this research organic agriculture is used as an example to test how an agricultural grassroots movement or niche can become mainstream. This research will therefor aim to identify which factors are needed to scale up a sustainable niche within the conventional agricultural sector. Scientific research within agricultural transition is often lacking to find a suitable framework to enhance the transition towards sustainable agriculture (El Bilali, 2018). Using an innovation system approach, it is possible to research such transitions. A frequently used tool within this approach is the Technological Innovation System framework (TIS) (Wieczork & Hekkert, 2012) and the adopted version Agricultural Innovation Systems (AIS) (Klerkx et al., 2010). For this study the TIS is used, which is a systemic framework that describes the structural and functional components of an innovation. The structural components are the actors, networks, institutions and infrastructures of a system. While the dynamics of an innovation are measured with the seven functions approach (Hekkert et al., 2007). This framework can provide research with the functional barriers and systemic problems of a sector (Wieczorek & Hekkert, 2012).

The TIS approach has not often been applied to agro-food sustainability transitions (El Bilali, 2018). For this research the TIS will be applied on the Dutch organic dairy innovation system and analyze the sector to determine which function is blocking the development of the innovation system. An interesting approach since it will give a new view on the development of the organic dairy sector (El Bilali, 2018). Organic agriculture was chosen to study the transition because it is an older niche and well-established in Austria and Denmark. Organic farming is also one of the few agricultural niches which has management practices that are codified by law in almost all countries (Seufert et al., 2017). Within the EU the same laws and regulations are implemented which makes it possible for this study to compare the Netherlands with Austria and Denmark. A comparison between these countries on the transition of the organic dairy sector has never been done before. Therefore, this paper seeks to identify factors, that can scale up the organic dairy sector and which will lead to a successful transition. The research question is as followed:

What is hindering the development of the Dutch organic dairy innovation system and what are the possible solutions to scale up?

This research will be divided in three sub-questions. The first question is: *How does the Dutch, Austrian and Danish organic dairy innovation system look like, and how is it currently functioning?* To answer the first sub-question, this study will entail an explorative design which will be supported through qualitative data. A literature review will be performed which provides this research with the current state of the Dutch organic dairy innovation system including the relevant actors, institutions, technologies and networks. This will provide the research with the intended domain. While collecting data of this sector, the current development of the system will also be determined. The second question is: *Which possible barriers are hindering the current development of the Dutch organic dairy innovation system?* This will be analyzed by interviewing experts from the organic dairy sector with specific questions related to the seven functions of the TIS framework. Encountered challenges will be compared to the found development factors of Austria and Denmark. These are factors which have led to the successful development of the organic agriculture sector. This analysis will provide an answer to the third question: *How can the Dutch organic dairy innovation system overcome the barriers and build a well-functioning system?*

2. METHODOLOGY

This study aims to provide a comprehensive overview and understanding of the conditions which will enhance the (sustainable) transition of the Dutch organic dairy innovation system to become adapted to the socio-technical regime. This will be executed by using the five steps of the TIS described by Hekkert et al., (2011). When following these steps, all processes which contribute to the development and diffusion of the innovation are considered. The results of the analysis can eventually show how the regime shift can occur from a bottom-up perspective.

2.1. Sustainable Transition

Transition is a long term, complex and multidimensional process, where a societal subsystem or (system) radically or incrementally changes (Loorbach & Rotmans, 2006). Examples of subsystems are the political or economic systems (Carayannis & Campbell, 2019). An important concept within transition research is the socio-technical regime. “Socio-technical regimes are relatively stable configurations of institutions, techniques and artefacts, as well as rules, practices and networks that determine the ‘normal” development and use of technologies” (Smith, et al., 2005 p. 1493). The socio-technical regime focuses on the dynamic interactions between all actors (Geels et al., 2008). Changes within a regime occur at many different dimensions such as technological, material, organizational, institutional, political, economic, and socio-cultural. This is due to the fact that established technologies and practices are highly intertwined within these systems (Markard et al., 2012**)**. A sustainable transition is an incremental change and an even more complex transition since it is characterized by the enhancement of ecological efficiency. It includes all changing dimensions mentioned above, while simultaneously, the socio-technical regime will have to shift towards sustainable production and consumption (Coenen et al., 2012).

Sustainable transitions can be seen as a long-term goal, and therefor what is considered ‘sustainable’ can change over time. Hence, guidance and governance are needed during transitions and required for the development of an innovation (Smith et al., 2005; Markard et al., 2012). Due to the intrinsic character of sustainability, and the many involved and intertwined actors, legitimacy of the implemented change is of essence, otherwise several functions can be blocked which can hinder the transition (Jacobsson & Bergek, 2004). According to Kemp and Rotmans (2001), sustainable development is an ambiguous goal, and a tremendous challenge (Loorbach & Rotmans, 2006).

One of the best-known sustainability transitions is that of the renewable energy sector (Coenen et al., 2012). The renewable energy sector and agricultural sector face similar challenges. These challenges include exploitation of finite resources, growing demand and an uneven distribution (Barbir, 2009). The energy sector is coping with these challenges by implementing renewable energy technologies such as geothermal, windmills and solar panels. These technologies are implemented to reduce the environmental impact and to enhance the transition towards sustainability (Jacobsson & Johnson, 2000). The implementation of ‘new technologies’ differentiates the energy sector from the agriculture sector. To transition towards a sustainable agricultural system, other forms of agriculture will need to be implemented. Agricultural innovations can include methods such as organic farming, nature inclusive or vertical farming

(Pigford et al., 2018). In most cases, the already existing agricultural land will have to be transformed to a more sustainable form (Brenes-Muñozetal., 2016). Another point of differentiation is that agricultural innovations are often not new and much less 'technical' than the energy innovations. However, according to Markard and Truffer (2008), an innovation does not have to be technical, an innovation is a response to a changing system or environment and can exists of technical and non-technical elements (Hall & Clark, 2010). By including both elements an innovation should portray the future including the goals, dreams and wishes of the people (Klerkx et al., 2012). In the case of organic agriculture, technology includes much more than a concrete technological innovation e.g. machinery. It also involves the complex cooperation between all actors, networks and institutions within this system (Jacobsson & Bergek, 2004). Besides this, this niche has among others a certification scheme and strict and specific EU laws - and regulations (Melita, 2000). Thus, this niche works towards the development of institutional change.

New technologies often struggle to develop and diffuse within a society. There are multiple factors which hinder the development of a technology. Some of these factors are; competition between technologies, compatibility and performance of an innovation and the lack of infrastructure or regulations (Musiolik et al., 2012; Geels, 2002). Other aspects which makes a transition within the agricultural sector difficult is that farming is a land-based activity, a farmer's crop choice is influenced by the local ecosystem, topography, climate but also by cultural, economic and social values. Since all these aspects vary between regions and countries, the farming practices, structures and values are never universal and thus this makes the sector very diverse. Farming is also highly involved within the socio-technical regime due to its multifunctionality. Next to being perceived as its number one function; food production, farming also entails functions as ecosystem services, protection of natural resources, cultural heritage and maintenance of forests and landscapes (Darnhofer et al., 2014; Röling, 2009).

2.2. Technological Innovation System

Until recently, the transition towards sustainable agriculture was not often looked at (El Bilali, 2018). Some of the used existing approaches as National Agricultural Research System (NARS) or the Agriculture Knowledge and Information System (AKIS), are lacking to enhance the economic and social transition of the agriculture sector (Spielman et al., 2009). A critical point, since the agricultural sector is in need of institutional change (Sharma et al., 2014). Innovation system frameworks have been recognized to be useful in the study of agricultural research (Hall, 2007). An often-used framework to study transitional change is the Technological Innovation System (TIS) (Hekkert et al., 2007), a framework which can also be used to analyze the agricultural sector (El Bilali, 2018).

The TIS was originally developed to study diffusions of large-scale technologies and apprehend entire transformation processes (Geels et al., 2008). For example, the TIS is often used to describe the transition of the renewable energy sector (Wieczorek et al., 2015). More recently, the TIS is also being used within the social sciences. It has once been applied for innovations within the dairy sector in Ethiopia (Kebebe et al., 2015), three times for precision agriculture technologies (Busse et al., 2015; Eastwood et al., 2012; Garb & Friedlander, 2014). One study has been performed in France by Angeon & Chave, (2014). Randelli and Rocchi (2017) applied the TIS to

'alternative' food networks, and most recently the TIS was applied on rainwater harvesting in Jordan (Sixt et al., 2018) followed by Schiller et al., (2020) on agroecology.

The TIS framework is a systemic tool that measures the level of an innovation system (Wieczorek & Hekkert, 2012). It exists of a "set of networks of actors and institutions that jointly interact in a specific technological field and contribute to the generation, diffusion and utilization of variants of a new technology and/or a new product" (Musiolik et al., 2012 p.1033). And it can be used to "asses the barriers and drivers of a niche as it grows and "institutionalizes" to further challenge the existing regime" (Sixt et al., 2018).

Different adapted approaches of the TIS have been used to study the agricultural transition. Recently, the TIS was adapted to create the Agroecological Innovation system (AeIS). This framework was used to study the agroecological transition in Nicaragua, a developing country (Schiller, 2020). A more often seen adaptation to the TIS is the Agriculture Innovation System (AIS), this framework was adopted to study agricultural innovation with the concept that innovation is an outcome of the different interactions between the actors, institutions, economic, environmental and societal systems (Klerkx et al., 2012; Spielman et al.,2009). In contrast to the TIS, the AIS is not only focused on the development of new technologies but also on organizational and institutional change (Spielman et al, 2009; Klerkx et al., 2012). The AIS can be seen as Complex Adaptive Systems (CAS) since a CAS is exists of "many agents of different types, where each defines his/her strategy, reacts to the actions of other agents and to changes in the environment, and tries to modify the environment in ways that fit his/her goals" (Spielman et al., 2009 p.400). The agricultural system is a self-organizing system where all components affect each other and therefore all components cannot be studied separately (Klerkx et al., 2012).

For this study the TIS framework, including the system functions, will be adapted slightly to study the development of the organic dairy sector. Similarly, to the AIS, the framework will be seen as CAS, since the organic dairy sector is also formed by many different actors where actions of one actor affects all other actors (Spielman et al., 2009). The TIS can be described as "socio-technical systems focused on the development, diffusion and use of a particular technology (in terms of knowledge, product or both)" (Bergek et al., 2008, p.408). A TIS can thus be implemented on a subsystem of a sectoral system where the barriers and drivers are assessed to challenge the existing structure (Sixt et al., 2018). Thus, for this research the TIS is utilized to analyze the development and assess the barriers of the organic dairy sector.

It can be argued that organic agriculture is not a technological innovation and therefore unfit to use within the TIS since it described the diffusion of a technology. However as described before, organic agriculture is more than just a technological innovation. Therefore, this TIS framework will focus on the analysis of Dutch organic dairy innovation system and is able to determine the development and diffusion of the system (Hekkert et al., 2011). When the TIS is used within sustainability transitions, the innovation system evolves gradually alongside a supporting network (Randelli & Rocchi, 2017). Therefore, the sustainable transition towards organic agriculture, is seen as an analytical construct. That is, a tool "we use to better illustrate and understand system dynamics and performance" (Bergek et al., 2008, p. 408). The emphasis within this transition is thus not on the technological aspect of the innovation, but rather on understanding the system dynamics and performance of a system.

2.3. Theoretical Framework

The TIS uses five steps to analyze an innovation. The TIS starts with analyzing the structural components of a system (Table 1) and determining the level of development. This is followed by determining the phase of development of the specific innovation, by using the innovation curve (Figure 2). The innovation is further evaluated by using the seven system functions (Table 3) which are a key process within the TIS (Hekkert et al., 2007). This is done by asking experts specific questions related to a function. The seven functions will identify the drivers and barriers of an innovation system. These barriers are ranked in order to identify which barrier is blocking the diffusion. The outcome is than linked to the current policy level and total diffusion of an innovation is established when all seven functions of the TIS are functioning well (Negro & Hekkert, 2008).

Table 1.
The structural components of the Technological Innovation System including its descriptions
Note: adopted from Wieczorek & Hekkert (2012)

Structure	*Description*
Actors	Exists of all components which direct or indirect influence the development of the transition examples are knowledge institutes, companies, NGOs, governmental bodies
Institutions	Exists of hard (rules, laws and regulations) and soft (more informal rules coming from habits, traditions or expectations) institutions
Networks/interactions	The interaction between all actors, at an individual and network level
Infrastructure	Includes physical (roads, machinery etc.) knowledge (know-how, strategic information) and financial (subsidies, financial programs)

Step 1: Structural Analysis
The first step within the TIS framework is to make an overview of all the structural components of the organic dairy sector (Table 1). Through a detailed analysis all components including actors, institutions, networks/interactions and infrastructure will be determined and mapped (Hekkert, et al., 2011). Including the capabilities of each component (Wieczorek & Hekkert, 2012).

Step 2: Determining the phase of development
Secondly, the organic dairy sector will be analyzed to determine the phase of development. A specific question related to each phase of development will be addressed (Hekkert et al., 2011 p. 9).

- Pre-development phase: is there a working prototype?
- Development phase: Is there commercial application?
- Take-off phase: Is there a fast market growth?
- Acceleration phase: Is there market saturation?

This level of development will be portrayed on the diffusion curve as shown in Figure 3 and the outcome of this step will be used in the analysis of *step 3*.

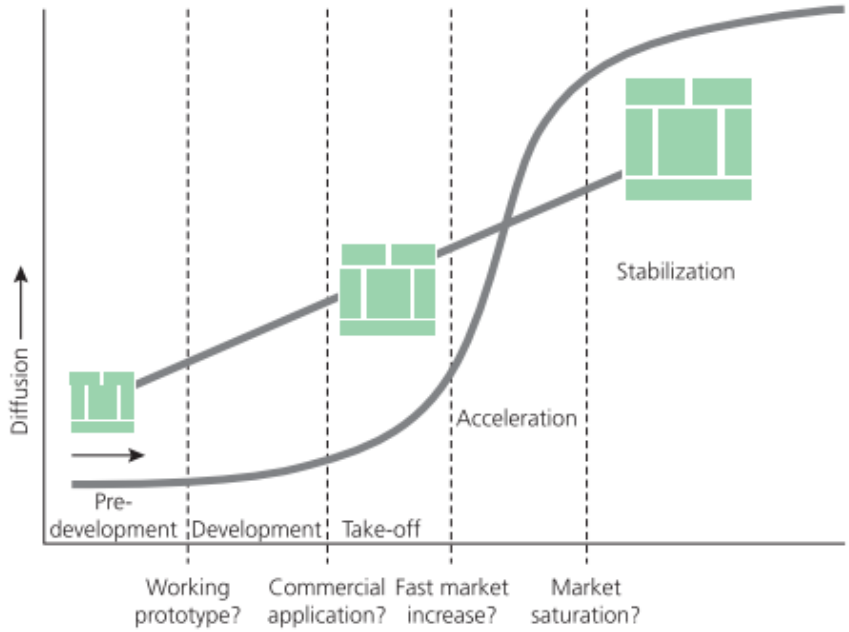

Figure 3.

The diffusion of an innovation portrayed though the phases of development

Note. Reprinted from Technological Innovation System Analysis M. Hekkert, S. Negro, G. Heimeriks & R. Harmsen, 2011 p. 9.

Step 3: System Functions

To assess the further development of the innovation the functions described in Table 3 are used. Each of these functions are related to the structural components of an innovation described in *step 1*. These functions will be assessed and evaluated by experts within the field and further explain how the system is performing. The outcome will be mapped in a spider diagram (Hekkert et al., 2011).

Step 4: Structural cause for functional barriers

With the outcome of the diagram, it can be identified which system function(s) are forming an obstacle for the development. Leading back to which structural component from *step 1* is forming a barrier (Hekkert et al., 2011). Followed by linking this to the structural problem, which is described in Table 2.

Tabel 2. *A description of the possible systemic problems which could occur within the Dutch organic dairy sector.*
Note: adopted from Wieczorek & Hekkert (2012)

Systemic Problem	**Actors**	**Institutions**	**Interactions**	**Infrastructures**
Presence or Absence	Absence of actors	Absence of specific institutions that support the Dutch organic dairy system	Missing interactions due to lack of trust, capacities or differing assumptions	Absence of necessary infrastructure such as knowledge exchange
Quality/ Capacity	Lacking capacity of actors	Hard institutional problems are related to laws and regulations. Soft institutional problems are related to habits and culture	There is a problem with the intensity of the interactions	The quality of the infrastructure is insufficient

Step 5: Obstacles for policy goals
Lastly, to form the right advice for the development of the lacking functions, the vision of the government has to be considered. The analyzed functions which are forming a barrier, will have to be ranked in relation of importance towards the vision. This way, diffusion of the technology has the highest chance of succeeding (Hekkert et al., 2011).

Table 3.
A detailed description of the seven system functions including adopted to the organic dairy sector. Each function includes possible question which can be used when interviewing experts.
Note: Adopted from: Hekkert et al., (2007)

Seven Functions	***Description***	***Possible Questions***
F1 Entrepreneurial Activity	For the dissemination of knowledge within the organic dairy sector, entrepreneurs are essential. The risks and initiatives entrepreneurs take are key for growth and innovation of the organic dairy sector.	● Are there enough entrepreneurs?
F2 Knowledge Development	Scientific and technological knowledge can be developed in different ways. Experimentation by farmers, research public and private institutes or R&D within companies and organizations. Knowledge development is needed for the continuous growth of the organic dairy sector.	● Is the quality and amount of knowledge sufficient and/or up to date?
F3 Knowledge Exchange	Knowledge exchange between actors and stakeholders are essential for the development of the organic dairy sector. Agricultural cooperation's, conferences and trade fairs can be used as a tool to exchange knowledge. Through these networks the sector can share information on certifications, innovations and governmental policies.	● Are there enough possibilities for actors to network?
F4 Guidance of the Search	The establishment of a short- and long-term vision for the growth of the organic dairy sector will stimulate the development of the sector. A common vision on the expectations, needs and requirements is needed.	● Is there a shared and common vision?
F5 Market Formation	Consumers and producers will have to be stimulated to choose for organic. The organic dairy sector will have to compete with the conventional dairy sector. Different activities (as stimulation of supply and demand, and marketing campaigns) will have to lead to expansion of the organic dairy sector.	● Is there enough demand?

F6 Resource Mobilization	For the organic dairy production all involved actors must have access to sufficient knowledge and resources. Financial resources, governmental support, education, skilled labor and accessible farmland.	● Is there enough land for the organic dairy sector to grow? ● Does the government provide sufficient support?
F7 Counteract resistance to change / Creation of legitimacy	The rise of the organic dairy sector can (have) led to resistance of different actors (consumers and actors within the conventional dairy sector). Trust needs to be built within the sector to create legitimacy	● Is there still resistance from farmers? ● Do consumers show resistance to organic products?

2.4. Analytical Framework

To provide a clear understanding on the operationalization process of this study, a conceptual framework is developed, Figure 4. This framework will show through a stepwise process how data is collected, analyzed and compared. By following the process, solutions for the found barriers have been provided and thereby have led to fulfillment of the system functions. Simultaneously this has led to the development of the Dutch organic dairy innovation system.

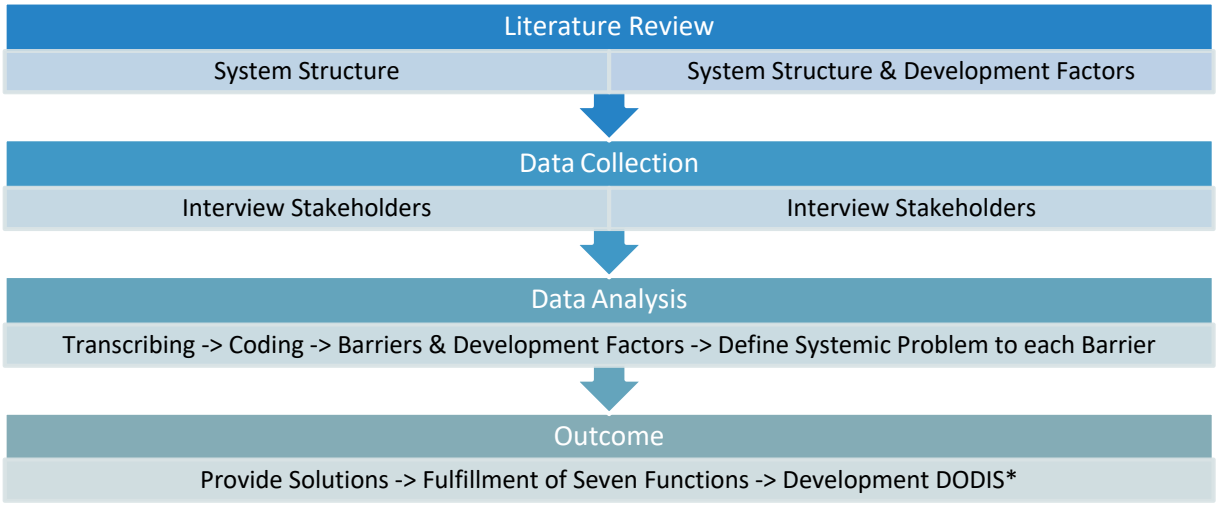

Figure 4.
A visualization of the Analytical Framework through four detailed steps.
**Dutch organic dairy innovation system*

2.4.1. Literature Review

Firstly, a literature review has been performed on the structure of the Dutch organic dairy innovation system together with the structure of the Austrian and Danish dairy sector. This review was conducted to identify the current state of development of the three countries. Relevant articles were found with the use of the scientific research platform Google Scholar, ScienceDirect and Scopus. Terms as transition, development, organic agriculture, sustainable and technological innovation were used to find sufficient articles. Related governmental documents and websites were also examined. Once theoretical saturation of the literature was achieved the development factors were used to formulate questions for the interviews.

2.4.2. Data Collection

Within qualitative research, interviews are often seen as a method of providing in-depth understanding of the field and it will gain insights in views, opinions, attitudes, experiences and predictions (Rowley, 2012). Therefore, this study has used semi-structured interviews for all three countries. Interviews were held in person or over the phone. All semi-structured interviews can be found in Appendix G, F & I. Most interviews lasted between 30 and 60 minutes and were carried out face to face or over the telephone. In total 23 interviews were performed with experts of the organic dairy sector in the Netherlands, Austria and Denmark (Table 4). A more detailed explanation is found in the Appendix E. The sample has included representatives from governmental bodies, NGOs, universities, farmers, processors and retailers. Due to the

complexity of the system it is impossible to imitate the entire system when gathering data from experts (Yin, 2013). However, the most sufficient way of assessing the system is by involving as many experts as possible (Hekkert et al., 2011). The 13 Dutch interviewees were asked questions which were formulated around the seven functions of the TIS framework. Each function is described in Table 3. The collected data has provided this study with in-depth information on challenges within the organic dairy sector. Following the interview, the experts were asked to rank the seven functions by rating statements based on the functions (see Data Analysis; Scoring). This will determine which function provides the biggest obstacle for development (See appendix F with statements). To strengthen the solutions found in the literature review for Denmark and Austria, 10 interviews were held within the agricultural regime of these countries as well. Questions in relation to the seven functions, development factors, and found barriers were asked. Most experts were found after the literature review by contacting the important actors within the organic dairy sector. Other relevant stakeholders were found by visiting a trade fair (Bio-beurs) and through snowball sampling; a form of sampling, which is often used within qualitative research. Snowball sampling provides a researcher with a broader network by asking participants for recommendations of other experts involved within the sector (Robinson, 2014). By using these three methods a total of 63 experts were contacted.

Table 4.
Overview of the total sample of the Netherlands, Denmark and Austria. The sample size is referred to as (n).

Organization	**Number of Interviews**		
	Netherlands	Denmark	Austria
Government	1		2
Milk Processor	2	1	
Farmers	3	1	
Bank	1		
Feed	1		
Research/Education	1	2	1
Supplier	1		
Dairy cooperation	1		
Farming Association	1	1	
Organic Chain Organization	1		
Certification Organization			1
State agency			1
Total (n)	**13**	**5**	**5**

2.4.3. Data Analysis

For this research, the grounded theory method was used to analyze the interviews. Grounded theory is “a systematic method for constructing a theoretical analysis from data” (Gubrium et al., 2012 p.347). It is an iterative process between data collection analysis and theory building (Gubrium et al., 2012). The initial coding framework for the barriers in the Netherlands was created through an iterative process and the seven functions were used as categories. After the first interviews were transcribed the coding framework was created. A constant comparison

between the data and concepts was made to convert the verbal data into barriers. Adoptions to the framework were made until theoretical saturation was achieved. Appendix A shows an extract on how the coding framework was achieved, and Appendix B shows the used coding framework.

The coding framework for Austria and Denmark was created based on the development factors found in literature. After an interview was performed, the transcribed data was coded. The coding framework was adjusted when more interviews where established. By using this iterative process possible missing development factors were added into the coding framework. An abstract of both coding frameworks can be found in the Appendix C & D.

Scoring

To determine the fulfillment of the seven functions all Dutch experts where asked to rate the functions. The experts evaluated statements based on the seven functions by using a systematic scale of value 1 (totally disagree) to 5 (totally agree). The table with statements based on the seven functions can be found in the Appendix F. Scoring of the functions gave the researcher information on which function was the most and least developed. When a function was rated by a respondent with score 5, it would mean that a function is completely fulfilled and functioning properly. In the case that a function scores 1, the function can form the biggest barrier for the development. Therefor the functions with the lowest scores can be seen as the most problematic (Hekkert et al., 2011).

Following this, the barriers found through the coding process were analyzed to provide the most common and important barriers. To decide which barriers were key in the development, a scoring system for the functions and barriers was developed. Every mentioned barrier was scored within the coding framework with value 1, if a respondent did not mention a barrier, the barrier got the value of 0. In total the barriers were mentioned 92 times, the Dutch sample size was 13 (n). To calculate how often one barrier was mentioned, a formula was created: *number of times mentioned/n x 100%.* Example: Lack of Policy was mentioned six times by respondents: *6/13 x 100% = 46%.*

The calculations for the development factors of Austria and Denmark were the same as for the barriers. However here the sample size (n) was 5.

