



Exploring circular initiatives in the dairy industry

A multi-case study of production companies and their networks

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Abstract

Circularity is now on the agenda of most companies and consumers are increasingly choosing circular products over linear products. This is a good development, since environmental problems can be traced back to waste of raw materials and products. However, decreasing waste can only be done when the production process becomes more circular, showing the relevance of this paper. In this study, interviews have been conducted with production firms in the dairy industry and a secondary data analysis is done to find out whether the network of a firm has influence on the amount of circular initiatives. The interviews reveal companies have different views on what circularity is in detail, which allows for differences in what is seen as being circular. Companies use their own R&D sections together with their networks to create circular initiatives and knowledge institutions such as Wageningen Universiteit in their networks to conduct independent research. The university creates new knowledge to help develop circular initiatives of the companies in this study. Companies in this study use the triple helix model, even though the government often does not aid development of initiatives by hampering development with rules and regulations. The secondary data analysis reveals that circularity is an important, and popular topic, but attaining circularity is difficult and cannot be done without cooperation and change in behavior of both companies and consumers.

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1. Introduction

The idea of a circular economy has been around since the 1960s and 1970s (Ekins et al., 2019) and the concept has gained body ever since. To date, circularity is on the agenda of most companies and consumers are increasingly choosing circular products over linear products. This is a good development, since multiple environmental problems can be traced back to waste of raw materials and products (Hanemaaijer et al., 2021). Use, and waste, of materials leads to emission into the air, water, and soil, with unwanted effects such as plastic soups in oceans, wastelands, a decrease in biodiversity, and accelerated climate change. In the next decennia the problem of these negative climate outcomes will increase, because of the increased demand for raw materials and the use of products which need these raw materials (Hanemaaijer et al., 2021). Countries are dependent on one another when it comes to raw materials and this dependence increases when demand for certain raw materials increases. Using products more sustainably: using them more often, more intensive, or using other materials in place, decreases dependence on other countries (European Parliament, 2023). However, this can only be done when the production process becomes more circular, showing the societal relevance of this paper.

In November 2019, the European Commission created the Green Deal to show the importance of acting, and in June 2021 the European Parliament adopted the Green Deal (European Parliament, 2023). The goal of the Green Deal is to make legally binding regulations to achieve climate neutrality for Europe as a whole by 2050 and to even have negative emissions after this time. Negative emissions allow for extraction of carbon dioxide from the air, instead of getting carbon dioxide in the air. One of the measures to get to climate neutrality is to boost the circular economy and to do this the European Commission has created multiple measures along the entire lifecycle of products with a focus on specific sectors, of which the food sector is one.

In line with the Green Deal, the Dutch cabinet has created the goal for the Netherlands to be fully circular by 2050 (Ministerie van Infrastructuur en Waterstaat, 2023). There are four factors with which the cabinet wants to make the Dutch economy circular as soon as possible, which will be further explained in section 2.3. The Dutch cabinet states that the Netherlands needs to work together internationally, and that changes need to be made internationally as well as chains of raw materials, waste, and products are international and where not all waste ends up in the Netherlands. This gives way for international businesses to address their own network to create circular initiatives (PACE, n.d.).



The importance of international networks shown in this paper also show the gap in the literature regarding circularity and the use of international networks by companies in creating circular initiatives. First, there are multiple definitions of circularity given in the academic literature, but also by popular magazines, by talkshows, and even by businesses. There is no consensus to date on what the exact definition of circularity is (Kirchherr et al., 2017). As there are many different definitions on circularity, one would expect multiple frameworks to create circularity. This is what is observed in the literature.

Next to not having one definition on circularity, there is also no conclusive research on the best strategy to develop circular business chains. It is unclear what the future should look like and which steps need to be taken to achieve full circularity by 2050. In this paper, the different strategies by Potting et al. (2016) and Kirchherr et al. (2017), and Jonker et al. (2018) are highlighted, but there are many more strategies to be found in the academic literature. Lastly, in investigating whether there is academic literature on whether the network of a firm has influence on the circular initiatives of a firm, to my knowledge nothing is found. Academic relevance of this paper is therefore to be found in the clarity this study might give on the importance of networks in the type and amount of circular initiatives.

The societal and academic relevance show why this research is important to conduct, but focusing on all sectors worldwide is not doable. Therefore this paper will focus on the Netherlands, and more specifically, on the dairy sector. The dairy sector is one of the most polluting sectors worldwide according to Raghunath et al. (2016) and in the Netherlands the dairy sector is one of the largest polluters too (Milieudefensie, 2022). In the Netherlands, most dairy companies can be found in the North of the Netherlands, with 17 out of 52 dairy companies being located in Groningen, Friesland, and Drenthe in December 2021 (Zuivel NL, 2021). The dairy industry in the Netherlands have a production value which accounts for 5.2% of the total European production value of dairy products. Nationally, the dairy industry accounts for 7% of the Dutch trade balance (Zuivel NL, 2021). These facts show the importance of the Dutch dairy industry and the impact the dairy industry has on the total Dutch industry when it becomes more circular.



More detailed, the research question which this paper will answer is: '*How does the size of the network of a production company in the dairy industry influence the level of circular initiatives?*'. This question cannot be answered on its own and therefore sub research questions are formulated. The following sub research questions will be answered in this paper:

- How can circularity be defined?
- Why is circularity important?
- What does the network of the firm look like in terms of size and location?
- Do knowledge institutions or an R&D section influence the amount of circular initiatives?
- Do governmental subsidies influence the amount of circular initiatives?
- Does the view on circularity influence the amount of circular initiatives?

These sub research questions help guide the study into the right direction to answer the research question. The study will be done by literature study to gain knowledge about the topic of circularity. Next to doing a literature study, qualitative research is done in the form of interviews and lastly a secondary data analysis is done to make this study more reliable.

This paper is set up as follows: the second chapter is the theoretical framework in which background information is given to gain more knowledge on the topic. The meaning and importance of circularity are given, together with different circular frameworks, national and international laws and regulations, national policy recommendations, the gap of circularity to date, the importance of networks, the triple helix, and academic and societal relevance of this study. This literature review ends with a conceptual model and expectations for the underlying study. After reading the theoretical framework, the methods are discussed in the third chapter. More information is given about data acquisition, data characteristics, and the choice of research tools is explained. In the next chapter, the results are shown in which the firms participating in this study are displayed on a casus basis. After having gained knowledge on the firms, the interview results are written in sections on knowledge institutions and the network, the definition of circularity, the amount of circular initiatives, secondary data results, the interview with Circular Friesland, and lastly, the overarching results of the interviews and the secondary data results. The fifth chapter is the conclusion and this paper will end with a discussion.

2. Theoretical framework

This section gives more insight into circularity; the definition, transition strategies, circular chances in the Netherlands, the influence of knowledge institutions, existing policies, the triple helix model, and the relevance of this thesis are explained. The descriptive sub research questions are answered in this section as well. After reading the theoretical framework, it becomes clear what this paper has to offer to the existing literature in the conceptual model. Finally, the expectations for this study are given.

2.1 Meaning and importance of circularity

A circular economy is an economy in which there is no waste and products and raw materials are used over and over again (Ministerie van Infrastructuur en Waterstaat, 2021). However, the focus of circularity differs depending on who is asked about the topic. In the practitioner definitions, economic prosperity has the focus, while scholars argue that a circular economy should be mostly focused on environmental aims (Kirchherr et al., 2017). Kirchherr et al. (2017) have reviewed 114 definitions of circularity, and they came up with the following generalization of circularity: replace the ‘end-of-life’ concept with reducing, alternatively reusing, recycling, and recovering materials in the production and consumption processes. Multiple scholars such as Ibn-Mohammed et al. (2021) and Velenturf & Purnell (2021) agree with this generalization of Kirchherr et al. (2017) and use the definition in their papers.

This is important at a small scale, such as companies and consumers, but also on a large scale, such as city, region, or national level. The aim of circularity according to Kirchherr et al. (2017) is to accomplish sustainable development, creating economic prosperity, social equity, and environmental quality while at the same time to benefit current and future generations.

Still, being circular, no matter what the meaning officially is, creates a circular product lifecycle, instead of a linear product chain which is often seen today. Figure 1 shows the linear economy, which is most apparent in today’s society, on the left and the circular economy on the right.

From a linear to a circular economy

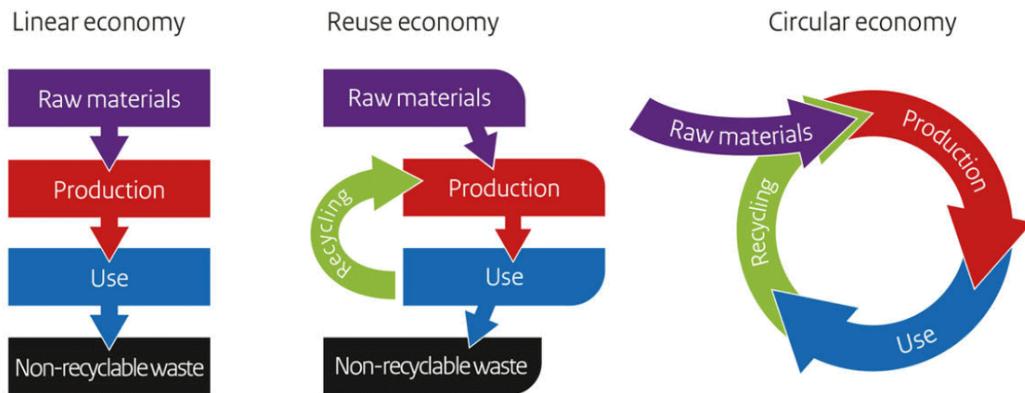


Figure 1: Linear and circular economy (Ministerie van Infrastructuur en Waterstaat, 2021).

In a circular economy it is important to close product cycles as this optimizes the value of products and materials. Having an optimized product value also increases the value of businesses, as this enhances the production process. Businesses take into account that products need to be reusable from the design stage onwards and this leads to products being designed in such a way that they can be easily repaired, both in terms of inputs, and costs. Another part of having a circular product cycle is the ability to use intensive machinery for multiple purposes. An example of this is to share large drills with other companies, intensifying the use of the machine which leads to using less raw materials on balance (Ministerie van Infrastructuur en Waterstaat, 2021). This way, the intensive machinery is not on hold for longer periods at a time, but rather in use for multiple purposes.

Decreasing the amount of inputs needed and more intensive use of machinery is a step in the right direction, but more factors come into play when thinking about the importance of circularity, which will be discussed in the circular frameworks in section 2.2. A circular economy decreases the amount of waste which leaks into the environment (Ministerie van Infrastructuur en Waterstaat, 2021) and being circular decreases the dependence on other countries as less raw materials from other countries are needed (Hanemaaijer et al., 2021).

2.2 Circular frameworks

2.2.1 Circular transitions

More and more businesses acknowledge the importance of circularity, but how they want to achieve this circularity differs from business to business (Kaipainen & Aarikka-Stenroos, 2022). Potting et al. (2016) created three kind of circular transitions to help businesses take



steps towards circularity. 1; transitions in which the rise of a specific radial new technology is central, which shapes the transition. Socio-institutional change is important to embed the new technology in society. 2; transitions in which socio-institutional change is central, and in which technological innovation has an incremental role. 3; transitions in which the socio-institutional change is central, but it is supported by enabling technology to ease the switch into a sharing economy. Transition 2 is also highlighted by Sehnem et al. (2021). In their paper they mention the need for dynamic, relational, and absorptive capacities to create socio-institutional change. The large difference between type 3 in comparison to type 1 and 2 is that type 3 has a generic enabling technology, while type 1 and 2 have specific enabling technologies. Generic enabling technologies are not dependent on specific sectors or inputs, but work on different processes. Transitions in type 3 are therefore in that sense easier, since the enabling technology can be developed in other sectors (Potting et al., 2016).

According to Potting et al. (2016), radical technological innovation is the most important innovation to move towards a circular economy. However, most businesses use incremental innovation to change specific quality demands of the product and these adjustments can mostly be done with the use of known technology. As long as businesses keep using incremental innovation, they will be stuck in the lower sections of circular strategies, such as recycle and recover. These lower section strategies will be further explained in section 2.2.2. These strategies are not enough to move into a circular economy and therefore it is important for businesses to start using radial innovation strategies. De Jesus et al. (2018) add to this view that movement towards circularity should not only focus on technology, but also on dynamic combinations of service innovations and new organizational set-ups. Consumers might change their behavior and start sharing products, but the manufacturing industry must comply to this transition and develop their products for this new way of sharing too. The lower circular strategies will mostly focus on technological innovations, while the higher circular strategies ask for transitions in the whole product chain, as well as innovations in product design and socio-institutional changes. Pieroni et al. (2019) agree with this view and they add that companies need to rethink their capabilities and work towards designing a new business model for circularity or sustainability. Companies learn through experimenting, testing, and implementing new ideas.

Today, 93% of all waste in the Netherlands has a useful purpose, and of this amount, 79% of this is recycled. However, the recycling is mostly of low quality and the use of raw materials to

do this is still high (PBL, 2016). This is not the most beneficial strategy when the aim is to move towards a circular economy, as raw materials will still be used in significant amounts. Value retention options are made to give handles to execute other strategies. These are explained in section 2.2.2.

