Hanze
University of Applied Sciences
Groningen

# Monitor 2019

# The Regional Food Chain

## Food from the region for the region - cooperative and innovative

EURADA
AWARD
BEST
INNOVATION
TOOL 2018

GEBIEDSCOÖPERATIE
WESTERKWARTIER

# Colophon


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This publication is the third part of the Monitor research series. This publication series highlights various aspects of the practical research of the professorship Sustainable Cooperative Entrepreneurship (Marian van Os Center for Entrepreneurship, Hanze University of Applied Sciences).

With applied research, Professor W. Foorthuis and his research group contribute to progressive insight into cooperation within the regional triple helix. The professorship Sustainable Cooperative Entrepreneurship is researching new forms of regional cooperation between entrepreneurs, knowledge institutions, governments and civil society organizations.

How do they see their new collaboration? Which tasks and responsibilities do they have in this collaboration? What solutions do they find for the social tasks in the field of climate, energy, food and active citizenship? And how does this ultimately contribute to the social and economic resilience of the region and its inhabitants?

The professorship does not answer these questions from the outside but as a participant to the regional transition processes. Our research group looks at new organizational models such as the regional cooperatives, the first of which were (and still are being) established in the Northern Netherlands.

The professorship guides the regional partners in the three important transitions to next business, next governance and next education: new sustainable and socially responsible business models, new democratic regional forms of government and the way in which we as a knowledge institution must innovate in order to be able to participate in the transitions in a meaningful way.

The two preceding parts are:
- Monitor 2016: *Regional Cooperative Westerkwartier* (Gebiedscoöperatie Westerkwartier).
  Foorthuis, W. & Lutz, S., Dec. 2016
- Monitor 2016/2017: *Neighborhood cooperation Helpman / de Wijert* (Buurtsamenwerking Helpman/de Wijert).
  Foorthuis, W. & Muller-ter Veen, A., Jul. 2017

Both parts can be downloaded via the publication button on the website of the professorship Sustainable Cooperative Entrepreneurship. To do this, scan the QR code.

Hanze University of Applied Sciences Groningen

# Monitor 2019

# The Regional Food Chain

## Food from the region for the region - cooperative and innovative

### Professorship Sustainable Cooperative Entrepreneurship in cooperation with the Regional Cooperative Westerkwartier

**share your talent.**
**move the world.**

# Preface

This is the third publication of the Monitor: a series of publications in which the results of the practical research within the professorship Sustainable Cooperative Entrepreneurship (DCO) and its knowledge circle are regularly presented.

The first two issues were dominated by the Regional Cooperative Westerkwartier and its Innovational workplaces. This edition zooms in on the approach and efficacy of the Regional Cooperative in the development of a regional food chain.

Although agriculture and food has always been an important sector in our region, you can now see that the sector has a difficult time due to various causes. We are very good in the production of bulk, but the completion of these raw products often takes place outside of the region. We see a large-scale regional food chain with production, processing and sales in the region, as an alternative to the current model. Obviously done in a sustainable way, with circular processes, less environmental impact and socially including. It is an integrated chain approach on a regional scale.

Together with chain links from various product groups, we are working on new revenue models. For instance, new cooperative partnerships, a different cultivation plan, product innovation and building new processing industries. We intertwine education with practice, so that they better connect to each other. Furthermore, with the help of education we aim to reach the practical goals in the region. It is a win-win situation.

We see that these issues also exist on a European scale. Three years ago, we formed a European partnership with REFRAME, led by the municipality of Groningen, and we were invited by Brussels to jointly find innovative answers for our commons questions. Our solutions are now widely shared.

In this Monitor you can read a reflection from the professorship Sustainable Cooperative Entrepreneurship on what we have developed in recent years, what we have learned and the next steps we are going to take. It is our pleasure to offer this edition to our regional and European partners. A regional and integral food chain is not a goal in itself, but more a means to keep our beautiful region livable and to develop it in a sustainable way. We do not do this alone, but with many partners in the region. I am proud of this result.

Hans Bergsma

*Director*
*Regional Cooperative*
*Westerkwartier*

Recently the Dutch TV documentary ‘Holwerd aan zee’ made a huge impact It is about a small village near the Wadden dyke in the North Western part of the province of Friesland. Tourists pass this village, on their way to the harbour to one of the famous Wadden islands, Ameland. Holwerd used to be a thriving village amidst very fertile soil where food was produced. In the village all activity was related to agricultural activity.

After World War II food production was increased to feed the hungry in Europe. Activities in producing food started to change. Producing on a big scale, mechanisation, exporting the produce abroad led in the end to a decrease in employment and activity in Holwerd. There is one shop left, children have to leave their village to get educated and have nothing to return to or for, only a few elder people stay.

We all recognize this in our own areas within the Reframe project. Communities are struggling and sometimes a small group of people face the challenge and develop a plan. So did four men in Holwerd. They developed a plan to save their community, make sure there will be a future for living and working in this area.

Reconnect Holwerd with the Wadden Sea again, bring the water back to the village and develop new activities, nature and employment again. The costs of a dyke breakthrough, a small lake, tourist accommodation etc. would cost about 65 million Euro. But the four men went and presented their plan with such enthusiasm and belief. They did about 250 presentations for every organisation they could think of within in the Netherlands and in Bruxelles. They already raised two-thirds of the money needed. It looks like they will succeed! It is a beautiful example what you can achieve, starting to develop an idea on which your own community can thrive on.

In Westerkwartier food production is very important and, the same as it is in the Holwerd region, produce is mainly for the world market. Due to the landscape of Westerkwartier produce is different and on a smaller scale. On this smaller scale it is even more difficult to raise a healthy income for producers.

Five years ago in the region Westerkwartier a couple of men started the ‘Gebiedscoöperatie’. A new type of organisation based on the coöperation between all parties in the area and, very important, students of the Hanzehogeschool Groningen, University of Applied Science. Their aim is to develop the regional food chain: food produced, processed and consumed in the region. Developing new business models on a scale which fits the region of Westerkwartier. Working together in unexpected formations, with unexpected partners. Celebrating their fifth-anniversary hundreds of companies, students and others were present. This shows how successful the Gebiedscoöperatie has been. Not only within the area of Westerkwartier but also on a European scale. Their contribution to the Reframe project has an impact on all partner regions.