To calculate how often a function was mentioned: *all mentioned barriers within a function / total mentioned barriers x 100%.* Example: Function F1 includes one barrier: Difficult transition process for the farmer mentioned six times: *6/92 x 100% = 7%*

To prioritize which barriers would be addressed three factors were taken into account. The priority of the functions depending on the development phase of the sector defined in the literature review. This was followed by how the experts ranked the functions. And finally it was depending on how often a barrier was mentioned by an expert. The priority of the various barriers is scored on the basis of a three-point Likert scale (Vagias, 2006). This scale divides the barriers in three levels of priority according to the number of times a challenge was mentioned by the respondents. If less than 33% of the respondents mention a challenge it is of low priority (-), between 34-66% the barrier is of medium priority (+) and 67-100% is of high priority (++) (Figure 5). Following this each barrier was linked to one of the seven functions. To get a clear understanding which barrier resisted the development the most, the barriers starting from medium priority or higher within the most important functions were evaluated in the results.

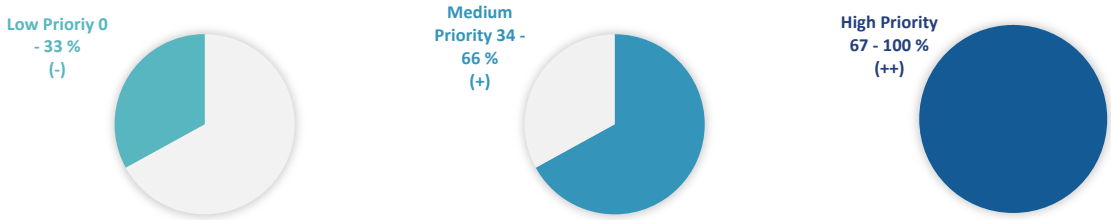

Figure 5.
A visualization of the prioritization scale. Low Priority = 0-33%, Medium Priority = 34-66% and High Priority = 67-100%

Defining Systemic Problem

Each specific barrier is now linked back to the structure of the system to define its systemic problem. By finding the systemic problem, the research got a clearer understanding of what systemic problem and function is mostly hindering the development of the Dutch organic dairy innovation system. Finally, to get a clearer understanding of the possible solutions of this research, a comparative analysis is used where the systemic problems found in the Netherlands are compared to the factors which have led to the development in Denmark and Austria. These factors can lead to the fulfillment of the seven functions. Which could eventually lead to the scaling up of the Dutch organic dairy innovation system.

3. RESULTS

3.1. System Structure

The organic dairy sector in the Netherlands, Denmark and Austria are very similar and are therefore here described as one. The organic dairy sector consists of many different actors and stakeholders from in- and outside the supply chain. These actors are all interacting together and within the supply chain interdependent on each other. This is due to the fact that actors within the supply chain often produce conventional and organic products (Smit, 2011). An example of this would be FrieslandCampina which produces both regular and organic milk. Due to the overlap within the conventional and organic dairy sector the infrastructure is well established (Smit, 2011).

At the beginning of the supply chain you find the national and international feed suppliers, who produce organic feed for the primary producers. Usually these suppliers produce next to organic also conventional feed. The primary producers are organic farmers which produce raw milk. This milk can be processed by the individual farmer on a small scale or the milk is processed on a large scale by a dairy processor. Here the raw milk is turned into fresh milk, cheese, milk powder etc. (Smit, 2011). Many of these products are sold for export to traders and wholesalers. The products which stay in the Netherlands are sold to retailers and food services which are then eventually sold to the consumer. Surrounding the supply chain there are other actors and stakeholders influencing the sector. This network consists of National and international (EU) governmental bodies, each with its own specific laws and regulations, research institutes and support organizations (Smit, 2011). A more detailed structure of the Dutch organic dairy innovation system is described in table 5.

Table 5.
Structure of the Dutch organic dairy innovation system, including examples.

Supply Chain	
Primary producers:	Farmers e.g. Boy Griffioen
Feed producers:	Agrifirm & ForFarmers
Dairy processors:	Friesland Campina, EKO Holland, Weerribben Zuivel
(Discount) Retailers:	Albert Heijn, UDEA, Lidl, Aldi
Research and Education	
University:	Wageningen University; Dairy Campus
Research Institute:	Louis Bolk Institute
University of applied sciences:	HAS Hogeschool
Support Organizations	
Bank:	Triodos Bank
Organic dairy farmer association:	Natuurweide

Organic production chain organization:	Bionext
Governmental Bodies and Policies	
Ministry:	Ministry of Agriculture Nature and Food Quality
SKAL:	Dutch organic control authority
IFOAM:	The International Federation of Organic Agriculture Movements
EU Regulation: COUNCIL REGULATION EC NO 834/2007	
Demand	
Consumers	

3.2. Development Organic Dairy Sector; Netherlands, Austria & Denmark

The rise of the organic agriculture sector in the Netherlands, Austria and Denmark all started about 30 years ago with the implementation of the first European wide organic regulation in 1991; EC Regulation 2092/91 (Michelsen, 2001). Austria joined the EU only in 1995, however they knew the accession to the EU could have a negative influence on their agricultural sector. Austria feared for a major price drop of agricultural products therefor they prepared their agricultural sector carefully by "promoting conversion to organic farming as a general strategy for the survival of Austrian agriculture" (Michelsen et al., 2001, pii). This led to significant growth in Austria (Figure 6).

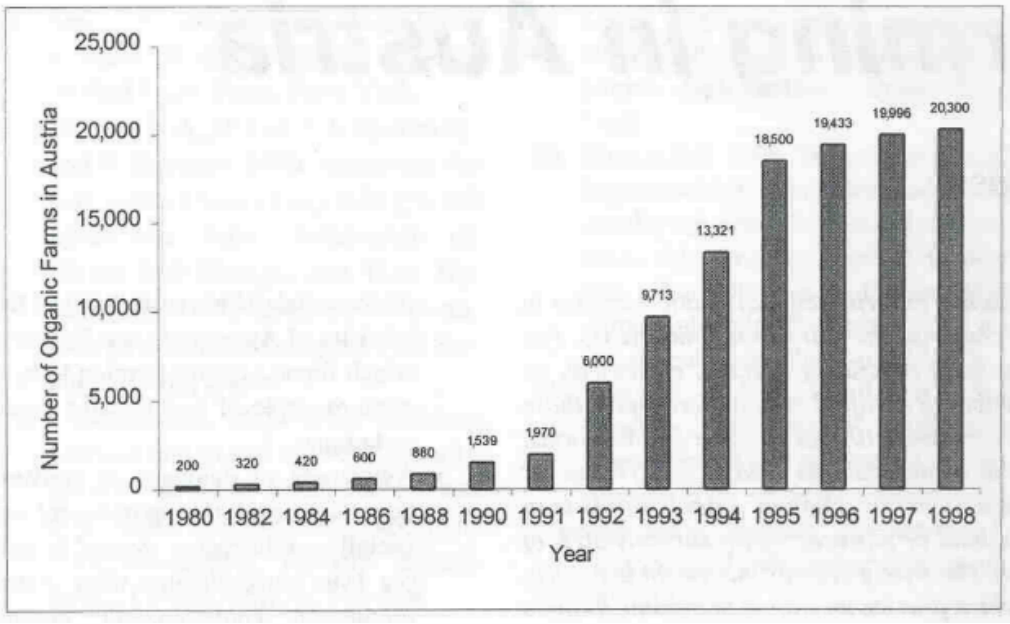

Figure 6.
Development of organic farms in Austria from 1980 until 1998.
Note: Retrieved from Organic farming in Austria. C. Vogl & J. Hess, American Journal of Alternative Agriculture, 1999, American Journal of Alternative Agriculture 14(3), p. 138.

All three countries implemented similar strategies as a national organic label, providing farmers with subsidies for transitioning and maintenance of the organic sector and having a shared vision on the growth of the organic sector (Danish agriculture and Food Council & Organic Denmark & Food Nation n.d.; Smit, 2011; Michelsen et al., 2001). Figure 1, 2 & 6 show that significant growth occurred in Austria and Denmark over the last 20 years. Austria is currently the country with the highest percentage of organic farms and farmland in the EU (Vogl & Hess, 2018). Denmark has the most well-developed organic market worldwide including the highest organic share (Kaad-Hansen, 2020). However, the development of the Dutch organic sector stayed behind. When looking specifically at the organic dairy sector the growth has more advanced in Denmark and Austria in comparison with the Netherlands. This can be concluded when looking at the amount of organic dairy farmers and the organic dairy retail sale in Figure 7 and 8.

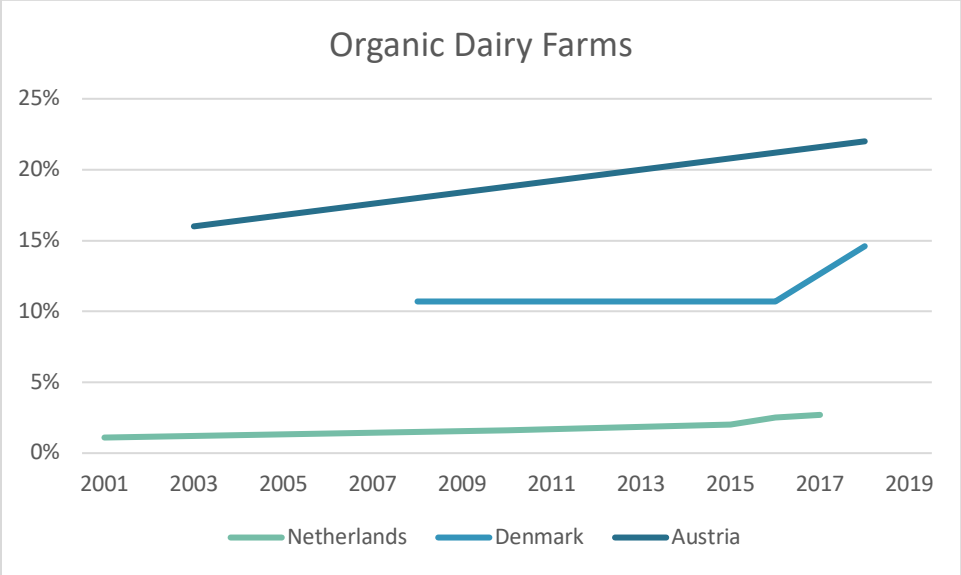

Figure 7.
The development of the total share of organic dairy farms in comparison with conventional dairy farms in the Netherlands, Austria and Denmark. An overview from 2001-2018.
*Note: Data retrieved from: (*Fødevarer & Landbrug 2019; *Krautgartner, 2020;* Ortner, *Kirner & Hambrusch, 2006, ZuivelNL, 2017)*

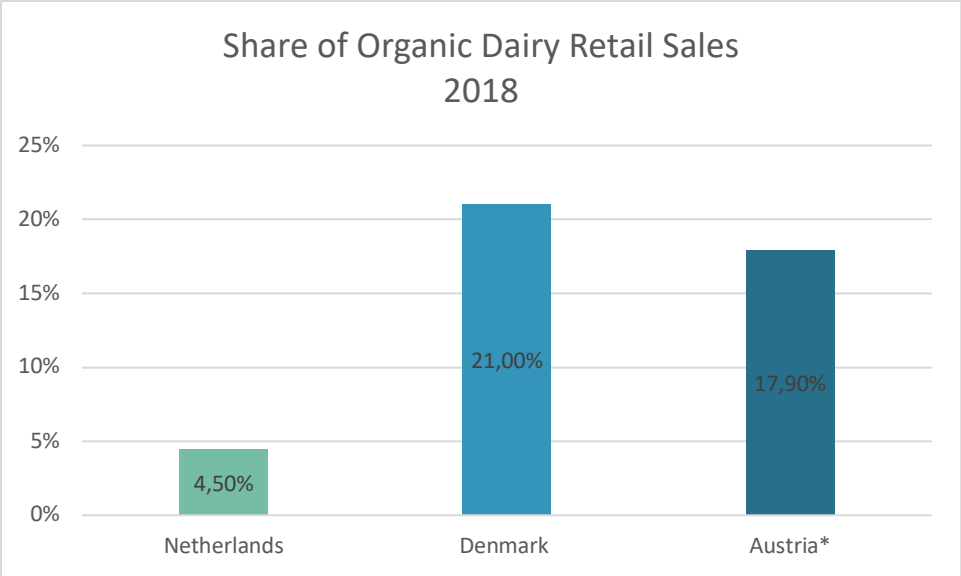

Figure 8.

Share of organic dairy retail sales in 2018 for the Netherlands, Denmark and Austria shown in percentages.

Note: Data retrieved from: (Mayr, 2020; Bionext, 2018; Kaad-Hansen, 2020)

**Austria only portrays the organic milk retail sales.*

3.3. Development of the Innovation

The given information on the organic retail sales, organic dairy farms, organic farmland and market share (Figure 1, 2, 7 & 8) clearly shows the underdevelopment of the Dutch organic sector. Where the development of organic started in Denmark and Austria approximately 30 years ago (Vogl & Hess, 1999; Daugbjerg et al., 2008), the Netherlands stagnated and never developed as well. When looking at the innovation curve (Figure 9), we can conclude that Denmark is in the middle of the acceleration phase. Since 2005, the Danish organic market share has been growing steady each year; from 3% in 2005 to almost 12% in 2018 (Kaad-Hansen, 2020). The Austrian organic market is at the end of the acceleration phase and is moving towards the saturation phase. This is due to the fact that the organic sector suffered from growth retardation for several years. However, the Austrian organic consumption, organic farmland and market share have grown again in 2018. Each factor grew with 5-10% (Bionext, 2018; Niggli et al., 2017). Fast market growth is not occurring in the Netherlands, but they do have commercial application of organic products (Bionext, 2018). Therefor it can be concluded that the Netherlands is at the beginning of the acceleration phase.

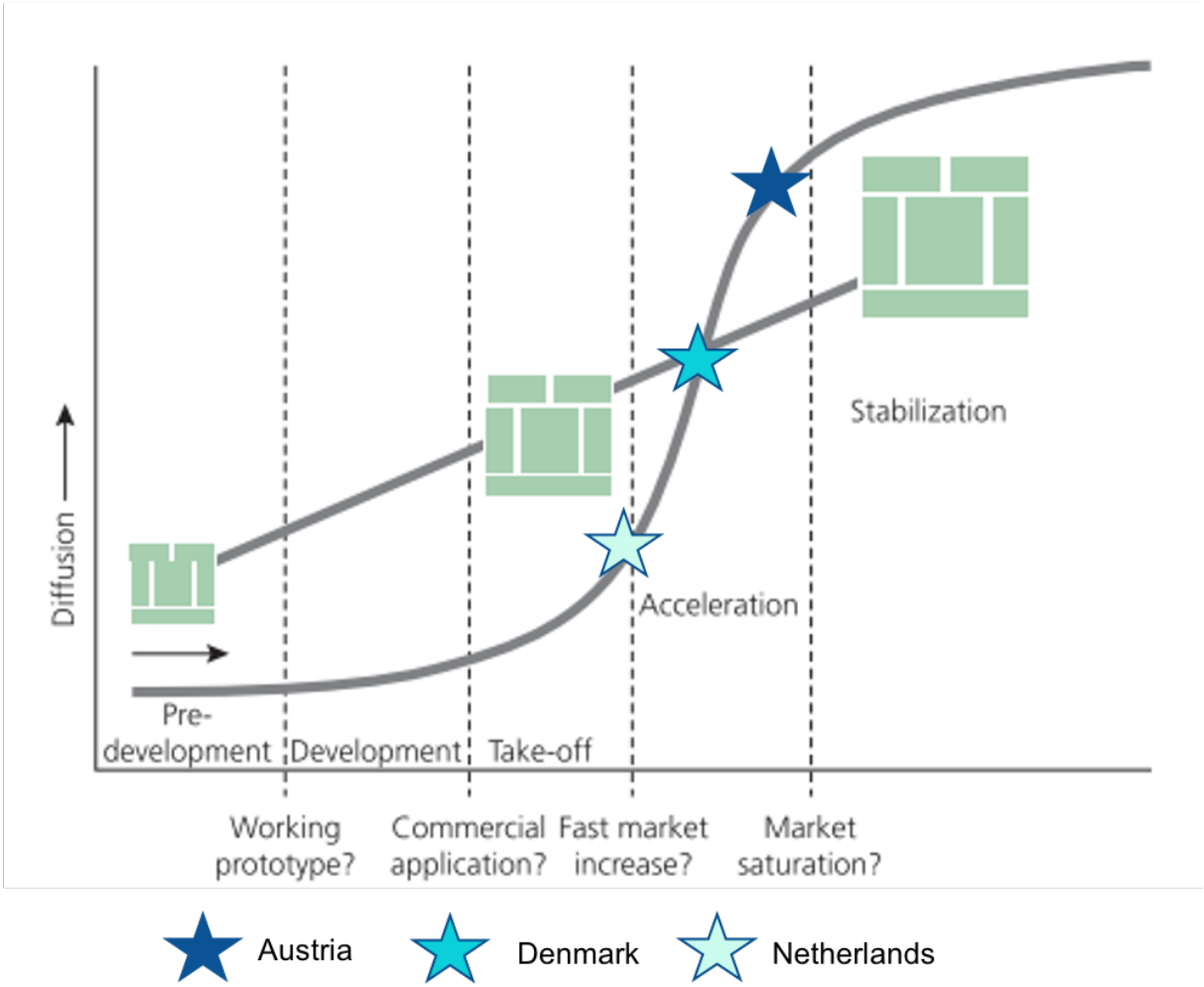

Figure 9.

The diffusion of an innovation portrayed though the phases of development including the development of Austria, Denmark and the Netherlands.

Note. Reprinted from Technological Innovation System Analysis M. Hekkert, S. Negro, G. Heimeriks & R. Harmsen, 2011 p. 9.

3.4. Seven Functions

According to Hekkert et al., (2011), the foremost important function during the acceleration phase is the function of Market Formation. Fulfillment of this function enhances growth and development of the innovation. Functions F1, F4 and F6 play a supportive role during this time. A clear goal and vision within the sector will lead to more available resources, which will enhance the entrepreneurial activity. An increase of entrepreneurs will provide the market with more options and thus enhance function F5. Counteract resistance to change together with the Functions on Knowledge development and exchange are not important during this phase (Hekkert et al., 2011). Therefor Function F1, F4, F5 & F6 are important for the acceleration of the Dutch organic dairy innovation system. Figure 10 portrays a functional pattern of an innovation during the acceleration phase.

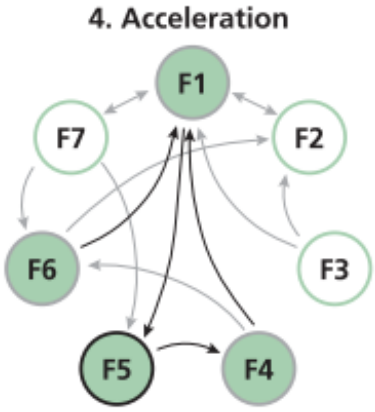

Figure 10.
A possible functional pattern during the acceleration phase of an innovation system
Note. Reprinted from Technological Innovation System Analysis M. Hekkert, S. Negro, G. Heimeriks & R. Harmsen, 2011 p. 12.

The Dutch respondents were asked to rate each function individually (explained in methodology). Figure 11 shows the outcome of these results. All the functions are rated above 3 points. Except for Function F1, (scoring 4.2), all other Functions were rated between 3 and 3,5 points. It can be concluded that Entrepreneurial activity is functioning well. However, since none of the Functions have a significant low score, it cannot be determined from this figure which function is mostly hindering the development at this time.

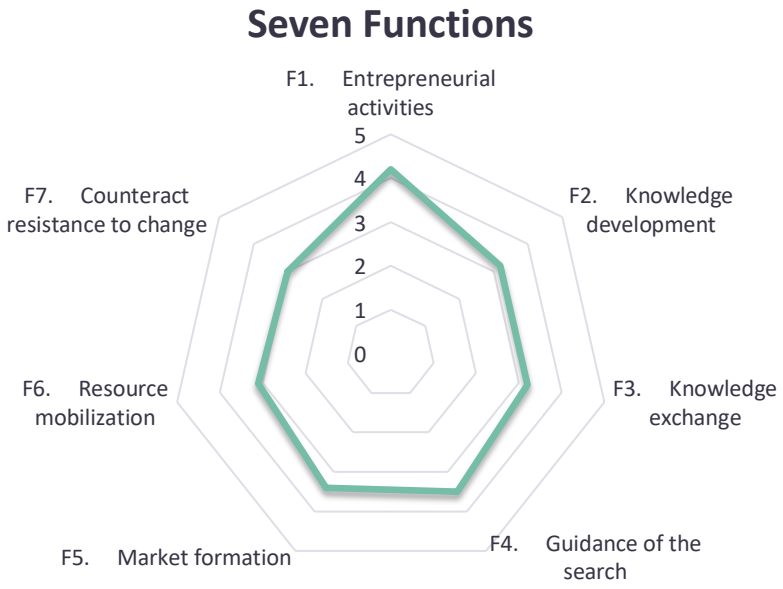

Figure 11.
This figure portrays the seven functions which were ranked by all 13 Dutch organic dairy experts.
1= very weak 5 = very strong

3.5. Barriers in the Netherlands

In this section the results of the 13 Dutch experts are presented. The coding framework has presented this research with 19 possible barriers within the Seven Functions. All barriers with medium priority (>33%) and within the most important function Function F1, F4, F5 & F6 are described per Function. Barriers within these functions could possibly have hindered the development of the Dutch organic dairy innovation system. Following this, each barrier is linked to its specific systemic problem to decide which structural element is hindering the innovation.

Of all 19 barriers, seven barriers were found within Function F5 which accounted for 37% of the total mentioned barriers (Figure 12). Following this, Function F4 accounted for six of the found barriers and coincides with 34% of the total mentioned barriers by the respondents. The barrier of the 'vision on economic growth and export' was mentioned by 9 of the 13 respondents. Function F6 was mentioned by 15% of the respondents and included three barriers. Function F1 with only one barrier accounted for 7% of the total mentioned barriers. Corresponding with Hekkert at al., (2011), Function F2, F3 & F7 only included together 7% of the mentioned barriers and were therefor not addressed in this research.

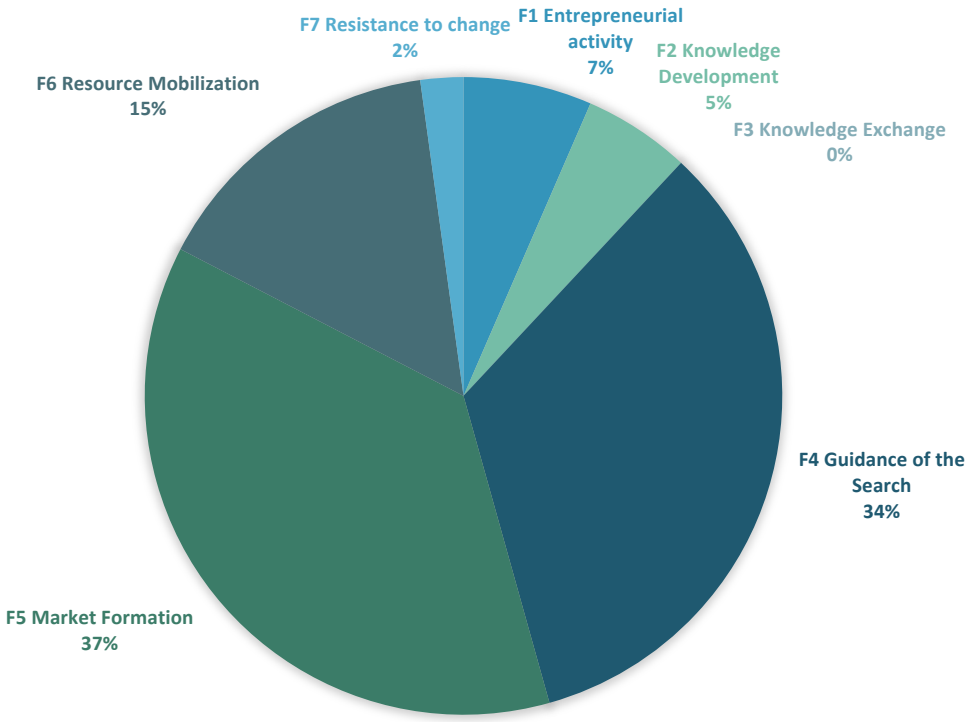

Figure 12.
An overview of the total mentioned barriers within each system function (calculated through description in methodology). Guidance of the Search and Market Formation contain the most mentioned barriers.

Within the four most important Functions (F1, F4, F5 & F6) as described by Hekkert et al., (2011). Eight barriers arose with medium priority (33 – 66%) and two barriers with high priority (>67%) (Figure 13). Function F5 contained three barriers, including the barrier 'lack of demand' which was mentioned most often; by 10 of the 13 respondents, and with 77% of high priority. Function F4 includes four barriers of medium priority and above. Similar to Function F5, Function F4 also

contained one of high priority; Vision on Economic Growth and Export. Function F6 consists of two of the barriers above 33% and Function F1 only included one barrier of medium priority.