2.2.2 Value retention strategies

However, circularity is an ambiguous concept with multiple actors interpreting circularity differently. This leads to researchers finding different strategies as to how to create circularity. According to Potting et al. (2016), there is a priority sequence in circularity initiatives and the role of innovation in the product chain. The value retention strategies (ROs) range from linear economy strategies towards circular economy strategies, with ‘recover’ being purely linear and ‘refuse’ being purely circular (figure 2)

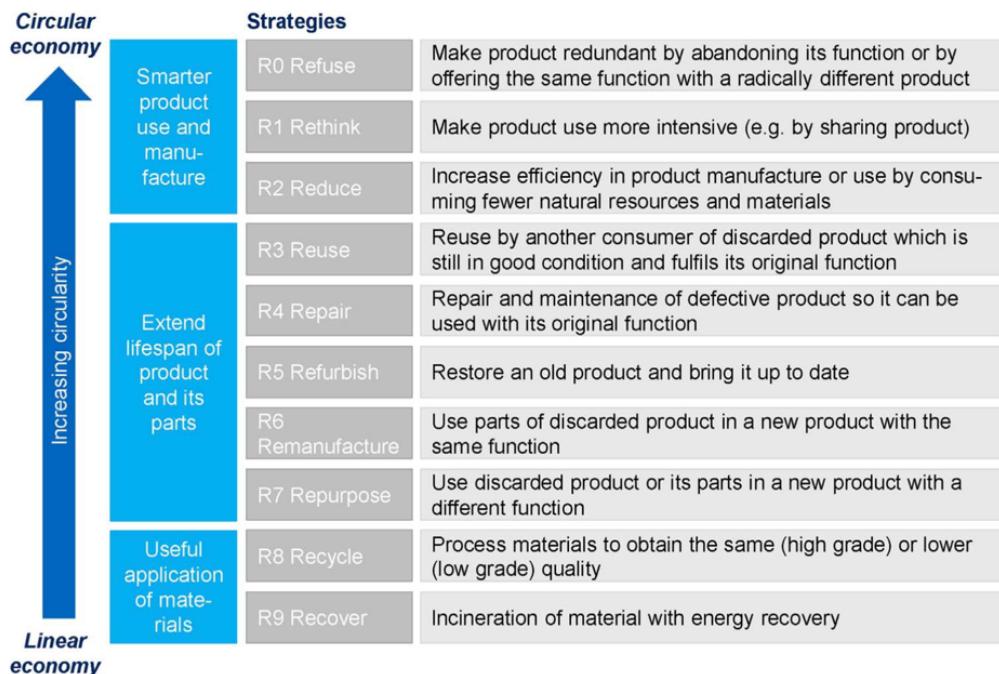


Figure 2: value retention strategies (Potting et al., 2016 & Kirchherr et al. 2017)

Figure 2 shows the different strategies to apply to move towards a circular economy. These strategies together are called the 10 ROs (RLI, 2015). The most basic strategies are to usefully apply materials. In this section, R9; *recover* and R8; *recycle* are present. R9 is about burning materials and using the residual energy again and R8 is about processing materials into the same high quality product, or as a different, lower quality, product. One step further towards a circular economy is the section of expanding the lifespan of products and its parts. This section consists



of R7; *repurpose*, R6; *remanufacture*, R5; *refurbish*, R4; *repair*, and R3; *re-use*. R7 is about using discarded products or materials to create new products with other functions. R6 is similar to R7, only this step involves using discarded products or materials and using these materials to create new products with the same function as the old product. R5 revives and modernizes old products, and R4 repairs and maintains a broken product so it can be used to its original function. R3 re-uses a discarded product which is still useful, but will now be used by another user (RLI, 2015).

The most circular section is the section which uses and manufactures a product in a smarter way. R2; *reduce*, R1; *rethink*, and R0; *refuse* are in this section. R2 is about more efficiently developing a product with less raw materials and inputs. R1 intensifies product use by sharing products or creating multipurpose products, and R0 is about making a product superfluous so it does not have to be developed in the first place. The different strategies go hand in hand with multiple sorts of innovation and all these strategies help to create a more circular economy, but the extent to which businesses use these strategies differ largely. Next to businesses using different strategies, socio-institutional challenges play a role (Potting et al., 2016). Socio-institutional factors are the norms and values of a society. Challenges in these factors are the willingness of people and businesses in society to change their norms and values in order to create circular transitions (Hanemaaijer et al., 2021). Consumers contribute to the circular economy as well and they do so by using their products longer, repair them, or recycle them (Ministerie van Infrastructuur en Waterstaat, 2021).

2.2.3 Product cycle ladder (*kringlopenladder*)

Jonker et al. (2018) have another view on how to achieve circularity, and they have made the ‘Kringlopenladder’, in English the ‘Product cycle ladder’, a model of five phases to create a circular economy. It is impossible for a business to become circular in an instance, and therefore Jonker et al. (2018) created this model of five phases which will help decrease the complex nature of circularity for businesses. The phases of the model range from simple to complex and ask action from businesses accordingly, as is shown in figure 3.

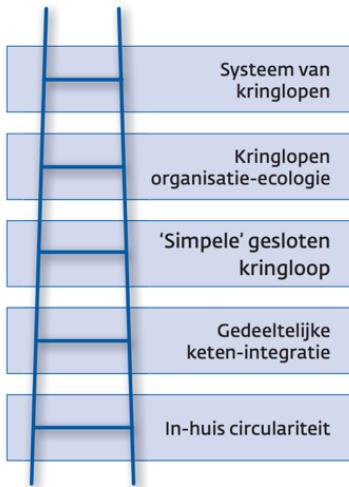


Figure 3: Product cycle ladder (Kringlopenladder) (Jonker et al., 2018)

The first phase is the most basal phase and it is called *in-house circularity*. In this phase the company closes the loops which are fully within the company. They can do this themselves, or with the help of their suppliers. The effects of this in-house circularity are small, but it does decrease costs for the company, which makes it a great first step into circularity.

The second phase, *partial chain integration*, has a focus which is no longer only on the business, but on the production chain. Closing loops within the company no longer has the priority, but closing loops between companies has the focus. One company's waste could be another company's inputs and this way multi-business loops are closed.

The third phase takes circularity one step further and focuses on closing the loop of a specific material. This phase is the *material mono stream loop*. Production processes need to be altered in such a way that a raw material enters a closed loop and will eventually be fully reused and recycled over and over again.

The fourth phase is the *organization ecology loop* and at this point the companies have multiple mono stream loops which depend on one another. Companies which work together in this ladder are dependent on one another in different stages of the production process.

The last, most complex phase, is the *system of loops*. Production chains are fully intertwined with subsystems and multiple companies working together. It is a fully organizational economic system and circularity is achieved.

These phases can be used by companies as a guideline to create circular businesses, with the goal being a fully circular economy. However, it will take at least 30 years to accomplish such a system, according to Jonker et al. (2018).



2.2.4 Circular frameworks comparison

The three circular frameworks mentioned above have similarities and differences compared to one another. This paragraph will link the different frameworks.

Jonker et al. (2018) state there are five phases to create a circular economy, while Potting et al. (2016) state there are three transitions, accompanied by the 10 different RLI (2015) strategies to becoming circular. However, the authors have something in common, which is that they rank initiatives from being ‘simple’ to execute, towards ‘complex’ initiatives to create full circularity.

Jonker et al. (2018) mention closing loops, from within the company as most simple to between companies to create an intertwined network, as most complex. The authors mention production processes being altered in such a way that products can be reused and recycled fully, but they do not go into depth as to which strategies a company could apply to create circularity.

Potting et al. (2016) do mention in more detail how to achieve circularity. The authors state multiple transitions, both from the industry, but also from society, need to happen in order to create circularity. With these transitions come the use of enabling technologies and radical technological innovation. However, Potting et al. (2016) mention companies mostly use incremental innovations, leading the businesses to be stuck with strategies like recycling and recovering. Potting et al. (2016) make a bridge towards the work of Kirchherr et al. (2017). Both the papers use value retention options (ROs) to create a more detailed description for businesses as to how they can become circular. As is explained before, the value retention options are strategies to move towards a circular economy.

When the papers of Potting et al. (2016), Jonker et al. (2018), and Kirchherr et al. (2017) are combined, an extensive network of transitions and strategies arise. First, both the industry and society should be open to changing their behavior, otherwise circular initiatives will not hold. Next, the initiatives should be executed.

The first phase of Jonker et al. (2018) is shown as the most basic phase, but closing loops, even though only within the company, ask for all ROs in the framework of Potting et al. (2016) and Kirchherr et al. (2017). As a matter of fact, all phases in the model of Jonker et al. (2018) ask for all ROs from RLI (2015), which makes the model of Jonker et al. (2018) hard to execute. It might be more manageable for businesses to follow the model of Potting et al. (2016) and Kirchherr et al. (2017) and to work their way to a circular business by using the value retention options.



2.3 National and international laws and regulations

Even though there are multiple frameworks on how to achieve circularity, all have to comply to national and international laws and regulations. The European Commission is a large player in the creation of laws and regulations regarding circularity. In 2020, the European Commission adopted the New Circular Economy Action Plan as a building block of the Green Deal (European Commission, 2023). As is mentioned earlier, having a circular economy is important to reduce the pressure on the planet and to create sustainable growth. The New Action Plan has an agenda oriented at the future, to achieve a cleaner and more competitive Europe in co-creation with economic and public actors, and consumers (European Commission, 2020). It has initiatives about the design of products, the processes, and consumption of products. The action plan has as aim to decrease waste and close loops of raw materials and it does so by legislative and non-legislative measures.

In total, the New Action Plan has several objectives, such as making sustainable products the norm in the European Union, focusing on sectors where the benefits of circularity are high, such as batteries, vehicles, textiles, and food, water & nutrients, and making circularity work for people, regions, and cities (European Commission, 2023).

Nationally, the Dutch cabinet has developed four policy pillars to create a circular economy as soon as possible. 1; decrease the use of raw materials. The need of raw materials is less if people use less products, share them, or if businesses produce more efficiently. 2; replace raw materials. If new raw materials are needed, use the sustainable, renewable available raw materials like biomass. 3; extend the life cycle of products. This way products can be used for a longer period of time. 4; high quality finish on products decreases the amount of waste generated (Ministerie van Infrastructuur en Waterstaat, 2023).

With these four pillars in mind, the government and over 400 actors such as universities, sector organizations, innovative startups, internationals, and municipalities in the Netherlands have signed the Grondstoffenakkoord (raw materials agreement) (Hanemaaijer et al., 2021). This agreement consists of five transition agenda's on the themes biomass & food, construction, plastics, production industry, and consumption goods. The Dutch cabinet has indicated to use laws and regulations, incentives, monitoring, innovation, and product responsibility to accelerate the transition towards a circular economy. This is the basis of the Dutch transition (Hanemaaijer et al., 2021).

2.4 National policy recommendations

From the national laws and regulations arise national policies. Policies in the Netherlands are mostly aimed at creating a broad coalition of actors to facilitate circular initiatives such as knowledge development on a voluntary basis (Hanemaaijer et al., 2021). Yet, voluntary participation is not enough to create a circular economy. To realize a fully circular economy, Hanemaaijer et al. (2021) recommend multiple policy handles. The first one is to internalize the cost of environmental damage of production and use of products into the price of the product or service. Raw materials are now cheaper than materials which are able to be recycled, and this should be changed. A second recommendation is to put weight to policy by using taxation, impositions, and regulation. Thirdly, increase the circularity requirements step by step when buying products and working together with the government, as the government is an important actor in the transition as well. The fourth recommendation is to develop a broad vision of circularity, which is accepted by both companies and societal organizations. Develop this vision into concrete goals according to specific transition themes. Rijksoverheid actually did this in 2020, when they created differential goal sets (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2023). The last recommendation is to create a clear division of roles for the different actors in circular policy. Clarify what the responsibilities are and which powers certain actors have.

All policies recommended by Hanemaaijer et al. (2021) rely on the fact that institutions and businesses are open to phase out linear product chains and decrease the use of products with a short lifespan, and that consumers are ready to change their behavior. If businesses and consumers are not open to do this yet, the government should use levies or ban certain product chains. An example of such regulation made by the government is seen today in the nitrogen law (Eerste Kamer der Staten-Generaal, n.d.). This law prohibits the emission of too much nitrogen into the atmosphere by large farmers and the government is making laws to date to decrease the emissions.

Not only Hanemaaijer et al. (2021) have recommendations for policy, Bastein et al. (2013) have recommendations too. They state that the government should support radical innovations by identifying groundbreaking ideas. This lowers the threshold to act and decreases the risks involved in radical innovations.

If the policies were to be adopted by the government, this would lead to the creation of jobs for new steps in the development process or product chain (Bastein et al., 2013). This creates



spinoff chances in the Netherlands because the country already has a strong knowledge position in the world. If the government has an active role, and is consistent with a long term strategy, large economic possibilities would arise.

2.5 What is not done in circularity today?

Even though Jonker et al. (2018) have created the Kringlopenladder to foster cooperation between companies and sectors, cooperation is not optimal yet. Jonker et al. (2018) see that businesses that use large amounts of raw materials, are more actively looking to be circular and use ROs. However, they remain rather linear and since businesses all have their own intensity in circularity, it is hard to work together with other businesses to develop the best strategy. Hanemaaijer et al. (2021) add to this that businesses which actively seek to make their raw material use more efficient, are progressively succeeding, but the use of raw materials is not decreasing. The total use of raw materials has not significantly changed in the Netherlands since 2010 and companies in the production industry are at the greatest risk. They depend most heavily on raw materials and have the risk of not being able to keep production going as long as they keep using those raw materials.

As companies are not effectively working together, the largest barrier to create a circular economy lays in the linear production chains (Jonker et al., 2018). It is a difficult task for companies to close the loops in their production chains as they are not ready to develop the strategies needed because they do not feel the urge to act or do not have the necessary means to act. As companies develop their strategies, they mostly cooperate with actors in their own network and exclude actors from outside their network. This reduces the options to create strong circular strategies. More information about networks is stated in section 2.6.

Businesses keeping their linear production chains also comes from the fact that they feel as if recycling products is being ‘circular enough’. Recycling is an essential part of the circular economy, but it is not sufficient to make the transition to a fully circular chain. This creates another barrier towards a circular economy, 66% of the 1900 Dutch innovative circular businesses focuses on recycling (Hanemaaijer et al., 2021). The recycling sector in the Netherlands is strong at this point, however, ROs (see figure 2) used mostly go up to R7 at the highest. Materials are reused as different materials, and quality of the material is lost in the process. Progress is to be made in recycling products into the same category products they were, while maintaining quality. More resources should be assigned to creating higher ROs, which



also includes increasing the lifespan of products, repairing, and remanufacturing. Adding to this, even though businesses try to create a circular strategy, they mostly stick to their existing business model which decreases the amount of possibilities a business has (Jonker et al., 2018) while it is important to create new business models (Hanemaaijer et al., 2021). Next to this, business do not use big-data as much as they should, according to Jabbour et al. (2017). The authors state the use of big data to create circularity is important, since it integrates key aspects of sustainability with essential stakeholders and data management.