In this Monitor you can read how Gebiedscoöperatie Westerkwartier worked and what they achieved so far. You are invited to get inspired and to contribute to a sustainable and healthy regional food chain in your own region.

Hiltje van der Wal

*Project manager Reframe, towards a regional foodframe, North Sea Region Interreg VB project*

*Municipality of Groningen*

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# Intro: Handling our food differently - how?

## More attention to quality

Our vision on food is changing. Food scandals, animal abuse, an imminent obesity epidemic, to strive for lower Co2 emitions and waste, food safety, food security and a more sustainable approach with circular processes, more sustainability and a circular economy - all this leads to us being more and more aware of food and the processes behind it. 55 percent of the Dutch say that they eat less unhealthy products than in the previous years[1]. Dutch people put healthy products in the first place, followed by price, flavour, safety and sustainable production[23].

The Dutch Scientific Council for the Government policy (WRR) has also dealt with the food issue. Already in 2014, the report "towards a food policy" was published: a report in which the authors advocate the transition from agricultural policy to food policy. According to the WRR, urgent issues around ecology, public health and climate change make it necessary that it is needed to spend much more attention on resilient food networks, which are better able to flexibly cope with different changes than the current structures. A variety of crops, players and products, good management of natural resources and the development of learning- and adaptability capacities with all the players involved are urgent matters according to the council[4]. One year later, in 2015, the Dutch Ministry of Economic Affairs underlined that our food has positive effects on our health, the costs of health care, the ecology and the climate[5]. More recently we see in the policy of the Dutch Ministry of Agriculture, Nature and Food-quality the emphasis on a transition of the way in which we produce, process, distribute and consume food. The minister argues for circular agriculture and invites stakeholders from the triple helix to develop sustainable chains[6].

1 https://www.rabobank.com/nl/press/search/2016/20161013-gezond-eten.html
2 http://www.groenkennisnet.nl/nl/groenkennisnet/dossier/dossier-consumententrends.htm
3 One must keep in mind that answers in such types of questionnaires are not always entirely reliable. An issue might be the so-called social desirability bias, a bias due to social correctness. Even if we are only behind a screen, we still tend to answer in accordance with the way we believe we are supposed to answer in case somebody would look over our shoulders.
4 https://www.wrr.nl/publicaties/rapporten/2014/10/02/naar-een-voedselbeleid
5 Dutch Ministry of Economic Affairs, Directorate-general "Agro en Natuur, Voedselagenda voor veilig, gezond en duurzaam voedsel", October 2015.
6 Visie Landbouw, Natuur en Voedsel: Waardevol en Verbonden, september 2018

**Paradox**
There is something strange going on: although the demand for regional food is increasing, the Dutch agricultural sector still focuses to a large extent on export, both in primary production as well as in the processing industry. In the list of agricultural exporters, The Netherlands comes in second after the USA with 90.3 billion euros[7], although the growth in 2018 is lower than in the two previous years. But the farmer-incomes from agriculture are declining and have been declining since 1995[8]. In addition to agricultural production there is still a lot of processing-industry in the Netherlands. Meat processing, dairy, oils and fats, sugar, cocoa and chocolate, bread and pastry, fruit and vegetable processing and beverages - in all these sectors several large multinationals are active[9], who generate 51% of the revenue. The other 49% comes from SMEs.

**More than 50% of employment disappears**
There is a major competition in the agri-food sector and in all likelihood this competition will only be fiercer, in all links of the chain, both internationally and nationally. This has led to the disappearing of many regional processing-companies in the Northern Netherlands in the past 30 to 50 years. We still see a lot of bulk production from a few large players, but many smaller companies don't make it and have to close their businesses. According to a scenario study by the Dutch Central Planning Agency, the agricultural employment in the period up to 2040 will decrease between 50 and 65%. This is mainly due to global competition. By upscaling, cost price reductions, far-reaching efficiency and rationalization only the largest entrepreneurs are able to survive. They produce well and a lot, especially bulk for export.

**New opportunities for the region**
If you know this - is it such a crazy idea to bring the food chain back to the region? After all, instead of importing expensive food we could also stimulate the regional production and processing again. Why not start producing for your own region, with stakeholders in your own region? Develop together an alternative to the current model.

It is here that there are opportunities for new regional SMEs. In the craftsmanship that we already know, but also in the innovative processing that we need but do not yet know. Healthy and delicious meat substitutes, for example from legumes. High protein products to support muscle-training for elderly people, so that they can stay longer healthy and can continue to live independently.

7 https://www.cbs.nl/nl-nl/nieuws/2019/03/landbouwexport-ruim-90-miljard-euro-in-2018
8 Compendium voor de Leefomgeving, https://www.clo.nl/indicatoren/nl2122-bedrijfsgrootte-en-economische-omvanglandbouwbedrijven-?ond=20911, https://www.clo.nl/indicatoren/nl2125-productiewaarde-landbouw?ond=20911
9 8 out of the 25 biggest companies in The Netherlands are food-related companies; http://eduweb.eeni.tbm.tudelft.nl/TB141E/imgs/ELI-agrofood-selectie.pdf



Or meals with products that help people strengthen before and after operations[10].

What is needed for that? Sustainable agriculture, a food system that is economical and efficient with raw materials, energy, water and minerals and a circular food chain with added value for the region, producers and consumers, lots of new knowledge, new studies, new companies and new investments in processing plants and machines. We can rebuild all this in the region.

## The new food chain: REFRAME in five North Sea countries

These were the principles of the lectorate Sustainable Cooperative Entrepreneurship (Hanze University of Applied Sciences Groningen) and the Regional Cooperative Westerkwartier when they started developing a new concept for the recovery and renewal of the regional food chain in 2015. Together with the regional stakeholders they developed a program with the title F4: Field, Factory, Fork, Field. It stands for a circular food chain with processing and completion in the region, a regional chain with entrepreneurs from the region for buyers in the region. A part of this program will be implemented under the name REFRAME. REFRAME is a project co-funded by the North Sea Region Programme 2014 - 2020 and involves five different countries in the North Sea Region (Denmark, Sweden, Germany, Belgium and the Netherlands). The partnership is with 14 partners out of 8 regions. Reframe has six main objectives:

1. Create data and understanding of current supply and demand
2. Business innovation through smart specialisation
3. Policy decision taking on urban food policies and intentions
4. Regional organisation in a cooperative structure
5. New skills for food-related SMEs and other stakeholders within a RFF
6. Regional food for environment, climate and health

## Three hypotheses and a road map

Now that we have lost almost all knowledge and capabilities for the regional food production the regional chain will not be just back in a jiffy. Is it even doable in general? What do we have to do for it and how can we achieve it? These are the questions the Regional Cooperative Westerkwartier asked itself when they started with the preparations for REFRAME.