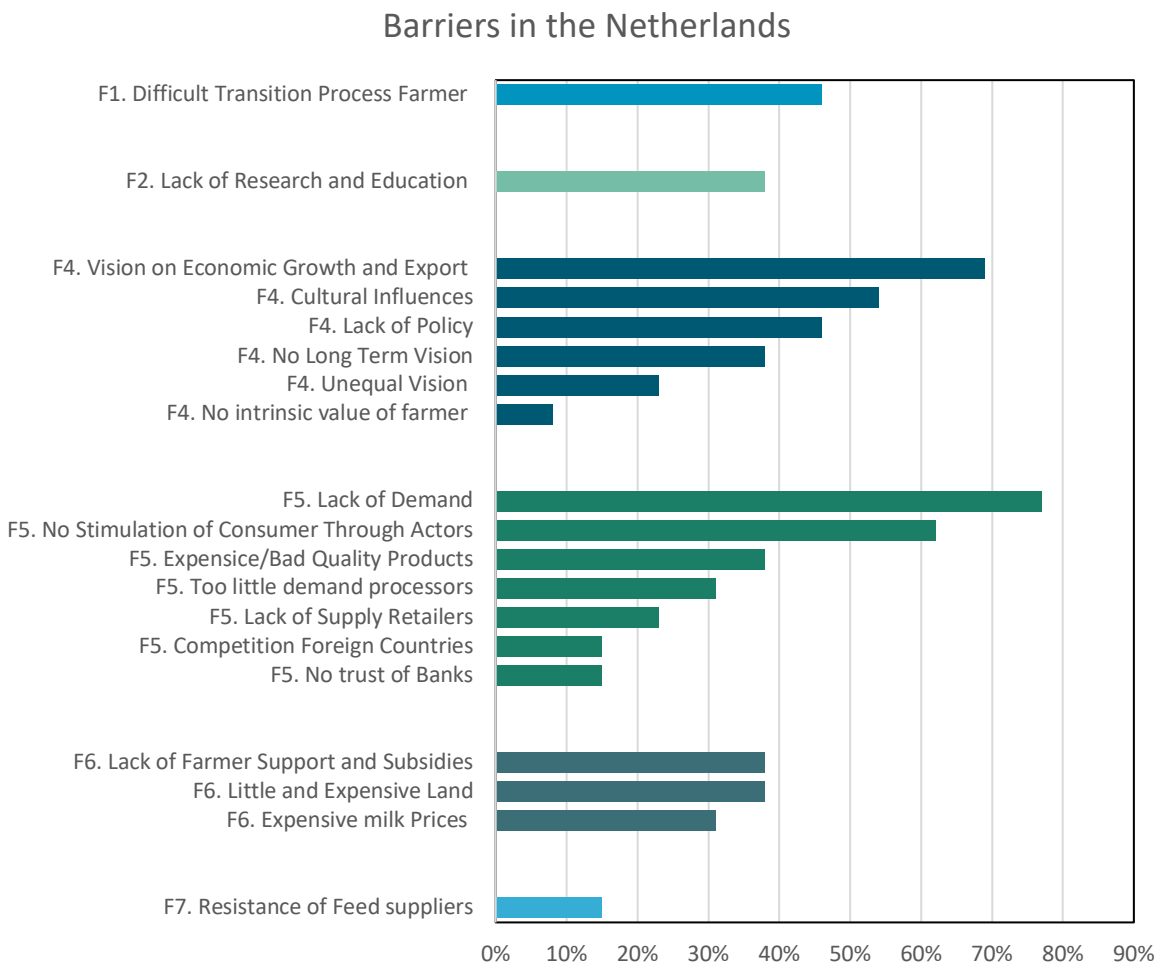

Figure 13.
All mentioned barriers organized by each function. The percentage shows how often a barrier was mentioned by a respondent (calculated through description in methodology).

The following section describes Function F1, F4, F5 & F6 with its corresponding barrier(s). Including a description of the related structural element(s) and corresponding systematic problem(s). A detailed overview is described in Table 6. All transcribed interviews can be found in the Appendix G, H &I.

3.5.1. Function F1. Entrepreneurial Activity

The barrier of the 'difficult transition process for the farmer' was mentioned by 6 of the 13 respondents. In interview 1 NL it was mention that,

"The conversion period is a big investment. During this two year process a farmer makes many extra costs while only receiving the conventional milk price for their product"
– Interview 1 NL

Next to the lengthy process and the high investment costs, a farmer could also include other factors when considering switching to organic. Some farmers might perceive tradition at the farm important. Another can be reluctant due to the risk of conversion, and the future profitability of organic products (Musshoff & Hirschauer, 2008). However, due to the European wide legislation on organic, all European farmers have to comply by the same two-year timeline and regulations.

Systemic Problem

When looking at the structural system, a farmer who has issues with the transition process falls under the actor level within the structure of the Dutch organic dairy innovation system. The transition process can be related back to the lack of competence of the farmer; lack of available resources; or farmers can have a difficulty in defining their strategy. This is called a capacity problem or how Smith (2000) states it, a transition problem. This problem can also be related back to a hard-institutional failure since the farmers do not receive any support from the government.

3.5.2. Function F4. Guidance of the Search

One of the most prominent challenges the Dutch organic dairy innovation system is facing is in regard to the national vision towards organic agriculture. All four barriers (scoring above 33%) (Figure 13) within this function can be linked to the current vision or the vision the Netherlands has had in the past. After World War II, the government wanted to maintain low food prices and stimulated industrial production and export (Meerburg et al., 2009). It is therefore not surprising that the vision of the Netherlands is often still on economic growth and export (69%). Especially since the Netherlands belongs worldwide to a high-income country where international competitiveness is key (Van den Bosch et al., 2011).

Near the end of the 1970s, environmental problems became increasingly evident in the Netherlands which led to stricter regulations to maintain the rural areas. Another change within the sector was the influence of mechanization and rationalization, which led to a decreasing labor force. This led to intensive large-scale farming systems (Meerburg et al., 2009). In 1992 in respondents to the implementation of the EU organic regulations (2092/91), the Netherlands implemented a memorandum on organic production methods ("Landbouwkwaliteitsbesluit biologische productiemethode", 1992). In 2001 a policy on organic farming was implemented which was followed up with a second policy in 2005 (Ecorys, 2005). This policy had the ambition to have 10% of organic agricultural land by 2010 and 5% consumer spending by 2007. During this time the government provided the organic sector with supportive legislation, research, campaigns, chain management and they helped with the facilitation of export (van Dam, 2016). However, the memorandum on organic production was ended in 2007 and followed up with a new policy in 2009 on sustainable production (Ministerie LNV, 2009). The main goal of this regulation was to transition to a more sustainable food system within 15 years (Bleker, 2010). Since 2018 the vision and policy of the government is on circular agriculture including the enhancement of sustainability (Schouten, 2018). The government has changed its vision continuously and is not sticking to a long-term vision. Which was also mentioned 38% of the time as a barrier. It is therefore not surprising that one of the respondents questions the new vision of a circular agriculture, implemented by the Minister of Agriculture, Carola Schouten. According to him, we should work with the tools we already have, and then together with the farmers create

a long-term policy vision (Interview 5 NL). It is also true that a lack of national policy (46%) can be seen as a barrier for the transition of the sector since the Netherlands has switched its vision in 2007, away from organic.

Another factor which could have an effect on the development in the national culture (54%). In Interview 6 NL it was said that the Dutch consumer judges a product on its price and does not appreciate the quality of a product. However, this barrier could possibly be neglected since other more sustainable products are sold in the Netherlands. For example, the market share of sustainable coffee products in the Netherlands went up from less than 1% in the mid 1980s to 45% in 2010 and was expected to rise to 75% by 2015 (Ingenbleek & Reinders, 2013).

Systemic Problem

All systemic problems found within Function F4 can be related back to institutional failure. This can be subdivided into hard and soft institutional failure. The Netherlands has European laws and regulations for the implementation and execution of organic farming principles. However, the national policies and visions have changed constantly over time. Therefore, this can be related back to hard institutional failure since it has to do with legislation (Jacobsson & Johnson, 2000). The influence of the national culture and a vision on economic growth and export can be related back to soft institutional failure (Wieczorek & Hekkert, 2012).

3.5.3. Function F5. Market Formation

Lack of consumer demand (77%) and lack of stimulation of the consumer (62%) are barriers, which have an effect on the growth of the organic sector. Both these barriers are targeting the consumer behavior. According to Kalogeras et al., (2009) several factors influence the Dutch consumer behavior. The consumer chooses conventional products over organic products due to the lower prices, higher availability, product appearance and extensive product variety. Another reason was mentioned in Interview 12 NL which coincides with the barrier 'expensive/low quality products'.

"Consumers are disappointed in the quality and taste of an organic dairy product and therefor do not buy organic products"
- Interview 12 NL

Systemic Problem

The lack of demand by the consumer is a capacity related problem, which falls under the actors' problem. The actor, in this case the consumer does not buy organic products and has a difficult time switching to organic products. Following this, the other actors as retailers, producers or government do not stimulate the consumer to buy organic products. This is also related to a hard-institutional problem since the government does not provide any support or tools for market stimulation nor does the government support the sector from an intrinsic point of view. The problem of missing interaction between stakeholders can be due to different objectives or visions. The barrier of price/quality of the product cannot be scaled as a systemic problem.

3.5.4. Function F6. Resource mobilization

"The land in the Netherlands is the most expensive land in all of Europe!"
- Interview 8 NL

With € 60.000 per ha. the Netherlands has the highest agricultural land prices in all of Europe (Silvis & Voskuilen, 2018). Next to the price, the land is also scarce and often used for many different purposes and not only for agriculture (Interview 11 NL). This is also mentioned by Meerburg et al., (2009) who states that there is a limited availability of land in the Netherlands. This can lead to tension between the different proposed functions (agriculture, nature development, housing etc.). In Interview 6 NL, it was mentioned that if the entire agricultural sector would transition to organic, much more land would be needed. This only counts when the Netherlands wants to keep the same production levels as during the conventional system. Reason for this is that an organic farmer requires more land to produce the same amount as a conventional farmer (Seufert et al., 2012). Therefor a barrier which the conventional farmer is facing when transitioning, is the limited amount of affordable land (within close proximity of its own farm) (Meeusen, 2015). Expansion of the organic sector is partially depending on the availability of land (in close proximity), the price and the struggle between different parties who all propose a different function for the land. These aspects play an important role when scaling up the Dutch organic dairy innovation system.

To enhance the transition of the organic sector, subsidies to farmers during and after the transition phase should be given by the government according to Interview 3 NL. Governmental support and subsidies (38%) is one of the barriers that emerged from the coding framework. From 1994 - 2004 subsidies were given to organic farmers through the RSBP (Regeling Stimulering Biologische Productiemethode) (Ecorys, 2007). Through this support system farmers could get subsidies per hectare of organic land for a period of five years (Ecorys, 2007; Bleker, 2012). The main goal of this subsidy was to promote organic agriculture and thereby decrease the impact on nature and the environmental. Starting in 2005 the SSBP (Subsidieregeling Stimulering Biologische Productie) replaced the RSBP. Instead of subsidizing per ha, the RSBP subsidizes the certification costs (Ecorys, 2007). This regulation ended in 2011 (Rijksoverheid, 2019). Currently the Netherlands gives no support and subsidies to the organic farmer (Interview 1 NL).

"There was a period, around 2005 where the government gave out subsidies for organic farming. Back than becoming organic was 'fun' now there is just nothing available"
- Interview 5 NL

According to Ecorys (2007), the subsidizing tools were appreciated by farmers for the execution of organic principles. Therefor the current lack of subsidies is a barrier for the development of the transition.

Systemic problem
Similar to Function F4, the mobilization of resources is also hampered due to hard institutional problems. The government stopped subsidies for conversion, and this is a reason why many farmers do not convert to organic agriculture. Another issue they face is the expensive and limited amount of land. This barrier can be linked back to an infrastructural problem where the presence of the resource; in this case the land is forming the problem.

Table 6.

A detailed overview of the barriers linked to their systemic problems which are hindering the development of the Dutch organic dairy innovation system. Including the frequency, priority and structural element related to each barrier. Only the barriers with medium priority and above are explained.

Function	Barrier	Frequency	Priority (-/+/++)	Structural Element	Type of Systemic Problem	Description Links Between Systemic Problems
F1 Entrepreneurial activity	**F1. Difficult Transition Process Farmer**	**46%**	**+**	Actor & Institution	Capacity Failure & Hard Institutional failure	The farmers willing to convert are resisted due to several obstacles. During the transition phase the farmer does not receive and governmental subsidies. The process is very lengthy and difficult which leads to high investments while only receiving conventional milk prices.
F2 Knowledge Development	F2. Lack of Research and Education	38%	+			
F4 Guidance of the Search	**F4. Vision on Economic Growth and Export**	**69%**	**++**	Institution	Soft Institutional failure	Lack of coherence between European and national policies, a continuous change of governmental vision by the ministry of agriculture which leads to no long-term vision. While the Netherlands pushes for economic growth and not on sustainable practices.
	F4. Cultural Influences	**54%**	**+**	Institution	Soft Institutional failure	
	F4. Lack of National Policy	**46%**	**+**	Institution	Hard Institutional Failure	
	F4. No Long-Term Policy Vision	**38%**	**+**	Institution	Hard Institutional Failure	
	F4. Unequal Vision	23%	-			
	F4. No intrinsic value of farmer	8%	-			

F5 Market Formation	**F5. Lack of Demand**	**77%**	++	Actor	Capacity Failure	The lack of consumer demand is possibly influenced by the high prices and low quality of the organic products. But also, by the missing stimulation of government to the retail sector through e.g. marketing campaigns.
	F5. No Stimulation of Consumer Through Actors	**62%**	+	Network/ Interaction & Institution	Presence Failure & Hard Institutional Failure	
	F5. Expensive/Low Quality Products	**38%**	+	Other	Other	
	F5. Too little demand processors	31%	-			
	F5. Lack of Supply Retailers	23%	-			
	F5. No trust of Banks	15%	-			
	F5. Competition Foreign Countries	15%	-			
F6 Resource Mobilization	**F6. Lack of Governmental Support and Subsidies for Farmers**	**38%**	+	Infrastructure & Institution	Presence & Hard Institutional Failure	Lacking resource include financial instruments for organic production and limited accessibility to farmland
	F6. Little and Expensive Land	**38%**	+	Institution	Hard Institutional Failure	
	F6. Expensive milk Prices	31%	-			
F7 Resistance to change	F7. Resistance of Feed suppliers	15%	-			

3.6. Structural-Functional Analysis

By using the TIS approach it was possible to determine distinct problems in the functions and structural components of the Dutch organic dairy innovation system. The structural-functional analysis provides a comprehensive overview of the innovation system. It is remarkable that every important function (F1, F4, F5 & F6) within this research struggled with hard institutional failure, also describe in Table 6. It can be said that the two barriers found in Function F4 as the lack of a long-term policy vision and the absence of a national policy are negatively influencing all other functions and holding back the diffusion of the innovation. The interrelationships between these functions are described in Figure 14. The lack of organic policy has an influence on the development of resource mobilization. The government does not provide the organic farmers with enough financial resources in regard to transitioning and maintenance. Nor do they stimulate the growth of the organic farmland through specific land support (Rijksdienst voor Ondernemend Nederland, n.d.). The lack of support and subsidies has a negative influence on the growth of the number of organic farmers. Since organic farmers are struggling with the transition process. A possible reason why the Dutch organic market is not developing is due to the low amount of governmental interference. They provide no support to the retail sector in regard to organic produce and there is also no consumer stimulation. When these functions are not fulfilled, the system will never become part of the incumbent regime.

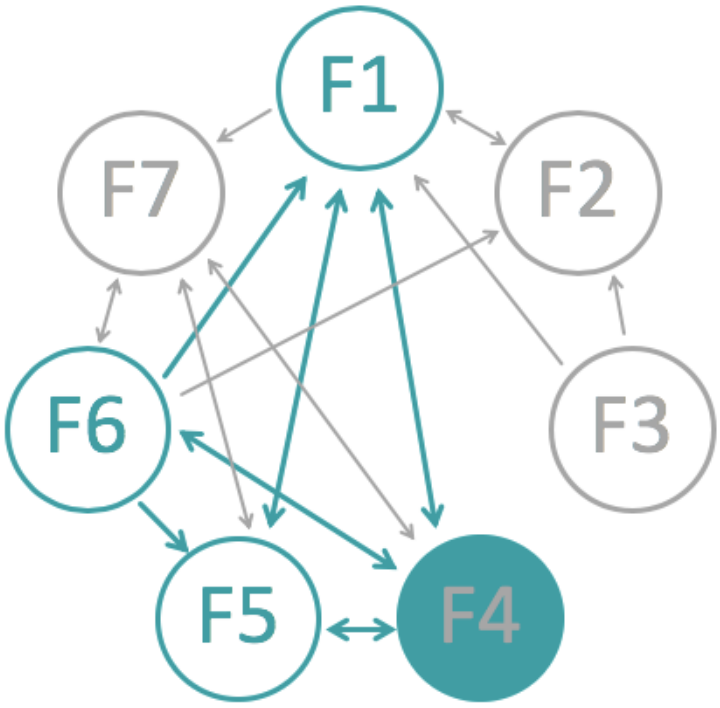

Figure 14.
Illustration of the interrelationships between the seven functions, which are hindering the development of the innovation. Function F4 represents the most influential Function since it has a negative impact on all other functions.

3.7. Development Factors in Denmark

The well-developed organic sector of Denmark can be traced back to the market and policy development. To create a balance between these two factors a 'push-pull strategy' was applied. The Danish government was 'pulling' the market by creating consumer awareness and marketing the organic sector. At the same time the 'push' came from farmer training, farm conversion and development of new farm practices (Dabbert et al., 2004; Danish agriculture and Food Council & Organic Denmark & Food Nation n.d.). The development of the Danish organic sector can be traced back to several factors described below. All factors were confirmed by the respondents see Figure 15.

3.7.1. Organic Policy Development

Starting in 1986, The Danish Ministry of Agriculture showed an explicit interest in organic farming. This led to administering of the red Ø-label, providing subsidies for farmers and a high support for development and innovation initiatives (Djauberg & Halpin, 2010). Due to these implementations the organic sector went from a small group of self-regulated farmers to a big group of strong legal-regulated farmers (Michelsen, 2001).

Subsidies

In 1987, Denmark introduced subsidies for organic farmers. According to 80% of the respondents, these subsidies enhanced the growth of the organic dairy sector in Denmark. A Danish farmer received subsidies during the conversion period for a period of three years. Between 1989 and 1994 the subsidies were mostly aimed at livestock producers (Daugbjerg & Halpin, 2010). In 1994 permanent subsidies for organic farming were implemented. A farmer could get subsidies for conversion, being a permanent organic farmer, reducing fertilizers and a supplement for environmentally sensitive areas (Daugbjerg et al., 2008). This was extended in 1996 where funding was provided for advice to farmers in the transition phase. At the same time subsidies for development initiatives were also given by the state for processing, marketing and distribution of organic products. Denmark also invested into schools, institutions and universities to educate farmers, increase knowledge and product development. (Daugbjerg et al., 2008). Currently the Danish government provides farmers with subsidies for conversion and maintenance of organic farming (Stolze et al., 2016).

Goals and Initiatives

The factor of goals and initiatives was mentioned by 80% of the respondents to have facilitated the development of the sector. In 1995 Denmark introduced its first national action plan to promote organic farming and to satisfy the demand. The progress of this action plan was monitored closely and led to a considerable increase in cultivated areas. In 1999 a second action plan was announced with the main goal obtaining a 10% share of cultivated agricultural land (Dabbert et al., 2004). In 2011 'The Organic Action Plan 2020' was introduced. The main goal of this action plan was to double the organically cultivated area by 2020. To realize this plan stakeholder involvement was a necessity. The idea was that the public sector would lead the way by enabling two objectives. Transitioning from conventional to organic production, and to supply 60% of all public sector kitchens with organic products. Since the implementation, organic farmland has grown by 57% and organic retail sales doubled (Biovision, 2018).

Another governmental initiative was the launch of the Organic Cuisine Label by the Danish Veterinary and Food Administration in 2009. This label was implemented for restaurants to give

consumers an organic option while eating out and to encourage organic production, sale and use of organic food in restaurants ("Organically sourced cuisine", n.d.). The Label is subdivided into three categories gold, silver and bronze. Where gold provides 90-100%, silver 60-90% and bronze 30-60% of organic food in a restaurant (Danish agriculture and Food Council & Organic Denmark & Food Nation n.d.). Finally, the organic farmers also started an initiative around 15 years ago, whereby they invite the public to join them on the so-called "organic day". On this day the organic dairy cows are being released on the grass pastures after wintertime (Danish agriculture and Food Council & Organic Denmark & Food Nation n.d.). It is the biggest national organic event, which attracts 250.000 Danes annually ("Organic Day", n.d.).
An interesting initiative that one of the respondents mentioned was that:

"The government started to implement organic school milk, to stimulate children and their parents to buy organic"
– Interview 2 DK

With this initiative the Danish government creates awareness of organic products by children. The target group is directed at future buyers and not only focused on the current consumers. Influencing children will indirectly influence the parents into buying organic. A smart choice since women with children are most likely to buy organic products (Hjelmar, 2011). All these initiatives had a positive impact on the development of the organic agricultural sector.

Organic Label
To increase the amount of production of organic products in Denmark the Organic Farming Act was implemented in 1987. The Act entails the implementation of the red Ø-label (Michelsen, 2001). Only state-certified farms were allowed to sell organic products (Daugbjerg & Halpin, 2010). The red Ø-label has been a success under consumers, currently 98% of the total Danish population knows about the label and it has received much consumer trust (Danish agriculture and Food Council & Organic Denmark & Food Nation n.d.). All respondents confirmed this development factor during the interviews.

"The logo has been very important for the organic development in Denmark. Because everyone always knows that a product with this label is Danish and organic, and it is very very good" – Interview 1 DK

The trust in the red Ø-label helped consumers buying organic products (Hjelmar, 2011). This can be a possible factor, which increased the development of the organic sector.

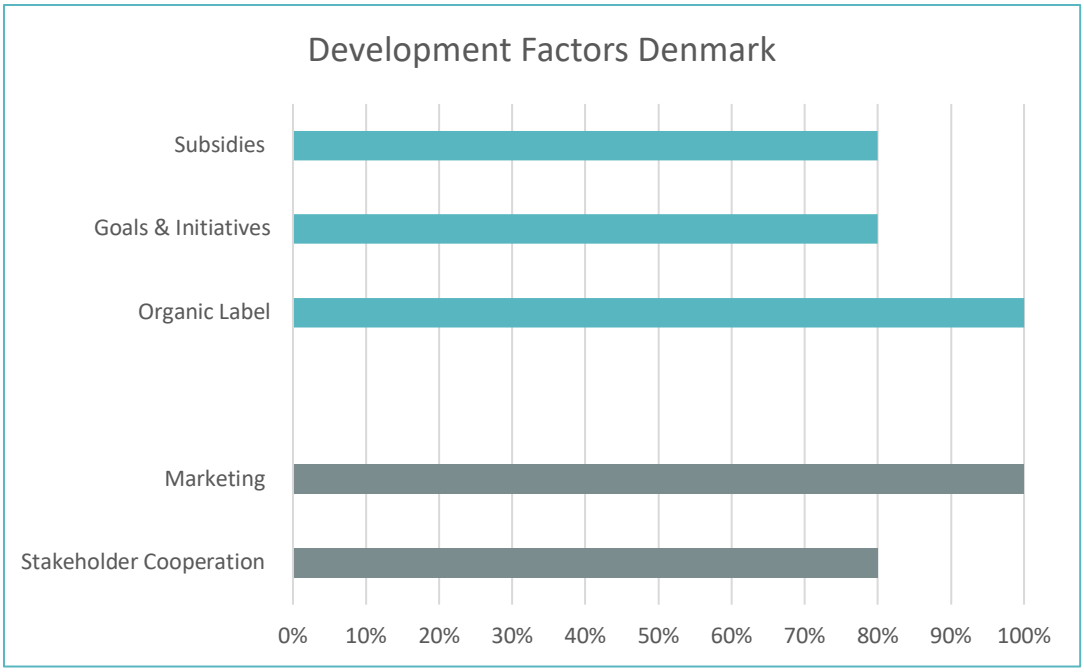

Figure 15.
An overview of the development factors in Denmark. The percentage indicates how often the factor was mentioned by the respondents.

3.7.2. Organic Market Development

Marketing
It can be said that Denmark applies an active market development strategy where interest groups target consumers and retailers (Thongplew et al., 2016). The collaboration between Danish supermarket chains and Organic Denmark* has led to expansion of organic product lines, higher visibility and increased consumer communication. These features, including campaigns of the government and the retail sector effectively targeted retailers and consumers (Thongplew et al., 2016; Danish agriculture & Food council & Organic Denmark & Food Nation n.d.). All Danish supermarkets have embraced organic products and thereby using branding strategies to promote organic by the consumer, and especially attract families with children. To boost the sales, retail sectors introduced their own organic brand and increased the number of products. This led to competition between retailers, this dropped the price of organic products which made them more affordable for the consumer (Danish agriculture and Food Council & Organic Denmark & Food Nation n.d.). The first marketing campaign for organic produce was established in 1993 and led to a major increase of consumer demand (Lynggaard, 2001). All respondents confirmed that marketing strategies increased the awareness of the consumer.

Stakeholder Cooperation
For policy development of the sector it was very important that there was little competition between (organic) farm organizations. Consensus between parties on organic support and resource availability for the organic sector eases the establishment of new policies (Daugbjerg & Halpin, 2010). Besides this, the development of the Danish Agriculture and Food Council** has linked the interest of the organic sector with the agricultural sector. The association considered the interests of all parties as consumers, ministries and industrial organizations (Dabbert et al., 2004). The close cooperation between the organic agricultural sector and the Danish Agriculture

and Food Council** led to positive features. It increased the dissemination of new knowledge, establishment of advisory services and development of organic policies (Dabbert et al., 2004; Danish agriculture and Food Council & Organic Denmark & Food Nation, n.d.).

* A non-profit organization, which represents the entire organic food industry in Denmark.
** Represents the farming and food industries of Denmark including companies, trade and farmers' associations.

3.8. Development Factors Austria

The development of the Austrian organic sector is due to several factors. The government played a very active role with probably the most important factor; the implementation of governmental subsidies and the agri-environmental program in 1995 (Pohl, 2003). Farm conversion happened at a fast pace and in 1997 20.000 organic farms were established (Figure 7). The consumer was influenced due to a high level of organic marketing (Pohl, 2003; Michelsen et al., 2001). The development factors where confirmed by the respondents see Figure 16.

3.8.1. Organic Policy Development

Subsidies

To encourage organic farming the Austrian government implemented several subsidies and incentives to help create the image of "Ecoland Austria" (Vogl & Hess, 1999). "Without a doubt, the organic farming boom in Austria was caused by government subsidies distributed on a federal scale" (Pohl, 2003 p3.). This is confirmed by Musshoff and Hirschauer (2008), they state that financial subsidies increased the willingness of farmers to convert. In 1989 three Austrian provinces started to give subsidies to individual farmers for switching to organic farming. In 1991 the Federal Ministry of Agriculture and Forestry stimulated the growth by introducing subsidies and an incentive program. Grants for organic farming associations and national conversion subsidies were implemented. Also, during and after conversion, assistance was given to the farmer (Vogl & Hess, 1999; Michelsen et al., 2001; Pohl, 2003). In 1992 these subsidies where supplemented by a program which supports organic production for existing producers (Michelsen et al., 2001). After entering the EU in 1995 Austria implemented a new agri-environmental program: ÖPUL. This five-year national aid program encouraged conversion and maintenance of organic farmers. (Pohl, 2003; Darnhofer & Strauss, 2015; Schneeberger at al., 2002). The respondents confirmed the positive influence of subsidies on the organic sector.