Lastly, Jonker et al. (2018) emphasize that the knowledge about circularity is far ahead of the actual execution of circularity. The transition towards a circular economy is still in an initial phase, as can be seen by the vast amount of linear chains still present (Hanemaaijer et al., 2021)

2.6 Importance of networks in knowledge creation

Jonker et al. (2018) have mentioned that companies do not effectively work together and often do not seek opportunities to cooperate with actors outside of their network, decreasing options to create circular strategies. This is troublesome, as networks are valuable ways to create knowledge for firms. Knowledge networks are collections of firms and actors who work together across spatial, organizational, and disciplinary boundaries to invent new knowledge and share this knowledge with one another (Pugh, 2013). Pugh (2013) mention that the focus of knowledge networks often lays in the development and distribution of knowledge. Contractor (2002) adds to this that knowledge lies in the network as a whole, rather than in one actor in the network. Everyone in the network has a special kind of knowledge and is able to connect this to knowledge of other actors in the network. This creates an extensive knowledge network that is worth more than only the knowledge from one actor. The network contains collective competencies that enable actors to produce products and services in a broader range than the actor could do on its own. Especially in knowledge and technologically intensive fields, like the dairy industry, large gains are to be attained when working together with other actors in the network (Powell, 1998). As the dairy industry is an industry in which technological advancements are important, and often difficult to achieve, working together increases the chance of creating new knowledge and a wide range of interorganizational linkages are crucial to create knowledge diffusion and learning. These linkages could be formal, through contracts, or informal, through participation in communities according to Powell (1998). When linkages between actors can be made on relatedness in the firms, collaboration will be further increased (Hansen, 2002). Hansen (2002) mentions that firms who have related knowledge or related

organizational capacities increase the speed of completion time of projects and increase the amount of knowledge exchanged.

2.7 The triple helix

As is mentioned in the paragraphs before, networks create a strong base to develop knowledge. Not only business to business cooperation is important, but the government is an important player in the network as well. The government has the opportunity to create laws and regulations, together with policies and financial incentives. However, not only the government and businesses should be active to create a circular economy, knowledge institutions are important as well. This is what is called the triple helix model, shown in figure 4.

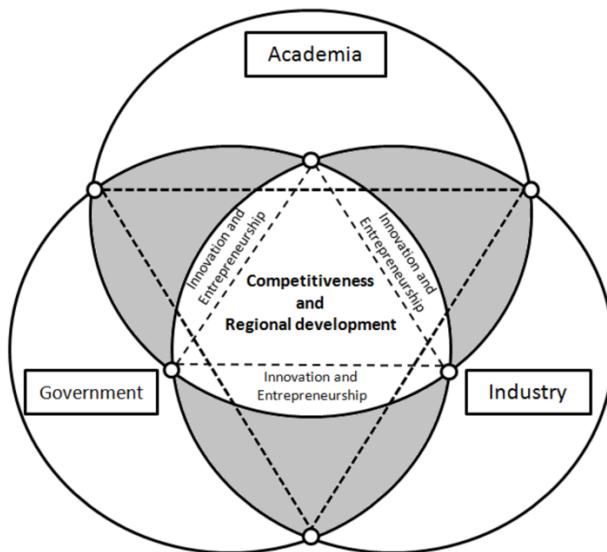


Figure 4: Triple helix model (Farinha & Ferreira 2013)

In this model, the university (or another knowledge institution) works together with the industry (the businesses) and the government. Industries have their own R&D sections in which they do research on initiatives they feel are valuable, the government makes trade-offs between investments and policies, and universities have a position both on the market regionally, but also globally. This creates different incentives and different viewpoints from all three actors in the helix and when these actors work together, innovations are enhanced (Leydesdorff, 2005). The triple helix also brings together the competences of the actors, which further enhances economic and social development by collaboration of the actors (Anttonen et al. 2018). The triple helix model shows the importance of working together, especially when preferences

between actors differ. This way, the most beneficial circular initiatives and innovations can be developed and executed, fostering shifts towards full circularity (Anttonen et al. 2018)

2.8 Academic relevance

Having multiple frameworks, having multiple policy recommendations, and even having multiple meanings of circularity shows the importance of this paper. Academic research is not conclusive on the circular economy and research on the concept of circularity is often superficial and unorganized (Korhonen et al., 2018). At this point, circularity is a collection of vague and separate ideas from multiple fields, according to the authors. In general, most concepts overlap but emphasize different issues like recycling, reusing, or reducing (Geisendorf & Pietrulla, 2017). There is no consensus about value retention options (ROs) and there is no comprehensive and systematic analysis on the circular economy (Kirchherr et al., 2017). Definitions of the circular economy vary widely and some definitions do not have a waste hierarchy. This is troublesome, since this kind of definition leads to companies only implementing minimal changes in their current business model. However, radical changes are often needed to accomplish circularity according to Kirchherr et al. (2017).

Bastein et al., (2013) on the other hand, state that both radical changes and incremental changes are needed. Radical changes could be both with the goal of circularity, as well as with the goal to create a beneficial economic outcome (Bastein et al., 2013). This again states the contradictory research.

There is no coherent definition, plan, or implementation to create a circular economy. Without the coherence and expansion of knowledge, the circular economy might collapse (Corvellec et al., 2021). Corvellec et al. (2021) state that even though the idea of circularity is good, the execution is often lacking. Biophysical limits are often overlooked when talking about the progress and growth which needs to be accomplished (Kovacic et al., 2020). ‘Circular economy’ is often times used as a buzzword for sustainable development and this is problematic (Kirchherr et al., 2017).

2.9 Societal relevance

Besides academic relevance, the topic of circularity also has a societal relevance. The Dutch cabinet has created the goal for the Netherlands to be fully circular in 2050 (Ministerie van Infrastructuur en Waterstaat, 2023) as is stated before. But why is this important? This has two



reasons, according to Rijksoverheid: the influence on the world, and the independence on other countries (Ministerie van Infrastructuur en Waterstaat, 2022). A circular economy is an important instrument for the world, as it has less impact on the climate, biodiversity, and pollution. More efficient and longer use of products decreases greenhouse gas emissions and more efficiently producing goods also decreases greenhouse gas emissions. This benefits the biodiversity in the world and less waste benefits the whole environment. In the best case, discarded products can be reused and recycled to their original quality without the need for new raw materials (Potting et al., 2016). The second reason is the dependence on other countries. Most of the raw materials used to produce products come from countries outside of the Netherlands. This creates a dependence on other countries, which could be a risk in the long run. When raw materials run out in another country, the country depending on these raw materials might encounter problems in production which could negatively impact the national, and even global, economy (Hanemaaijer et al., 2021). Next to this, some raw materials are scarce and keep on increasing in price. The sooner the Netherlands switches to a circular economy, the sooner the Netherlands will be less dependent on other countries anymore, creating a stronger and self-sufficient economy.

This paper uses the theories from this section to create a base for the subject. The circular frameworks explained in this section are the basis to find out whether companies use these frameworks, or whether they use their own strategies. The theories from Jonker et al. (2018) and Hanemaaijer et al. (2021) are used to find out whether businesses work together to create circular initiatives or not.

2.10 Conceptual framework and expectations

Combining all theories from the previous paragraphs creates the conceptual model of this paper. In this paper causality is not investigated, but the subject which will be investigated is whether there is a link between the amount of circular initiatives and the network of a company. These variables are not dependent nor independent, since this is a qualitative study. The network of a company exists of multiple firms and in some cases a knowledge institution is present as well. Profits might also influence the amount of circular initiatives, just as the beliefs about circularity of the company, as is shown in figure 5.

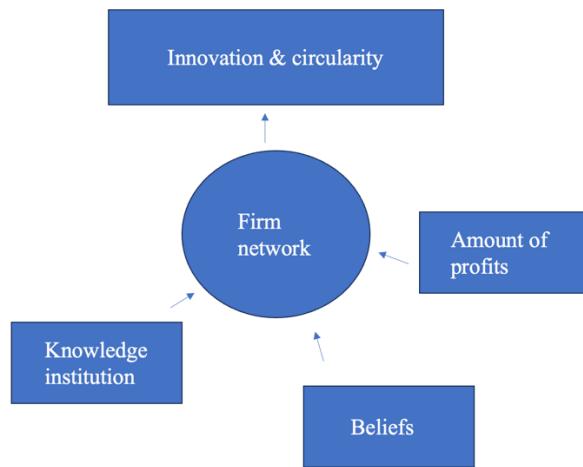


Figure 5: factors influencing amount of circular initiatives (created by author)

The conceptual model and research questions create multiple expectations. The first expectation is that international firms have a broader network than local firms, which increases their chances of having an actor in the network with which knowledge on circularity can be exchanged. It is expected that firms which are present in related sectors, will collaborate more often.

The second expectation is that larger firms (in terms of amount of employees) will have more profits, allowing them to use more financial resources to develop circular initiatives.

The last expectation is that firms which have a knowledge institution in their network will both have more circular initiatives and a higher quality of initiatives, because of the effects of the triple helix.

3. Methods and data

The methods of acquiring data for this paper are qualitative. Qualitative data assemblance is chosen because networks thrive on tacit knowledge, which cannot be written down (Nousala, 2006) and the tacit nature of networks is best described through interviews (Silverman, 2011). Data acquisition is done by literature study, interviews, and secondary data assemblance.

3.1 Data acquisition

The data gathered in this paper come from interviews, academic literature, and secondary data. Desk research is done to create the literature review in the previous section of this paper and mostly academic literature is used for this. From this literature review, theories and general knowledge was gained and this created the basis for the interview questions.

The dairy industry has been picked because it is a large polluting industry in the Netherlands (Raghunath et al. 2016). The industry is large in number of firms and it was thought this would increase the number of firms willing to participate in this study. At first the search contained mostly firms in Groningen and Friesland, since these companies are manageable to reach by train or car. Later other firms were contacted too, also further away. The search for dairy companies started with a Google search, to get an idea about which companies are in the region of Groningen and Friesland. After doing a Google search which lead to zero respondents, even after contacting them multiple times, several personal acquaintances have been contacted to help and find new contact persons at dairy firms. This procedure has been the most helpful and led to three respondents. All interviews conducted in this study have been with companies contacted through the acquaintances who have helped to get in touch with employees of the companies. The Google search was less beneficial, as most of the companies contacted, except for Wagenaar Dairy, have either not responded, or have told not to have the time to help with the study. The initial plan was to have six interviews with both local and international firms. However, it became clear that most Dutch dairy companies are international nowadays, so only firms which are at least to some extend international, are interviewed. Due to the fact that the participation ratio was very low, even after extensive search and contact moments, this lead to having four interviews instead of six.

Another, separate, interview is done with Circulair Friesland. More information about Circulair Friesland can be found in section 4.2. This interview is done to find out which trends they see,



as a network organization, in circularity. Other topics covered in this interview are what kind of organization Circulair Friesland is, and what kind of companies are connected to Circulair Friesland. The full interview question template with Circulair Friesland can be found in Appendix A6.

Having five interviews is not representative of the whole population of dairy firms in the Netherlands and therefore secondary data analysis is done. This analysis is done after all interviews have been conducted and there is no time left to do more interviews before the deadline of this study. Through a Google search containing “circulaire initiatieven OR circulariteit AND zuivelindustrie” the first 10 hits are examined as these comprise the first page of Google results. Using the same keywords in Google achieves resemblance in the topics of the hits and this allows for comparison between hits (Silverman, 2011). Adding this content analysis creates triangulation, using different sources and data to increase the validity and reliability of the paper (Benders, 2023). These search terms are chosen as they show whether or not there is information to be found about the dairy industry in combination with circular initiatives. It is important to add a secondary data search on Google, since only the interviews are not enough to create reliable results. The first 10 hits are Dutch websites which have information about circularity on their webpages and the content of these pages is researched. The goal of this secondary data analysis is to find out whether there are differences or similarities between the information on the webpage and the information gathered from the interviews. The data on the websites have been analyzed with a content analysis (Silverman, 2011) specifying the information that is also discussed with the firms in the in depth interviews.

After having done the secondary data search, some hits have shown not to be relevant. The webpages all have content on circularity, but not all webpages have content on circularity in combination with the Dutch dairy industry. Even though the search specified the dairy industry, some hits did not have correspondence to the topic of this study. When the hit on Google does not have content on circularity specifically on the Dutch dairy industry, the hit is thought of as being not relevant and will be excluded from the research. This leaves six hits which are examined in this study.

3.2 Data characteristics

The interviews are done in a semi-structural fashion. Interview questions are made beforehand but are not asked in the same sequence. This way of interviewing allows for having a structure, while also having the possibility to ask other questions to go further into depth when wanted (Silverman, 2011). Each interview contained the same interview questions and questions were about the nature of the firm, the network of the firm, the definition on circularity, the circular initiatives of the firm, and whether or not the firm received any subsidies. The full interview questions template is found in Appendix A1. The interviews have been conducted over a time period of three months, between February and April 2023, took between 30 and 60 minutes and were in Dutch. All interviews were in person with a spokesman of the company, either on site or online. The interviewees have signed an informed consent form and had the right to stop or deny to answer questions whenever they wanted. All have agreed on being mentioned by name and the interviews have been recorded. The data of the interviews will be stored anonymously for 5 years in the secure RUG repository by prof. dr. A.E. Brouwer (supervisor of this study).

4. Results

This section shows the results of the research done. First, more information about respondents is given on a case by case basis. The first three and the sixth question of the interview are the basis of the cases (Appendix A1). Later, the sub research questions and expectations are examined by comparing the fourth until the last interview questions for all respondents. All results in this section regarding the interviews come from the answers the respondents gave. To give body to the results from the interviews, a content analysis of 10 websites on Dutch circularity is done after this. The section ends with the overarching results of the methods combined.