In recent decades there have been many small-scale attempts in the region to organize locally produced food-selling. Think about for example the selling of products in farm-stores, on local markets or through online platforms. But what do you see? Most of these initiatives cannot survive in the long-run. They are too small for solid business operations and too dependent on the commitment of volunteers. In some cases, companies

10 Specifically these health-related aspects of regional products are addressed by the Regional Cooperative Westerkwartier in its proposal for the continuation of the EU-partnership REFRAME, the EU-cooperation project described in this publication.


The regional chain with the Food Factory as the central and connection link

succeed in keeping their heads just above the water, but you have to have a lot of financial resources by hand to be able to cope with fluctuations in sales. In most cases initiative takers get an extra income at most from their activities and do not reach the stage of a mature business model.

**But how could it be possible?**
At the start of the program in the north of the Netherlands, we made three hypotheses which would be able to make a regional chain possible:

1. organize the chain on a regional scale
2. develop a cooperative approach with a leading role for small SMEs in the region
3. Bring providers and buyers together in a business-to business relationship.

The guiding principle was that the vision of small SMEs in the region can only innovate and flourish, if they know how to integrate their strengths. Everyone for themselves is too small to make an attractive proposition, but together they are capable of it. Hence, the motto was "Cooperating instead of competing."

These were the hypotheses at the start of the program for the pilot of the Regional Cooperative Westerkwartier. In addition, the developers had prepared a working definition for the regional chain and had figured out a road map on how they wanted to work towards the realization of a regional chain in five steps. The REFRAME project is currently on ¾ of the total project duration. We have taken this as an occasion to review the course and the results. Are the hypotheses correct, is the definition proven correct and is the plan for setting up a modern regional food chain useful?

## Reading Guide

In this monitor we present you the REFRAME-pilot of the Regional Cooperative Westerkwartier in three parts.

- In part 1 we will tell you about the hypotheses with which the project has started: a regional, cooperative and b2b scheme. In addition, we outline the 5-step plan for the implementation and the first working definition of the term "regional food chain".
- In part 2 we discuss the steps that have been taken and the results that have been achieved with this. Which of the hypotheses seem to be confirmed, which appear to be wrong and why? What went different then planned or expected? We also discuss a few student projects and the surprising development of the Food Factory. On top of that, we will give a brief overview of what is happening in the rest of the Netherlands regarding the short food chain.
- In part 3 we will provide a look at the next phase. Three components will be discussed here. First: which business models do we know and which of those fit within such a new regional entrepreneurship? Next: how are you going to manage such a regional chain? Which governance models are suitable for the governing of a multi-stakeholder alliance and how to build a cooperative and democratic set-up? And finally: how do you ensure knowledge creation, knowledge sharing and knowledge flow from and between all stakeholders?

The **Regional Cooperative Westerkwartier** is a company in the tradition of the cooperative enterprise. However, she is more than a company. She also acts as an engine for regional development. Together with entrepreneurs, students and researchers from educational institutions, residents and government in the region, a step-by-step process is gone through. They identify the themes that play a role in the region and prepare an agenda together. This provides the framework for innovation-related questions from entrepreneurs. For the answering of questions students and researchers play a decisive role, because together with the regional stakeholders they develop new knowledge and insights, which they then implement in practice, test and improve.

Through the structural linking of entrepreneurs with knowledge institutions, they can mutually exchange the latest information and knowledge. This happens in learning communities, where you come together to answer concrete questions, but also and foremost to develop new business plans and models.

The Regional Cooperative distinguishes itself in a number of ways from traditional cooperatives: she is cross-sectoral, works on a regional scale and has a wide variety of stakeholders. Especially the diversity within the partnership is the most important condition for increasing the chance of innovations.

At the same time, diversity also requires other working processes and innovations in the "line organizations" that form the Regional Cooperative. Thinking from a shared responsibility, shared tasks and also shared financing are examples of this.

For the cooperation with its regional partners, the Regional Cooperative and the Hanze University of Applied Sciences have developed the method of "Innovation Lab, Powerful SMEs".

In the **Entrepreneurs' Innovation Lab,** the activities of the Regional Cooperative are carried out. Innovation in SMEs is linked together with the creation of learning environments for students and professionals. The Entrepreneurs' Innovation Lab stands for a methodical approach that ensures a stable working method within the triple helix collaboration.

In its ideal form, it is a practice-oriented social innovation and learning system, in which partners of knowledge institutions and professional practice work together on complex and current issues. The answers to these questions you can find in an iterative process of knowledge co-creation, practical application, evaluation and new co-creation. The Regional Cooperative works hereby as a vehicle to stimulate regional agendas, questions, innovation, cooperation and knowledge sharing. Ultimately, this must be reflected in valorizable effects of new products, services and business processes.

**EURADA AWARD**

This new form of innovative private-public cooperation was researched and awarded by the European Association of regional development-societies, "EURADA", at the end of 2018. They have defined innovative organizational forms for regional development from all EU projects to which they participate as partners. This led to around 50 of such organizations, of which the Regional Cooperative Westerkwartier was elected the most innovative.

eurada
→ European Association of Development Agencies
→ Association of regional development companies
→ Founded in 1992
→ 81 members in 23 countries

For the "best practice transfer", the EURADA researchers have translated the results into a "canvas" attached to the business-model canvas of Alexander Osterwalder with the tools required to map the organization. You can find more information about this at EURADA. To do this, scan the QR code.

**LANGMAN AWARD**

This approach was also awarded regionally. The Regional Cooperative was awarded with the Langman Award during the New Year's reception "North-Netherlands". The Regional Cooperative received this award because, according to the jury, she has proven itself as a concept for regional development. It is not an award for those who simply govern, but for those who roll up their sleeves in order to put the north of the Netherlands on the map. With awarding the Regional Cooperative, an enterprise has been put in the spotlights which will most certainly inspire partners in the region.