"The upswing certainly came from quality-related subsidies from the state and the EU. Austria started early to provide public funds for quality-related food safety in its own country" – Interview 4 AT

*Oesterreichisches Programm zur Foerderung einer umweltgerechten, extensiven und den natuerlichen Lebensraum schuetzenden Landwirtschaft" – "Austrian National Aid Programme for the Promotion of Extensive Farming Which Protects the Natural Living Conditions"

Goals, Laws and Regulations

The accession of Austria to the EU in 1995 played a big role in the agriculture sector. As explained within the development section, Austria feared for major price drops of agricultural products. Therefor conversion was promoted as a general strategy to survive the accession to the EU.

"For us organic was a way to survive and stand out." – Interview 2 AT

Thus indirectly, entering the EU had an effect on the growth of the organic sector (Michelsen et al, 2001).

Since 2001 Austria continuously implemented organic action programs. These action plans were established to enhance the development of the Austrian organic agriculture sector. The first plan was established in 2001, some changes were made to this plan in 2003 and 2005 (Bundesministerium landwirtschaft regionen und tourismus, 2015). This was followed up by the organic action plan from 2008-2013 with one of the goals being to achieve 20% of organic products (Darnhofer & Strauss, 2015). Currently the 5th action plan (2015-2020) is in place with the number one goal to maintain Austria's number one position within the EU when it comes to share of organic farmland Ministry Austria action program (Bundesministerium landwirtschaft regionen und tourismus, 2015)..

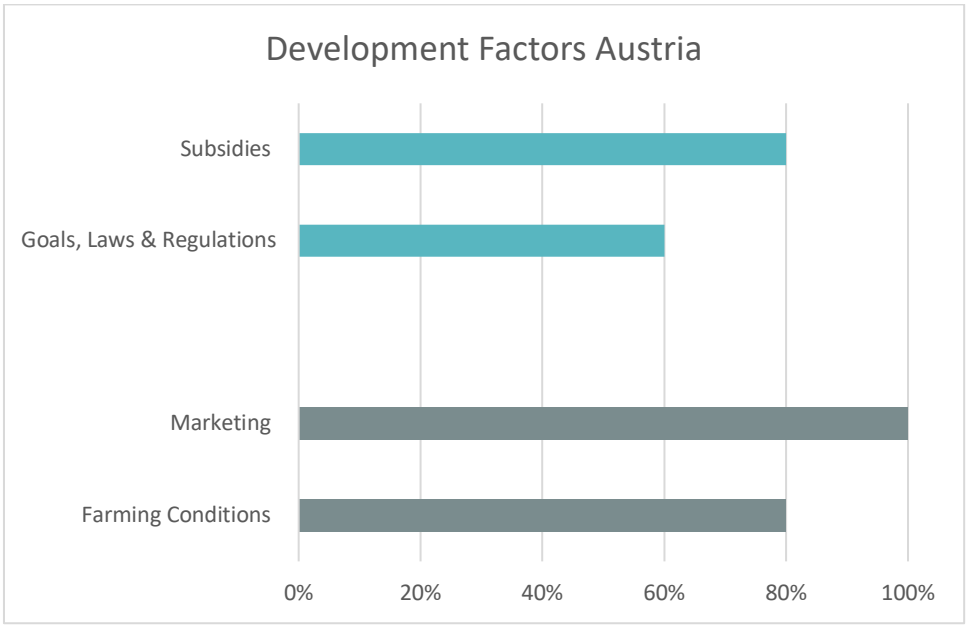

Figure 16.

An overview of the development factors in Austria. The percentage indicates how often the factor was mentioned by the respondents.

3.8.2. Organic Market Development

Marketing

Next to the conversion of organic farmers, the retail sector also played an important role. In 1994 intensive advertising occurred by conventional food retailers and processors (Musshoff & Hirschauer, 2008; Pohl, 2003; Vogl & Hess, 2020), and not only by specialized food shops (Musshoff & Hirschauer, 2008). The biggest Austrian retailer Billa-Merkur started its own organic Product line; Ja natürlich (Michelsen et al., 2001; Pohl, 2003). These companies did not only

advertise organic products and their brand names but also linked the product to positive and healthy attributes as; “well-being”or “pleasure”. These features create a positive image and more public awareness by the consumer (Pohl, 2003).

Farming Conditions

It has been shown that farms in marginal areas have been converting earlier than in other areas (Musshoff & Hirschauer, 2008). In Austria the growth of the organic farms mainly occurred in the Alpine areas. Due to the location and natural conditions in these areas no intensive farming is possible. In 2001, 22% of farms in the Alpine areas was organic, in contrast to 4% in hilly or flat areas in Austria (Musshoff & Hirschauer, 2008). The Alpine areas can thus be seen as favorable farming conditions. In these areas a farmer already followed extensive production practices, which is in line with organic farming (Michelsen et al., 2001; Pohl, 2003).

4. DISCUSSION & POLICY RECOMMENDATIONS

In this section we reflect on the functioning of the Dutch organic dairy innovation system and exploring the possible solutions of a cross-country comparison to enhance the growth of the sector. Through this analysis the research is capable in providing possible tools for the further diffusion of the development.

Transitions are long-term, multidimensional and complex systems (Geels, 2002; Loorbach & Rotmans, 2006). Within sustainable transitions, a long-term vision is used as a guide for short- and long-term objectives within the field (Grin et al., 2011). Guidance and governance are required to diffuse an innovation (Smith et al., 2005; Markard et al., 2012). As shown in the Results section, the Dutch organic dairy innovation system does not have a national policy, long-term policy vision, nor does the government provide currently any guidance. These hard-institutional problems found within Function F4 have a negative impact on all other functions and therefor this function is hampering the development of the Dutch organic dairy innovation system.

Similar outcomes have been found by Schiller et al., (2020) and Sixt et al., (2018). They analyzed specific agricultural niches with the TIS framework. Both concluded that the lack of a common vision (related to Function F4) negatively impacts every function within the TIS. Difference between this study and Schiller et al., (2020) and Sixt et al., (2018) is related to the aspect of time. Organic agriculture has been known in the Netherlands for more than 30 years and included European wide legislation since 1992 (Michelsen, 2001). In contrast, agroecology has only recently become part of national policies in Nicaragua (Schiller et al., 2020). And the implementation of sustainable water harvesting practices in Jordan have only received interest in the last years (Sixt et al., 2018). Therefor it can be said, for the further development of these innovations, the implication of a long-term policy will be essential.

The influence of a long-term policy vision was seen in Austria and Denmark. Both countries mention the influences of continuous subsidies for farmer as one of the most important factors of development, as seen in the Results. Consequently, it is notable that the lack of subsidies was mentioned by many of the Dutch respondents as a barrier. The Rural Development Program (RDP), the funding instrument of the CAP provides each EU country with funding. In Denmark, 13.2% of the funding went to subsidies for conversion and maintenance on organic farms. In Austria the share was above 10%. The Netherlands, however, did not use the RDP for subsidies for conversion and maintenance of organic farmers. They provided no funding whatsoever (Meredith et al., (2018) (See figure 8). Next to the European funding the Netherlands also does not provide any national funding for any organic principles (Rijksdienst voor Ondernemend Nederland, n.d).

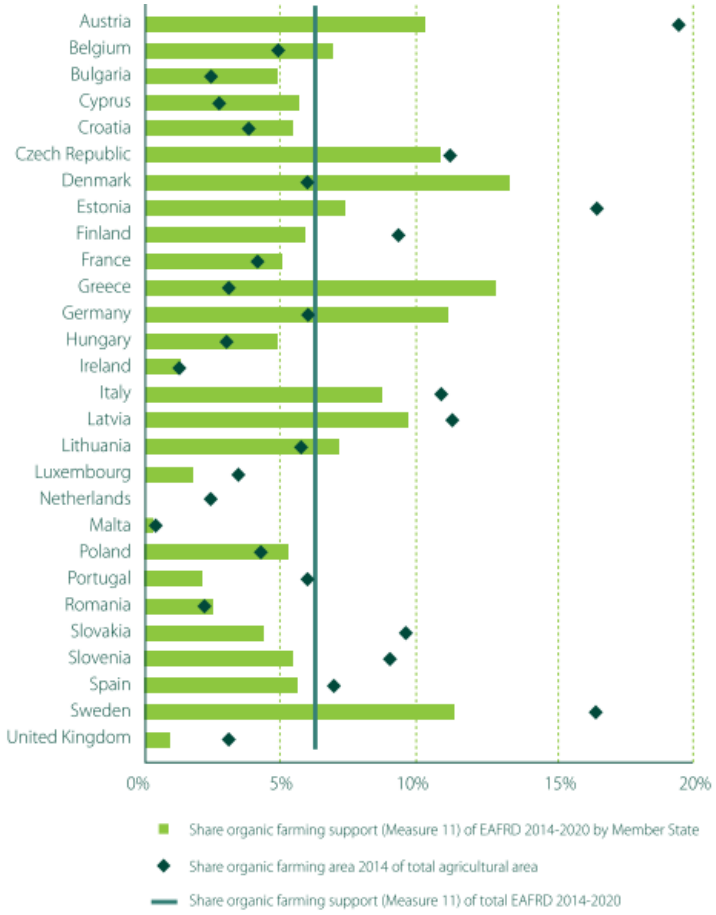

Figure 17.
This figure shows what percentage of the EAFRD each EU country dedicates to conversion and maintenance subsidies for organic farmers. It also indicates the total share of organic farmland in each EU country. Denmark spends most of the budget on transition and maintenance subsidies in comparison with other EU countries, Austria ranks fourth.*
Note: Reprinted from: Organic Action Plans Development, Implementation and Evaluation. S. Meredith, N. Lampkin & O. Schmid 2018. p.23.
**EAFRD: European Agricultural Fund for Rural Development*

Another remarkable point is that both countries used integrated support programs for organic farming also called Organic Action Plans (OAP). These national plans seek to support and develop the organic sector through a detailed analysis of the strengths and weaknesses. Both Denmark and Austria have continuously updated or developed a new program (Schmid et al., 2015). It is shown in the Results that these goals and programs have led to further development of both organic sectors. The Netherlands on the other hand, does not have an organic action plan, and has been slacking in the implementation over the years. However, state involvement is necessary when fostering a green industry (e.g. organic) (Daugbjerg & Halpin, 2010). It can therefore be argued that a long-term policy vision, has the most significant role in the development and the diffusion of the Dutch organic dairy sector.

When taking a closer look on the interrelationships between the functions and systemic problems. It stands out that the lack of a long-term policy vision has the biggest effect on the sector development. Implementation of a long-term policy vision including subsidies and goals

can be seen as a possible solution to scale up the Dutch organic dairy sector. A detailed explanation is shown in Figure 18.

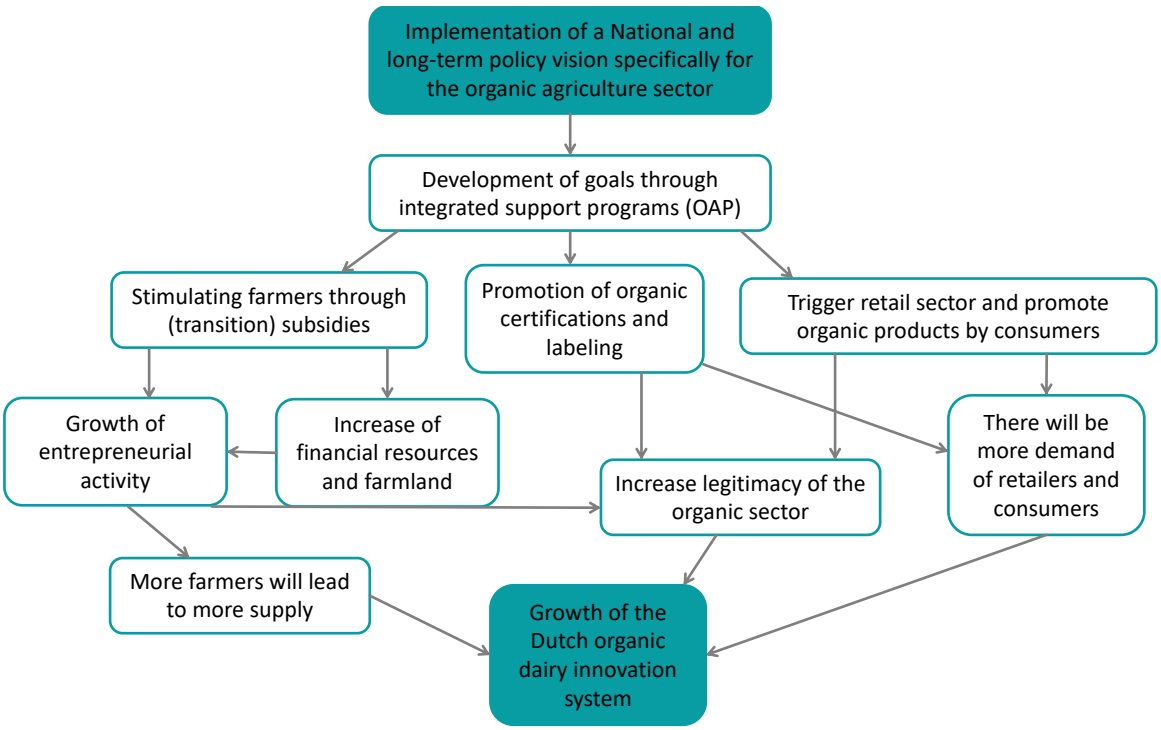

Figure 18.
The implementation of a national long-term policy vision has an influence on all systems within the Dutch organic dairy innovation system and can eventually lead to growth.

Governmental influences as certifications, labeling and marketing play a key role in the development of the organic market. However, changing consumer behavior and altering their consumption patterns is one of the biggest challenges within sustainable development (Thøgerson, 2010). The government is not the only factor to drive organic demand. A consumer chooses also based on their ability to buy a product such as income, knowledge and habits. But factors as beliefs, attitudes and values are also important factors (Thøgerson, 2010; Thøgerson & Ölander, 2006)

5. CONCLUSION

The two main goals of this research were to 1) provide actionable knowledge on the up scaling of the Dutch organic dairy innovation system, and 2) contribute to the growing literature using TIS analysis within the agricultural sector to identify systemic problems which hold back the diffusion of sustainable niches. To answer both questions a structural-functional analysis was performed to identify the mechanisms which are blocking further diffusion of the Dutch organic dairy innovation system. Based on the results, one main barrier was identified which is mostly hampering the development of the organic dairy sector; no long-term policy vision. This barrier weakens Function F4 Guidance of the search together with the other hard institutional problem of a lacking national policy. Since the functions are strongly interlinked, it can therefore be said that the underdevelopment of Function F4 is hindering the development of the Dutch organic dairy innovation system. This research highlights that implementation of a long term-national policy will stimulate the growth of the Dutch organic dairy innovation system. Sustainable transitions are long-term processes, thus development of a sustainable agricultural niche is dependent on the development of Function F4 Guidance of the Search. To strengthen the findings of this research it would be beneficial to make a comparison with other and more EU countries. It would also be interesting to do a similar research but within a different sector (e.g. horticulture). By performing similar research and receiving similar results it might be possible to define a framework for the diffusion of sustainable niches in the agricultural sector.

5.1. Limitations

A limitation that could influence the reliability and validity of this research is that of the comparison between the Netherlands with Austria and Denmark. All countries are within the EU and have to follow the EU law on organic production and labeling. However, the landscape, climate and culture of both countries have an influence on the development of their organic dairy sector. These are aspects that are difficult to compare since these characteristics are tied to its country.

An additional factor that could influence the outcome of this research is the sample size. To gain a broad insight on the barriers within the organic dairy sector 13 experts were interviewed. These experts were strategically chosen to portray the entire Dutch organic dairy system structure. A bigger sample size could have led to more or different barriers and make the findings more valid.

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7. APPENDIX

Appendix A

An abstract of the methodology of the coding framework for the Netherlands

Transcribed Data	Concepts/Barriers	Functions
Transition is a big investment	Difficult Transition Process Farmer	F1
Government will have to implement more laws and regulations	Lack of National Policy	F4
Arable land is limited in the Netherlands	Little and expensive land	F6
The Dutch culture is focused on growth and efficiency	Vision on Economic growth and Export	F4
Too little demand of the consumer	Lack of Demand Consumers	F5
The banks have too little trust in organic farmers	No Trust of Banks	F5

Appendix B

Coding Framework Netherlands

Categories	Barriers	Mentioned in Interview			
		#1	#2	#3	Etc.
F1 Entrepreneurial activity	Difficult Transition Process Farmer				
F2 Knowledge Development	Lack of Research and Education				
	Vision on Economic Growth and Export				
	Cultural Influences				
F4 Guidance of the Search	Lack of National Policy				
	No Long-Term Vision				
	Unequal Vision				
	No Intrinsic Value of Farmer				
	Lack of Demand				
	No Stimulation of Consumer Through Actors				
	Expensive/Low Quality Products				
F5 Market Formation	Too little demand processors				
	Lack of Supply Retailers				
	No trust of Banks				
	Competition Foreign Countries				
F6 Resource Mobilization	Lack of Governmental Support and Subsidies for Farmers				
	Little and Expensive Land				
	Expensive milk Prices				
F7 Resistance to change	Resistance of Feed suppliers				

Appendix C

Coding Framework Denmark

Categories	Development Factors	Mentioned in Interview			
		#1	#2	#3	Etc.
Policy Development	Organic Label				
	Goals & Initiatives				
	Conversion				
Market Development	Marketing				
	Stakeholder Cooperation				

Appendix D

Coding Framework Austria

Categories	Development Factors	Mentioned in Interview			
		#1	#2	#3	Etc.
Policy Development	Laws & Regulations				
	Subsidies & Incentives				
Market Development	Marketing				
	Farming Conditions				

Appendix E

Detailed description of the collected sample

Organization	Number of Interviews		
	Netherlands	Denmark	Austria
Government	Ministry of Agriculture 1		Austrian chamber of agriculture 2
Milk Processor	Friesland Campina, Weerribben Zuivel 2	Naturmaelk 1	
Farmers	Organic dairy farmers 3	organic dairy farmer 1	
Bank	Triodos Bank 1		
Feed Producers	Agrifirm 1		
Research/ Education	Dairy Campus WUR 1	Icrofs, Seges 2	Hochschule für Agrar- und Umweltpädagogik 1
Supplier	UDEA 1		
Dairy cooperation	Eko Holland 1		
Farming association	Natuurweide 1	Danish Agriculture and Food council 1	

Organic Chain organisation	Bionext 1		
Certification organisation			LKV Austria 1
State agency			AMA 1
Total (n)	1 3	5	5

Appendix F

Functions including statements

This table explains the seven functions which are needed to realize an innovation within a society. These functions are adopted to the organic dairy sector. When all seven functions are fulfilled, we can speak of a fully integrated innovation. Every description is followed by a statement. The named 'actors' refer to all relevant organizations, institutes, government agencies, or consumers within the organic dairy sector.
Please provide a value of 1 to 5 in each box behind the statement.

1 = Totally disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Totally agree

Seven Functions	*Description*	***Value*** ***(Please add in a number between 1 to 5)***
F1 Entrepreneurial Activity	For the dissemination of knowledge within the organic dairy sector, entrepreneurs are essential. The risks and initiatives entrepreneurs take are key for growth and innovation of the organic dairy sector.	
	Statement: There are enough entrepreneurs within the organic dairy sector to realize innovation and growth.	
F2 Knowledge Development	Scientific and technological knowledge can be developed in different ways. Experimentation by farmers, research public and private institutes or R&D within companies and organizations. Knowledge development is needed for the continuous growth of the organic dairy sector.	
	Statement: There is enough knowledge development in the organic dairy sector	
F3 Knowledge Exchange	Knowledge exchange between actors and stakeholders are essential for the development of the organic dairy sector. Agricultural cooperation's, conferences and trade fairs can be used as a tool to exchange knowledge. Through these networks the sector can share information on certifications, innovations and governmental policies.	
	Statement: Actors and stakeholders provide enough opportunities to exchange knowledge	
F4 Guidance of the Search	It is important to determine a short- and long-term vision for the growth of the organic dairy sector. A common vision on the expectations, needs and requirements is needed.	
	Statement: The organic dairy sector shares a common goal and vision.	

F5 *Market Formation*	Consumers will have to be stimulated to choose for organic. The organic dairy sector will have to compete with the conventional dairy sector. Different activities (as stimulation of supply and demand, and marketing campaigns) will have to lead to expansion of the organic dairy sector.	
	Statement: The organic dairy sector can compete with the conventional dairy sector. **Statement: There is enough supply and demand of organic products.**	
F6 *Resource Mobilization*	For the organic dairy production all involved actors must have access to enough knowledge and resources. Financial resources, governmental support, education, skilled labor and accessible farmland.	
	Statement: The organic dairy sector disposes enough knowledge and resources.	
F7 *Counteract resistance to change*	The rise of the organic dairy sector can (have) led to resistance of different actors (consumers and actors within the conventional dairy sector).	
	Statement: There is no resistance towards the organic dairy sector.	

Appendix G

Interviews Netherlands

Interview 1 NL

Bionext
21 Januari 2020
Gerdine Kaptijn – Projectleider Kennis en Innovatie

- Wie zijn jullie?

De keten organisatie voor de biologische landbouw binnen Nederland. We doen aan belangenbehartiging van de hele sector, maar we verbinden ook de gehele sector met elkaar. Zodat de boeren ook met de zuivelsector in contact komen en kunnen praten en andersom ook.

- Hoe worden de actoren met elkaar in verbinding gebracht? En hoe wordt hier kennis gedeeld?

We delen vooral veel kennis met elkaar per sector werken we met keten groepen. Bijv. de ketengroep zuivel hier zit een representatief van elk onderdeel binnen de keten (veevoer fabrikant, melkveehouders, poedermelk fabrikant). Hier worden trends en wetgeving updates besproken. Ontwikkelpunten en bedreigingen binnen de sector waar we mee aan de slag willen.

- Wordt de kennis genoeg verspreid?

De melkveesector is goed georganiseerd maar als biologische melkveehouder moet je je vaak ergens aansluiten (bv FrieslandCampina of Eko Holland). Eko Holland doet ook veel aan het verspreiden van kennis. De natuurweide, de vereniging van biologische melkveehouders. Dit helpt voor het bespreken en delen van kennis. Zij hebben onder meer studie groepjes.
Ook via Bionext praten de grote actoren met elkaar, er zijn ook adviseurs die adviseren over omschakeling (er zijn er twee die hier specifiek op adviseren).

- Waarom is Biologische sector zo klein in Nederland?

Het afschaffen van het melkquotum (2015) speelt hier een grote rol in. Voordat dit gebeurde was de melkprijs van biologische melk goed, na de afschaffing ging deze prijs omlaag omdat er veel meer melk op de markt kwam. Toen kwam er grote druk op de prijs van melk. Hierna zie je wel een groei in de hoeveelheid biologische melkveehouders (2016). Maar sinds 2018 neemt FrieslandCampina geen nieuwe melkveehouders meer aan en hierdoor is de groei gestagneerd. Want biologisch moet het hebben van een goeie melkprijs, want een bio boer moet veel meer dingen doen dan een gangbare boer. Daarvoor moet de prijs voor een liter melk ook omhoog. Als er meer biologische melk op de markt komt, zal de prijs dalen. En als er dan niet genoeg vraag is zullen de boeren er ook geen winst meer uit halen.

- Waarom is er niet genoeg vraag naar biologische zuivelproducten? Hoe zouden we dit kunnen opschalen?

Er is wel groei in het marktaandeel en ook wel een kleine groei in het areaal, maar niet zo hard als in de rest van Europa. Dit heeft te maken met de prijs in de supermarkt, het zou ook te maken kunnen hebben met de marketing. En meer promotie om het biologische zuivelproducten onder de aandacht te brengen zal nodig zijn.
Het lastige van vraag en aanbod is dat Nederland erg veel exporteert waardoor het moeilijk wordt om er een conclusie aan te verbinden. De geproduceerde melk gaat vaak niet naar de nederlandse consument. Biologische boeren zouden het liefst voor lokaal aanbod produceren. Er zijn wel een heel aantal boeren die hun eigen zuivel verwerken, maar dit percentage is klein.

- Hoeveel invloed heeft de visie van de EU (greendeal)op Nederland? Zullen we hierdoor meer biologisch produceren?

Dit zal zeker een positieve invloed hebben, biologische wordt ook als iets positiefs genoemd in dit document. Er zal meer aandacht voor biologisch komen, en ook zeker vanuit beleidsniveau. We denken dat er een grotere focus vanuit de Nederlandse overheid op biologisch komt.
De vraag is dan zullen er meer bio boeren komen? Of zullen er meer supermarkten in gaan zetten op biologisch.

Je hebt veel geld nodig als boer om om te schakelen naar biologisch. Het kost veel tijd, je hebt meer land nodig en de grondprijzen zijn ontzettend hoog. Het ligt ook heel erg aan de omstandigheden van een boer of hij/zij gaat omschakelen. De bank speelt hier ook een grote rol in, heeft de bank genoeg vertrouwen? Maar als dat niet lukt, is het niet mogelijk om om te schakelen.

- Is er genoeg stimulatie en middelen? Zijn er genoeg subsidies?

Nee, in Nederland is er weinig subsidie voor biologische landbouw. Vroeger was het meer dan nu. Zelfs al groeit de sector, en is er veel innovatie, de overheid doet weinig aan het stimuleren van omschakeling.

- Zou Nederland en de biologische sector er klaar voor zijn om groter te worden?

De tijd zal zich er goed voor lenen. Boeren zijn gefrustreerd over hoe hun bedrijf in elkaar steekt. Omgeschakelde boeren vonden het vaak geen goed idee om hun dieren altijd binnen te houden, ze zijn klaar met alle chemische bestrijdingsmiddelen. Boeren zijn er klaar voor en zien ook wel dat het systeem anders moet. Er moet een cultuurverandering plaatsvinden. Er komt een nieuwe trend waarbij zo min mogelijke kosten en zo'n hoog mogelijke opbrengst minder van belang is. Er speelt ook een nieuwe trend bij de consument, gezond eten, vegan en ook biologisch groeit gestaag. Er is meer ruimte voor biologisch in Nederland. De vraag is wel of Nederland goed genoeg, kan zorgen voor een eerlijke prijs.
Zal biologisch de vorm van duurzame landbouw zijn die gangbare landbouw over zal nemen?

Eko Holland heeft ook weer ruimte voor meer biologische melkveehouders (ongeveer 10).

- Wat zijn de grootse barrières?

Financien zijn een drempel, omschakelen is een grote investering. Gedurende twee jaar maak je veel kosten maar krijg je nog niet de biologische prijs voor de producten.
De markt die houdt het ook erg tegen, er is te weinig vraag.
Cultuur: Meeste boeren zijn niet principeel tegen boeren

- Hoe hebben veevoer bedrijven een rol op de markt of keten?