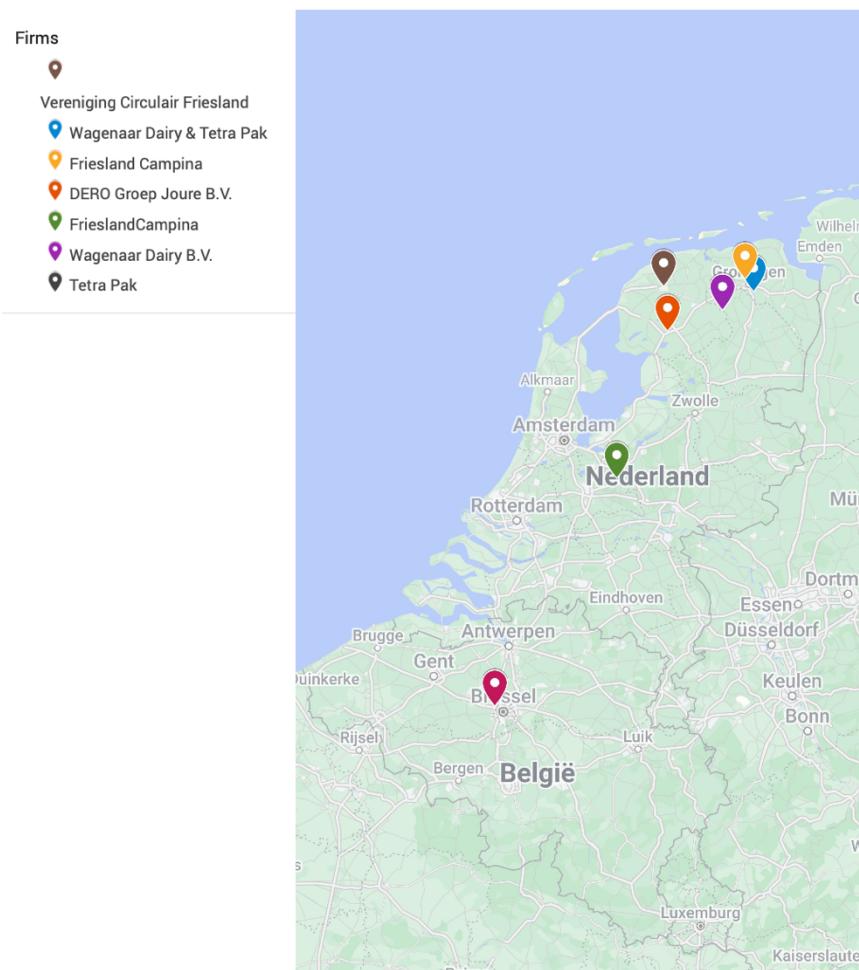


Figure 6: location of the firms and interviews done

Figure 6 shows the locations of the firms which have participated in this study. The yellow pin shows an online interview with Friesland Campina, done online at the Zernike Campus in Groningen and the green pin shows the location of the headquarters of Friesland Campina in Amersfoort. The blue pin shows the location of the online interviews with Wagenaar Dairy and Tetra Pak, done from Haren. The purple pin shows the location of the firm of Wagenaar Dairy



and the headquarters of Tetra Pak are in Belgium, shown by the red pin. The brown pin shows the location of both the cooperation Circulair Friesland and the location of the interview, at the Watercampus in Friesland. The orange pin shows both the location of the firm Dero Groep and the location of the interview.

4.1 Case Dero Groep

In total five interviews have been conducted, four with production businesses in the dairy industry, and one with Circulair Friesland. The first interview conducted was with Wichger Helmholz, the sales account manager of the company Dero Groep, he acts as the spokesman of Dero Groep during this interview. Dero Groep automizes processes in the feed industry, mostly in cheese and convenience food, and automizes employee intensive processes for which a lot of people are needed or for which no employees can be found, so the process can be executed with less personnel (Appendix A2). They supply the cheese press systems for producers of cheese, and these systems run for 20-30 years. Dero Groep has 130 employees, a revenue of €27 million annually and 60-70% of this revenue comes from processes with cheese. The network of Dero Groep is international, yet mostly in Europe. However, Dero Groep also has projects in Australia, New Zealand, South Africa, and one in the United States and Canada. The most important collaborations are with Ewer, De Producent, and merchants such as Van de Sterre and De Goei. Right now, Dero Groep is a large player in the European market, but Switzerland and Austria have rapidly expanding automation sectors. Dero Groep is persistent to stay ahead of these countries.

4.2 Case Circulair Friesland

The second interview is done with Länk Vaessen, circular specialist on water. Länk does not work for Circulair Friesland internally but he is the spokesman of Circulair Friesland in the interview conducted. Circulair Friesland is a cooperation of 140 members of which 100 are located in Friesland (Appendix A7). All companies are able to join Circulair Friesland, but the preference is to keep the cooperation local. Actors join Circulair Friesland whenever they want to become more sustainable or circular and they want or need help to accomplish this. At this moment in time, production companies in the dairy industry are not part of the network of Circulair Friesland, as “*These companies are often too large and do not wish to have help in becoming circular.*” thus Länk (Appendix A7, q8 & q9). Businesses which do join Circular Friesland are mostly middle size companies, but small companies and startups also do join. Circulair Friesland has three themes on which companies can join: circularity in purchasing,



circularity in construction, and closing nutrient loops. The goal of Circulair Friesland is to connect and stimulate organizations, governments, schools, and businesses to act circular and it does so with the use of tools. These tools are: the Circo Trick; in which actors think about how to become circular together and what is needed to accomplish this, and the Ambitietafel; where Circulair Friesland joins businesses which want to realize an idea and collaborate to work out how to do this. The goal of Circulair Friesland is to get Friesland to be the most circular region in Europe before 2025.

4.3 Case Friesland Campina

About one week later, the interview with Friesland Campina took place. The interview is conducted with Klaas Vos, sustainability manager of Friesland Campina. After the interview was conducted, Anton Sweere, Manager Research Program Ideal Factory, answered some questions too. Friesland Campina is a cooperation which trades in fluid dairy products, milk feed, and cheese (Appendix A3). They collect milk from member farmers and process the milk into dairy products to sell worldwide. Milk collected from companies outside of the Netherlands, for example companies located in Romania and Bulgaria, is sold on the Dutch market too. However, foreign farmers are not members, they are connected to Friesland Campina by contracts. In total, Friesland Campina has 10.000 member farmers, over 21.000 employees, 50 companies worldwide, and a revenue of €14 billion annually. The largest share of revenue comes from trade in Europe, about 75%, the rest of the revenue comes mostly from South East Asia. This creates a global network for Friesland Campina, which mostly exists of farmers, suppliers for non-food products like dyes, pigments, soy, machines, and service. The most important collaboration for Friesland Campina is the one with member farmers.

4.4 Case Tetra Pak

The second to last interview conducted is with Frank Vandewal, sustainability director with a focus on Europe. Frank is the spokesman of Tetra Pak during this interview. Tetra Pak is a business set up in the 1950s which produces packaging for drinks, packing material, and all elements needed for producing the packaging like straws and caps, with 23.000 employees worldwide (Appendix A4). Next to this, Tetra Pak also produces the machines for production in the dairy industry. "*Tetra Park delivers full end-to-end solutions from machines to milk cows to filling packages and everything in between.*" thus Frank (Appendix A4, q2). One of the pillars of Tetra Pak is that food needs to be supplied to the consumer in the safest way possible, but also with as low impact on the environment as possible. Tetra Park has collaborations



internationally, but nationally the cooperation with Kennisinstituut Duurzaam Verpakken (KIDV) and Het Afvalfonds are important.

4.5 Case Wagenaar Dairy

Lastly, an interview with Wybe Wiekema, co-owner of Wagenaar Dairy, is conducted. Wagenaar Dairy trades in dry dairy products like milk feed and the team consists of 12 employees (Appendix A5). They produce products for human consumption, as well as animal consumption. Total revenue is 1000 tones in kilograms per week, with a value of €1 per kilogram which adds up to a yearly revenue of €52 million. Products for animal consumption take up 75% of the revenue. Wagenaar Dairy buys material from the human food industry which has some sort of defect or a short 'best before' date which they use for the animal food industry. The company is active internationally, but they are mostly active in Europe. They buy products from France, Belgium, Luxembourg, Scandinavia, and Ireland and ship it to Haulerwijk where it is made into homogenous batches. A small stream of products which is also not suitable for animal food are used in the bio industry, which Wagenaar Dairy sells to a company in Meeden where the products are used for gas production. Other companies in the network of Wagenaar Dairy are Ewer, Friesland Campina, DMK, and Euroserum. These companies are customers of Wagenaar Dairy and are the primary link in the chain. Wagenaar Dairy gets their products from contracts with companies in the production of human food, for example baby food, like Falio, Humana, and Hero. Whenever products are rejected, these companies sell the products to Wagenaar Dairy who tries to produce animal food from it. The products Wagenaar Dairy buys are still good products, but due to strong regulation the products may no longer be used for human consumption. Other companies in the network of Wagenaar Dairy which mostly purchase calf milk products are Firma van Drie, Deca Feed, Nutri Feed, and AB Neo. Lastly, Wagenaar Dairy is affiliated with VIDO (Voedingsmiddelen in Diervoederoverleg), a cooperation to connect competitors to find out which opportunities and bottlenecks are present in the industry.

4.6 Knowledge institutions and network

After having conducted the interviews, answers from the respondents are compared and sub research questions can be answered. One of the sub research questions is the question '*What does the network of the firm look like?*' This question has been answered in the cases described above. Another sub research question is the question '*Does the firm have a school/university/research organization in their network?*' This question is also asked in the



interviews and different answers were given by the different respondents. Not all firms have a knowledge institution in their network, but some have their own R&D section.

Dero Groep has an R&D section in Nieuw Vennep where two employees work on new initiatives and investigate whether those initiatives have potential or not. In Joure, their main location, there is no R&D section, but here new initiatives are developed depending on the project employees are working on. There is no knowledge institution in the network of Dero Groep, since they want to develop all initiatives inhouse. “*Depending on the kind of project, collaborations are made if Dero Groep needs knowledge which we do not have ourselves.*” thus Wichger (Appendix A2, q7). The closest link Dero Groep has to a knowledge institution are the two graduate research students doing their research at Dero Groep (Appendix A2). It is not mentioned in the interview what kind of graduate research students are doing research at Dero Groep. From the interview it does looks like they do not use the triple helix model.

All other three respondents mentioned their company does have a knowledge institution in their network. Wagenaar Dairy, one of the smaller companies in this paper, does not have an R&D section. “*We are too small as a company to hire a fulltime employee to work on R&D.*” thus Wybe (Appendix A5, q4). However, they do have knowledge institutes in their network through their connection to VIDO. VIDO is a cooperation where multiple companies in the animal feed industry share their knowledge, making the cooperation full of companies that are related to Wagenaar Dairy. As Hansen (2002) mentioned, this increased the capacities to create new knowledge. Prevalent knowledge institutions with which they are in contact are Blok, Universiteit Wageningen, NYWA certified companies, and Schouten. Wagenaar Dairy knows it is important to develop knowledge and therefore they built a small lab, which allows for execution of smaller initiatives.

Friesland Campina and Tetra Pak are larger companies and both have their own R&D section. Friesland Campina has an R&D section in which they do strategic and fundamental research on circularity, they even have a special department on research on circular packaging and a department on farm & sustainability where circularity in the chain is examined (Appendix A3). Next to having an R&D department, Friesland Campina has a strong collaboration with Universiteit Wageningen. The motive to work together with knowledge institutions and to have an own R&D network is that it creates specific knowledge. “*The most important reason to collaborate with knowledge institutions is that they have specific knowledge.*” thus Klaas



(Appendix A3, q4). Klaas his view is in line with the triple helix model in which it is stated that knowledge institutions strengthen the opportunities to create new knowledge and initiatives. Next to this, collaborations allow for extra manpower, which equals more time to work on the subject. In the process, Friesland Campina does not forget the member farmers. Whenever they have initiatives, Friesland Campina tries to work together with them to execute those initiatives.

Tetra Pak also has their own R&D section and they largely do research in house. Annually, €100 million is spend worldwide within Tetra Pak to innovate on packaging as packaging needs to be developed to fully consist of paper fiber. Packaging needs to become fully circular or recycled and Tetra Pak is working hard on achieving this through their own R&D section. However, Frank does state: “*Collaborations with knowledge institutions are important because a university executes natural research and delivers more transparency and knowledge on the topic in question.*” (Appendix A4, q4). Universities are not necessary for Tetra Pak to become sustainable, but they are important links in technical research, Frank mentioned the essence of the triple helix model. Tetra Pak is open to graduate research students, just as Wagenaar Dairy, but this is dependent on the availability of students.

It is clear that all companies value R&D and the creation of innovations and new initiatives, but how they execute this differs. Wagenaar Dairy, Friesland Campina, and Tetra Pak all have knowledge institutions in their network and all respondents mention in the interview the presence of such an institution is helping them, may it be through independent research, or through specific knowledge the institution has. This is in line with the theory of section 2.7 about the triple helix. The respondents also mention the input of the government, which will be further investigated in section 4.7.

4.7 Definition of circularity

The definition of circularity which is worked with in this paper is described in the section of the theoretical framework. However, respondents could have another view of circularity. Therefore the sub research question ‘*What is circularity?*’ is asked in the interviews, to give more insights into how circularity is perceived. All respondents agree with the definition given to them, but Wybe and Frank have information to add. Wybe, from Wagenaar Dairy, states: “*There is no reason not to become circular, but at this moment rules and regulation hinder the development of full circularity as a lot of products may not be used anymore after rejection, even if the products are still good.*” (Appendix A5, q5). This connects to section 2.7 about the



triple helix, only the government is not aiding development of initiatives at this point. The triple helix model emphasizes the importance of government, institutions, and firms working together, while Wybe states that the government is not cooperating to the fullest at this point. Rules and regulations made by the government hinder the development of circularity, breaking down the possibilities of the triple helix.

Frank, from Tetra Pak, agrees in the basic sense with the definition given, but he thinks it is too narrow. He states: “*Circularity is described as ‘recycling and reusing materials as raw materials for other products’ but this ignores the question ‘what is the impact on material choice and the ability to reuse this?’*” (Appendix A4, q5). Frank says recycling on its own does not make a package sustainable, and recycling should be used in a broader sense. A product should not always be recycled to the same product, but it should be recycled to another product when this other product is more sustainable and has a longer lifespan. Recycling a pet bottle is efficient for 70%, meaning that after a couple loops, the ‘old’ bottle is fully gone and in the process multiple new raw materials are used. If instead this pet bottle would be recycled for a carpet, this would be more efficient and the carpet also has a longer lifespan (Appendix A4). Frank his view is in line with the theory from Potting et al. (2016) in section 2.2.2. Even though Frank does not mention the ROs by name, he is talking about them. Frank mentions the importance of rethinking recycling, which is in line with executing R6 instead of R8. Besides, Frank also agrees with Hanemaaijer et al. (2021) in the sense that recycling is not enough to create circularity, even though multiple businesses feel as if it is.