Picture: Hans Bergsma accepts the Langman Award during the New Year's reception "North-Netherlands"


**In this part we present the hypotheses with which the project has started: a regional, cooperative and B2B design. Furthermore, we outline the 5-step plan for implementation and the first working definition of the term regional food chain. We conclude with an overview of the seven points which at the start of the project seemed necessary for the functioning of a regional food chain.**

## Regional scale

It has been discussed before: for achieving a stable and competitive market position a minimum turnover is needed. This will not be obtained in a small and fluctuating market. From the customers you also need a certain area in which there can be produced. Not every area is suitable for the production of every part in the chain. The soils differ and are therefore sometimes better suited for cattle, horticulture or agriculture. Furthermore, there are geographical-cultural differences that have grown through the ages. For a smart specialization in the chain, you want to make the best possible use of this. In order to reach the required volumes in production and sales you have to think and work on a regional scale.

**What do we mean by a region?**

What is meant by a region differs depending on the geographical and demographic conditions. The lesser populated an area, the wider a region. In our specific case we are dealing with a relatively densely populated area and we therefore define the region as the urban field Groningen - Assen. This is the forensic zone in which the majority of the population is oriented towards studying or working in or in relation to the city of Groningen. It is also the area in which the focus of economic development lies primarily on the city of Groningen. This region has a radius of approximately 40 kilometres from the city of Groningen[11] and has almost one million inhabitants.

11 The urban field Groningen is not an exact circle, but has the shape of an oval. The borders are the Waddensea coast in the north, the German border in the east, Assen in the south and Drachten in the west.

## Business-to-business relationship

In addition to scaling up from local to regional, you also need to scale up in the organization of demand and supply. One of the reasons that many local, but also online initiatives are failing is because it is not reliable enough for them to focus on the consumers market.

The private consumers are flexible in their habits, preferences and testing something new. It is very much possible that for a little while they would do their grocery shopping at the local market, but apart from the very loyal customers, most people would not prefer to go to the supermarket when it is raining, cold or when they lack time.

Regional meeting at fruit growing company Oudebosch



| | |
|---|---|
| B2B | Doing business as a company with other business parties who add value to products or services; for example, selling goods and services to professional buyers. |
| B2C | Doing business as a company with parties who consume a final product; for example, retail trade, restaurants, etcetera. |
| C2C | Doing business as a private party with other private parties, not a business market, for example, someone who owns chickens sells eggs on the side of the road to neighbours and acquaintances. |
| C2B | Selling something to the business market as a private party, for example, bloggers or reviewers who offer links to a certain producer or business-related sales-address. |

Therefore you need to organize a reliable market for delivery and sales. Providers thus receive the certainty that they can sell their products and buyers know that they will receive their delivery. The volumes that are essential for an effective business model can only be reached through a business-to-business relationship. For the reconstruction and renewal of the regional food chain this is the only level with which you can be easily successful. On the long term you can also link up with initiatives at the level of b2c, c2c and maybe even c2b (see the terms in the image). But only if you already built a solid foundation and can integrate providers on a smaller scale into an existing structure.

## Cooperative approach

The third aspect is closely related to the two previous ones. As a small SME you cannot deliver the volumes that a large buyer needs all by yourself. That is, if you want to deliver the supplies in the way that large buyers need them. The regional healthcare institutions need products for around 3,000 to 3,500 hot meals a day. We do not only speak about cultivation and harvest, but also about peeling, cutting, blanching, slaughtering, filleting, baking, roasting, cooking, preserving, drying, seasoning, freezing, packaging, transporting, etcetera. Cooperative networks, who can be the links in the connecting chains on a regional scale, are needed. This is also what Karner states[12] in her comparative study of local and regional food systems. Regional providers can only survive if they organize themselves in cooperative networks on a regional scale[13].

Moreover, as an SME or financer you only invest in innovative technologies, equipment or a new slaughterhouse if you have a view in advance of a solid business model with sufficient volumes, both on the demand side as well as on the supply side.

12 Karner, S. (ed.) (2010). Local Food Systems in Europe: Case studies from five countries and what they imply for policy and practice. FAAN report. Graz: IFZ.

13 If you only look at the primary production, it would be possible for a single farmer to deliver the requested volumes. The UMCG hospital buys 65.000 kilos of potatoes on a yearly basis, for example. You need about 1 hectare for that. Even a small farmer can deliver that. If you extrapolate this to the 12 northern hospitals, you will reach 160.000 kilos. This can also still be supplied by a farmer. But you have more target groups than industrial kitchens and you want more variety in your supply. Therefore, more diversity and thus more cooperation is also required in the primary production.

Producers in the chain must therefore collaborate cooperatively in a network - both with their fellow-producers as well as with large consumers, such as hospitals, universities, healthcare institutions, etcetera. You need to organize a structural collaboration in the region. This means: a network of agro- and food entrepreneurs from different professions and specializations in production, processing, logistics and supply. Furthermore, you also need a cooperative cooperation with the buyers, so that you can rely on sales and delivery from both sides.

**Keep learning and innovating**

Lastly, there is one more aspect that should not be underexposed. You need knowledge, expertise and a reliable partner for education, courses and practical training. Once again, we cite Karner, who indicates that new chains can only continue existing and expanding if those people involved can professionalize and can obtain new knowledge and skills. In fact: "They must constantly learn, in order to keep up with changing circumstances and to remain competitive in the market."