Zij spelen wel een grote rol voor de boer. Meeste veevoer bedrijven hebben ook een biologische veevoer tak. De zuivel afnemers hebben een grotere rol zoals FrieslandCampinaen Eko Holland.

- Hoe staat de groei ten opzichte van Denemarken of Oostenrijk?

In die landen heeft de overheid een grote invloed gehad en een duidelijk streven. Wat Nederland helemaal niet heeft gehad. De groei in Nederland is alleen maar vanuit de sector en de consumenten en het is niet een beleidspunt. In het buitenland is dit vaak wel zo, waar ze bij een bepaald jaar een bepaalde hoeveelheid biologisch moeten hebben. Maar waarom doet nederland dit niet?

Interview 2 NL

Agrifirm
29 Januari 2020
Marjan Bierema – Productmanager biologisch

Verantwoordelijk voor het voer gedeelte binnen Agrifirm en opgegroeid op een biologische melkveehouderij.

Vanuit de overheid, de wet en regelgeving wordt vaak bedacht door mensen die niet ind e sector zitten. En daardoor is het heel moeilijk om wetten en dingen erdoorheen te krijgen. Wet en regelgeving moet eigenlijk worden bedacht door mensen van de sector zelf, die precies weten wat voor problemen er spelen en waar ze tegen aan lopen.

- Kijkt en denkt de overheid genoeg mee met de sector om tot goede oplossingen te komen?

Binnen bio, bio is een eilandje op zich zelf. Zij zijn eigenlijk al bezig. Er is al bepaalde wetgeving vanuit SKAL en de EU dan merk je door de hele stikstofcrisis dat de biologische veehouderij al bijna goed zit omdat zij al binnen de maatstaven zitten van wat een land kan hebben en opnemen. De bio boeren doen uit solidariteit mee met de protesten, maar het grootste gedeelte van de bio boeren maakt zich niet druk om de nieuwe wetgeving van de overheid omdat zij al bezig zijn met duurzaamheid en het goed omgaan met land en dier.
De echte grote boeren komen nu in de problemen, en het is niet prettig om op die manier te werken, ze jagen ze in het harnas, en de boeren kunnen geen kant meer op.

Toen het melkquotum werd gestopt, hebben de regelgevingen van de overheid gefaald. Want toen is er niets voor in de plaats gekomen en kregen alle boeren een 'vrij brief' om te gaan vergroten. Dus aan de ene kant kun je zeggen; je had het kunnen zien aankomen, want er komt altijd wel weer iets nieuws in de plaats. Maar de overheid heeft het zelf in de hand gehad want ze hadden meteen een nieuwe wet en regelgeving kunnen maken en toepassen. Zodat je de groei van boeren kon beperken.

- Hoe staat het met de visie van de sector?

De overheid stimuleert geen lange termijnvisie. Er moet een groep mensen komen die hun eigen belangen opzijzetten en naar een werkbaar model toe. Ik heb wel het idee dat dit nu aan het vormen is. Maar het is even afwachten hoe ze dit gaan doen.

- Wat zijn de barrières binnen de sector die de groei stagneren?

Vanuit Agrifirm hebben we hier heel weinig invloed op. Maar de grootste barrière ligt aan het eind van de keten, de consument. Hierdoor gaan boeren niet om, en bij FrieslandCampina nemen ze geen nieuwe bio boeren aan. Dus FrieslandCampina verkoopt dus eigenlijk niet genoeg bio melk. Maar Eko holland heeft wel nog plek voor boeren.

Er is wel wil bij boeren om over te stappen, er zijn nu ook wel een aantal boeren die aan het kijken zijn om de laatste stappen te zetten om over te gaan naar biologisch. De boeren die veel moeten investeren om over te schakelen zien hier vaak vanaf.

- Agrifim staat vooraan aan de keten, wat zouden jullie kunnen doen om de groei te versnellen?

Zij zouden kunnen helpen door middel van informatievoorziening. Maar als er geen vraag is door de consument, is er weinig wat wij kunnen doen. En als er teveel aanbod komt gaan de prijzen van de producten naar beneden.

Misschien moet de groep bio wel beperkt blijven, de rede waarom boeren overgaan is omdat ze zo meer kunnen verdienen, en dat weer terug kunnen stoppen in hun bedrijfsvoering en daardoor meer

duurzaam kunnen werken, hogere biodiversiteit, beter leven voor de dieren etc. Als bio groter groeit, raak je de kracht van Bio ook wel een beetje kwijt!

- Wat is de invloed van de Nederlandse export op bio?

De biologische melkveehouderij wordt bio omdat ze hun producten lokaal willen verkopen. Ze houden van binnenlandse kringlopen. Dus een grotere markt dmv export is dan niet echt mogelijk.
Biologische landbouw hoeft niet altijd kringloop landbouw te zijn. Tussen die twee ligt ook een wereld van verschil. Wil je bepaalde soorten voer wel of niet gebruiken. Wordt bio de voorloop van kringloop?

De vraag van hoe groot wil je bio hebben? Het is altijd mooi en ambitieus om meer bio erbij te hebben. Het is de kracht van bio, dat er maar een bepaald groepje mee bezig is. Anders ben je niet meer zeker van de prijzen.

- Zijn er genoeg middelen (kennis, financeel) binnen de sector? En stimuleert de overheid genoeg?

Er kan altijd meer gedaan worden. Bio wordt gezien als 'mooi' maar het is ook een ondergesneeuwd kindje. Het is wel lastig om in te schatte. In Duitsland zijn deze doelstellingen erg duidelijk. Bijv; 20% van ons areaal moet biologisch worden. Dit soort doelstellingen zijn er niet in Nederland.
Wat is het doel dat we uiteindelijk willen behalen en wat voor rol wil Nederland spelen in de wereld? Het grote exportland gericht op technologie en innovatie of minder export en een meer duurzame rol spelen en uitstralen? Wat is de stip op de horizon waar we naar toe willen?
De overheid kan meer doen voor bio dmv bepaalde regelgeving. Sommige bedrijven hebben ruimte nodig om te experimenteren (R&D). Bio is toch net even het aparte eentje dat net even wat anders zit.

De visie van Nederland lag vaak anders dan die van andere landen. Bij ons lagen de doelstellingen vaak op economische groei en export. Dit heeft ook erg te maken met welke politieke partijen er regeren. Je ziet het wel opkomen in Nederland nu ook met Groenlinks en D66. Ik heb een stiekeme hoop dat wat nu bio is, top bio wordt, en dat gangbare boeren bio boeren worden. Dus dat biologisch boeren de gangbare manieren van boeren worden en hierdoor de prijzen eerlijker worden, meer aandacht voor dieren welzijnen duurzaamheid.

- Hoe staat het met de kennisontwikkeling?

Voor de opleiding tot boer, wordt er erg veel gepushed voor de schaal vergroting. Het vergrote van de bedrijven van 100 naar 200 koeien, nog steeds gericht op economische groei. Bij voorbaat moet je dan al weten of je bio boer wil worden of niet omdat daar wel specifieke opleidingen voor zijn. Maar de keuze ligt te vroeg.

- Hoe zit het met de cultuur binnen de sector en op het platteland?

Ook binnen deze sector, hebben we een typische Nederlandse gedachtegang van meer, meer, meer en groter, groter grootst, en steeds efficiënter. In Denemarken is er een grotere groenere gedachte. Nederland is vooruitstrevend in efficiency. Bio boeren zetten nu in op andere dingen.

Interview 3 NL

UDEA
30 Januari 2020
Steven IJzerman - Kwaliteitsmanager

Achtergrond UDEA
Wij zijn een groothandel en leveren aan alle natuurvoedingswinkels in heel Nederland en ok daarbuiten. We leveren aan iedereen die bio producten wilt. Maar we leveren niet een gewone supermarkten.

- Wat zijn de barrières waar de sector tegen aanloopt? Of wat zijn jullie bij UDEA?

Hun belangrijkste leverancier is weerribben zuivel, het is een vrij overzichtelijke keten. Zuivel Zuivel; een groep van biodynamische boeren is eigenlijk hun belangrijkste melkleverancier en groeit gestaag met UDEA mee. Dit is allemaal goed ingericht, dus vanuit ons (UDEA) hebben we weinig barrières. Er zijn meerde organisaties zoals FrieslandCampina die ook biologische melk produceren. Dus ik heb weinig zicht op de groei van de sector.

Bio groeit elk jaar, en wij hebben ook wel enkele overnames gedaan. Dus vanuit de leverancier groeien we wel.

- Hoe staat het met de vraag en aanbod in de sector?

Biologisch groeit, maar de laatste jaren hebben speciaalzaken het moeilijker gekregen. Dit komt omdat reguliere supermarkten meer biologisch zijn gaan verkopen. Dus er zijn meer aanbieders van biologisch gekomen.

- Hoe kan de Nederlandse biologische sector groeien?

Als je kijkt naar de melk garantie prijs, is die prijs in Denemarken het laagst, dus gaan bedrijven daar hun melk halen.
Er wordt niet bewust voor Nederlandse melk gekozen, en er wordt niet gestimuleerd vanuit de branch, de supermakrt branch om voor nederlandse melk te kiezen.

- Hoe komt dit?

De overheid, in nederland hebben we een vrije markt maar er is concurrentie met Europese landen. Dus Nederland zal niet snel maatregelen nemen dat we geen bio melk mogen importeren uit andere Europese landen.
Dus vanuit de supermarkt, die zullen het waarschijnlijk pas echt doen als mensen meer producten gaan komen. Dus de consument zal meer Nederlands biologische producten moeten aanschaffen. Als er echt een keuze komt vanuit de consument, zal de supermarkt ook mee gaan bewegen. Maar eerder zal dit ook niet gebeuren. Supermarkten zullen lokale producten moeten gaan verkopen. En de consument zal lokale biologische producten moeten kopen.

- Hoe zou dit kunnen worden gestimuleerd? En waar zou dit moeten beginnen?

Er zullen organisaties moeten zijn die dit soort dingen moeten stimuleren, dit zal hand in hand moeten gaan met de overheid. En natuurorganisaties zouden hier ook aan mee kunnen helpen.

- Is er genoeg ruimte binnen de sector om te groeien? Genoeg entrepreneurs, boeren en organisaties binnen de keten en infrastructuur?

Het zal zeker een omschakelings traject zijn, omschakelen naar biologisch duurt sowieso rond de 3 jaar. Maar het zou zeker ingericht moeten worden, en de consument moet meer worden gestimuleerd. Juist nu, met de stikstof crisis in biologisch een uitkomst, nu is de tijd om dit te stimuleren.

- Hoe staat de visie van de sector er op het moment bij? Is er een gezamelijke lange termijn visie?

Dit zou er inderdaad moeten zijn, maar dit is er nog niet. Dit zou de groei van de sector erg helpen en de saamhorigheid van de sector tot groei bevorderen. De push naar een visie moet er wel gaan komen.

- Zijn er genoeg middelen voor een boer om omteschakelen?

Er zijn zeker middelen voor, maar hier heb ik te weinig kennis voor.
Tijdens de omschakel periode mag je de producten nog niet als biologisch verkopen en hiervoor zouden toch wel plannen moeten worden bedacht om de boer hierbij te helpen.
Ze maken namelijk erg veel kosten in het begin die je dan niet terug kan krijgen van het product. Hier zou de overheid financieel in kunnen steunen.

- Hoe staat het met de kennisontwikkeling en verspreiding binnen de sector? En wat is de rol van instituten en universiteiten?

We zouden moeten insteken op innovatie, hoe kunnen we op een efficiënte wijze waardevolle en duurzame landbouw doorvoeren. Er wordt vaak gedacht dat biologische landbouw ouderwets is, maar hier wordt juist erg veel op geïnnoveerd! En dit zou meer moeten worden gestimuleerd, en hier zouden universiteiten ook zeker in kunnen helpen.

- Wat voor innovaties zie je binnen de biologische landbouw?

Dit kan heel breed zijn zoals stalsystemen, een manier van oogsten het gaat over machines, software. Ouderwets met een trekker over het land heenrijden. Er is erg veel innovatie in de agrarische sector maar er is nog steeds ruimte voor meer.

We moeten de consument meer stimuleren om deze sector te laten groeien, zij spelen zeker een belangrijke rol. Wat je ook in de praktijk ziet is op het moment dat een groep consumenten in een richting gaan bewegen dat zelf de markt zich daarop zal gaan aanpassen en dus zal volgen.

Thisa een deens bedrijf

Interview 4 NL

Natuurweide
11 februari 2020
Paul Brinkhof

- Wat is er gebeurd in de sector?

De reden waarom biologisch zo is achtergebleven komt doordat in 2014/15 het melkquotum is afgeschaft. Hierdoor mochten boeren zo veel koeien houden als ze wilden en zo veel melk produceren. Hierdoor is de stikstof crisis tot stand gekomen en hebben we nu een probleem. De overheid had meteen andere maatregelen moeten nemen en een lange termijn visie moeten hebben maar dat is niet gebeurd.

- Zijn er genoeg middelen om de groei van de biologische sector waar te maken? (financeel, areaal, etc). f6

Waar het allemaal begint, is de toegevoegde waarde van de agrarische sector. Wat voegen zij toe aan BV Nederland? Als je kijkt naar de uitvoer cijfers van NL – naar Duitsland en omgekeerd. Kloppen deze cijfers niet. Dit komt doordat Nederland telt ook de buitenlandse producten die zij leveren als exportproducten. Veel goederen die worden ingevoerd en doorgevoerd telt Nederlands als export.

Wat levert een hectare grond op, hoeveel liter melk wordt er op geproduceerd, in dat opzicht is de biologische sector slecht sinds we weinig melk produceren per hectare.

Veel mensen binnen de sector inclusief de banken focussen alleen maar op productie. Als biologische bedrijf naast een natuurgebied zit, ben je helemaal niet meer interessant voor een bank want je gebruikt je grond dan niet optimaal.

De push moet echt vanuit de consument komen!
En de banken durven ook vaak niet genoeg. (triodos bank). De banken kijken te breed want de biologsche sector is klein dus ze durven er ook niet echt voor uit te komen en schuiven het daarom p kringloop landbouw. Maar er is een verschil tussen biologische kringloop en gangbare kringloop.

De groei van de biologische sector die moet komen van boeren die uit zichzelf omschakelen, en niet onder druk van slechte gangbare prijzen. En de consument moet meer specifiek vragen naar biologische producten.

Bij de overheid wordt het woord biologisch niet gebruikt.
De sector die de oplossing heeft; de biologische sector wordt niet genoemd door de overheid. Dat is de macht en heel bijzonder en nadelig voor deze sector.

- Wat is de visie van de sector, liggen de actoren op één lijn?

Bij natuurweide, als sector geloven we wel in een visie. Maar het is een moeilijk proces om iedereen op dezelfde lijn te krijgen. We moeten uitdragen wat we doen, en als de overheid dat niet wilt, moeten we dat zelf maar doen.

- Wat is de cultuur binnen de landbouw? Wordt biologisch geaccepteerd?

Iedereen zit in zijn eigen bubbel. De biologische boeren zitten in een biologische bubbel, de gangbare boeren weer in een gangbare bubbel. Sinds biologische boeren wel weten wat gangbare landbouw is, maar gangbare boeren niet weten wat biologisch is. Hierdoor is biologisch vaak een bedreiging voor de gangbare boeren. En tegelijkertijd, de leveranciers aan wie de biologische boeren leveren die snappen niks van de gangbare boeren. Omdat zij in de biologische bubbel zitten.

Cultuurverschillen hangen ook af aan het gebied waarin je zit, maar je merkt wel dat er meer respect komt voor biologische boeren.
En er is ook nog steeds tegenwerking binnen een sector; waar bio boeren geen antibiotica willen gebruiken, maar de veeartsen nog steeds pleiten voor het gebruikt.
Dus mensen zullen nooit op dezelfde lijn komen. Maar we blijven positief, en we staan er positiever in dan gangbare boeren. En we zien steeds meer acceptatie.

- Zijn er genoeg ondernemers en boeren?

En dat het aantal boeren minder wordt is al jaren zo. Er zullen ook bio boeren stoppen. En welke kant dit op gaat dat weet niemand, maar dat er milieuvriendelijker geboerd gaat worden is één ding dat zeker is! Maar compleet biologisch zal dit waarschijnlijk niet worden. Want de sector omschakelen naar meer milieuvriendelijke praktijken zal voor nu meer effect hebben op land, dier en milieu dan een complete omschakeling naar biologisch. En dit is een trend die ook door de grote supermarkten wordt en zal worden afgedwongen.

- Hoe zit het met de mobilisatie van de sector? F6

True costs zal moeten worden door gerekend in een product op alle fronten. En als dit niet gaat gebeuren binnen de landbouw, dan zal de bio sector klein blijven.
Binnen Nederland is alles gericht op innovatie en economische groei. We hebben ook erg veel export. Maar door deze economische groei wordt er dus gepushed voor massa productie i.p.v. betere en meer duurzame producten.

Als bio boer, boer je ook onder moeilijkere omstandigheden dan als reguliere boer. Omdat je je aan meer regels moet houden, en je eigenlijk minder opties hebt. Er is dus eigenlijk veel minder correctie gebied voor een bio boer. En er komt eigenlijk niet meer steun om bij dit proces te helpen.

- Markt vorming F5

Een grote barrière ligt bij het begin van de keten. De krachtvoer leveranciers, bedrijven die ook grotendeels de stakingen hebben gesponsord. Voor hun is het van belang dat er een grote veestapel blijft, en dat ze veel krachtvoer kunnen verkopen.

Interview 5 NL

De Groene Griffioen
4 februari 2020
Boy Griffioen - Biologische melkveehouder

- Hoe staat de sector er op het moment voor?

Biologisch staat vaak bij bedrijven die gangbaar en biologisch doen niet als prioriteit. Bijvoorbeeld Campina, de melk die ze hebben daar hebben ze een weg voor gevonden. Maar Campina stimuleert niet meer voor lokaal biologisch. Veel van de dingen die ze doen bijvoorbeeld weidevoer wordt geëxporteerd naar China. Campina neemt ook geen bio boeren meer aan. De bio voeren lopen weg bij Friesland Campina waar EKO Holland groeit en er 50 zoekt!
Wij zijn zelf nog wel lid bij Campina. Omschakelaars zullen kijken naar andere opties dan Campina. Omdat Campina niet het meest interessants voor hun is.

- Misschien is dit ook hetzelfde bij veeboer bedrijven?

De bio sector is vaak voor hun niet speciaal aantrekkelijk. Dit kan komen omdat bio boeren meer gericht zijn op werken met minder inputs en daardoor minder te verdienen valt voor leveranciers van bio boeren. Als veevoer bedrijf snap ik als ze zeggen dat we de richting bio niet op willen gaan omdat dat meer geld kost dan oplevert. Maar Friesland Campina zou dit moeten kunnen. Zeker omdat zij het bedrijf zijn die toegang hebben tot alle supermarkten.

- Vraag en aanbod?

Bio producten zijn te koop in de supermarkt. Maar er ligt niet veel en er wordt ook niet veel verkocht.

Wij werken zelf onder MOMA. Maar produceren het meest van onze producten zelf. VLOG genetisch gemodificeerd vrij. Wij verkopen hier in de winkel of in Amsterdam.

Er zijn in Nederland eigenlijk maar twee vormen van landbouw. Gangbaar en biologisch en een heel klein beetje BD Biologisch Dynamisch; dit is bijna een geloofsovertuiging.

Bio is kunstmest en bestrijdingsmiddelen vrij. Wij zelf doen wel wat extra dingen, zoals (bijna) antibiotica vrij. Wij hebben ook een steverigere koe die beter om kan gaan met een kleine tegenslag (ontsteking of verkoudheid). We willen ook meer duurzamer te werk gaan, hogere biodiversiteit, zonnepanelen maar dit kost geld en daardoor zijn we nu ons eigen merk begonnen. Als je je eigen product maakt, kan je je eigen regels maken. We hebben dus ook klanten die hier omgeven. Die geven om kwaliteit en het niet erg vinden om meer te betalen voor een beter product.

- Waar liggen er nog mogelijkheden voor groei binnen de biologische sector? En wat zijn de barrieres?

In NL zijn er 2 struikelblokken.
Een is de cultuur waarin prijs best wel belangrijk is. Meer betalen voor goede kwaliteit voedsel gebeurd hier veel minder dan in bijvoorbeeld Frankrijk of Duitsland. Daar is gewoon een heel ander plaatje. Als nederlandse mensen het daar niet mee eens zijn zouden ze wel naar een andere winkel lopen maar dat gebeurd niet. Dus blijkbaar is de markt vraag nog niet echt aanwezig. Dus de productie en het afzet zijn wel samen in balans. Er wordt misschien zelfs wel meer geexporteerd naar duitsland en Engeland omdat daar meer vraag is.

- Is er genoeg areaal F6

De 8 in Nederland is buitengewoon duur. En de mogelijkheden om te extensiveren, zijn daardoor beperkter. Het gaat vaak om de uitgangs situatie. Als het al een tijd in de familie is, en je dus al veel

grond bezit dus meer geïnvesteerd in grond en productie rechten, dan maak je een goede kans om om te schakelen.

Maar als nieuwe boer, als je een bedrijf zou gaan starten, moet je of echt een exclusieve boer worden of toch gewoon een gangbare boer omdat de grond zo ontzettend duur is.

- Zouden er op deze beide punten meer moeten worden gestimuleerd? Wie kan hier invloed op hebben?

Je kan hier zeker aandacht aan besteden. Zeker voor de grond, er zijn doelstellingen voor natuur en klimaat op de grond ook en zeker voor stikstof op het moment. Dan zouden ze moeten zeggen rond natuurgebieden dat de boeren daar moeten omschakelen want daardoor wordt de stikstof daar lager. Want er komen minder koeien per hectare (dat moet ook worden gestimuleerd). De natuurdoelstellingen en biodiversiteit doelstellingen moeten worden verbonden aan de grond, en het zou logisch zijn als dit wordt verbonden aan biologisch boeren.

Om de natuurgebieden heen zou een cordon van bio boeren moeten komen. Ik ben hier de enige bio boer! Maar als we dit beleid tegen stikstof willen beschermen zouden de boeren meer grond moeten krijgen en worden gedreven om bioboer te worden. Ze moeten ook worden gecompenseerd hiervoor.

- Hoe staat het met de visie?

Er is een periode geweest van stimuleringsmaatregelen. In 2005-2012 waren er wel subsidies voor omschakeling. Toen was het wat 'leuker' en nu is er eigenlijk niks beschikbaar. Alhoewel sommige provincies wel wat proberen te doen, dus meer vanuit lokaal dan vanaf bovenaf. We zouden het stikstof probleem kunnen oplossen door meer bio boeren. Dan heb je twee vliegen in een klap.

- Hoe zit het met de vraag naar bio producten?

Het stimuleren van vraag naar bio producten kost veel energie van de verkoper. Als je echt de supermarkten bedient, dan moeten de supermarkten inspringen. Zij kunnen kiezen om bepaalde dingen te verkopen. Als ze echt keuzes zouden maken voor betere producten zou de consument ook meer kopen. De regering zou hier een handje in kunnen helpen, kijk maar naar de spaarlamp.

- Visie

Er wordt heel technologisch altijd gekeken naar hoe we problemen op willen lossen. Dit zie je ook in de oplossingen die in wetgeving worden veranderd. Stel je start een bedrijf en kijkt waaraan je moet voldoen. Dan zijn er veel regels en technische snufjes waar je je aan moet houden, maar er wordt niet gekeken naar de simpele oplossing van minder koeien! Dit wordt niet gezien als oplossing. De overheid heeft ook vaak geen lange termijn visie. Je wilt een toekomst visie. Bijna alle boeren willen verduurzamen, zelfs gangbare boeren. Als er maar een toekomst visie is en een verdienmodel. En een respectvolle manier van met elkaar omgaan. Maar dit is er gewoon niet, je ziet nu de kringloopvisie van Carola Schouten. Maar er is nog geen enkele maatregel die deze visie tot stand laat komen. Er komt geen verandering. De manier hoe de overheid omgaat met de stikstof en fosfaat crisis, alsof er plots iets veranderd is binnen de sector. Maar dit is niet zo, als ze nu met lange termijn plannen zouden komen, zouden de boeren hier ook enthousiast van worden. En bereid zijn en gedwongen worden om deze producten in de supermarkt te leggen. En geen goedkopere producten ernaast. Dit hoeft niet eens bio te zijn maar in ieder geval een duurzamere vorm.

- Hoe kijk je naar de halvering van de vee stapel?

Een heel lastig topic, zeker omdat het nog niet volledig is doorgerekend. Maar de veestapel zal zeker verkleind moeten worden. Biologisch zal regionale restricties moeten opleggen.

- Hoe hebben kennisinstituten een invloed op de bio sector?

Zeker universiteiten kunnen hier een grote rol in spelen. Je ziet het ook steeds meer gebeuren omdat meer studenten enthousiast worden van groenere en duurzamere manieren. Maar helaas zijn de budgetten voor onderzoek komen van de bedrijven die er belang bij hebben En dit zijn geen bedrijven die verkopen aan bio boeren. Want bio boeren staan er niet op bekend dat ze veel kopen of nodig hebben. Wij proberen te boeren met minder middelen en meer met de natuur. En hierdoor worden er dus minder onderzoeken naar duurzamere vormen van landbouw uitgevoerd. De budgetten voor onderzoek naar de methodes voor landbouw zijn dus lager. Omdat er maar weinig opbrengsten uitkomen. Deze kennisinstituten zouden niet afhankelijk moeten zijn van niet publieke gelden, en hierdoor wordt het een beetje door verpest.
We moeten werken aan het grote plaatje, en niet aan kleine dingetjes om extra geld te verdienen.
Ik pleit ervoor dat de regeldruk wordt verlaagd en als we nou zeggen 20% minder dieren maar geen gezeur over mestinjecties. Zodat wij gewoon ons werk kunnen blijven doen. Dan is er weer wat meer perspectief en ademruimte. En dan kunnen we weer praten over andere dingen.

Als bio nu al niks opbrengt, waarom zou kringloop landbouw dan wel werken? Zouden we niet eerst moeten werken met de middelen die we al hebben en de kennis die we al hebben ipv elke keer wat nieuws te verzinnen.