4.8 Circular initiatives

Since all respondents, at least largely, agree with the circularity definition given, the next step is to find out whether and why the firms have circular initiatives and if they receive subsidies to become more circular. The sub questions answered are “*Does the firm have circular initiatives?*” And “*Why is circularity important?*”. Wagenaar Dairy, Tetra Pak, and Dero Groep do not use governmental subsidies to become more circular. Friesland Campina does use subsidies to do research on whether investments will be profitable or not, but it also allows for limitations since the subsidy issuer has control over the details of the subsidy (Appendix A3). Even though the other firms do not use subsidies, Tetra Pak invests in initiatives of other companies to help them become more sustainable. “*Tetra Pak invests in circular initiatives by other companies with the goal to make the other companies more circular.*” thus Frank (Appendix A4, q8). In that sense. Tetra Park provides subsidies to other companies, as they feel



it is important to create a more circular economy. Tetra Pak would like to help create a circular economy and does so by investing in other companies.

It is now clear most companies in this research do not use subsidies, but do they have circular initiatives? And if so, why? Dero Groep states they recycle, separate, and use secondhand machines (Appendix A2). Recycling is important for the company and they recycle materials like stainless steel, plastic, cables, and PLC (programmable logic controller, a specific type of computer). They also reuse old machines and buy secondhand robots to use in their processes. Waste to which there is no use anymore, is separated and sent to specific companies which process those materials. Dero Groep does not have as a goal to become circular, the circular initiatives they have come from demand from customers. There is a need on the market and Dero Groep acts on this need. *“Dero Groep is circular at this moment, but this is not our goal. We are driven by the needs and wants of the customers.”* Thus Wichger (Appendix A2, q5). Wichger states that Dero Groep is circular at this moment, but they do have waste, making them linear at least to some sense when working with the definition from the theoretical framework, which Wichger agrees with. However, according to the theories mentioned in section 2.2, Dero Groep is not circular, as they still have waste and do not employ all possible ROs to attain circularity.

Friesland Campina has multiple circular initiatives, like TKI Agrofood in which projects are made to recover particles from waste water and WISE is a project which sustainably returns water from factories back to the farmer. Another initiative Friesland Campina has is circular agriculture in which fertilizers are reused. Yet another initiative is recycling packaging and reuse of residual heat from production processes (Appendix A3). *“Reusing packages is an important goal at Friesland Campina, in 2025 95% of products should be reused.”* Thus Klaas (Appendix A3, q9). Redesigning processes is an important step into making more processes adequate for reusing materials. Friesland Campina is now doing research on creating new, environmentally friendly cleaning methods. As to why the company has circular initiatives, Klaas mentions the following: *“It is purpose based and it has to do with why we are here on earth. Costs are taken into account, but this is not the most important factor.”* (Appendix A3, q10). Friesland Campina has their own sustainability strategy and they act by this strategy company wide. Comparing this to the circular frameworks in section 2.2, Friesland Campina tries to create higher ROs such as R2 to increase efficiency of creating the product, using less



raw materials. Next to this, Friesland Campina acknowledges the need to change behavior, just as Hanemaaijer et al. (2021) have stated in their paper.

Wagenaar Dairy is comparable to Friesland Campina in the sense that they also want to become more circular for the sake of the environment. In this sense both companies agree with the view of Hanemaaijer et al. (2021). Wagenaar Dairy has circular initiatives such as decreasing the amount of waste generated in the production process (Appendix A5). “*We have 1000 tones waste per week, but we only have two grey containers waste per week.*” thus Wybe (Appendix A5, q9). Wagenaar Dairy separates all plastics, paper, and pallets to reuse those materials. Circularity and sustainability are important for the company and the company is energy neutral. One large point which Wybe makes is that Wagenaar Dairy does not want to see products go to waste, but a lot of products at this point are going to waste because of the laws and regulations. Wybe would like to see regulation change, so less good food products are wasted. This could be connected to R1, making the usage of the product more intensive. Even though food products are different from other machinery, using the food products more intensely might decrease waste. However, Wybe does understand this is difficult since the risks of not having good food products are high. With regard to the reason of having circular initiatives, Wagenaar Dairy does keep costs in mind when creating circular initiatives, since the company needs to stay financially viable, but profits are not more important than the environment. Wybe states: “*Long term is more important than short term. Sometimes this means we have less profits, but profits are not more important than sustainability. Sustainability is not only important for the company, but also for the environment.*” (Appendix A5, q10).

The company with the most circular view and initiatives is Tetra Pak. Tetra Pak wants to fully get rid of plastics and produce bio based packaging (Appendix A4). Due to rules and regulations this is not possible at this point, but they are doing research to find a certification system to use FSC paper for their packages. It is important for Tetra Pak to close loops and therefore they work together with actors in their network. Waste of Tetra Pak can be used by other companies and this way it is no longer waste, but part of another circular chain. The environment is the most important for Tetra Pak, everything they do they want to do with as little impact on the environment as possible. If this leads to a process taking longer, or being more expensive, that is fine. “*Everything is built around decreasing impact, if this means the development takes longer and is more expensive, this is fine.*” Thus Frank (Appendix A4, separate notes). Not only reusing and recycling is important for the company, but they check the compatibility for



recycling too when choosing new products. If the new product cannot be recycled, they will not use it in production. Tetra Pak has a clear vision in which they state that they want to work with renewable raw materials and they want to evolve into a low carbon economy. This is more than just recycling, and more than working alone. Frank states: “*Climate goals are not going to be met with only recycling, a conscious choice needs to be made to work with materials which decrease CO2 emission in general.*” (Appendix A4, q5). Tetra Pak, just as Wagenaar Dairy, and Friesland Campina, are changing their behavior towards circularity, which is needed as is mentioned in section 2.1.

4.9 Secondary data research

As the five interviews are not representative of the whole population, a secondary data search is done in which the first 10 hits of a Google search have been examined. The Google search consisted of “circulaire initiatieven OR circulariteit AND zuivelindustrie” and the first 10 hits are:

- “Boeren zijn belangrijk voor circulaire zuivelsector” (Thijssen, 2021)
- “Week zonder vlees en zuivel van start en bedrijfskleding wordt duurzamer” (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2023b)
- “Mogelijke doelen voor een circulaire economie” (Hanemaaijer et al., 2021)
- “Voedsel voor de Circulaire Economie” (Rood et al., 2016)
- “Circulariteit” (Vita blog, n.d.)
- “Niet alle circulaire initiatieven zijn even duurzaam” (SGS Search, n.d.)
- “Bijdrage circulaire economie aan de klimaatopgave” (Witmond et al., 2021)
- “Circulaire economie en de Sustainable Development Goals” (Hoogerwerf et al., 2022)
- “Een verkenning van de circulaire economie in de zuivelsector” (De Nederlandse Zuivel Organisatie, 2016)
- “Circulair wordt de standaard voor studenten van MBO College Lelystad” (Kamps, 2022)

The goal of the secondary data analysis is to find out whether the results from the interviews are in line with what is found online. Is there a connection between the views of the respondents and the online hits or not?

Not all of these hits are relevant for this paper as is explained in section 3.1, and therefore the hits from Ministerie van Binnenlandse Zaken en Koninkrijksrelaties (2023b), Vitam blog (n.d.),



and Kamps (2022) are not further explained in this section. Hanemaaijer et al. (2021) have written a document about possible goals for the circular economy, but even though the Google search specifies the dairy industry, this is not mentioned in the document. Therefore this document is useful for circularity in general, but not for circularity in the dairy industry.

The other hits are relevant to this study and the results of the content analysis are as follows: The transition towards a circular dairy industry is necessary to feed the growing world population and the Dutch dairy industry should take the lead to accomplish this (Thijssen, 2021). The authors state that creating a circular dairy industry is important because it closes loops of nutrients, water, CO₂, and waste while at the same time promoting biodiversity and optimal land use.

The Dutch dairy industry is innovatively leading the world and to assure a smooth transition into circularity, three paths are made: biological agriculture in optimized grazing and extensive grazing, and high tech agriculture. Optimized grazing increases the productivity of land, but investments in technologies are needed to accomplish this. Extensive grazing closes the loops between soil, plants, animals and nutrients, but to accomplish this, governance needs to improve. High tech agriculture uses technological solutions to close loops, but public acceptance might be lower. However, Thijssen (2021) uses Friesland Campina as a source, making this no independent hit in the search.

Rood et al. (2016) mention the importance of having a circular economy but also state that production chains in food need to drastically change. An integral approach is needed and three conditions need to be met: resources and raw materials need to be optimally used and managed as they are necessary to produce renewable materials, food needs to be optimally used and waste needs to be minimized, and residual flows need to be more efficiently managed. This paper is about the food industry as a whole, but the dairy industry is mentioned as an important player in the food industry by Rood et al. (2016). Food needing to be optimally used and waste needing to be minimized is something which speaks to Wagenaar Dairy, as also mentioned during the interview.

Witmond et al. (2021) add to the paper of Rood et al. (2016) by also recommending an integral policy approach. An integral approach involves multiple actors in the production chain and increases collaborations between actors. Witmond et al. (2021) have developed a road map to help companies in the production industry to become more circular. This roadmap stresses the



importance of moving up the RO-ladder and to involve more actors. Recycling is now the most used RO, but recycling alone is not enough, as is mentioned both by Potting et al., (2016), and Tetra Pak. Current policy is mostly focused on closing individual production chains, but an intertwined network should be the goal.

Witmond et al. (2021) also state financial incentives are important to foster change, think about internalizing external costs of producing waste. Lastly, Witmond et al. (2021) state it is important to phase out the linear economy by using laws and regulation. This can be done by stimulate innovation and by having guiding measurements to decrease linearity.

SGS Search (n.d.) writes about the importance of circularity, but not all circular initiatives are sustainable. There should be enough time to properly develop an initiative, but when it is still not sustainable enough after tweaking and finalizing, this might not be the best initiative. Think about a material which is recycled, but at the same time the recycling process uses a large amount of energy. The initiative might in the end be counter beneficial for the environment when looking at the whole production chain. Dero Groep mentioned the importance of an R&D section to investigate whether initiatives are worthwhile or not, showing the similarity between the results from the interview and the results from the online hit.

Hoogerwerf et al. (2022) mention the importance of societal changes in becoming more circular, just as Hanemaaijer et al. (2021) (section 2.4). Business should change their production processes in order to become more circular. However, businesses changing their production process is not enough, consumer should also think about their part. Consumers should alter their behavior and think about altering choices made to aid circularity.

To become more circular, De Nederlandse Zuivel Organisatie (2016) made a roadmap of the current state of the dairy industry. They state the importance of consumers to waste less products, but they also investigate the sector. First steps towards sustainability and circularity is to increase sustainability of the energy production. Energy production can be more sustainable by using solar and wind energy and by reusing residual heat from production and by using as much local or national recourses for animal food, CO₂ emission is lowered.

The overarching results of the secondary data analysis is that it is clear that circularity is important. Most sources mention the need to become circular and the advantages this has for nature, but most of them also state that becoming circular is not easy. This view is shared by



the respondents of the interviews, especially by Wagenaar Dairy and Circulair Friesland mentioning the importance of the government with their rules and regulations. Not all initiatives are beneficial for the environment, and innovations might be expensive. Tetra Pak adds to this that this is fine, as long as steps are taken towards circularity. Next to the industry making changes, society and consumers should make changes too and think about their behavior. Up until now, multiple production chains are not circular yet, but rather still linear, and recycling is seen as ‘enough’ in multiple cases. Tetra Pak also mentions the need for companies to do more than just recycling, showing the similarity between the interviews and the online hits. Lastly, more than one source mention the importance of the government and policy options in creating a circular economy. Policy options like supporting innovations, and repelling linear initiatives are seen as essential in creating a circular economy.

4.10 Combination of interviews and secondary data research

As this research combines interviews with companies, Circulair Friesland, and a secondary data search, it is important to make a link between those results too.

Circulair Friesland sees that small companies most of the time have more circular initiatives than big companies (Appendix A7). “*Because of the enthusiasm of startups, more and more initiatives are developed.*” thus Länk (Appendix A7, q6). He also states smaller companies are more flexible to invest in sustainability and circularity, as larger companies are retained by the lead they have and the machines they have already acquired. Those large companies do not want to pose the risk of those machines not working anymore after implementing a circular initiative (Appendix A7, loose notes). Larger companies do not want to achieve help to increase their circularity, and therefore they are largely not part of the network of Circulair Friesland. Länk does see a trend in circular initiatives: “*Across the entire economy more circular and sustainable initiatives are developed.*” (Appendix A7, q7). He mentions companies mostly want to become more circular for the sake of the environment and society, and that only a small fraction has initiatives purely for profit. Länk also sees the restrictions laws and regulations pose on creating circular initiatives.

In sum, the interview with Circulair Friesland is in line with the results from the interviews. In the interviews it is mentioned that laws and regulations prohibit the limitless execution of circular initiatives and this is also what Länk sees. The secondary data research hits do not mention laws and regulations, but the hits do mention the governmental role in achieving



circularity. Policy options need to be made by the government to aid the development of circularity.

Most companies mention in their interview that circularity is important, not only to keep the company viable, but largely because it is needed to keep the environment healthy, which is also what Länk mentioned in his interview. However, as the secondary data search also reveals, achieving circularity is not an easy task. Recycling is mostly seen as ‘enough’ to become circular and this is also what is seen, at least to some extent, in the interviews.

5. Conclusion

As is shown in this study, companies have different views on circularity, on what is needed in terms of circularity and how to achieve this, and all companies have a different international network. Combining all results with the theories from the theoretical framework and the secondary data analysis creates the conclusion of this paper.

In the beginning of the paper the research question '*How does the size of the network of a production company in the dairy industry influence the level of circular initiatives?*' was stated. Before attaining results, multiple expectations were made. The first expectation was that international firms have a broader network which increases the chances of having an actor in the network with which knowledge can be exchanged. Another expectation was that firms in related sectors collaborate more often. The third expectation is that larger firms will have more financial means to develop circular initiatives and the last expectation is that firms with a knowledge institute in their network will both have more initiatives, and of a higher quality.

In the interviews it became clear that the network of all firms participating in this study was international, but the size (in number of partners) of the network differs. Next to the size difference, not all companies had a knowledge institute in their network and R&D was executed differently as well.