## The 5-step plan for implementation

We invented a step-by-step approach for the implementation:

1. Mapping: retrieve regional data:
   - Which food producers are there and which products are requested (the latter in cooperation with large regional consumers). For this we conduct desktop research and interviews. In the context of the pilot, we would limit ourselves to one (to be later determined which) product group.
   - We develop a database to save and analyze the results of the first exploration. We call this the regional food map.
   - The food map also provides insights about the possible matches and mismatches. Where are demand and supply covered and where do we see gaps?
2. Smart specialization strategies: working out new business opportunities:
   - With the food map from the previous phase the regional entrepreneurs will have an overview of their chances for new business cases: where are my niches and how can I build a cooperative chain in the supply-side together with my regional colleagues?
   - For those who are interested we organize a series of workshops to find their smart specializations and to develop business cases.
   - The entrepreneurs in the regional food chain prepare a regional proposition together with an attractive range of both primary and processed products for the consumer.
3. Building a cooperative structure
   - The steps for building a cooperative structure only make sense if an explicit intention of cooperation has been declared. The producers have prepared their own proposition. It is now up to the buyers to accept this offer.
   - Both parties reach an agreement for a test run. We call this the regional cooperative arrangement.
   - But such an arrangement does not happen automatically. There has to be a person or a team of people who ensure a flexible implementation. That also means for example that alternative products can be delivered in case something goes wrong in the region. The buyers must be sure that they receive their order every day. We call such an essential team or person the regional food agent.
4. Test run and agreements for continuation
   - The test run for the regional arrangement can start for the duration of the period that has been agreed upon.
   - The experiment is being observed, documented and evaluated: what is working and what isn't, where are reparations needed.
   - A final evaluation takes place after the termination of the experiment. This serves as a basis for the safeguarding and transferring of the knowledge obtained, as a fundament for upscaling and broadening of other products.
5. Continuation
   - The collaboration-network is being expanded.
   - Parties conclude agreements for the continuation and expansion to other products. The arrangement can grow to a reliable regional food contract.

## Regional food chain - the first definition

At the start of the program, we discovered that there was not yet a definition of the regional food chain in the way as we imagined it. We therefore drew up a definition ourselves:

> Regional Food Chain Working Definition, September 2015: a regional food chain is a chain in which a certain product or product-group is being produced, processed, sold and distributed in the region, in a circular way, thus including the processing of residual streams.

We were aware that this was only a preliminary definition that would have to be re-examined during the implementation process and would have to be improved in line with the learning process. In part two you can read which actions have been undertaken, which insights have been reached and how the definition has continued to develop on the basis of these actions and insights.

# Part 2: First steps and conclusions

**In this part we describe what actions have been taken and to what results this has led. We are also going to check the hypotheses and the first definition. Which hypotheses can we confirm and why? Which hypotheses appear not to be correct and why not? What went different than planned or expected? Furthermore, we highlight some studies that have yielded new insights. On top of that, we will discuss the surprising development of the Food Factory and we will briefly summarize what is happening in the rest of the country in terms of the short food chains. Finally, we summarize which provisional conditions for the functioning of a regional food chain we have drafted following our midterm-evaluation and to what new definition this has led.**

## Mapping

By mapping is meant the mapping of food relevant data in the region, for example, the regional food suppliers and buyers. By researching this in a baseline measurement, we know what there is and what is still missing. The Regional Cooperative researched the number of dairy farmers, grown products, quantities, collaborations, visions of the future, consumption figures, etc. These are all matters that clarify the image of the region and that can show what is already there and where there are opportunities.

**Development and use of an app**

In order to find what food-related entrepreneurs produce and whether or not they see opportunities for collaboration, an interview app has been developed. In addition, an overview of regional food producers and processors has been compiled. This overview is a list of over 3400 companies. Students from different schools (Terra SVE and Hanze University of Applied Sciences Groningen) have conducted interviews. On the basis of the collected data from interviews, desk research and information from regional working groups, a better understanding of the region has been established. The facts and figures in the sections below are largely derived from the mapping.

## Facts & Figures

Data has been collected from the mapping and a better understanding of the regional food chain has been developed. Below you can find some examples of the facts and figures that have been found there.