Economisch zit de wereld in zo'n complexe situatie omdat de producten die we verkopen nooit de volledige kosten uitdrukken.
We kunnen ook niet afstappen compleet van dieren omdat je anders afhankelijk blijft van kunst mest. Minder vlees eten is zinnig, omdat we voor onze gezondheid eigenlijk veel te veel land gebruiken en dieren nemen veel van dit land in, en ook zeker het voer wat voor deze dieren moet worden geproduceerd. Wezouden moeten boeren in balans

- Kan de hoeveelheid export een reden zijn dat we niet biologisch produceren?

Goeie vraag. Ik denk dat we in verhouding weinig produceren. Ik denk dat de bio productie op de binnenlandse markt gericht is op Engeland en Duitsland. De gangbare markt heeft een veel grotere cirkel. Maar ook door de Rotterdamse haven kunnen we meer produceren omdat we veevoer makkelijk aan kunnen laten voeren vanuit het buitenland.
In verhouding hebben we heel veel product die we in een groot gebied afzetten en dat is zo veel meer dan het biologische product wat we dan in een kleine cirkel afzetten. Hierdoor lijkt het percentage bio producten erg klein.

Nee, ik denk dat het verschil in rendement op deze vruchtbare grond niet groot genoeg is om de verminderde productie te betalen en dat je in de wat armere gebieden dus hier op het veen waar het grond wat minder gewaardeerd wordt. Maar in Frankrijk is veel land dus minder productief, en dus het verschil in rendement veel kleiner en dus makkelijker om bio te worden.

Als er in NL veel vraag zou zijn zouden er ook meer bio boeren zijn. Ondanks dit vind ik bio wel al een volwassen sector. Het is eigenlijk de enige sector naast gangbaar die serieus wordt genomen. Hierdoor is het dus ook wel een goed label en kenmerk. Omdat je dan sowieso al een aantal dingen goed doen of op een bepaalde manier.

- Hoe zit het met de cultuur tussen de boeren? Waarom ben jij als enige biologisch?

Twee dingen, er is hier in dit gebied niet genoeg land over. En als je niet groter kan worden qua aantal dieren en je geen land kan bijkopen dan doe je geen eigen verwerking en iedereen wil toch wel altijd een beetje meer. Dus dan maar gangbaar blijven en meer koeien dan verkleinen.
Daarnaast is het ook een stukje acceptatie van de collega's, dit wordt al wel minder. Maar gangbare buren kijken toch nog steeds wel neer op biologische boeren. Zij vinden dat een bio boer zich beter voelt

dan de rest. Maar de acceptatie wordt steeds meer en ik word ook steeds meer als volwaardig gezien. Maar dit zorgt er wel voor dat boeren minder snel omschakelen.

Interview 6 NL

Ministry of Agriculture, Nature and Food Quality (Ministerie van Landbouw, Natuur en Voedselkwaliteit)
5 februari 2020
Hendrik-Jan Roest – Deputy Chief Veterinary Officer

- Waardoor is Nederland achtergebleven in de biologische landbouw

Waar Nederland natuurlijk erg goed is geweest is de technologische innovaties binnen de akkerbouw en melkproductie. Door gebruik te maken van de technologie en kunstmest en antibiotica als groeibevorderaars. Zitten we daardoor nu op het randje naar wat mogelijk is, maar hierdoor niet altijd hebben gekeken naar of het duurzaam is. Of hoe duurzaam de productie is. Dus de driver van de biologische sector is economische groei, en de concucrentie met de wereld markt we delen dit met veel ambitie. En dit moet allemaal passen. En in veel landen is areaal goedkoper, prodcutie middelen goedkoper en wij moeten dus ergens een efficientie slag behalen, en dat is ook heel lang de driver geweest van de Nederlandse landbouw.

Nu lopen we tegen de grens aan en zien we hierdoor een soort van transitie opkomen. De milieu last van de productie hebben we nooit echt meegenomen. We hebben wel altijd de voordelen benut maar niet de milieubelasting mee genomen.

Dit zag je ook bij het principe van de vervuiler betaald. Producenten zijn nu ook verantwoordelijk voor hun afvalstoffen. In de veehouderij is dit altijd een beetje opgeschoven mede door de landbouw lobby. Ook op europees niveau hebben we vaak aangevraagd, dat de normen voor de uitstoot zijn opgerekt zodat we toch konden voldoen aan de europese eisen. Als je de traditionele landbouw vergelijkt met de bio landbouw, Dan heb je een groter areaal grond nodig om hetzelfde te produceren. Stikstof en medicatie worden hier minimaal gebruikt. Dus het potentieel in het areaal en productie middelen, daar leggen we dan zelf een limiet aan waardoor je per difinitie een groter stuk grond nodig hebt dan bij de conventionele landbouw.

Met het feit dat we in een klein land leven en erg technologisch gedreven zijn, is de biologische landbouw nooit een natuurlijke keuze geworden voor veel boeren.

- Zou bio nu niet juist een goeie oplossing?

Waar is de toekomst van de landbouw?
Is dit bij volledig biologisch?
Voor een bio productie heb je een veel grotere hoeveelheid areaal nodig en hiervoor is de aarde te klein. Om hiermee alle mensen te voeden die er ook zijn.

F4
De toekomst is om het goede van de biologische landbouw, te combineren met technologie. Met technologie die focused op aandacht voor milieu, kringloop, duurzaam, biodiversiteit. Waarbij de kringloop visie, met een zo laag mogelijke milieubelasting we zo zurgvldig mogelijk omgaan met grondstoffen tot een productie komen. Dit zal vergen dat de traditionele landbouw meer opschuift naar de biologische variant, de goede kenmerken daarvan. En waarbij de biologische veehouderij opschuift naar het meer implementeren van meer technologische oplossingen om toch tot een productie te komen die in verhouding tot de hoeveelheid land te verantwoorden is.

Deze periode is erg interessant, volgens mij zit je voor een paradigma shift in de landbouw. We hebben heel lang aangehouden zoveel mogelijk produceren voor zo weinig mogelijk kosten, en we zien dat dat niet meer past. Klimaat veranderd, grondstoffen raken uitgeput.

Voorbeeld dat soja wordt geteeld in zuid afrika, waardoor regenbossen worden gekapt en met die soja worden de dieren hier gevoed.

Dus we hebben een andere manier van landbouw nodig en we moeten anders en zorgvuldiger omgaan met onze grondstoffen.

We hebben grote problemen met mest en stikstof fosfaat methaan in Nederland. Deze zullen we moeten verminderen en hier hebben we voornodig dat we de kringloop op een lager niveau sluit.

- Hoe staat het met subsidies, en de vraag en aanbod van bio producten?

De kracht van de biologische melkveehouderij, is als je het totale plaatje bekijkt voor grondstoffen heb ik het vermoeden dat de totale voetafdruk minder is dan de reguliere melkveehouderij. Dit is dus een voordeel tot de traditionele veehouderij omdat je de milieulast gaat meerekenen in de kosten van de productie.

Vraag en aanbod staan redelijk met elkaar gelijk, vraag zal wel wat groeien met het maatschappelijk bewust worden van mensen. Mensen gaan dit ook steeds meer vertalen en wat ze gaan kopen. En dus de consument en burger komen dichter bij elkaar. Maar de massa zal niet in een keer een omslag gaan maken.

F6
Moet deze omslag gebeuren in het biologische deel of in het reguliere deel?
Of moeten we de randvoorwaarde van de biologische productie naar beneden halen zodat gangbaar meer duurzaam wordt. Wat er nu gebeurd met het stikstof en klimaat beleid dat de randvoorwaarde waaronder geproduceerd wordt dat er daar aan gesleuteld wordt. Dus meer duurzaam en dat is precies waar biologisch in uitblinkt.

F5.
Door de kosten die de productie met zich meebrengen en de milieu kosten moeten worden verwerkt in de prijs. Deze worden vaak niet meegenomen in de gangbare prijs. Dit moet worden opgeheven zodat het verschil kleiner wordt. Hoe kleiner het prijs verschil hoe meer je de consument stimuleert om betere en meer biologische producten te kopen

Cultuur
Nederland heeft een bijzondere cultuur. De consument beoordeelt veel op prijs ipv op smaak en kwaliteit van een product. In Belgie en Frankrijk is er een veel hogere biodiversiteit van producten. Die consument zal andere keuzes moeten maken, en nederlanders waarderen de kwaliteit van goede producten niet. En dat is een groot issue, en dit zit vast in de volksaard van onze maatschappij.

Hoe speelt de rol van export?

Export speelt geen rol in de invloed op biologisch sector. We produceren zo veel extra (surplus) wat in andere landen van hogere waarde is dan hier. Bv slagaders, oren, poten, etc. de afzetmarkt is daar veel hoger dan hier.

- Wat is de rol van instituten en universiteiten?

Voor hun is ook zeker een taak weg gelegd. Veel scholing is veel gericht op productie. En dit zal zeker onderdeel spelen in de transitie. De overheid stelt randvoorwaarden om dingen te produceren. Universiteiten moeten aan deze voorwaarden voldoen. En die voorwaarden zijn enerzijds de

milieuregels, en de mate van kringloop stimuleren maar ook de voorwaarden waaronder subsidies worden gegeven aan schoolsystemen.
De HAS in Den Bosch doet wel dingen voor de biologische sector. Dus er zit wel beweging in.

- Overheid stimulering in het buitenland

De visie van Nederland is heel erg van we laten het aan de markt over en de markt moet het zelf regulieren en daardoor heeft de overheid ook minder gesubsidieerd. Nederlands mist de mindset, een cultuur die het niet waardeerd en geen ruimte.

Voor subsidies kan je kijken bij RVO voor ondernemend nederland (rijksdienst). Hier kan je even kijken voor subsidies van de stimulering.

F5
Grond is schaars in Nederland we willen het voor van alles gebruiken!

Interview 7 NL

Weerribben Zuivel
18 Februari 2020

Edwin Crombags – Commercieel Manager

Nederland is niet altijd te vergelijken met andere Europese landen. Nederland exporteert erg veel van zijn zuivel. Het grootste gedeelte van de melk is gebruikt voor de export. In Oostenrijk en Denemarken is een veel groter deel gebruikt voor het land zelf. En dus veel minder export.

De consument in deze landen zijn totaal anders, en hebben een andere visie op het kopen van producten.

- Wat zijn de grootste barrières waar de sector tegen aan loopt?

Je moet beginnen bij de consument, zij moeten een voorkeur krijgen voor biologische zuivel i.p.v. gangbare zuivel. En als de consumenten vraag er is dan komt het aanbod vanzelf. Er is geen tekort aan biologische melkproducten op het moment. Want wat de consument nu vraagt kan gewoon geleverd worden.

- Zijn er genoeg biologische ondernemingen?

Het probleem ligt bij de consument en niet bij de boer. Er zijn genoeg boeren die willen omschakelen, of zelfs al omgeschakeld zijn. Maar die kunnen hun melk niet biologisch leveren omdat de coöperaties de melk niet willen afnemen.
Er zijn zeker genoeg boeren binnen de sector.

- Is de visie van de biologische melkveehouderij op een lijn?

Wat er onder kringloop landbouw wordt verstaan is nog steeds erg vaag. Dit kun je erg ver doorvoeren, zelfs tot biodynamische landbouw. Maar dit is niet waar deoverheid naar toe wilt, want die zitten op een veel lager niveau, en zelfs nog lager dan biologisch. Biologisch gaat veel verder dan want de overheid wil (kringloop landbouw).
Dus de visie ligt niet op een lijn.
Je ziet langzaam dat de hele sector aan het verduurzamen is. Maar dit is nog niet het niveau van biologisch.

- Is er veel weerstand binnen de sector? Zijn er genoeg middelen beschikbaar?

Ik geloof niet dat er veel belemmeringen zijn om om te schakelen. Er is geen tekort aan omschakelaars. Het enige wat zou kunnen helpen, is dat tijdens de omschakel periode een surplus wordt betaald aan de boeren ipv de gangbare melkprijs. Dit is ook voorgekomen in het verleden.

- Is er genoeg kennis? Wordt er genoeg onderzoek gedaan?

Ja de grote coöperaties zullen allemaal begeleiders hebben voor het omschakel traject. Er zijn ook landbouwspecialisten die per bedrijf kunnen berekenen of het haalbaar is om de omschakeling in te gaan of niet.

- Hoe zouden we de consument kunnen stimuleren?

In Denemarken heeft de overheid gestimuleerd in dat alle overheidskantines biologische moesten aanbieden. Dat soort zaken zouden helpen, maar de Nederlandse politiek wil het altijd graag aan de markt overlaten.

Interview 8 NL

Weerribben Zuivel
19-02-2020
Klaas de Lange - eigenaar en ambassadeur Oxfam

- Wat is de grootste barrière binnen de biologische melkveehouderij?

De biologische melkveehouderij zit redelijk vast. Je ziet erg dat het een typisch gevalletje is van het kip en ei verhaal. Wie moeten er eerst gaan de consument of de producent? Op het moment ligt de vraag en aanbod erg gelijk en is er dus geen rede om te groeien vanuit de kant van de producent. Maar het blijft natuurlijk essentieel dat er een goede prijs wordt betaald voor de melk, anders zullen boeren niet gaan omschakelen. En als de vraag groeit zal die prijs dan ook nog goed blijven?

- Hoe zit het met de kennisontwikkeling binnen de sector?

Binnen de melkveehouderij is kennis niet het probleem! Er is genoeg kennis over wet en regelgeving maar ook over de acties die moeten worden ondernomen als omschakeling van toepassing is. De overheid heeft een grote maatschappelijke dienst tegenover de maatschappij om ze te leren over de kennis, technologieën en soorten landbouw die er zijn. Maar ook over de producten die hieruit ontstaan.

- Heeft de sector genoeg areaal om te groeien?

De Nederlandse grond is de duurste grond van Europa. Om de biologische landbouw te laten groeien is extra grond nodig. En deze grondprijzen te kunnen betalen, zal een boer excessieve bedrijfsvoering moeten implementeren. In vergelijking met andere Europese landen is de grondprijs van Nederland erg hoog. In Denemarken is de grond wel 3 keer zo goedkoop, maar leveren de producten dezelfde prijs op als in Nederland.

Een rede voor deze dure grond is dat de overheid veel te veel verschillende functies heeft. Ze willen het niet alleen gebruiken voor boeren maar ook voor natuurontwikkeling gebieden voor zonnepanelen. Er is over het algemeen een intensieve grondclaim. Wat misschien zou kunnen helpen is als een boer natuurbeheerder zou worden. Een boer zouden zijn alleen de functie van broer hebben maar ook het land regeren de biodiversiteit in het dierenwelzijn van vee en wilde dieren. Als dit zo geregeld kan worden zouden we geen natuurbeheerders meer nodig hebben en zou het land beter gebruikt kunnen worden. Het land zou een bredere en meer multifunctionele functie hebben.

- Hoe staat het met de visie van de sector?

De verschillende actoren zitten niet op een lijn. De biologische sector zou graag een ecologisch evenwicht zien op het land. Maar BV Nederland richt zich vooral op de massa export. De invloeden van Europa zullen hier ook maar weinig invloed op hebben. Ook omdat met de kijk op klimaat, stikstof probleem, verhogen van biodiversiteit er ook weer andere functies van het land zullen komen. En nog steeds minder ruimte voor de boer.

Er is ook veel discussie over excessief beleid, discussie over groene producten of daar ook lagere btw op moet en niet alleen op bio. Waterschapslasten, gezonde bodem, die absorbeert zo veel water dan een gebruikte bodem dit hoort ook bij de maatschappelijke verantwoording.

- Hoe zit het met de weerstand binnen de sector? Is er nog steeds weerstand van buitenaf?

Toen wij omschakelden was dat wel zo. Maar dat is wel het oude denken, als je je nu nog wilt vasthouden aan de traditionele manier en je niet de transitie van de landbouw meekrijgt. Sommige houden zich nog erg vast aan de oude verworden rechten en denkwijzen. Bepaalde groeperingen en stromingen hebben dit nog wel, maar die hebben wel hun laatste tijd gehad.

- Wat zouden we kunnen doen om de consument te stimuleren?

De consument heeft natuurlijk veel impact want als zij geen beter voedsel willen eten dan gebeurt er niet zo veel. Zelfde verhaal weer over het kip en het ei.

- Doet de overheid genoeg voor een betere vorm van landbouw?

Nee de overheid doet dit niet, die is hier geen trekker in, ze zouden ook genoeg kunnen stimuleren.

Interview 9 NL

Dairy Campus
21-02-2020
Kees de Koning - Manager Dairy Campus

- Waar werk je voor en wat doen jullie?

Het nationale innovatie en onderzoekscentrum van Wageningen Universiteit, te Leeuwarden. We doen onderzoek innovatie en onderwijsactiviteiten voor ons rekening nemen. We werken voor de gangbare landbouw, niet per se biologisch. Maar we werken met alles wat actueel is binnen de sector, biodiversiteit bodemkwaliteit, waterbeheer etc. We werken grotendeels voor Nederlandse bedrijven. Maar we doen ook biologische projecten. Sinds ik al meer dan 20 jaar in de zuivelsector werk, en ook veel betrokken ben geweest bij een biologisch melkvee onderzoeksbedrijf.

De research kant van Wageningen, is afhankelijk van financieel support. Je moet zelf geld inzamelen dus dan ben je afhankelijk van projecten die worden gefinancierd door het ministerie of bedrijven en dan bepaalt de markt dus, samen met de support van het ministerie welke onderzoeken worden uitgevoerd. Sinds er eigenlijk geen specifieke biologische onderzoeksbedrijven zijn wordt hier nog maar weinig onderzoek naar gedaan. De financiering is gestopt voor de sector en daardoor het onderzoek gestagneerd.

De bal ligt nu bij de industrie, bij de consument als de consument vraagt naar meer biologische producten dan gaat het onderzoek vanzelf gebeuren. Ik ken genoeg bedrijven die willen om schakelen naar biologisch. Maar alleen als daar een markt voor zou zijn. Maar de markt groeit niet echt, waar Oostenrijk maar ook Denemarken 30 % van de melkveehouderijen zijn biologisch. En ook qua techniek zijn ze hier net zo vooruitstrevend als de gangbare landbouw. Het is in Nederland niet direct een tekort aan kennis maar meer de vraag van hoe het komt dat deze markt hier het minder oppakt. Ik zie wel dat gangbare landbouw steeds meer richting biologisch gaat. Dus de consument heeft misschien wel het gevoel dat we beter met de dieren om moeten gaan en dus al wel bewuster kiest. Maar of het dan biologisch is maakt het vaak niet uit. Je ziet ook meer vraag naar speciaal producten, de consument wordt meer getriggerd door ambachtelijk en streek producten. Ik zie dus wel echt een verschil in de manier waarop de consument koopt.

Ik denk dat biologisch het moeilijk vindt om zich te onderscheiden van alle andere soorten landbouw die er tegenwoordig zijn. En hierdoor stagneert de groei.

- Zijn er genoeg ondernemers en bedrijven binnen de sector?

Er zijn genoeg ondernemers, ik ken er zeker wel een aantal en zeker de wat kleinere. Je hebt een keuze als ondernemer en vaak kiezen ze toch voor wat grootschaliger. Dit is een verschil met Oostenrijk waar het veel kleinschaliger is. En in Denemarken niet, dat is net zoals Nederland, en veel gericht op grootschalig. Hier is ook de markt voor biologisch ontstaan. Daar kopen ze veel biologisch, en wordt er ook biologisch producten geëxporteerd.

In Nederland zijn er veel duurzame bewegingen maar die zijn allemaal niet biologisch.

Ik denk dat het ook erg interessant is om te kijken naar de perceptie van de consument ten opzichte van biologische producten.

Een van de redenen waardoor de sector niet groeit komt omdat er te weinig afzet van producten is. Iets wat in Denemarken dus wel gebeurt. Het is een beetje het kip en het ei verhaal.

Ook als je kijk naar de eieren, er zijn zo veel verschillende soorten. En dat zie je met andere producten ook waardoor biologisch wegvalt.

- Hoe wordt de kennisverspreid binnen de sector?

Er zijn een aantal grote bedrijven zoals Friesland Campina, en als zij zien dat er markt is. Nu draait het weer om de marktvraag. Kleine ondernemingen, die kijken nadrukkelijk welke vraag komt er uit de markt.
Er zit wel een stukje sturing in van de zuivelindustrie, over hoeveel en welke mensen ze toelaten. Wat zal er gebeuren als er meer biologisch in de schappen komt, zou de consument dan meer gaan kopen? Maar dan gaan ook misschien de prijzen naar beneden en dan verliezen de boeren het voordeel van biologisch zijn.

Je hebt beperkingen als je alleen richt op biologisch, die sector is klein dus als organisatie of onderzoeksinstituut kun je je beter richten op gangbaar. Daar valt ook niet genoeg te verdienen voor ons.

Vanuit de sector en vanuit de boeren zijn er zeker een aantal die kunnen groeien of extensiveren, die zullen zeker omschakelen naar biologisch. Ook omdat ze dan meer kunnen verdienen.
Maar het probleem ligt bij de afzet, de markt is nog te klein.

- Stel de consument vraagt meer om biologische producten is Nederland daar klaar voor?

Nederland zit als het gaat om productie, wel eigenlijk tot het maximale, tot het plafond van zijn kunnen. Twee derde is voor de export, 33% voor Nederland waarvan 3% biologisch, is al bijna 10 procent. Dan is het een kwestie van verschuiven en dan heeft de grondprijs geen invloed. Want het land hebben we al dus dat is geen extra kostenpost. Want minder dieren, minder productie, maar dit hoeft niet erg te zijn als de prijs hoog genoeg blijft. Zeker bedrijven die niet meer kunnen groeien zullen dan gaan voor maximalisatie, en niet direct voor biologisch.
De ruimte is er an zich wel maar op het moment dat er meer vraag zal zijn gaan de prijzen omhoog.

- Hoe ziet de visie van de sector eruit en ligt die op een lijn?

De visie van biologisch ligt wel op een lijn, maar in de gehele sector zijn een aantal visies. Maximalisatie en kostprijs verlagend denken is bijvoorbeeld een visie, inkomensvergroting.
Maar er zijn veel mogelijkheden. Zo zijn er best een aantal ondernemers die voor zichzelf beginnen en speciaal producten maken. Die komen in een speciale niche te zitten, maar de consument heeft hier wel oog voor. Dan zit er een goed verhaal bij en krijgt de consument een goed gevoel en dat vinden ze leuk. Maar biologisch wordt dan alweer snel vergeten.

- Hoe zit het met de weerstand binnen de sector?

Nee, dit was 15-20 jaar geleden wel maar nu is de weerstand van andere boeren erg laag.

Interview 10 NL

Eko Holland
Pieter Boons – biologische melkveehouder (boer bij Eko holland)
22 januari 2020

- Wat zijn de barrieres binnen de biologische zuivelsector?

Er zijn twee redenen waardoor de biologische zuivelsector zo weinig groeit. Ten eerste ligt dit aan de consument, de Nederlandse consument koopt te weinig biologische producten.

De andere reden is, is dat Nederland en de Nederlandse landbouw erg gericht is op economische groei. Dit is een verkeerde insteek als het gaat om meer duurzame productie en een meer duurzamere maatschappij. Ze moeten weg van massa productie.

De overheid doet hier namelijk niks aan. Ze leggen continu alle schuld bij de boeren en wij moeten alles maar oplossen. Neem nou het voorbeeld van de halvering van de veestapel.

Interview 11 NL

Triodos Bank
Thomas Schara - Relatie manager team landbouw
22 januari 2020

- Wat is de grootste barriere binnen de biologsche melkveehouderij?

De grootste barrière is zeker weten de schaarse grond in Nederland maar ook de prijzen van deze grond. Nederland is een duur land ten opzichte van andere Europese landen, en hierdoor dus erg gebonden aan de grond. De grond is vaak zo duur omdat het voor veel verschillende doeleinden moet worden gebruikt. Hierdoor is het erg moeilijk voor Nederlandse boeren om om te schakelen zeker ook omdat je meer land nodig hebt voor dezelfde hoeveelheid koeien.

Na de tweede wereldoorlog was de landbouw alleen maar gericht op maximale voedselproductie. En deze visie is lange tijd doorgezet, vandaar ook dat Nederland een van de grootste exporteurs is van de wereld. Maar de visie is gericht op groei en export door middel van mechanisatie. We kunnen ook zoveel groeien door de rotterdamse haven, hierdoor is het mogelijk om veel middelen goedkoop te importeren.

De inkrimping van de veestapel zal ook leiden tot minder agrarische bedrijven en waarschijnlijk minder biologische boeren.

Interview 12 NL

Remeker
4 Maart 2020
Dirk jan van de Voort – biologische melkveehouder

- Wie bent u?

Biologische boer van Jersey cows al meer dan 20 jaar en melkproducent.
Ik focus mijzelf hetmeeste op kennis en smaak van de producten en daarbij ben ik een biologische boer. Maar dat is onze core business.

- Zijn er genoeg ondernemers binnen de sector?

Ja we zien genoeg melk producenten boeren etc om de sector te laten groeien, dit is niet het probleem.

- Wat zijn de grootste barrières?

We zien dat afnemers van biologische melk vaak teleurgesteld zijn in biologische melk producten omdat de smaak van deze producten niet beter is dan gangbaar. Hun verwachtingen zijn hoger dan dat het product levert.

Ik zie wel dat veel mensen willen meedoen met de biologische sector. Maar dat mensen best vaak teleurgesteld zijn vooral als het gaat om de kwaliteit van de producten.
Ik ben het hier ook zelf mee eens en erger mij hier ook aan. Dit komt omdat bio boeren wel voldoen aan bijvoorbeeld geen bestrijdingsmiddelen. Maar dit is ook beperkt want insecticide mag je wel gebruiken en daardoor is het dus inconsequent. Maar daar werk je aan mee dat er geen bestrijdingsmiddlen of kunstemest wordt gebruikt. Hierdoor krijg je vanzelf meer bodemleven .Maar het gaat er uiteindelijk om dat je een smaakvol product hebt dat wil de afnemer. En het liefst dat er een bio keurmerk opzit maar dat het eigenlijk geen smaakvol prodcut is.

In de begin tijd had je meer de idealisten je zou dat nu de BD boeren kunnen noemen. Nu is het zo groot geworden, en handige jongens weten heel goed hoe je zeg maar 'clean labelling' bijvoorbeeld bacterie aan het werk zet en E-nummers zeg maar verwerken. Vroeger was dit ondenkbaar.
Toen bio begon waren de producten zuiverder. Er zouden nu stappen moeten worden gezet en hiervoor is de Nederlandse consument te nuchter voor. Het moet kloppen en het product moet wat voorstellen en hierin krijg je het niet verder op deze manier.