Dero Groep has no knowledge institution in their network, as they want their initiatives to be developed in house at their own R&D section. Wagenaar Dairy does have a knowledge institution in their network, namely Wageningen Universiteit. However, Wagenaar Dairy is too small of a company to have fulltime employees working on R&D and therefore they do not have their own R&D section. Friesland Campina and Tetra Pak are both larger companies, and both have a knowledge institute in their network as well as their own R&D section. Tetra Pak has a general R&D section and Friesland Campina has an R&D section fully committed to doing strategic and fundamental research on circularity. All firms which have a knowledge institution in their network, work together with Wageningen Universiteit and all companies mention in the interviews that the most important reason to work together with knowledge institutions is that they have specialized knowledge and are able to do independent research. In essence, all companies are part of the triple helix model, even though the government does not always generate help, as rules and regulations can hinder the execution of circular initiatives.



Circulair Friesland mentioned the role of the government in their interview as well, also stating the power the government has on the creation of new initiatives.

With respect to the first expectation, all companies have circular initiatives, no matter what their network looks like. Knowledge institutions are important, but doing own research creates initiatives as well. Dero Groep does not have a knowledge institution in their network, but they do not have difficulties with creating new circular initiatives. Relatedness on the other hand is an important factor in collaboration. The respondents mentioned that they work together with companies in the same sector, or are even connected to a sector wide cooperation. However, just as with knowledge institutions, initiatives can also be made in collaboration with companies outside of the sector with less relatedness, or even without collaborations.

The different execution of research on circularity comes from the different views of the companies on circularity. Dero Groep does not have a circular strategy of their own, but they react to the needs of the market and create circular strategies when the client needs this. Wagenaar Dairy does have a circular strategy, but it is a small company, which makes it difficult to work on circularity fulltime. Friesland Campina on the other hand is large enough to create a separate circularity R&D section and this allows them to execute their circularity strategy. However, the company with the most purpose based circularity strategy is Tetra Pak, they want to become circular because this is the only way forward in their view. The environment being a large player as being the reason why companies become circular, is also what Circulair Friesland sees as a trend.

These views on circularity explain the different value retention options of the companies. As all companies mention they recycle and reduce, sometimes also reuse, this is mostly where the value retention options end. Most of the respondents have not mentioned higher ROs in the interview, and they mostly mentioned the recycling and reducing execution they had. Tetra Pak did mention a higher RO, as they mention that only recycling is not enough to create circularity, more needs to be done. Frank, from Tetra Pak, mentions the option to reuse products for different purposes, mentioning a higher RO: R6. Friesland Campina mentioned in the interview that they are trying to increase efficiency of the production, in some way mentioning R2.

Nothing at this point can be said about the quality of circular initiatives and whether this is connected to the knowledge institutes or the network. It seems from the interviews that all firms in this study have circular initiatives and are content with the quality of the initiatives. Therefore, the expectation about the quality of the initiatives is not conclusive.



Wagenaar Dairy and Tetra Pak show their interest in circularity, and the urgency of creating circularity, by mentioning that costs are not more important than the environment. Both mention research is allowed to take a longer time if this means that the initiative developed aids the environment.

When combining the interview results with the results from the secondary data analysis, it is clear that popular online hits mention the importance of circularity. However, the online hits add to this that becoming circular is not an easy task, while respondents do not explicitly mention this, besides mentioning the hindrance of the government. Online hits also reveal that companies and society need to change behavior in order to become fully circular: this is another aspect, which was not mentioned during the interviews.

The last expectation about larger firms having more financial means to develop initiatives, has a twofold result. On the one hand are larger firms capable of spending more money on circular initiatives, as is seen with Friesland Campina and Tetra Pak, but on the other hand this is not the trend seen at Circulair Friesland. Circulair Friesland mentioned in their interview that it is the small companies that are working hard towards circularity and the larger companies are not too keen on developing new initiatives. Smaller companies are more flexible which leads to more initiatives, even if they have fewer financial means. However, this is not what is found in the interviews and therefore this result is inconclusive.

To conclude, all companies in this study are working towards circularity, whether it is because of market demand or internal strategy. How they attain their circular initiatives differ, largely because of different views on circularity. To answer the research question, the size of the network and the existence of a knowledge institute in this network is not the most important factor in the development of circular initiatives. More important is the view of the company on circularity and the hindrance of the government in the possibilities of executing initiatives. Creating a circular economy is hard and working alone to get there is not possible. Companies need to work together, and society needs to change behavior too.

6. Discussion

The results and conclusion of this study are not completely in line with theory. Theory mentioned in the theoretical framework mention that collaboration with related actors and knowledge institutes are important in creating circular initiatives. Even though it is found that the companies in this study use their network to create initiatives, they also create initiatives in house and without the help of others. The network therefore is important, but circular initiatives are also made without the use of their networks and this is different from the literature. Pittaway et al. (2016) state network contacts are important to foster innovative behavior. The results from the Dutch dairy industry from this study are not in line with the results from Pittaway et al. (2016), this could be due to the fact that the group of respondents was small, or because the innovation needed for circular initiatives is different from the innovation needed for product innovations.

Next to companies working on their own towards circularity, circularity is an unclear concept by itself. All respondents in this study agree with the definition given in the theoretical framework, but in general the conception of circularity differs per company and even per person. This allows for multiple strategies and views on what circularity is and how to attain this. Even though the respondents largely agreed with the given definition, in the interviews it became clear that they have different views on what ‘circular enough’ actually is. This ‘enough’ by itself already shows that the need for circularity is not by definition an intrinsic motivation but rather just enough attitude to satisfy public and/or policy demand. This leads to companies having different circular initiatives at different circular levels, while they are all satisfied with these initiatives being circular in their view. These differences allow for differences in the quality and level of initiatives, while this cannot be revealed in the interviews. More in depth interviews are needed in which the actual initiatives are laid out and compared.

Which brings forward another problem, namely the problem that there is no consensus on what circularity is and which initiatives are circular and which are not. This makes it hard, if not impossible, to compare initiatives with one another. This is in line with Linder et al. (2017) who also state that the practical use of circularity definitions is much depending on opportunistic views and easy solutions.

As is mentioned before in the policy paragraph, multiple policy initiatives are in order to make the Netherlands circular as soon as possible. However, despite the vast policy ideas, the circular



future is not mapped out. There are many unanswered questions about how to create socio-institutional changes and how to develop the innovation needed to become circular. It is not only a question of how the circular economy is perceived at this point, Corvellec et al. (2021) state that there is a need for new and enlarged, interdisciplinary research to support the policy process.

All of these uncertainties and indistinctness surrounding the topic of circularity also created limits to this study. Some companies were not interested in participating in this study, while others did not have the time to participate. This meant that only four interviews were conducted with firms, which decreases the validity and representativeness of this study. To increase validity, secondary data analysis has been conducted, but it would have been better to have more interviews with companies as interviews allow for more depth and personalized questions. However, interviews are not perfect, as not every employee has the knowledge about every question asked in the interview. Some respondents did not know about all the initiatives, or about subsidies attained by the company. This means, in a perfect world, more than one employee from the company would be interviewed. This is mostly not possible due to time constraints and the availability of employees.

Recommendations for further research could be on the in-depth meaning of circular initiatives. The respondents could be interviewed again, or colleagues from the same company, to ask more questions about the actual initiatives and how those have been developed. This will give more insight into what is viewed as a circular initiative, the amount of initiatives, and the quality of the initiatives. It would be beneficial to add more companies to the study, to create a representative sample. In the end, if enough companies are to be examined, a guideline could be made for the Dutch context so a consensus could be reached about the actual meaning, and future, of circularity.

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8. Appendix

A1: Interview template companies

Interview

1. Wat is uw naam en functie?
2. Wat doet uw bedrijf?
3. Hoe ziet het netwerk van uw bedrijf eruit?
 - a. Welke samenwerkingen binnen dit bedrijf zijn het belangrijkst?
4. Heeft u een school/hbo/universiteit/onderzoeksinstuut in het netwerk?
 - a. Waarom heeft u deze organisatie in uw netwerk?
5. Wat is uw definitie van circulariteit?
 - a. Mijn definitie is: een circulaire economie heeft geen afval en ruwe materialen worden steeds opnieuw gebruikt (definitie Rijksoverheid)
6. Zou u het bedrijf als lokaal, regionaal, nationaal of internationaal beschrijven? Waarom?
7. Heeft het bedrijf een R&D sectie?
 - a. Als ja: wordt er onderzoek gedaan naar circulariteit? Hoe veel?
 - b. Als nee: hoe komt u aan uw circulaire initiatieven?
8. Krijgt het bedrijf subsidies voor circulaire initiatieven?
 - a. Als ja: zorgt dit voor belemmeringen of eisen?
9. Welke circulaire initiatieven heeft dit bedrijf?
 - a. Als er geen zijn: zijn er andere initiatieven? Denk aan recycle, reuse, refurbish, repurpose
10. Waarom heeft dit bedrijf circulaire initiatieven?
 - a. Denk aan kosten-baten, milieu

A2: Transcribed interview Dero Groep

1. Wat is uw naam en functie?
Wichger Helmholz, sales accountmanager
2. Wat doet uw bedrijf?
Wij automatiseren in de voedingsmiddelenindustrie, met name kaas en convenience food. Processen die veel handen kosten, of waar geen mensen in te vinden zijn, automatiseren wij.
Dero Groep heeft een omzet van 27 miljoen euro en kaas is 60-70% van de omzet. Zelf maakt Dero Groep geen kaas
De markt van Dero Groep is wereldwijd
3. Hoe ziet het netwerk van uw bedrijf eruit?
 - a. Welke samenwerkingen binnen dit bedrijf zijn het belangrijkst?
Het netwerk is voornamelijk Europees, maar ook Australië, Nieuw Zeeland en Zuid Afrika zijn grote spelers. In Amerika en Canada heeft Dero Groep wel eens een project gedaan.
Belangrijke samenwerkingen met producten zijn met Ewer, De Producten, en handelaren zoals Van de Sterre en De Goei.
Voor producenten is Dero Groep ook belangrijk, want ze leveren kaasperssystemen aan deze producten. Samen werken ze aan het ontwikkelen van de juiste producten.
De markt vergroten is belangrijk voor Dero Groep. Landen zoals Zwitserland en Oostenrijk zijn ver in het automatiseren en hier wil Dero Groep op voor blijven omdat Dero Groep op dit moment marktleider is in behandelstelsystemen van kaas
Een kaaslijn produceert zo'n 20-30 jaar.
4. Heeft u een school/hbo/universiteit/onderzoeksinstuut in het netwerk?
 - a. Waarom heeft u deze organisatie in uw netwerk?
Dero Groep heeft een intern netwerk voor het delen van nieuws binnen het bedrijf
Op dit moment doen twee afstudeerders hun onderzoek bij Dero Groep, dit onderzoek wordt gebruikt om kennis te vergaren.
Er is geen onderzoeksnetwerk met universiteiten of scholen maar Dero Groep is wel altijd geïnteresseerd in hoogopgeleid personeel. Een samenwerking met een school is niet gewenst omdat dit vaak lang duurt, Dero Groep wil korte kanalen.
5. Wat is uw definitie van circulariteit?
 - a. Mijn definitie is: een circulaire economie heeft geen afval en ruwe materialen worden steeds opnieuw gebruikt (Ministerie van Infrastructuur en Waterstaat, 2021).
Wichger is het met mijn definitie eens.
Dero Groep is op dit moment circulair, maar dit is niet hun eigen doel. Ze worden vooral gedreven door de klanten die dit willen. Hetzelfde geldt voor sustainability



Circulariteit en sustainability zijn vooral belangrijk voor de klanten of omdat het kostenbesparend is, maar de natuur is niet het uitgangspunt

6. Zou u het bedrijf als lokaal, regionaal, nationaal of internationaal beschrijven? Waarom?
Internationaal, voornamelijk in West Europa en er zijn enkele projecten in verdere landen
7. Heeft het bedrijf een R&D sectie?
 - a. Zo ja, wordt er onderzoek gedaan naar circulariteit? Hoe veel?
 - b. Zo nee, hoe komt u aan uw circulaire initiatieven?

Dero Groep heeft een R&D sectie in Nieuw Vennep met twee R&D medewerkers die proefjes doen en dingen maken om te kijken of er potentie in zit.

In Joure is geen R&D medewerker, maar er wordt projectmatig gebouwd en hierdoor is geen enkel product of productlijn gelijk. Er wordt veel onderzoek gedaan, dit wordt niet uitbesteed, maar er worden wel samenwerkingen aangegaan om samen iets te ontwikkelen.

Vragen die op dit moment spelen bij Dero Groep zijn: ‘kunnen we af van stroom?’, ‘kunnen we af van perslucht? (omdat het duur is)’, ‘kunnen we ultrasonisch gaan reinigen?’

Dero Groep is bezig om dingen te doen met nieuwe technologieën

8. Krijgt het bedrijf subsidies voor circulaire initiatieven?
 - a. Zo ja, zorgt dit voor belemmeringen of eisen?
- Dero Groep krijgt geen subsidies voor circulaire initiatieven

9. Welke circulaire initiatieven heeft dit bedrijf?

a. Als er geen zijn: zijn er andere initiatieven? Denk aan recycle, reuse, refurbish, repurpose
Recyclen is belangrijk, denk aan het recyclen van roestvrijstaal, kunststof, kabels (koper wordt eruit gehaald), PLC (programmable logic controller, het hart van de kaaslijn, dit is een computer), gewikkelde motoren

Oude apparaten worden veel hergebruikt en er wordt bij Dero Groep niets geproduceerd dat twee dagen wordt gebruikt en daarna weer wordt weggegooid. Er worden vaak tweedehands robots gebruikt, deze zijn goedkoper en doen het nog goed.

Afval dat niet verder verwerkt kan worden, wordt gescheiden en naar een afvalverwerkingsbedrijf gebracht.

Als er wel een nieuwe machine wordt gekocht, dan worden op maat gemaakte materialen gekocht zodat hier geen afval bij vrij komt.

Kunststof wordt klein gemaakt en kan zo voor andere materialen gebruikt worden.

10. Waarom heeft dit bedrijf circulaire initiatieven?

a. Denk aan kosten-baten, milieu

Vooral omdat de klant dit wil, er is een behoefte in de markt.

Dero Groep heeft deze initiatieven dus voor de klant. Het is voor Dero Groep niet kostenbesparend, maar voor de klant vaak wel.

In Nieuw Vennep zijn er zonnepanelen geplaatst uit economisch oogpunt.