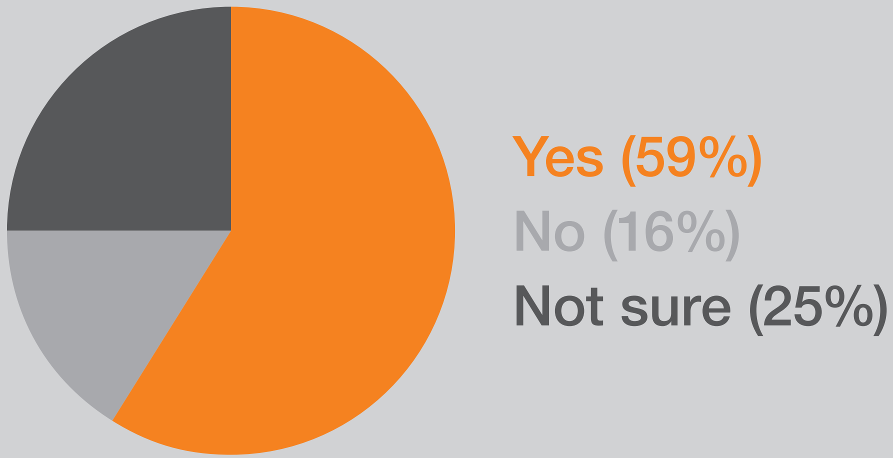



**Figure a:** Do you wish to learn from other entrepreneurs? (N=60)


**Figure b:** Word cloud: what do you want to learn? The larger the word, the more often it has been chosen

| Period | 2000 | | | 2017 | | |
|---|---|---|---|---|---|---|
| subject | Harvested surface | Gross yield per ha | Total gross yield | Harvested surface | Gross yield per ha | Total gross yield |
| Crops | ha | 1 000 kg | 1 000 kg | ha | 1 000 kg | 1 000 kg |
| Total wheat | 31674 | 8,1 | 257282 | 28220 | 9 | 254749 |
| Winter wheat | 28971 | 8,2 | 238857 | 26768 | 9,1 | 244104 |
| Summer wheat | 2703 | 6,8 | 18425 | 1452 | 7,3 | 10645 |
| Winter barley | 829 | 6,1 | 5040 | 2131 | 8,8 | 18777 |
| Summer barley | 8054 | 6,3 | 51001 | 4733 | 6,6 | 31198 |
| Rye | 828 | 5,4 | 4498 | 99 | 2,7 | 261 |
| Oats | 692 | 5,8 | 4005 | 382 | 6,6 | 2524 |
| Triticale | 178 | 6 | 1065 | 100 | 4 | 398 |
| Grain corn | . | . | . | 115 | 11,5 | 1329 |
| Common corn | . | . | . | 7364 | 48,8 | 359631 |
| Corn Cob Mix | . | . | . | 108 | 13,2 | 1421 |
| Brown beans | 7 | 2,8 | 20 | 6 | 3,5 | 21 |
| Rapeseed | 747 | 3,4 | 2551 | 1076 | 4,1 | 4442 |
| Fiber flax | 74 | 6,1 | 451 | | | |
| Flax seeds | 73 | 1 | 72 | | | |
| Chicory | 25 | 43,5 | 1097 | 184 | 46 | 8469 |
| Hemp | 472 | 5,9 | 2774 | 935 | 7,5 | 7010 |
| Potatoes, total | 26404 | 41,6 | 1098754 | 26384 | 41,5 | 1095009 |
| Consumption potatoes, total | 2209 | 52,2 | 115227 | 1847 | 47,4 | 87483 |
| Consumption potatoes clay | 1847 | 52,7 | 97275 | | | |
| Consumption potatoes sand/ peat | 362 | 49,6 | 17952 | | | |
| Seed potatoes, total | 8448 | 34,3 | 289951 | 8888 | 37,7 | 334617 |
| Seed potatoes clay | 7574 | 34,3 | 259897 | | | |
| Seed potatoes sand / peat | 874 | 34,4 | 30054 | | | |
| Starch potatoes | 15747 | 44 | 693576 | 15649 | 43 | 672910 |
| Sugar beet | 14282 | 59,1 | 843756 | 13786 | 87,7 | 1208837 |
| Seed onions | 234 | 60 | 14120 | 1814 | 70,1 | 127229 |
| Seed onions after outages | 234 | 58 | 13529 | 1814 | 64,6 | 117297 |

SOURCE: CBS

**Figure c:** Agricultural crops, production province of Groningen 2000-2017.

In the province of Groningen, potatoes, sugar beets and wheat are grown on large scale. Next to that we see a strong growth in onions, chicory and hemp; and at the same time a decrease in rye and oats.

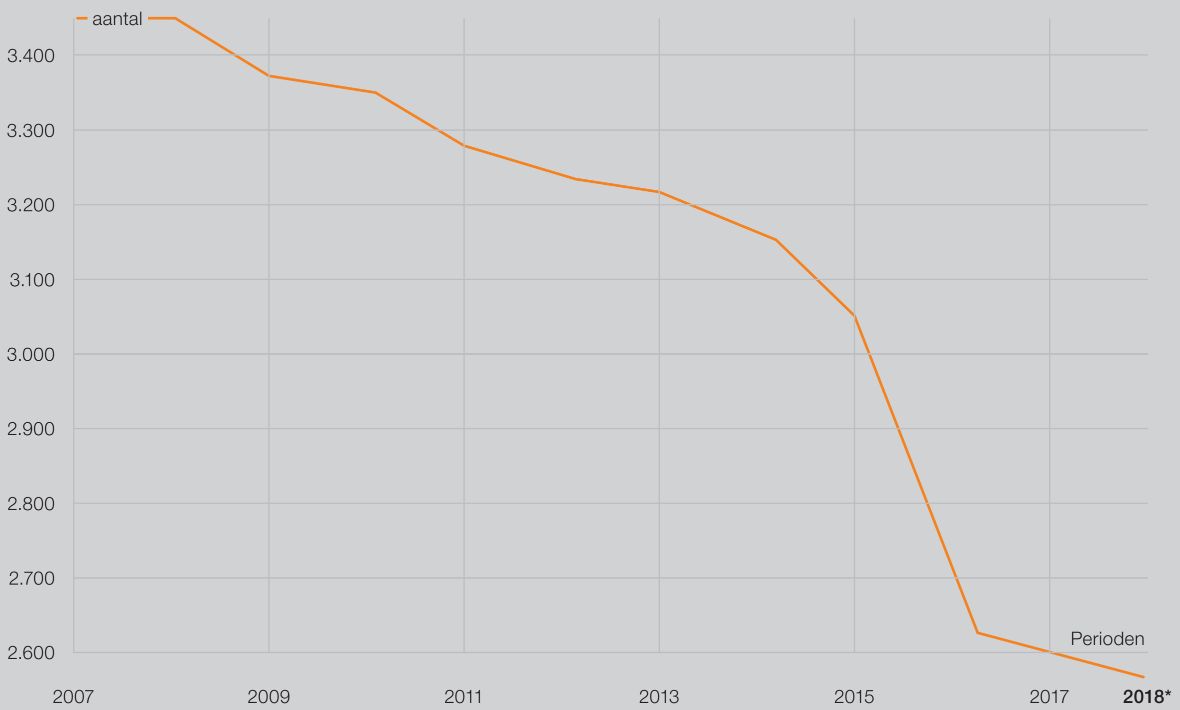



**Figure d:** Number of agricultural companies in the province of Groningen

Source: http://statline.cbs.nl/Statweb/publication/?DM=SLNL&PA=80780ned&D1=23-63,65-86&D2=1,5&D3=l&HDR=G1,G2&STB=T&VW=T

| **Subject** | | **2000** | **2005** | **2010** | **2017** | **2018*** |
|---|---|---|---|---|---|---|
| Number of agricultural businesses, total | bedrijven | 4193 | 3634 | 3355 | 2601 | 2566 |
| Cultivated land, total | are | 16610128 | 16549387 | 16180926 | 15897300 | 15792545 |
| Agriculture | are | 9416481 | 9074397 | 8522886 | 8400966 | 8507806 |
| Horticulture open ground | are | 109613 | 85989 | 84847 | 114451 | 113572 |
| Horticulture under glass | are | 7419 | 6804 | 6122 | 5499 | 5337 |
| Grassland and green fodder | are | 7076615 | 7382197 | 7567071 | 7376384 | 7165830 |
| Non-cultivated land, total | are | 930619 | 846248 | 845382 | . | . |
| Cultivated land, total | bedrijven | 4156 | 3593 | 3309 | 2564 | 2525 |
| Agriculture | bedrijven | 2107 | 1799 | 1551 | 1347 | 1367 |
| Horticulture open ground | bedrijven | 262 | 196 | 162 | 170 | 176 |
| Horticulture under glass | bedrijven | 95 | 80 | 55 | 30 | 24 |
| Grassland and green fodder | bedrijven | 3146 | 2745 | 2704 | 2149 | 2121 |
| Non-cultivated land, total | bedrijven | 3096 | 2778 | 3015 | . | . |
| Potatoes, total | are | 2720072 | 2632370 | 2552460 | 2660581 | 2755773 |
| Cereals, total | are | 4254730 | 4181910 | 4343167 | 3620251 | 3627589 |
| Potatoes, total | bedrijven | 1292 | 997 | 827 | 800 | 790 |
| Cereals, total | bedrijven | 1786 | 1544 | 1380 | 1160 | 1185 |
| Flower bulbs and tubers, total | are | 15703 | 19057 | 16472 | 32335 | 35056 |
| Dairy cows and calves (> = 2 years) | bedrijven | 79786 | 85245 | 89814 | 107910 | 105958 |
| Goats, total | bedrijven | 4446 | 6015 | 9662 | 8797 | 9775 |
| Grazing animals, total | bedrijven | 2695 | 2329 | 2178 | 1528 | 1507 |
| Sheep, total | bedrijven | 1139 | 913 | 851 | 490 | 488 |