Er is nu niks beters en het is jammer dat we niet verder komen, en met betrekking tot de afzet zullen we meer stappen moeten zetten. En dus de kwaliteit van het product verbeteren. Zolang je nog pesticide kunt gebruiken en gangbare mest, en gangbaar stro dat is voor mij totaal ondankbaar maar ondanks alle waarschuwingen gebeurd dat gewoon. En je haalt hier al die middelen binnen via een indirect gangbare manier. Er zijn afspraken over gemaakt om dit niet te doen maar dit gebeurd gewoon niet.

De regelgeving gaat niet ver genoeg, er zijn lobby groepen die dit tegen gaan. En dan gebeurd het niet compleet. Ga je maar is goed verdiepen in de regelgeving. Je mag namelijk nog tot 35% gangbare mest gebruiken. En gangbare stro mag gebruiken. Insecticide mag je gewoon volop gebruikt, komt allemaal in eht systeem en het mag allemaal.

Wordt er nu niet voorgelogen naar de maatschappij?

Dus er moet meer gebeuren bij de wet en regelgeving en stregnere controlles want anders gebeurd er gewoon niets en blijven de producten half half.

Interview 13 NL

FrieslandCampina
Reinier van der Starre - Farmer service specialist
10 Maart 2020

- Wat zijn de barrières die jij hebt gezien?

Voor een zuivel bedrijf als Friesland Campina is het belangrijkste dat er genoeg markt vraag is naar bepaalde zuivel producten. En dan de consument daar ook voor betaald.

- En waardoor gebeurt het niet dat de consument meer koopt?

Dit komt onder andere door het prijsverschil tussen biologisch en gangbare zuivelproducten.

De markt voor biologische zuivel is maar een erg klein gedeelde in vergelijking tot onze gangbare zuivel. Hierdoor ligt onze focus op gangbare melk. Biologisch is een te klein onderdeel om op te focussen.

- Waarom nemen jullie niet meer biologische boeren aan?

Bijzondere melkstromen, als je een extra certificering nodig hebt om andere melk te leveren dan gangbare melk. Wat wij kunnen afzetten in de markt is in principe markt gedreven. Ontwikkelingen om op in te spelen, daar hoort een bepaalde hoeveelheid melk bij en zo proberen wij dat af te stemmen. Als wij meer biologische melk innemen of een andere bijzondere melkstroom, en wij kunnen dat niet kwijt voor die specifieke marktprijs dan lopen wij verlies en dat schiet niet op. Ons doel is niet om biologisch groot te maken ons doel is om een zo hoog mogelijke melk prijs te realiseren voor al onze melkveehouders.

- Hoe staat het met de kennis binnen de sector?

Er is voldoende kennis binnen de sector. Wij hebben zelf geen R&D voor onze melkveehouders voor het ontwikkelen van bijvoorbeeld biologisch voer, maar dit doen we ook niet voor de gangbare boeren.

- Wat vind je van de visie van de biologische sector? Zitten zij op een lijn?

  Er is wel een duidelijke visie en gemeenschappelijk doel. Dat is wel duidelijk maar de vraag is wel of het wel vooruitstrevend genoeg is. De biologische landbouw vindt het wel goed hoe het nu allemaal is en willen niet per se meer. Je hebt vas wel gehoord van de aanvulende norm, maar met alle respect, dit is opgezet door melkveehouders zelf en niet bijzonder innovatief en vooruitstrevend of ambiteus. Het zijn natuurlijk wel de goede dingen maar niet zo vooruitstrevend als misschien verwacht.
  Iedereen weet wat biologisch is maar het kan vooruitstrevender.
  Deze is binnen alle actoren op 1 lijn. Maar voor de landbouw in het algemeen is deze enorm versnipperd. Al die verschillende visies en stromingen zijn allemaal wel vertegenwoordigd binnen Friesland Campina, alle verschillende meningen.

- Zijn er genoeg middelen en ondernemers subsidie en land voor de sector om te groeien.

  Dit is niet het probleem, als er meer aanbod komt zou de sector daarop kunnen inspelen. Want de middelen en boeren zijn er al.
  Maar dit hangt er wel van af waar en hoe en bij welke product segmenten, dus specifiek op bepaalde producten. Op het moment dat er meer vraag komt, gaat de ontwikkeling ook steeds sneller. Je hebt grote volumes nodig om dit soort zaken aan de gang te krijgen.

  Zijn er nog andere barrières?
  De sector is vooral afhankelijk van de vraag van producten. Als deze toe neemt, dan zal de sector ook groeien.

- Kennisontwikkeling

De Europese wet en regelgeving, en de Skal certificering, daar zie ik een probleem voor bio. De sector is misschien niet innovatief genoeg. De voorwaarde waaraan je moet voldoen om biologisch te zijn die zijn al behoorlijk gedateerd en daar veranderd niet zo veel meer aan. Terwijl er heel veel ontwikkelingen zijn binnen de melkveehouderij. OP het gebied van dierenwelzijn, duurzaamheid etc. Waarin andere melkveehouders grotere stappen zetten dan biologisch. Dus eigenlijk zou de wet en regelgeving voor biologisch moeten worden aangepast aan de veranderingen van nu.
Daardoor zijn biologische boeren misschien zelfs al wel ingehaald door andere boeren.

- Marktvorming

Er is niet genoeg vraag om de sector te laten groeien. Ook wel een voorwaarde voor de biologische melkveehouder is dat zij er een eerlijke prijs aan overhouden. Waar hij mee kan voortbestaan op langere termijn. Maar stel dat de biologische sector heel hard zou gaan groeien en heel groot wordt, zal dan niet de prijs onderdruk komen te staan?
Als biologisch standaard wordt zouden de boeren dan nog wel hoog genoege prijzen krijgen voor hun melk?

- Mobilisatie van middelen

Er zijn genoeg middelen de vraag is alleen gebruiken we ze ook. Dat is weer wat anders. Er is genoeg beschikbaar alleen financieel staat de sector onder druk.

Biologische heeft de laatste jaren qua image enorme verbeteringen doorgemaakt en biologische boeren wel echt als volwaardig worden gezien.

Appendix H

Interviews Denmark

Interviews 1 DK

Danish Agriculture and Food Council
Ejvind Pederson - Manager Danish Agriculture and Food Council
March 5th, 2020

In Denmark we have 425 organic dairy farmers. It's about 11 % of all Danish dairy farmers. The organic milk production was 12% of total dairy production and growing about 2% last year. A lot of farmers have converted in 1015,16 and 17. It has been growing, this is the same as in Germany and France. Growing very fast, in France it grew by 16%. But in these countries only about 3.5 % of total production. In Austria and Sweden, the share is much higher.

The share for cheese and butter is also growing but milk is the easiest because the price difference is not that big that's why people switch to organic milk first.

- Did you face any barriers in Denmark in the past?

At the starting point, in the late 90s we had too much organic milk. Much more than the consumer was buying. This started in the late 90s because you got money from the European union if you switched your stables and converted to organic. A lot of organic milk in this time period and next 10 years followed was sold as conventional milk because the demand was lower. In 2000 the retail shops focused much more on organic production and made market campaigns where they told about organic production and what the difference was between organic and conventional. This was mainly due to the retail sector. They did a lot of campaigns for organic products. And the government gave some supply as well for the campaigns together with other organic institutions.

Followed this the ball started roling and people started to buy organic. A interesting point is that the discount sector also got involved. Neto a discount retail shop in Denmark. Reason for this is that because they saw that organic consumers have more money to buy organic food. And they wanted this consumer in their supermarket as well. Even during the crisis of 2008, the organic consumer still bought products. Mostly they are also higher educated people than the conventional buyers. Which means they have more money to spend on food, especially in Copenhagen. Today you can buy organic food wherever you want in Denmark

How was the consumer convinced to buy organic? In the Netherlands they don't buy because of high prices, no difference in taste, many other options etc.

In Denmark we don't have that many options. The point is that Denmark got his own organic label, 30 years ago. The red O, and it is very famous in Denmark. It came out as the same time as the organic regulations and all the Danish consumers trust this label. Consumers could find this from the beginning, its controlled and carried out by the state. It's not privately owned. It also means that all the consumers are trusting this product and logo. There needs to be trust from the consumer to buy organic products. Everybody trusts the organic regulations in Denmark, as I said it carried out by the Danish state authorities. This organic label has given some interviews, and findings where that 98% of the Danish population know this label. In comparison with the European logo, this is only 50%. Thus, the logo has been very important for the organic development in Denmark. Because they always know that a product with this label is organic, it's very very good.

- Did the market grow so much in Denmark due to this label?

Yes, especially in the beginning. It's the same as in Sweden, there they also have a logo and all the Swedish people trust this label. In Germany it's a it the same, but here they have 2 private organic labels.

Danish consumers want to buy organic products because fewer residues, better environment, clean drinking water, better animal welfare, less climate impact, health quality and fewer additives.

In Denmark we have organic spring day. Where all the organic cows go out on grassland. This is somewhere in the middle of April, and we advise all the consumers to go out to the countryside and see how the cows are going out. A lot of people are coming, around a 150000 on 1 Sunday! This is an initiative of the organic dairy farmers and supplied by the government. When the consumers are going out to the countryside, the whole family sees how the cows are going out, they are really playing in the grassland. After this the consumer only wants to drink organic milk because it's such a good welfare. We have had this in the past 15 years. It's also very good for children. It's a wonderful day.

- Did the Danish government play a role in the increase of the organic sector?

Yes, they made some sheets with what they wanted to improve. Fr example they gave out labels to restaurants; bronze silver and gold. These labels show how much organic is served at these restaurants. When 90% or more is organic, you get a gold label. This is to show the consumer Silver is 60% or higher and bronze 30-60%. A little more than 3000 public kitchens have an organic label. This is also a way how you can support the organic development. Denmakr is the only country and you might also have this in Berlin. Its th Danish government that supports this.
We also support export campaigns, when organic companies went to the Biofach, they got some support to make a Danish Nationl stand. We also go to biofach in China this ear and we also get some support from the government so we can do it and that it wont be to expansive for the companies. We also went to the Netherlands, this helped a lot with the export of Danish organic products. It increased the sales.

- Has the Danish government always be pro organic?

The Danish government has been very pro organic in the past 20 years. But out social democratic government is a little bit more pro organic compares to the conservative side. But the both support because organic is so popular under the Danish consumer, so than the government wants to show the support as well.

- How should the Netherlands promote organic for the consumer?

In one way the retail and super markets should start promoting more organic products. And also they have to give more information about what is organic farming? How much does your consumer know? And do they know the difference between organic and conventional farming? The retail sector should educate the consumer about organic products. Of course your government could also play a role for this but mainly the retail sector.

China also asked help from Denmark and we also advised there to start with education of organic products. However there more from the government and also from the retail sector.

- Did Denmark face any issues in relation to the transition of farmers?

Yes, we also faced issues with our farmers, saying its too expensive or time consuming, or too many rules. But in Denmark we do a conversion check. We have farm advisers which go to conventional farmers and say if you want to convert your farm you have to take care of specific things. They will advise on which points and what the outcome will be once they have converted. For some its not possible to convert. As organic farmer, you have to have a lot of acres near your stable otherwise you can't convert.

The issue in the Netherlands are the high land prices. That must be a big burden for you, its cheaper for your farmers to keep the cows inside than to have them roam outside.

- Friesland Campina is facing issues that they are not taking in more organic dairy farmers.

In Denmark we have Arla Foods, they are the biggest organic dairy producer in the world and they also don't take more dairy farmers currently. As I said, in the past years they have gotten so many new organic dairy farmers and now they want to make sure that we can sell all the milk as organic. In my opinion this is good because than they can give a higher milk price for the farmers, or if they have to much organic milk the prices get lower. We also have 2 other companies that export organic milk. We have more dairies than in your country.

Interview 2 DK

Seges
Kirsten Holmes - Seges Director
March 10th 2020

I am head of director of the innovation department, at seges we are the R&D of the Danish agriculture and we are part of the farmers association cooperative where we are the development department. The innovation department exists of 500/600 employees working with innovation within the Danish agriculture. My department works with innovations within organic, around 25 people working here. Sometimes we develop a product and work together with the local advisers or farmers. `there are approximately a 100 advisers consulting farmers on organic farming.

- What where the main barriers you facedin Denmark?

20 to 25 years ago we got the red O, the organic label. The national state is still certifying all the farmers and controlling them. That is one of the things, we don't have a company paying them. It is free for the farmers.

- How you mean it is free?

To get the onversion and to keep up the organic status, control on the farm and you don't have to pay for it. You have to pay the advisrs to get ready for the control and to hep them with the paperwork and with the conversion. But when they are a organic farmer they don't need more advising then a regular farmer. And they don't have to pay to keep the organic label on their products. To keep up the label it is free.

We always have the 2 first years where you cant sell your products as organic. Then you get support from the government for these two years.
Last time when we had a big conversion group, Arla had not enough milk for the consumer demand. And than Arla paid some of the cost for the conversion.

- How does the consumer deal with more expensive products?

The price of the product does not get subsidized. We get the free control and a small amount per year that is used for conversion of the lower yield within the field. A farmer gets only compensation of the land area and for not using pesticides.
The milk production is totally driven by consumer demand!

- How did that happen?

About 50% of all Danish people buy organic every week. The conversion from conventional to organic is always driven by the consumer. But one of the main reason for the thrive in Denmark it is kind of choosing that they want to support production without pesticed. We now this because of surveys. They also want production with better animal welfare, cows to be on grass and grazing so that is some of the reasons why they buy organic. It is easy for them because it is in the supermarktet because it is nect to all the other procuts. In Denmakr it is made very easy. And Arla is the main reason for this. They are the largest organic dairy, and the largest dairy producer as well. They have made a group of organic farmers who very early in the process agreed to that even in the process that if they make more than that they would sell, than it would be sold as conventional milk. But farmers would still get the organic milk price.

Farmers they knew they would get a higher price and the amount or share of organic milk would be higher. If Arla had too much milk, some of the milk would be sold as non gmo in Germany.

We also have other milk producers, thise and naturmealk. Thise has a close cooperation with coop. But Arla realized that for the production of organic milk it would be good to cooperate with the other organic

dairys. For many years we had a concept that all the dairys got together and discussed the rules for oranic milk production in Denmark. This was all discussed before the EU came with their regulations. A few other rules where implemented and where agreed on by all the dairys and some stricter than the EU rules. This came from all the cooperatives together and not from the government. The dairy structure in Denmark consist mostly of cooperatives. They agreed to not have any competition between the dairys and have a higher price. Organic milk is organic milk and delivered in the same way. This was all before the EU came with the regualtions.

It has been very easy for the consumer to buy organic milk. The farmers don't have to deal with getting the milk in de supermarkets, that's the dairy producer problem.

The difference between conventional and organic is not that big. But the structure is the same.
Coop has been big in branding for organic it has been more or less a competition between the different supermarket chains on who is the strongest on organic. Due to this competition, consumers are buying as well.

We have an organic chair; the consumer starts buying organic milk than they will move on to vegetables, than butter than cheese, then meat etc.
Meat is still very hard but for an organic consumer they always start with organic milk. Some shops in Kopenhagen have more than 50% organic milk. In the country side it is lower, but there you see a growth.

- Do you also have other certifications which are popular next to organic is there a competition?

In Denmark, due to the education, the easiest thing to buy is organic sicne they know what it means. If they want to do something and can afford it they buy organic. Until know that's what has happenng and seen as the highest label. For example they choose that over grass milk.
Sometimes a lot of consumers believe that we do more than we do. They get surprised when they see the calve is only with the mom for 24 hours. The consumer sometimes raises their expectations.

- What should come first the supply or the demand

It is best if we have 1 or 2 percent less than consumer demand. And since we also do export we need to have a small surplus. So it is a tricky balance. Now people are also switching to non dairy milk as oat and soja milk. In Denmark we are still growing slowly.

- Does organic also need to be local?

We are so used to that our animal production is also needed for export since we have a large agricultural sector. It is in our DNA, but it is more difficult to export organic. Denmark also has a label in China. But if that is sustainable that is the question, but if they want to pay for it it works.

- How where the people in Denmark educated?

The farmer organization, organic Denmark and Seges, produced a lot of leaflets and education payments and for the schools.
For example, we have organic school milk. To stimulate children and their parents to buy organic. This was a beginning point for example to start the chain. It is a healthy choice; we want to give our children the best and thus we buy organic.

- Are there any other barriers or solutions?

That there is no competition between the conventional and the organic farmer plays a big role. They work together they respect each other and learn from each other.

Interview 3 DK

International Centre for Research in Organic Food Systems (ICROFS)
Jakob Sehested – Director
March 16th 2020

- What does ICROFS do?

We have a board with people from the sector, stakeholders and consumers and organizations and they are focusing on strategy. When national funds for organic research is available our board selects on what we wanto to focus. We have a board who selects which projects are relevant. This is the strcture of ICROFS.
Of course organic research can be performed in other programs, we are not the only one.

Icrofs was constructed because at first organic was only a very small area. In the late 80s, organic was for grassroots and idealists. The government saw potential and wanted to support, thus the idea is: you need to focus your effots to have a strategy where to put your money which will help the sector best. That is why the set it up this way.

Just as in the Netherlands our government always has a specific focus, now here it is on 'green'. Green transition and strategies are being put infore about climate, green transition, circular. The circular bio economy.
We are a national center established by the ministry, we are located at a University.

- How much influence did the institution have on the consumer or supermarkets or other actors? Did you play a big role?

No, we did not lay a big role in stimulating any actors into buying organic.

- What do you specifically focus on with your research

Its primarily focused on the primary production, farmers, developing farmers production systems, issues around having feed supply, organic nutrients, recirulaiton. Now it has been running for 30 years and production and consumption are stil growing and therefor our strategy has been focuses on what comes after the farmer so processing of goods and foods, packaging, relation to consumers. Because her eyou find the major problems in scaling up and developing the sector. So now we have systems running but changes are happening, organic agriculture is developing and the world around it is developing so we need to have the consumer on board for the transition to come in the primary production systems. Transitions in e.g. public goods as welfare, biodiversity, climate. A lot of disccuin is going on, what is better? Organic or conventional.It is important that science and research are engaging in this issue and having the connection between consumer expectations and the production. The organic thinking ; You need to look at food as a system.

Now it has been something you bought in the shop; you buy animal welfare, you buy a good feeling. Now the movement among the young is that climate also needs to be an engangement within the food system.

- Do you still see a lot of stimulation to the consumer on new updates and do you play into the awareness of the younger generation?

You are touching something very basic here. You have the organic principles, the basic foundation as ecology, fairness, care and health from IFOAM. You have the legislation and regulations which is more fixed since regulation is difficult to change, but that is what is supporting the sales because than you have the branding, official control of the sustem and you know when you buy this you get something specific. Ofcourse are the regulations developing slowly. And now starting 2021, new regulations are

being put into force from the EU level and there has been updates along the way. And in Denmark the producers have been on the forehand of this development. For many years it was allowed to use conventional feed for the animals, because it was not possible to get the right feed for the animals. Which actually raised some questions from the consumer sight. How can a product than still be organic? In the early days it was thus a little different within the sector. Years before the EU regulations demanded it there where voluntary rules from the organic farmers in Denmark. But than the dairys came up with new rules, very much driven by the dairys, saying that you only produce organic if you use a 100% organic feed. They did this before any legislation came up.

- The Danish u label, does this have more strict regulation than the EU regulations?

There are a few stricter regulations but basically the same.
It's a brand supported by the Danish government supported by authorities and who are controlling production and the supermarktets. The red u became before the EU regulations came out.

- How do you keep the milk prices high?

In Denmark this is the branding and the market, it is a market driven price. There is nothing different there we have a label and we have a brand and as long as the consumer gets some extravalue for there money and are ready to pay than you can get the higher price. The organic dairts have contracts with the farmers on the milk prices.

Interview 4 DK

Yke W. Kloppenburg-Oosterwoud - Dutch organic dairy farmer in Denmark
March 17th 2020

Wij zijn naar Denemarken verhuisd omdat we iets anders wilden. We hadden na een aantal jaar de mogelijkheid om omte schakelen naar biologisch omdat onze land en de ligging van onze stal dat toeliet. In plaats van opschalen wilde we dat de koeien weer naar buiten gingen en toen besloten om biologisch te gaan boeren. We hebben 210 hecatre wat we afgrazen en en waar we voer van daan halen en we hebben nog 40 hectare natuur. Toen we deze boerderij begonnen was de hoeveelheid land voor een deense boer erg weinig terwij dit voor ons juist veel meer was dan wat we waren gewend van Nederland.
Er zijn ook veel akkerbouwers die met ons willen samenwerken.

In Denemakren in het nog steeds een vraag en aanbod verhaal.

In Nederland is de vraag nog steeds veel te laag.

Ik denk dat de uitdaging in nederland is dat je meer grond nodig hebt als biologische boer want je hebt minder koeien per hectare en je kunt niet corrigeren met kunst mest en je moet dus optimaler je grond gebruiken. In nederland is het klimaat wel beter dan in Denemarken. Vanwege de hoeveelheid neerslag. Het is moelijker corrigeren dan als een gangbare boer.

In Denemarken werd er erg gestimuleerd van de overheid, gemeentes die kantines hebben waar alleen maar biologisch verkopen scholen die alleen biologisch hebben en hier heeft de overheid wel erg op gestimuleerd. Er zijn natuurlijk altijd mensen op tegen want vraag en aanbod moet zichzelf doen maar we weten ook dat bijv. we willen nu groene energie en windmolens en zonnepanelen komen ook niet zonder stimulatie van de overheid.
Wil je dat er iets gaat gebeuren dan zal het moeten worden gefaciliteerd. En Denemarken heeft dit gedaan en zal in Nederland ook moeten gebeuren.

Maar je krijgt nu natuurlijk de discussie, melk is natuurlijk gemakkelijk om te kopen als biologisch product omdat het niet veel duurder is dan gangbare melk voor de consument. Groente en fruit gaat redelijk goed maar vlees is nog erg moeilijk. Ik denk dat we een switch gaan krijgen. We krijgen nu nog een extra verhaal van klimaat ernaast.

Er wordt hier ook veel reclame gemaakt door supermarkten over we moeten Deens lokaal en biologisch eten maar aan de andere kant willen we hier ook graag exporteren. Nederland wil ook graag exporteren maar dit houdt in dat als je moet exporteren dat je ook producten moet gaan importeren. We weten ook allemaal dat transport niet zo zwaar weegt maar hoe zeker zijn we dat biologisch ook biologisch als het uit andere landen dan de EU komt, wat is het controlesysteem? Dat is voor mij nog wel een ding. Wij zijn hier wel een stuk verder met regels en van nature misschien wat trouwer zijn om ze te volgen dan in andere landen.

Dit is dus wel een risico want we importeren heel veel maar hebben niet altijd zicht op hou het er in andere landen aan toe gaat. Zeker omtrent biologisch.
Ik denk dat we in west europe redelijk met elkaar kunnen vergelijken over hoe we melk produceren. En dus vergelijkbaar zijn.

- Wat zou nederland moeten doen om biologisch te laten groeien?

Ik vraag mij eerst af met de hoeveelheid grond en grondstoffen die je in nederland hebt, kun je wel bilogisch worden. Ze hebben nu natuurlijk de visie van de kringloop landbouw misschien moeten ze juist stimuleren dat alle conventionele boeren halverwege biologisch gaat zitten. Dan bereik je meer dan als 10% van de boeren biologisch wordt. Je kunt nu al een grote vermindering zien in bijvoorbeeld kunstmest, de gangbare boer heeft al erg veel grote stappen gemaakt. De kringloop is eigenlijk ook biologisch als je het goed zou doen. Hier zeg je we gaan niet iets toevoegen als er ook niet weer wat af gaat.

Waarom zou je volledeig biologish worden? Als je de mensen/consument vraagt, die zeggen dat de dieren het beter moeten hebben, geen bestrijdingsmiddelen, geen gmo en geen kunstmest. Dierenwelzijn, de koeien naar buiten, staat daar gelijk aan volgens veel mensen. Maar dat hoef helemaal niet zo te zijn. Wij praten hier al meer over natuurlijke leefomstandigheden moet naleven. Zoals een dier van nature is dat hij dat kan ontplooien.
De klimaat discussie kan misschien helpen aan een tussenoplossing voor de landbouw.
We zouden eigenlijk moeten kijken wat voor type bedrijf het meeste meewertk aan dierenwelzijn, en het klimaat en daar een tussenvorm van creeren.

Hier hebben we het biologische keurmerk O, dat bestaat inmiddels 30 jaar. En er wordt nu heel hard gekeken hoe kunne we zorgen dat het goed blijft gaan. We zien dat veel boeren tegen dingen aan lopen als; het is niet efficient, niet effectief, het werkt niet per se mee aan het klimaat, dieren hebben het ook echt niet allemaal beter. Er moet een soort van nieuwe start komen om ons te blijven onderscheiden omdat de conventionele boeren wel veel stappen aan het zetten zijn. En best dicht bij biologisch is gekomen. De reden is ook dat iedereeen weet als een koe het goed heeft, zij meer melk gaat produceren. Dus gaan ook conventionele boeren over op een beter dierenwelzijn.
Stappen moeten ondernomen worden, zodat die consumetn ook echt meer gaat krijgen voor wat ze betalen.

De overheid heeft heel erg gestimeleerd hier in denemarken. Daardoor hebben ze gestimuleerd om kantines scholen, alle overheids instellingen om biologische prodcuten in te kopen en dat heeft een beweging in gang gezet. Moeders van jonge kinderen is de eerste groep die biologisch koopt zij willen dat het goed gaat met de kinderen. Dat is de groep, die er het hardst aan trekt en die je als eerst zou moeten aan spreken.
Wat hier is gebeurd is het stimuleren van de vraag! En daarbij krijg je op een gegeven moment, van he dat zijn goede klanten, jongen mensen met kinderen die goed verdienen. En supermarkten zien her hierdoor dus als een kans omdat deze groep ook andere duurdere producten zal kopen in een supermarkt en toen gingen de superarkten ook stimuleren om biologisch producten te kopen. En zij zijn ook de toekomst. In principe is het een lang traject geweest. OP een gegeven moment kon de overheid door de bomen het bos niet meer zien door alle logos en tekentjes op de verpakkingen, waardoor ze nu een overkoepelened teken op prducten gaan zetten. Het harten systeem (vergelijkbaar met beter level keurmerk in nederland). Bedacht door de overheid.