A3: Transcribed interview Friesland Campina

1. Wat is uw naam en functie?

Klaas Vos, duurzaamheidsmanager voor afdeling duurzaamheid

Anton Sweere

2. Wat doet uw bedrijf?

Friesland Campina haalt melk van leden veehouders op, van die melk maken ze zuivelproducten en deze verkopen ze wereldwijd. Melk wordt ook op andere plekken opgekocht (Roemenië en Bulgarije) en doorverkocht op voor de lokale markt, deze boeren zijn geen leden, maar hier is een contract mee opgesteld. Veel melk wordt lokaal opgekocht bij leden.

Friesland Campina is een coöperatie.

Friesland Campina handelt in vloeibare zuivelproducten, melkvoeders, kaas

De omzet is 14 miljard euro, met 50 locaties wereldwijd en 10.000 leden veehouders.

De meeste leden veehouders zijn in Nederland, maar er zijn ook leden veehouders in Duitsland en België.

Waar Friesland Campina aanwezig is in het buitenland, is dit allemaal met contracten en niet met leden.

De coöperatie is Nederlands en zo blijft dat.

Het grootste deel van de afzet is in Europa, zo'n 75%. De rest is voornamelijk Zuidoost Azië.

Het grootste afzetproduct is kaas.

3. Hoe ziet het netwerk van uw bedrijf eruit?

a. Welke samenwerkingen binnen dit bedrijf zijn het belangrijkst?

Boeren zijn leveranciers van melk en grondstoffen

Er zijn ook andere leveranciers, die leveren suikers, kleurstoffen, smaakstoffen, vloeibare vetten en soja.

Friesland Campina heeft een energieketen voor elektriciteit, aardgas en aardolie



Er is ook een dienstverlening keten met mensen in eigen dienst, maar ook ingehuurde specialisten voor techniek en supply chain

Er zijn leveranciers voor de apparatuur en gebouwen

Het belangrijkst is de samenwerking met leden veehouders

4. Heeft u een school/hbo/universiteit/onderzoeksinstuut in het netwerk?

- a. Waarom heeft u deze organisatie in uw netwerk?

Friesland Campina heeft een R&D sectie en deze sectie werkt samen met de Universiteit Wageningen en andere bedrijven en universiteiten in heel Nederland en daarbuiten.

De belangrijkste reden voor samenwerking is dat instellingen specifieke kennis hebben en door samen te werken is er extra mankracht.

Friesland Campina doet zowel strategische als fundamentele research onderzoeken en ze doen zowel eigen onderzoek als dat ze onderzoek uitbesteden.

5. Wat is uw definitie van circulariteit?

- a. Mijn definitie is: een circulaire economie heeft geen afval en ruwe materialen worden steeds opnieuw gebruikt (Ministerie van Infrastructuur en Waterstaat, 2021).

Klaas is het met deze definitie eens

6. Zou u het bedrijf als lokaal, regionaal, nationaal of internationaal beschrijven? Waarom?

Friesland Campina is internationaal, omdat ze wereldwijd samenwerkingen hebben en een wereldwijde afzet hebben

7. Heeft het bedrijf een R&D sectie?

- a. Zo ja, wordt er onderzoek gedaan naar circulariteit? Hoe veel?

- b. Zo nee, hoe komt u aan uw circulaire initiatieven?

Friesland Campina heeft een R&D sectie, waar veel onderzoek wordt gedaan naar circulariteit. Er is een afdeling verpakkingsresearch voor circulaire verpakkingen en een afdeling farm & sustainability waarbij er onderzoek wordt gedaan naar circulariteit in de keten

Circulaire initiatieven komen van R&D en samenwerkingen met organisaties. Van de 10.000 leden hebben er ook meerdere initiatieven. Friesland Campina werkt dan samen met deze boeren om de initiatieven groter te maken

Er is ook samenwerking met andere bedrijven om circulaire producten te ontwikkelen

8. Krijgt het bedrijf subsidies voor circulaire initiatieven?

- a. Zo ja, zorgt dit voor belemmeringen of eisen?

Friesland Campina krijgt subsidies, maar Klaas weet hier het fijne niet van. Hij weet wel dat het beperkend kan zijn in wat er uitgevoerd mag worden

Collega Anton weet hier wel meer van: er zijn verschillende subsidies, voornamelijk op onderzoek en investeringen (voor energiebesparing en warmtepompen).

In Groningen loopt het project Fascinating, gesubsidieerd door de provincie waar Friesland Campina aan deelneemt. De focus ligt op circulariteit in de agrofood sector, zowel op de boerderij als in de fabrieken.

Er is een beperking, want de provincie heeft de touwtjes in handen

9. Welke circulaire initiatieven heeft dit bedrijf?

- a. Als er geen zijn: zijn er andere initiatieven? Denk aan recycle, reuse, refurbish, repurpose

Friesland Campina recyclt verpakkingsmiddelen

Er is circulaire landbouw, het krijgen van meststoffen en het hergebruiken van meststoffen

Hergebruiken van restwarmte van productieprocessen en hergebruiken van waterstromen

Door het hele bedrijf heen worden initiatieven uitgevoerd. Binnen de TKI energie participeert Friesland Campina met innovatieprojecten op het gebied van energiebesparing en -hergebruik. Via TKI AgroFood wordt er met projecten in een gebied stoffen teruggevonden uit industrieel en huishoudelijk afvalwater en binnen WISE is een project voor het terugbrengen van water van de fabrieken naar de boerderij, om irrigatie te creëren.

Het hergebruik van verpakkingen is een belangrijke doelstelling, en in 2025 is het doel om 95% te hergebruiken.

Efficiëntie van productieprocessen is continu een punt van aandacht, zodat grondstoffen maximaal omgezet worden in eindproducten. Daarnaast wordt er gekeken naar het herontwerpen van processen, zodat bijv. minder hulpstoffen gebruikt worden. Daarnaast worden reinigingsprocessen geoptimaliseerd om het gebruik van reinigingsmiddelen (en water en energie) te minimaliseren. Tevens wordt er onderzoek gedaan aan processen om vervuiling van apparatuur te verminderen, zodat er ook minder gereinigd hoeft te worden. Tenslotte wordt er nog gekeken naar nieuwe, meer milieuvriendelijke reinigingsmethoden.

10. Waarom heeft dit bedrijf circulaire initiatieven?

- a. Denk aan kosten-baten, milieu

Omdat het past in de sustainability strategie van Friesland Campina.



Het is purpose gerelateerd, het heeft te maken met waarvoor we hier op aarde zijn. Kosten spelen wel mee, maar dit is niet de belangrijkste reden

Losse notities van het interview

Humane voeding heeft veel regels en deze zijn gemaakt voor de veiligheid. Het belemmert de initiatieven niet, omdat veiligheid bovenaan staat en de initiatieven werken hier aan mee. Het is wel eens een extra uitdaging en er zijn soms extra stappen nodig, maar het is geen belemmering.

A4: Transcribed interview Tetra Pak

1. Wat is uw naam en functie?

Frank VandeWal, sustainability director Tetra Pak binnen Europa. Hij heeft een focus op alles dat te maken heeft met inzameling en recyclen van verpakkingen die op de markt komen

2. Wat doet uw bedrijf?

Tetra Park staat bekend als een van de producenten van materiaal voor drank kartons (verpakkingen). Daarnaast produceren ze verpakkingsmateriaal en alle elementen die hiervoor nodig zijn (rietjes, doppen) en produceren ze machines voor de productie in de zuivelindustrie

Tetra Park levert full end to end oplossingen van machines om koeien te melken tot het uiteindelijk vullen van de verpakkingen en alles ertussen

Tetra Park bestaat al sinds de jaren 50 en sustainability staat al sinds het begin op de doelstellingen. Voedsel moet op een veilige manier bij de consument komen maar impact hiervan moet zo klein mogelijk zijn

Recyclen van verpakkingen is op dit moment moeilijk door de strenge regelgeving. Producten doorgeven aan een andere sector is dan een goede optie. Een pak kan niet opnieuw een park worden, maar wel eventueel een doos die niet gebruikt wordt voor eten

3. Hoe ziet het netwerk van uw bedrijf eruit?

a. Welke samenwerkingen binnen dit bedrijf zijn het belangrijkst?

Samenwerking met bedrijven zoals KIDV en het Afvalfonds is heel belangrijk. Tetra Pak kan veel zeggen, maar het moet uit overheidswegen komen om geloofwaardig te zijn en zo ook te worden gezien. Vanuit overheidswegen moeten deze bedrijven voor bevestiging zorgen en de stappen bepalen die ondernomen moeten worden. Deze zijn zo transparant en duidelijk en zo nemen mensen het ook beter aan

4. Heeft u een school/hbo/universiteit/onderzoeksinstuut in het netwerk?

a. Waarom heeft u deze organisatie in uw netwerk?

Tetra Pak werkt samen met universiteiten zodat de universiteit onderzoek kan doen en Tetra Pak specifieke informatie kan geven. Op dit moment is er bijvoorbeeld onduidelijkheid over een materiaal en de universiteit kan op een neutrale manier onderzoek doen en zo meer transparantie en informatie leveren. In het verleden zijn er ook samenwerkingen geweest met universiteiten in de vorm van afstudeerprojecten maar dit is op basis van beschikbaarheid van studenten.

Een belangrijke universiteit is Universiteit Wageningen maar er zijn ook andere universiteiten in het netwerk. Het zijn wel voornamelijk instellingen die kennis hebben over duurzaamheid omdat de referentie van bepaalde namen in onderzoek ook belangrijk is voor geloofwaardigheid van Tetra Pak.

Universiteiten zijn niet noodzakelijk voor de duurzaamheid van Tetra Pak, maar voornamelijk voor technisch onderzoek.

Samenwerking heeft altijd als doel om productie op een manier te verbeteren of efficiënter te maken.

5. Wat is uw definitie van circulariteit?

a. Mijn definitie is: een circulaire economie heeft geen afval en ruwe materialen worden steeds opnieuw gebruikt (Ministerie van Infrastructuur en Waterstaat, 2021).

Frank is het hier op zich mee eens, maar hij vindt de definitie te krap.

Circulariteit maakt deel uit van een groter geheel volgens hem, dat is impact van bepaalde keuzes op milieu en klimaat in het algemeen. Hier wordt circulariteit klein beschreven als 'recyclen en opnieuw materiaal inzetten als grondstof' maar dit gaat voorbij aan 'wat is de impact van de materiaalkeuze en de keuze om dat te gaan hergebruiken?'

Recyclen op zich maakt een verpakking niet duurzaam, je zou ook moeten kijken of een product op een andere manier gebruikt kan worden dan recyclen weer naar hetzelfde product. Zo kun je kijken welke andere toepassingen er beter zijn voor het milieu (of efficiënter zijn). Een pet fles recyclen is 70% efficiënt, dus na een paar loops ben je de 'oude' fles kwijt. Je kunt ook de pet fles inzetten voor andere materialen (tapijt) die efficiënter zijn en vervolgens jaren langer mee gaat. Moeten we altijd van verpakking naar verpakking gaan om een goede circulariteit hebben?

Tetra Pak heeft een duidelijke visie waarin zij voornamelijk willen gaan werken met hernieuwbare grondstoffen, hierdoor kan de totale impact gereduceerd worden (vooral CO2) ten opzichte van andere verpakkingen.



Recyclen is niet alleen van product X opnieuw naar product X, maar ook van product X naar product Y als de impact van de levenscyclus van product Y langer is

Evaluieren naar een low carbon economy, dit gaat verder dan recyclen

Klimaat doelstellingen gaan niet gehaald worden met recyclen, er moet een bewuste keus gemaakt worden voor materialen die de hele CO₂ uitstoot kunnen verkleinen

6. Zou u het bedrijf als lokaal, regionaal, nationaal of internationaal beschrijven? Waarom?

Tetra Pak is een internationaal bedrijf. Maar vlak het nationale niveau niet uit, dit is ook erg belangrijk. Internationaal gaat het vooral over onafhankelijke partijen die visie en activiteiten kunnen ondersteunen en bevestigen. Denk aan doelstellingen tot CO₂ impact en herbruikbare materialen, het is belangrijk om samen te werken met onafhankelijke partijen die dit auditen. Zo wordt er transparant aangegeven hoe er gescoord wordt op dit soort dingen.

Lokaal is het netwerk vooral gericht op de specifieke situatie van een land. Het is belangrijk om met overheden/Rijkswaterstaat (lokaal en nationaal) in gesprek te gaan. Alle stakeholders van het afvalfonds zijn altijd in gesprek met Tetra Pak om ervoor te zorgen dat er zo veel mogelijk acties opgezet worden om vooruitgang te boeken. Dit zijn meer wetgevende stakeholders

Ter ondersteuning zijn er ook partijen in overleg om argumentatie en onderzoek mee te doen. Universiteiten werken vaak in opdracht van het ministerie of Tetra Pak om specifieke elementen te onderzoeken. Facts&figures zijn belangrijk en moeten zo dicht mogelijk bij de realiteit aansluiten

Samenwerking met sorteerbedrijven om materialen te recyclen

7. Heeft het bedrijf een R&D sectie?

a. Zo ja, wordt er onderzoek gedaan naar circulariteit? Hoe veel?

b. Zo nee, hoe komt u aan uw circulaire initiatieven?

Tetra Pak heeft een R&D sectie. Meestal doen ze hier onderzoek van Tetra Pak zelf, maar er wordt ook onderzoek gedaan in samenwerking met leveranciers.

Jaarlijks wordt er meer dan 100 miljoen euro wereldwijd besteed aan innovatie van verpakkingen die maximaal over moeten naar papiervezel. De verpakking moet uiteindelijk gemaakt worden van hernieuwbare materialen of volledig gerecyclede materialen

Er is ook onderzoek naar 'end of life' van artikelen om ervoor te zorgen dat deze nieuwe ideeën er ook voor zorgen dat er bij de recycling opties blijven

8. Krijgt het bedrijf subsidies voor circulaire initiatieven?

a. Zo ja, zorgt dit voor belemmeringen of eisen?

Tetra Pak maakt geen gebruik van subsidies

Tetra Pak investeert wel in initiatieven van andere bedrijven zodat de andere bedrijven meer circulair kunnen worden. Een voorbeeld: samenwerking met Recon Polymers (startup) die technologie hebben ontwikkeld om het niet-papier gedeelte van een verpakking te recyclen. Tetra Pak heeft hiermee mee gefinancierd en Recon Polymers is nu een grote speler in de markt.