*) Full data for 2008 not yet available

**Figure e:** Agricultural companies, -crops, -animal and ground use in the province of Groningen (Source: CBS, 2019)

You can see that the number of agricultural businesses has decreased enormously in the province of Groningen, it decreased from 4193 agricultural businesses in 2000 to 2566 in 2018. The remaining companies are increasing on average; however, the total area of cultivated land is declining. Number of dairy cows and calves increased for years but is now decreasing again. The amount of potatoes grown is slightly decreasing every year. In the province of Groningen in general there is a steady decline of agricultural production and a looming attenuation of production diversity. This goes hand in hand with the employment in the sector, as can be seen in the following figure.

| Subject | | 2000 | 2005 | 2010 | 2014 | 2016 | 2017 | 2018* |
|---|---|---|---|---|---|---|---|---|
| | | Total | Total | Total | Total | Total | Total | Total |
| **Workforce**<br>Regularly employed<br>Regularly employed, total | Number | 10 302 | 8 932 | 8 727 | 8 216 | 7 394 | 7 491 | 7 603 |
| Family workers<br>Family workers, total | Number | 8 510 | 7 626 | 7 323 | 6 784 | 6 009 | 6 037 | 6 137 |
| Company heads | Number | 4 119 | 3 559 | 3 272 | 3 038 | 2 539 | 2 515 | 2 473 |
| Husbands | Number | 1 806 | 1 844 | 2 028 | . | . | . | . |
| Assisting family | Number | 2 585 | 2 223 | 2 023 | . | . | . | . |
| Non-family workers<br>Non-family workers, total | Number | 1 792 | 1 306 | 1 404 | 1 432 | 1 385 | 1 454 | 1 466 |
| Managers | Number | 74 | 75 | 83 | 105 | 91 | 86 | 93 |
| Other regularly employed persons | Number | 1 718 | 1 231 | 1 321 | 1 327 | 1 294 | 1 368 | 1 373 |
| Not regularly employed | Number | . | . | . | . | . | . | . |
| **Working year units**<br>Regularly employed<br>Regularly employed, total | Number | 7 176 | 5 960 | 5 536 | 5 349 | 5 130 | 5 072 | 5 070 |
| Family workers<br>Family workers, total | Number | 6 015 | 5 126 | 4 638 | 4 440 | 4 235 | 4 186 | 4 221 |
| Company heads | Number | 3 424 | 2 837 | 2 619 | 2 454 | 2 265 | 2 239 | 2 199 |
| Husbands | Number | 1 088 | 951 | 929 | . | . | . | . |
| Assisting family | Number | 1 503 | 1 338 | 1 091 | . | . | . | . |
| Non-family workers<br>Non-family workers, total | Number | 1 161 | 834 | 899 | 909 | 894 | 885 | 849 |
| Managers | Number | 60 | 51 | 58 | 74 | 70 | 66 | 71 |
| Other regularly employed persons | Number | 1 101 | 784 | 841 | 835 | 824 | 819 | 778 |
| Not regularly employed | Number | 360 | 258 | 379 | 319 | 314 | 351 | 317 |
| **Companies with workers**<br>Regularly employed<br>Regularly employed, total | Number | 4 193 | 3 634 | 3 355 | 3 143 | 2 630 | 2 601 | 2 566 |
| Family workers<br>Family workers, total | Number | 4 119 | 3 559 | 3 272 | 3 038 | 2 539 | 2 515 | 2 473 |
| Company heads | Number | 4 119 | 3 559 | 3 272 | 3 038 | 2 539 | 2 515 | 2 473 |
| Husbands | Number | 1 806 | 1 844 | 2 028 | . | . | . | . |
| Assisting family | Number | 1 547 | 1 267 | 1 309 | . | . | . | . |
| Non-family workers<br>Non-family workers, total | Number | 629 | 528 | 560 | 594 | 535 | 591 | 704 |
| Managers | Number | 74 | 75 | 83 | 105 | 91 | 86 | 93 |
| Other regularly employed persons | Number | 610 | 528 | 537 | 569 | 518 | 574 | 682 |
| Not regularly employed | Number | 603 | 897 | 1 797 | 1 901 | 1 899 | 1 920 | 1 893 |

**Figure f:** Agriculture, workforce per region, Province of Groningen, Source: CBS



Between 2000 and 2016, the number of employees that regularly works in agriculture decreased, but in the following years it slightly increased again. One must note however that the number of workers in almost every other sector in the province of Groningen also declined and this also applies to the total workforce[14].

| | Average consumption in kilos p.p. 2015 (WUR, 2016) | Inhabitants urban field Groningen | Kilos meat per year | Average weight slaughtered animal | Number of slaughtered animals per year |
|---|---|---|---|---|---|
| Pig meat | 36,6 | 953151 | 34885326,6 | 56 [15] | 622953 |
| Poultry[16] | 22,3 | 953151 | 21255267,3 | 1,56 [17][18] | 13625172 |
| Beef[19] | 13,9 | 953151 | 13248798,9 | 330 [20] | 40148 |
| Veal | 1,3 | 953151 | 1239096,3 | 169 [21] | 7332 |
| Sheep- and goat meat[22] | 1,2 | 953151 | 1143781,2 | 17,5 [23] | 65359 |
| Total[24] | **75,4** | **953151** | **71867585,4** | | **14360963** |