Restaurants werken hier ook mee aan de kwaliteit van de producten en lokaal en biologisch. Hoe beter we het met zn alle hebben hoe beter onze dieren kunnen leven, we zeggen ook wel dat onze koeien topsporters zijn. Ze hebben optimale voeding en optimale rust nodig om te kunnen presteren.

De toekomst wort meer veelzijdig, en er zal altijd een groep blijven die voor goedkoop zal gaan, een groep vegan etc.

Er zal ook wel meer kennis moeten worden overgebracht naar de consument om uit te leggen wat biologisch is. Maar hier is het nog vooral de bewuste kiezer die biologisch kiest. We krijgen zo veel informatie op ons afgestuurd. Er zou een duideijk systeem moeten komen van wat wat is. Zodat de consumeren precies weet wat hij/zij koopt. Daarom kopen mensen ook snel lokaal want dat is makkelijk.

Interview 5 DK

Naturmaelk
Nelly Riggelsen - Naturmaelk Sales and marketing chef
March 17th 2020

The organic in Denmark, they were the pioneers it was in the middle 90s. And in the beginning of 2000 the demand of selling organic started in Copenhagen. In our way the hospital sector started demanding organic milk. And the supermarkets started in 2005/06. It was not only developed by the farmers but also by the government and organic Denmark. We were talking and speaking about organic production and make information sheets to convince farmers to change from conventional to organic.
Around 2012 the government decided that organic food had to be up to 60% served at governmental instances as schools, hospitals, all public areas. This goal had to be reached by 2020. The demand was not coming from the consumers but coming from the government. They were putting these rules into society, and organic Denmark was working on fulfilling the goals. Organic Denmark is working very political. And very much together with the government so they also try to push it. The production and demand was not only coming from ourselves.
Organic Denmark was working on the same and are making a lot of advertising. They also help the farmers to become organic. Everything is one big chain. This is really needed to get the organic sector further; all organizations and companies need to work together and strive for the same goal. This is one of the main reasons why we sell so much organic. Also when you look at the cost for organic, milk is the cheapest one to change, therefor they always start with milk, or drinking products cost the price difference is not that big.

- When there is more organic milk in production how do you keep the milk prices up?

Yes, we can keep the milk prices up. Thus for the farmer it is still better to produce organic milk.

We started as an organic milk producing company, the farmers working for us where inspired to make organic milk. We now only have about 30 dairy's in Denmark, wheras before we had about a 1000. The companies became bigger and the smaller farms disappeared. The structure has changed compared to years ago and the farmers have more power. Farmers want to produce their own milk, since organic was at first not common to be in the supermarkets, organic farmers started selling and producing their own milk. It is the same still the for the small dairy's.

- Was it hard for farmers to switch to organic?

In Denmark farmers are still easily switching, also due to the lack of organic milk. Arla, has been one of the drivers for the growth of organic milk. It takes 2 years to switch and Arla has been subsidizing the farmer for those two years to stimulate switching to organic. In economic perspective the farmers also see that its than better to be an organic farmer than conventional. The demand was so high, and then arla got closes to take more organic farmers about 3 years ago. But the sector is still growing currently. And both Arla and us are taking new organic farmers again.

- How do supermarket chains play a role?

Yes, supermarkets promote organic products. Two out of three dairy products in Denmark are organic. And almost all supermarket chains have their own organic brand!".
. We make milk for different supermarkets; Lidl is one of them. Every organic dairy supplies to their own supermarket chain. His is also something to look at because the chains predict the small dairys and they are very loyal and the make their own advertising too.

Most of the stimulation was all happening together at the same time. Everything was playing a little bit together. The demand is moving the farmers to produce organic. The organic farmers could see that the demand for organic products is still rising.

Appendix I

Interviews Austria

Interview 1 DK

AMA
Florian Egger - AMAQuality manager
Marhc 6th 2020

I am working at AMA marketing, a state agency. We have our own quality standards which also applies to the conventional sector but also to the organic sector. Our quality standards apply for all different kind of production sectors including dairy. We have a very wide role in the whole food sector, we have our own brand/seal AMA, so the retailers and producers and processors can have a contract with AMA and when they fulfill the requirements, they are allowed to have the brand on the products. It is similar to the European organic logo but now specifically for Austria. We have a legal mandate, when Austria attended to the EU in 1995the Austrian government invented the AMA law which defined that we have in the one hand a state agency AMA that they are in charge of all the funding's and subsidies for European law and the AMA marketing is in charge for enhancing the quality of food production and giving the people information about food production and quality.
I am working for AMA marketing and we have a lot of information and expertise regarding the whole food sector.

We have a lot of data on food production and consumer. I can give you data on how organic farmers grew, area and how is the food sector involving on the consumer sight. We have a lot of date on how the share of organic products has evolved within the different sectors, also within dairy.

The growth of organic started in 1995. The most important parameter encouraged and supported the growth of the organic dairy sector was that the retail and the retailers started very early with listing organic products. There was not even an European law for organic but in Austria it was already implemented.
Publication on 35 years of organic in Austria, explains why organic is so strong in Austria (in German).

- Why did the retail sector start promoting organic?

Because there were some pioneers in Austria which were very charismatic and they went directly to the retailer and said lets try e.g. gertha lambert she was very convincing to the retailers and then they gave it a try. On the other side, it's a very small structure selling based especially in the beverage.
For the small farms this was relative easy, a perfect situation to try a different kind of farming.

On the one hand you have the retailers and on the other hand you have the tructure of the farming sector in the region, small scale and family based. This combination of retailers and small scale farmers was a good combination for the growth of organic in the 90s.
sa

- Most of the organic dairy farmers are smallholders?

This is not specific to the organic sector. But the average size of a dairy farm is about 19 or 18 cows. Very small.

- Was there any barriers which the sector was facing? Which was difficult for the sector?

Currently we have a issue with the European commission that there are some problems. Each member state in the EU has the right to personalize the implementation of the organic law. Some remarks on how Austria has been implementing the rules on pasture and meadow where an issue.

In 1995 retailers came with a big step to increase the consumers and a second big step which increased the organic share. The discount store hofer (retail company) this started with an organic brand in 2007. This was the second strong boost in Austria. This really increased the organic share with about 2 or 3 %. I think this is also which may the organic sector has benefit since there is now competition. It has boosted the organic sector.

9.3 % market share 21% of drinking milk, bought at the retailer is organic. For eggs this is 22.1 %.

- Do you see issues with the consumer in not buying organic?

This is a very important topic. Because you want to get the consumer behind you because the agriculture commodity produces organic quality. The taste also needs to be good otherwise people wont buy it.

- In the Netherlands we have so many different options to choose from do you have that too?

The AMA marketing, main brand is AMA seal which covers the whole sector which says that quality standard need to be higher than the regular law. And than there is also private labels. The reason why we have such a big market share is because the retailers processors and farmers came with a business solution to work together. We also have an expert panel, a small panel where 15-20 people where we develop our guidelines. This is very important because the different sectors work together and is 1 sector doesn't agree the point will not go through. People from the entire value chain discuss topis during this meeting. Here it is consensus based where everyone can give there opinion.
We work a little differently than some other eu countries.

- How do you keep the milk prices up and do farmers have issues with switching to organic?

I am not sure. Maybe ask the organic association.
We have many small scale farmers and often they are not full time farmers. They do farming part time. And have another job next to this. In the morning you take care of the animals and during the day you do a different job and at night you go back to the farm. It is a very idealistic approach and not only for profit. It's a tradition whereby their fathers did it, and many generations before.

Here it is easy to switch from conventional to organic, but I can't really give you an answer specifically on why it is easy.

The true price organization is important, the Netherlands is very price oriented. An important aspect is that yu really look at the numbers, we have the discussion here of why is organic are expensive and what is the real price of organic milk and to tackle this question, true price accounting is essential. And could be a very useful method. There are a few companies in the Netherlands doing this. I ou have a markert where people only look at price and numbers and than you should give them the right numbers and real prices.
We have a more idealistic approach in comparison to the Netherlands. We have specific regions, specific ways of organic farming, which we use for our marketing. Our market is less market oriented and more on tradition.

Interview 2 AT

Austrian Chamber of Agriculture
Sylvia Maria Schindecker – market policy, animal products
March 24th 2020

What does your company do?
Every famer in Austria is a member of our organization. We provide is not just political advise but also education for our farmers and extension services for our farmers. Extensions for dairy production, direct marketing, we give them advise. We are closely connected to the government but a separate institution. We are financed by our members. The pay for us. Every farmer is forced to pay a certain amount to us and we are a lobby group, an interest group. We do political lobby but we also try to represent all our farmers, also within the EU. We are the farmers union.
I am responsible for orgaic farming and GMO free production. This means that I represent all organic farmers in Austria. I always write position papers and take my influence within the EU and within our ministry. Everything about organic, or organic working groups I am part off. Of course we have also organic farming associations but not all of the Austrian organic farmers are part of these. But we work together very closely.

- Why are there so many organic dairy farms in Austria?

Austria has a long history of organic farming. There are several factors which have influenced this. 1st, we are the first country world wide who implemented an organic regulation. We have national rules since 1983.
2nd we had a very interesting history in the 1980s because we wanted to become part of the EU. When de discussion started, that we with our mountains and structures, that it would be difficult for us in the common market and than we changed our position and focused on eco social agriculture policies. To be sustainable economic viable and good shape and also look at the social impact. We looked at the three pillars of sustainability within our common agriculture policy and therefor we started to subsidize organic farming associations and we subsidized people who wanted to convert to organic this started in 1989.
The third part is that we started market organic products in the supermarkets in 1994. The first prodcuts is organic dairy milk. We already have 25 years of organic milk in the supermarket. The supermarkets promoted it with the consumers and then got more popular.

- What was the reasoning to promote organic from the supermarkets?

They were looking for diversity and we had some very good pioneers within organic farming. One dairy company in Salzburg which started to do a project. They started with bila, a supermarket. We had good pioneers and people to establish organic within the whole retail chain and farming setor. The fourth pillar of development is that we have a lot of mountaind and that it is difficult to produce we have very cold winters and lots of small farms. But always been extensve farms. And we never had the intensity to produce very intensive. It is nt possible in the mountains. Thus the conversion was therefor not that big of a step. It was easier for farms who just had grassland and pastures. Than for maybe intensive farmers in the east where you find areable crops which is harder to convert because they are more intensive farms. In the east are also the conditions for farming better and thus better for extensive farming.

- Why did the consumer switch to organic and how did the retail sector do this?

This is also the reason because in Austria we have a lot of cooperatives within the dairy sector. These are very small and owned by the farmers in contradiction to Denmark or the Netherlands (eg Arla or FrieslandCampina). In 1994 we already knew we would be a member of the eu and we would need to survive within the common agricultural market and with our small structure we knew that we would not survive unless we would go a different way. For us organic was a way to survive and stand out.

- Do you also export?

We alsodo a lot of export as cheese and milk. What is interesting is that we also have to export a lot of organic milk, our consumers always say that they buy organic milk but in real life they actually do not do it. AT is one of the richest country and we have a high living standard, but the conventional sector is also very good. We export around 40 to 50 % of our organic milk. Our most important organic export partner is Germany.We closely rely on them. They buy most of our organic milk together with Switserland.

WE are very good in the supermarktes, our share is about 20% of the milk bought in the supermarkted is organic.

- Why did the supermarkets start selling organic products?

The supermarket started to create their own brand, they own the brand. We have 3big supermarket brand wihin organic, Ja naturlich, Teruck zu ursprung and a third one. They all own their own organic brands and standards. They put a lot of money in these brands because it brings more money for their supermarket. The still sell conventional milk as well. But it is interesting because they have everything for the consumer. For the well educated mom with kids they have organic milk and for the poorer mom they have still conventional milk. Since they own their brand they can put pressure on the farmers and make more money. They can sell organic milk for a higher price and have a higher share of it. Herefor they put a lot of marketing and effort within these brands. And than more and more people know about organic food and products this is why they are asking for it and if the differene between organic and conventional is not that big, its easier for the consumer to switch. Austrian dairy production is very expensive, its mainly produced in the mountains and therefore more expanise than in other countries. But the difference between organic and conventional is not that big and than for the consumer its easier to switch. For a consumer since the price is maybe only 10 cents more. For example meat it's a very big difference.

Organic dairy products are the first organic product a consumer buys in Austria. All these factors help to be so succesfull.

- Do you also have a national organic seal or brand?

Yes we have AMA bio Seagal. And this is also in the supermarkets and very succesfull in Austria. It played a big role because its not just organic but also Austrian quality. And people trust this brand. Austrian consumers like regional prodcuts and we are conservative. We like our history etc. And this comes together in the AMA bio seal. It gives Austrian quality, origin and bio together and is a very good combination.

- Do farmers promote organic?

The farmers pay for AMA and AMA is responsible for marketing. They are doing a lot of marketing for organic products. Bio Austria is the biggest organic farming association, and they do a lot of marketing for organic products and our organization as well. We have a lot of farmers who go to schools and do events or provide young children with information about organic milk production and we bring a lot of education and marketing as well.

- Who is the group you promote organic products to?

WE see that young mothers are more likely and conscience about organic production and products and they like to buy the best for their kids. So we also have some programs which really go to these groups. Also, we try to promote it at schools and educate the young people so that they change their consumer behavior. We do this at schools.

We call it school on the farm and we try to bring young children to the farm so that the see how we produce and live on the farms. Since children do not really have access to farms anymore, and children

influence their family and they can have a big impact because they will be our consumers within the long run. And therefore, our main focus. Of course, we also still focus on adults but mostly children, because adults are harder to change.

A problem we have, is that we are not very good in selling organic in restaurants. There they don't ask for organic dairy products. The big tourist sector also does not ask for organic food within the hotels. And that is one of our biggest problem. And currently our young population does not cook much and only eats out. Which is a big issue.
Communities and municipalities or cities also do not focus on organic, only Vienna has a big share of organic up to 50% in their kitchens but no other cities. They don't have mandatory organic food in the kitchens which is a problem. We need to increase the organic food in hospitals, and schools.
We try to put political pressure on our politicians to increase this. We try to influence the internal market and try to give incentives.

What `I would do in the Netherlands is to try to install all these measures, try to have organic in supermarkets, in restaurants and in the communal caterings. Then you give a lot of incentives and farmers will produce organic. This way you can convince farmers to produce organic.

The price of land in the Netherlands is very difficult, this is also getting a bigger issue in Austria and therefor I think food needs to be more expensive. Because its so expensive to produce food but people only want cheap food since they are used to that since WWII. But this will need to change in the future. WE need to change our behavior, and even the Corona crisis shows we need to change our consumer behavior. We need to support our economy, farms and dairy companies within our country and not worldwide.

- Was there a lot of governmental support to switch to organic?

Yes we are one of the countries that subsidize organic the most. This is happening since 1989 where we pay a lot of money to the organic sector. WE support the organic farming association and we support the farmers that convert and we support the organic farms. SOnot just the ones that are converting but also the ones who are already organic. WE finance with a very high share, and thus attractive to a farmer to switch.

- Do you think the organic EU regulations are outdated?

Yes we need to develop, we see that consumers have more and more wishes to organic farming. The consumer is so far away from organic farming that its so difficult to meet all the demands because they do not really know how we produce our food. With emissions and climate change we have more and more wishes which we need to fulfill at least some of them. We have a new organic regulation since we need to constantly develop and put a lot of effort in R&D. This is one of the most important pillars of organic farming. How can we get better?

Conventional is maybe catching up on organic and we need to make organic stand out again.

He people do not know anymore how we produce and we need to get them back to the roots; where does your food come from? And why is it not possible to produce with very high standards. We also need to look at the farmer and have to pay them the right price. Food is too cheap!

What is really important is education for the farmers and for the consumer/people and R&D. do it step by step and maybe not a lot of farms can convert but maybe a lot of farms can do some of the organic measures. Step by step.
Another option is the implementation of organic regions.

Interview 3 AT

Institut für Unternehmensführung, Forschung und Innovation Hochschule für Agrar- und Umweltpädagogik
Leopold Kirner - Professor
March 31st 2020

- How did you get so much organic milk in Austria?

Twenty % of the farms are practicing organic agriculture. This is the same in the dairy sector also nearly 20% of the milk comes from organic farms. The huge growing phase was in the mid 90s Austria was entering the EU in 1995 and it was a good strategy for dairy farmers to convert to organic because they would get higher milk prices and they would get a premium from the state. These two factors increased the organic milk production in Austria. The third point is the organization, the environment for organic farming. Consulting services and organic farming groups, who meet each other to talk about strategies within organic farming. These three points where responsible for the high rate of organic farming in Austria.

- Where did the farmer organizations come from?

It was a bottom up process, founded by farmers. Now the biggest organization is bio Austria which was founded in 1997. The critical number of farms in a region, they supported each other exchanges knowledge and where supported by consultants. The organization environment is very important, not only the market and not only the support from the state.
This was also observed in other countries.

The development of organic farms has been growing fast starting in 1992 -1996. Here they double the amount of organic farms and after 1996 the growth became stable.

- Why did all of a sudden so many organic farms pop up in Austria?

This was also due to entering the EU but another factor was that supermarkets started selling organic products in 1992. And if you look at the diffusion model, during the pioneer phase a few farmers where converting to organic. They spread the word and during the critical phase not only farmers, but also other institutions have a good meaning of organic farming. Some of these people and pioneers where very important within agricultural policies or in consulting services and if they except organic farming than it comes to a stable phase where many other joins organic.
The Netherlands is still in an early phase. And here they need support fr farmers who want to convert to organic.

Who gave the support to the farmers in Austria?
Here this was done by the government, by the marketing in the supermarkets and in the organizational environment; advising systems, teaching systems and education systems. These are very important.

- Who should take responsibility for the growth of organic?

It needs encourages persons who believe in organic farming and want to stand up and believe this is a better system than conventional. In Austria there where a few pioneers who were very inspired. Herr Mueller and Hans wicker Rusch. A few Austrian farmers went to Switzerland to get information and knowledge from them and brought it back to AT and started to produce as they were taught.
Organic farming in Austria was really a bottom up approach. Now the government is proud hat we have so many organic farms, but initially it came farm the farmer.

- How did the Austrian farm deal with conversion?

The Dutch farmers mainly think about the economy. The Austrian farmer has other reasons. Inspiration, faith that this is a better way of farming but not the economy. In the beginning the actually have disadvantages because they make less money. Because there was no higher prices or support this only came in 1992. In 1992 subsidies were realized for farmers if they wanted to convert to organic.

In Austria around 30-40% f our crops are organic. But in the Netherlands, this could be more. Because you have a good climate and good soil. Here we have the alps and the productivity is not as high as in other regions (including the climate conditions). Therefor the amount of yield is not as high as for example in the Netherlands. We don't farm as intensive as in the Netherlands. Therefor the conversion is combined with higher losses because you have high productivity. And thus, easier in Austria. Smaller farms, less intensive, closer to nature.

The milk price difference is about 10 cents. Is the difference as high as here?

Another advantage is that the income for an organic specialized dairy farmer is much higher. And also, for other organic farms. Thus, farmers convert easily.

`is it an option for farmers to rent land?
But the high prices of land are a problem. Check out Wageningen University about the impact of converting to organic farming.

- How does education play a role in Austria? How did you spread the word?

Food is very important here, quality is very important for us, more important than price. We have two agricultural schools for farmers who only teach organic farming. Young farmers go to these schools.

- Is organic still up to date enough?

Organic farming is not in all cases better than organic farming. The advantage of convectional farming is the productivity.
We have several studies where we compare conventional with organic on the emissions. But on for example biodiversity and soil structure there organic is much better.

- Do you think conventional farmers are catching up to organic?

We see this also sometimes in Austria, especially in the dairy sector where the stables are very much the same. But there is still a gap.

- How did the consumer start to buy organic?

There are many reasons, and most important is health and environmental protection. And animal friendly husbandry. Of course, organic products are often regional, and this is a very important aspect for the Austrian consumer and it tastes better! Many consumers say it tastes like in the past. 'Like grandma cooked'. We can't prove the taste, but it is a feeling.

- Does the consumer not mind paying extra?

One third of the population still wants to eat healthy products and therefor don't mind paying a bit more. Especially since the difference in milk is not that high.

Interview 4 AT

Burgenländische Landwirtschaftskammer Abt. V – Tierzucht
Dominik Köck
Apil 1st 2020

- What is your professional role?

I work for farmers' interests and in the state of Burgenland I am responsible for advice on milk and beef production and for feeding issues. As a sideline, I also run a mountain farm with cattle fattening, lamb fattening and forestry.

- What were the obstacles to the transition to organic milk products? How did you solve this?

Coincidentally, one of the farms I look after is Austria's first organic farm. He started organically cultivating his land in the 1970s and feeding his dairy cows organic food. Today this farm is one of the largest milk suppliers in Burgenland. To pass on the story of the farm: The beginning was very hard, nobody had the knowledge of organic farming, specialist books had to be purchased, which had to be learned in self-study. What had been learned had to be implemented in the fields and in the stable - with major setbacks and without financial support from the state. The sales prices were not, as is the case today, adjusted to the additional work in production. The farmers received the same prices as conventional farms. Perseverance was the big motto. Above all, I'm talking about the performance limits of an organic milk cow and the associated lower income. The farm primarily solved the problem by selling its products (milk, flour, etc.) in a small farm shop to customers who longed for more "nature". It was a very interesting time.

- Where did the growth in the organic milk sector come from?

The upswing certainly came from quality-related subsidies from the state and the EU. Austria started early to provide public funds for quality-related food safety in its own country.

- Why and how did you encourage farmers to switch to organic?

The advantage of why organic can be easily implemented in Austria is the fact that due to the small structure and the large number of "small" family businesses on the world market Austria is certainly not competitive with quantity, but with quality. The most difficult cultivation of the mountain slopes and the steep surfaces, which are used as a ski slope in winter, can only be managed with ruminants and in small style (you cannot mow with tractors here, but have to do it by hand). The average Austrian agricultural enterprise cultivates 20 hectares of usable area and keeps an average of 18 dairy cows. The appreciation of the product of the small family businesses and the financial compensation of the laboriously produced goods was an incentive for more and more farmers to switch.

- Why and how did you encourage consumers to buy organic milk products?

Everyone wants to live healthy - organic is healthy. Consumption is very close to home, and wants products exactly from its small Austrian companies. The alpine pasture in the mountains is the best example of this. The consumer appreciates hiking in the summer and tasting and also buying the cheese that is made there. These are only small quantities but exactly these sales ensure the survival of countless companies. In the Alpine region there are mountain farmers who can feed an entire family with just 10 cows and the children can afford good schooling - often this is not possible in farms with more than 100 cows. Marketing certainly plays a crucial role here. Basically, organic stands for natural food from an agriculture without chemical additives. Production takes place according to the basic ideas of agriculture (fruit lodge, circular economy, etc.). Regionality is very important to the consumer, but also how the animals are kept. Slurry systems and slatted floors are actually no longer sold in dairy

cattle, in Austria. Animal welfare is the key word. Husbandry systems on straw, compost stalls, pasture and much more. For this, the consumer is also willing to pay more. For this special animal husbandry, the dairies offer an "animal welfare bonus" of 0.5 cents per kg milk. It is only through particularly animal-friendly husbandry that consumers can buy more BIO!

- Have retailers and supermarkets played a role in the expansion of organic products?

Yes a big one. A lot of own brands were created. The dairies also have an individual “milk type” for each farm. For example, there is a dairy in Austria that sells 8 different types of milk. From GMO-free milk to classic organic milk to organic hay milk. Of course, these segments can also be found in the retail and chain stores. Almost every retail chain has its own organic track (JA, natürlich; Natur PUR)

- What role did the government play in the growth and transition of organic dairy farming?

Financial co-financed funds are available to the farmers and very important, it is not forgotten even on the little ones. Investment grants etc. In some regions it is already the case that agricultural businesses in new barns can only build according to organic standards, regardless of whether they are organic or conventional.

- Does education play a role in improving the organic sector?

Before I switched to advocacy, I would be a livestock farm teacher at an agricultural vocational school (2013-2019). In fact, it is the case in Austria that such agricultural schools teach their own subject "BIO". In this lesson, students are introduced to organic farming, plant cultivation and livestock farming.

- Besides these questions, are there other factors that the Netherlands can implement to boost and expand the organic milk sector?

In my opinion, organic only works individually in each country. Austria markets organic products through small structures, mining traditions and handicrafts. In the Netherlands there are certainly other principles that speak for organic. The basic idea of organic farming should never be neglected. Circular economy!

Interview 5 AT

LKV Austria
Franz Josep Auer - Geschäftsführer
Aprl 24th 2020

- Where did the growth of the organic dairy sector come from? What where the main reasons?

This is a combination of the demand for organic dairy products based on the brands established over the past few years, the current milk price in the conventional sector and the incentives to promote organic products.

- Why and how where the farmers stimulated to switch to organic?

Funding incentives, poor conventional milk price at the beginning of this ÖPUL period, partly out of conviction from organic farming

- Why and how where the consumers stimulated to buy organic (dairy) products?

Mainly through the creation of the organic lines of the three large Austrian retail chains (Hofer, Rewe, Spar)

- Did entering the EU play a role in the development of the organic sector? How?

In Austria, the organic sector was already very active in some regions before the EU accession (Upper Mühlviertel, Styria, Lower Austria and Vorarlberg). With the accession to the EU, however, there were initially uniform guidelines for organic farming. For the time being, these essentially only included the crop production area. Specifications for organic animal husbandry did not follow until the mid to late 1990s.

- Did retailers and supermarkets play a role in the expansion of organic products? How?

Yes, with the establishment of organic own-label brands, large quantities of organic products were brought onto the market for the first time and also “socially acceptable” among the population. First organic own brands at Rewe, then also Hofer and Spar.

- What was the role of the government in the growth and transition of organic dairy farming? Subsidies?

In accordance with the EU organic regulation, corresponding subsidies for the organic management of farms as well as higher investment subsidies for stable buildings on organic farms were introduced / made possible in the ÖPUL.

- (How) does education play a major role in enhancing the organic sector?

This issue has only been taken up in recent years. There are now a large number of LFI courses on organic farming. These courses are often also offered in cooperation with organic associations such as BA, Demeter, etc. In agricultural schools, the subject of organic farming is only sparsely developing into a fixed subject with the exception of schools with a focus on bios (e.g. Bioschule Schlägl in Upper Austria).

- Apart from these questions, are there any other factors which enhanced the organic development in Austria?

Definitely the “salon-ability” of organic products in general but also the health awareness of the younger generation with small children.