9. Welke circulaire initiatieven heeft dit bedrijf?

a. Als er geen zijn: zijn er andere initiatieven? Denk aan recycle, reuse, refurbish, repurpose

Tetra Pak wil af van plastic en overstappen naar bio gebaseerde verpakkingen, ze zijn hiervoor op zoek naar een certificatiesysteem (FSC papier)

Recyclen is belangrijk, maar er zijn meer initiatieven.

Er is altijd innovatie als het gaat om de samenstelling van verpakkingen, en een groot deel van het budget is dan ook hieraan geweid.

10. Waarom heeft dit bedrijf circulaire initiatieven?

a. Denk aan kosten-baten, milieu

het is belangrijk om samen te werken met bedrijven die producten overnemen om te recyclen en hier iets nuttigs van te maken zodat de producten opnieuw in een loop terecht komen.

Het milieu is voor Tetra Pak het belangrijkst. Alles draait om impact verkleinen, als hierdoor de ontwikkeling langer duurt en iets duurder is, dan is dat goed. Het is echt belangrijk om papier based te worden voor verpakkingen en geen andere materialen te gebruiken die niet eindeloos gerecycled kunnen worden.

Het is niet alleen de compatibiliteit van recyclen, maar als het gaat om de vervanging dan moet het op recycling gebied evenwaardig zijn, daarbij mag het milieu niet de dupe zijn.

Natuurlijk zijn kosten wel belangrijk, maar het staat niet op nummer 1.

Losse notities van het interview

Het is de verantwoordelijkheid van de gehele industrie om met oplossingen voor de toekomst te komen. Deze verantwoordelijkheid neemt Tetra Pak heel serieus.

Het is voor Tetra Pak belangrijk om samen te werken met zuivelbedrijven binnen hun activiteit om te kijken hoe het productieproces in hun bedrijf te verbeteren (CO₂ impact verkleinen, minder water gebruiken etc.)



Het is belangrijk om verder te kijken dan alleen de eigen activiteit, maar door de hele keten kijken of zaken geoptimaliseerd kunnen worden. Dit is ook in lijn met de doelstellingen van de klanten en het leidt tot een financieel betere situatie

A5: Transcribed interview Wagenaar Dairy

1. Wat is uw naam en functie?

Wybe Wiekema, mede-eigenaar Wagenaar Dairy sinds 2014

2. Wat doet uw bedrijf?

Wagenaar Dairy handelt in droge zuivelproducten zoals melkpoeders. Op de markt voor zowel humane voeding als diervoeding, diervoeding bedraagt 75% van de omzet.

De omzet is 1000 ton per week met een verkoopwaarde van €1 per kilogram.

Wagenaar Dairy koopt materiaal uit de voedingsindustrie met afwijkingen of een tbt probleem dat wel nog te gebruiken is voor dieren en verwerkt dit tot diervoeding.

De grootste markt is Europa. Er wordt ingekocht in Frankrijk, Benelux, Scandinavië en Ierland en in Haulerwijk wordt dit uitgepakt en wordt er een homogene partij van gemaakt.

Een kleine stroom van voedsel is ook niet geschikt voor dieren en deze producten worden gebruikt in de bio industrie. De grootste afnemer hiervan is een bedrijf in Meeden, hier worden de producten gebruikt voor de gasproductie en de installaties.

3. Hoe ziet het netwerk van uw bedrijf eruit?

Het netwerk is Europees, er is veel contact met andere zuivelproducenten in heel Europa. Grote zuivelfabrieken zoals Ewer, Friesland Campina, DMK en Euroserum hebben regelmatig contact met Wagenaar Dairy. Deze bedrijven zijn ook klanten van Wagenaar Dairy en dit is de primaire industrie, de eerste schakel in de keten.

Ook andere zuivelbedrijven zijn belangrijk in het netwerk van Wagenaar Dairy. Bedrijven in de babyvoeding zoals Falio, Humana, Hero en Ebbert hebben contracten voor langere periode met Wagenaar Dairy. Afgekeurde producten worden verkocht aan Wagenaar Dairy en zij gebruiken het om er diervoeding van te maken. Deze producten zijn wel nog goed, maar wegens strenge regelgeving mag het niet gebruikt worden voor de humane markt, hier ziet Wybe graag verandering in.

Andere afnemers van producten van Wagenaar Dairy zijn Firma van Drie, Deca Feed, Nutri Feed, AB Neo en nog meer. Deze afnemers zijn voornamelijk kalvermelkproducten.

Samenwerkingen zijn er ook, niet alleen afnemers. Wagenaar Dairy is aangesloten bij VIDO (voedingsmiddelen in diervoederoverleg) om concurrenten met elkaar te verbinden. Wagenaar Dairy is zowel in de diervoeding als in de humane voeding actief en VIDO helpt met het onderzoeken welke problemen en kansen er zijn voor de industrie.

4. Heeft u een school/hbo/universiteit/onderzoeksinstuut in het netwerk?

- a. Waarom heeft u deze organisatie in uw netwerk?

Vanuit de VIDO werkt Wagenaar Dairy samen met onderzoeksinstututen om onderzoeken uit te voeren. Per onderwerp verschilt het met wie Wagenaar Dairy contact heeft.

Samenwerkingen zijn met Blok, Universiteit Wageningen, NYWA gecertificeerde organisaties, Schouten. Wagenaar Dairy zelf is te klein om al deze kennis in huis te hebben en daarom is het belangrijk om samen te werken en onafhankelijk onderzoek uit te laten voeren

5. Wat is uw definitie van circulariteit?

- a. Mijn definitie is: een circulaire economie heeft geen afval en ruwe materialen worden steeds opnieuw gebruikt (Ministerie van Infrastructuur en Waterstaat, 2021).

Wybe is het eens met mijn definitie. Hij vindt dat er geen reden is om niet circulair te worden maar op dit moment houdt de regelgeving en wetgeving volledige circulariteit tegen omdat veel goederen niet meer gebruikt mogen worden naar afkeuring, zelfs als het nog goede producten zijn

6. Zou u het bedrijf als lokaal, regionaal, nationaal of internationaal beschrijven? Waarom?

Internationaal, voornamelijk voor circulaire grondstoffen in de Europese markt.

7. Heeft het bedrijf een R&D sectie?

- a. Zo ja, wordt er onderzoek gedaan naar circulariteit? Hoe veel?

- b. Zo nee, hoe komt u aan uw circulaire initiatieven?

Wagenaar Dairy heeft geen R&D sectie, maar de innovaties komen wel van de werkvloer en de eigenaren. Wagenaar Dairy heeft een klein lab en als er ideeën zijn wordt dit kleinschalig onderzocht in het bedrijf. Veel innovaties worden gemaakt vanuit klantvragen die op dat moment niet verwerkt kunnen worden. Wagenaar Dairy gaat dan op zoek naar oplossingen.

Wagenaar Dairy is altijd op zoek naar grondstoffen en er is meer vraag dan dat ze kunnen leveren, vooral voor circulaire grondstoffen zoals melkpoeders

8. Krijgt het bedrijf subsidies voor circulaire initiatieven?

- a. Zo ja, zorgt dit voor belemmeringen of eisen?



Wagenaar Dairy krijgt geen subsidies.

Er is een subsidieregeling voor zonnepanelen, maar er zijn geen subsidies voor het verwerken van de producten.

Er is in het verleden wel subsidie verleent, voor het maken van een machine die helpt bij het uitpakken van babyvoeding zodat het nog humaan gebruikt mag worden.

Kleinere bedrijven zoals Wagenaar Dairy hebben niet genoeg mensen om zich fulltime bezig te kunnen houden met subsidies. Wagenaar Dairy heeft zelf 30 man personeel.

Wybe staat wel open om meer naar subsidies te kijken zodat er meer innovaties uitgevoerd kunnen worden.

9. Welke circulaire initiatieven heeft dit bedrijf?

a. Als er geen zijn: zijn er andere initiatieven? Denk aan recycle, reuse, refurbish, repurpose

Van de 1000 ton omzet in de week, zijn er maar twee grijze containers afval per week. Plastic, papier en pallets worden allemaal gescheiden en hergebruikt. Dit is een eis van de industrie zelf, maar Wagenaar Dairy wil dit zelf ook

Wagenaar Dairy wil zo circulair mogelijk zijn, ze zijn energieneutraal. Circulariteit en duurzaamheid zijn erg belangrijk

10. Waarom heeft dit bedrijf circulaire initiatieven?

Er is zo veel vraag naar melkpoeders, producten die verdwijnen zijn zonde. Alle producten moeten een bestemming krijgen, maar mede door certificering is dit moeilijk. Hierdoor gaan er miljoenen tonnen per jaar verloren

Kosten zijn een belangrijk punt, want Wagenaar Dairy is wel een bedrijf dat financieel gezond moet blijven, maar winst is minder belangrijk dan het milieu. Winst mag niet ten kosten gaan van duurzaamheid. Duurzaamheid is zowel belangrijk voor de natuur als voor de toekomst van het bedrijf.

De korte termijn is niet belangrijk, maar de lange termijn.

Losse notities van het interview

Wybe wil zo veel mogelijk een bestemming vinden voor materiaal

Er moet eerder in de keten gekeken worden naar hoe de samenstelling, de verpakking etc, ervoor zorgen dat maar 2-3% van het afval kan worden hergebruikt.

A6: Interview template Circulair Friesland

Interview Circulair Friesland

1. Wat is uw naam en functie?
2. Wat voor bedrijf is Circulair Friesland?
3. Wat is het doel van Circulair Friesland?
 - a. Stimuleert Circulair Friesland circulaire initiatieven?
4. Hoe ziet het netwerk van Circulair Friesland eruit?
 - a. Wie zijn de belangrijkste actoren in dit netwerk?
5. Wat voor bedrijven zijn er aangesloten bij Circulair Friesland?
 - a. Hoe sluiten bedrijven zich aan bij Circulair Friesland?
 - b. Is er een gemiddelde grootte van bedrijven?
6. Hebben bepaalde bedrijven meer circulaire initiatieven? Denk aan grootte, locatie, nationaliteit van medewerkers, etc.
7. Welke trend in circulariteit ziet u de afgelopen jaren?
8. Wat is de belangrijkste factor voor circulaire initiatieven volgens u? denk aan samenwerkingen, een bedrijfsplan, winst, etc.
9. Is het goed als ik aan het eind van mijn thesis bij u terugkom om te bespreken wat ik gevonden heb en om dan te kijken of dat overeenkomt met wat jullie zien bij bedrijven die aangesloten zijn bij jullie?

A7: Transcribed interview Circulair Friesland

1. Wat is uw naam en functie?
Lank Vaessen, aanjager water en business developer op de Watercampus. Niet intern bij Circulair Friesland
2. Wat voor bedrijf is Circulair Friesland?
Circulair Friesland probeert organisaties, overheden, bedrijven en scholen te stimuleren om circulair te gaan handelen. Hiervoor heeft Circulair Friesland tools zoals een circo trick; samen nadenken over hoe je circulair kunt worden en wat je hiervoor nodig hebt, een ambitietafel; samen zitten met marktpartijen die iets willen realiseren en samen kijken hoe dit gedaan kan worden, gesprekken met leden
Circulair Friesland heeft thema's waar actoren zich op kunnen sluiten: circulariteit in inkoop, circulariteit in bouw, sluiten van nutriëntenkringloop



Bedrijven hebben een incentive om circulair te worden en vragen hierbij Circulair Friesland om hulp, Circulair Friesland realiseert dan opties om het bedrijf mee te helpen.

Ieder bedrijf mag zich bij Circulair Friesland aanmelden, maar het liefst heeft Circulair Friesland bedrijven uit Friesland om het lokaal te houden

Circulair Friesland wordt gefinancierd door ledengeld, subsidies en financiering van de gemeente

3. Wat is het doel van Circulair Friesland?

Het doel van Circulair Friesland is om de meest circulaire regio van Nederland en Europa te worden vóór 2025

4. Hoe ziet het netwerk van Circulair Friesland eruit?

- a. Wie zijn de belangrijkste actoren in dit netwerk?

De leden zijn voornamelijk in Friesland, 100 van de 140

Circulair Friesland heeft geen zuivelbedrijven in het netwerk, omdat deze bedrijven vaak zelf te groot zijn.

5. Wat voor bedrijven zijn er aangesloten bij Circulair Friesland?

- a. Hoe sluiten bedrijven zich aan bij Circulair Friesland?

- b. Is er een gemiddelde grootte van bedrijven?

Er is een overzicht te vinden op de website. Grote concerns sluiten zich niet zomaar aan, want zij hebben zelf een oplossing voor problemen en worden liever niet gecontroleerd

Vooral middelbedrijven melden zich aan, maar er zijn ook kleine bedrijven en starters in het netwerk

6. Hebben bepaalde bedrijven meer circulaire initiatieven? Denk aan grootte, locatie, nationaliteit van medewerkers, etc.

Kleinere bedrijven hebben meer initiatieven, een actieve sector in het noorden is de bouw

Door het enthousiasme van starters komt er steeds meer van de grond

7. Welke trend in circulariteit ziet u de afgelopen jaren?

Over de hele breedte van de economie komen er steeds meer circulaire en duurzame initiatieven

8. Wat is de belangrijkste factor voor circulaire initiatieven volgens u? denk aan samenwerkingen, een bedrijfsplan, winst, etc.

Aangesloten bedrijven willen soms winst maken, maar de meeste doen het omwille de samenleving

9. Is het goed als ik aan het eind van mijn thesis bij u terugkom om te bespreken wat ik gevonden heb en om dan te kijken of dat overeenkomt met wat jullie zien bij bedrijven die aangesloten zijn bij jullie?

Ja dat mag

Losse notities van het interview

Kleinere bedrijven hebben meer geld en flexibiliteit om te investeren in duurzaamheid en circulariteit. Grote bedrijven worden tegengehouden door de voorsprong die ze hebben, machines die ze al hebben en systemen die al graaien. Als ze circulair worden is de kans groot dat dit niet meer werkt en dat het ze extra geld gaat kosten. Hierdoor zullen grote bedrijven minder snel proberen te innoveren

Circulariteit en innovatie op nieuwe producten is wel makkelijker voor grote bedrijven dan voor kleine bedrijven, omdat grote bedrijven meer financiële middelen hebben. Een randvoorwaarde hiervoor is wel dat het nieuwe product moet passen in de lijn van wat de grote bedrijven al maken.

Wetgeving is een heel groot probleem, als een product eenmaal een eindproduct is, mag het niet meer terugkomen in de keten.