**Figure g:** Meat consumption urban field Groningen + number of required animals

14 https://www.provinciegroningen.nl/over-groningen/kerngegevens/werkgelegenheid/
15 https://www.vlees.nl/faq/hoeveel-kilo-vlees-komt-er-varken/
16 We have chosen to show the weight of a meat chick. This is the most eaten meat in poultry.
17 https://www.wakkerdier.nl/vee-industrie/vleeskuikens
18 http://www.boerderij.nl/Pluimveehouderij/Nieuws/2015/6/Slachtgewicht-vleeskuikens-stijgt-verder-1773429W/
19 The slaughter weight of a Groningen blaarkop was chosen. This is a dual-purpose breed and I think gives a good indication of the amount of meat that cross-dairy cows can have.
20 http://zeldzamerassen.nl/blaarkopnet/wp-content/uploads/sites/11/2014/08/VeeteeltBlaarkopUniqueSP2010.pdf
21 http://www.forfarmers.nl/bestanden/ForFarmers_NL/PDF-documenten-NL/PDF-Rundvee-en-Vleesvee/12953-1/ForFarmers_Hendrix_Vleesveeinfo_Nr1_2015.pdf
22 The carcass weight of an average lamb was chosen. More lamb than goat is eaten.
23 https://www.vlees.nl/faq/weegt-lam-als-geslacht-wordt-en-hoeveel-vlees-levert-op
24 Horse meat has not been taken into consideration. The average Dutch person eats only 0.1 kg of horse meat per year.

| | | Number of beds | Employers |
|---|---|---|---|
| University Medical Center Groningen | Groningen | 1339 | 12735 |
| Martini Hospital Groningen | Groningen | 578 | 3100 |
| Ommelander Hospital Scheemda | Scheemda | 320 | 1200 |
| Rafaja Hospital (Healthcare Group Treant) | Stadskanaal | 200 | |
| Scheper Hospital (Healthcare Group Treant) | Emmen | 381 | 1500 |
| Bethesda Hospital (Healthcare Group Treant) | Hoogeveen | 120 | |
| Wilhemina Hospital Assen | Assen | 251 | 1360 |
| MCL Leeuwarden | Leeuwarden | 647 | |
| Hospital Nij Smellinghe | Drachten | 277 | 1525 |
| Hospital Tjongerschans | Heerenveen | 238 | 1320 |
| Antonius Hospital Sneek | Sneek | 265 | |
| Isala Hospital | Zwolle | 1100 | 6250 |
| **Total** | | **5716** | **28990** |

**Figure h:** Number of beds/employers per hospital

The 12 northern hospitals have a total of 5716 beds together. The number of meals is then 3 times this number = 17,148 potential meals per day. You can also add the hospital staff to the number of meals. To this number you can add a number of snacks that, according to the latest insights, are recommended to eat throughout the day (source: NRC, Onderzoek ziekenhuismaaltijden, https://www.nrc.nl/nieuws/2019/02/11/ziekenhuiseten-was-bord-met-slootsaus-a3653598).

| Number | Product | Volume (KG) |
|---|---|---|
| 1 | Potatoes | 1100 |
| 2 | Beef | 615 |
| 3 | Pig | 508 |
| 4 | Milk | 474 |
| 5 | Cheese | 280 |
| 6 | Chicken | 270 |
| 7 | Apples | 250 |
| 8 | Tomatoes | 178 |
| 9 | Yoghurt | 174 |
| 10 | Onions | 170 |

**Figure i:** Potential weekly revenue / 10 most bought products by big respondents from the hospitality sector. (Bakker, 2017)



All requested products from the top 10 listed above are produced in principle in the Northern Netherlands, as shown in figure i. But the production is often not tuned to regional demand. If you do this, then there are clear opportunities for regional producers. In part, however, the current supply lacks the possibility of processing. This again would provide new chances for employment.

We see that more than half of the manufacture and/or processing plants are in the category bread and fresh pastry. The processing of vegetables, on the other hand, is completely missing in the province of Groningen.

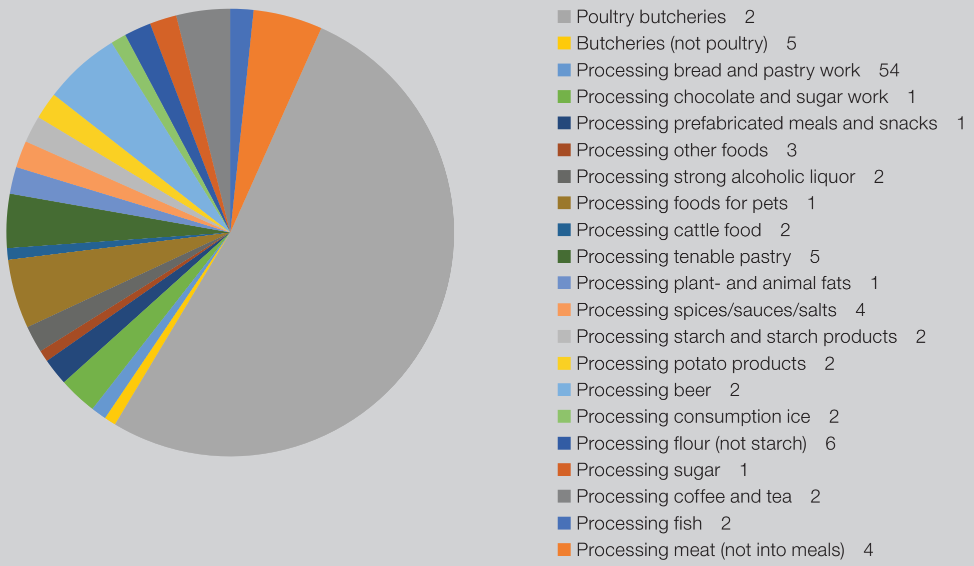



**Figure j:** Number of companies in the processing of food in the province of Groningen and the Drenthe municipalities of Noordenveld and Tynaarlo (Source: Chamber of commerce 2017).

## Student research

### Purchasing research

In collaboration with the professorship Purchasing Management of the Hanze University of Applied Sciences, we have mapped major purchasing parties and their willingness to buy regionally. Major purchasing parties in healthcare, hospitality, catering and office institutions have been interviewed. Often, these parties say they are willing to purchase regionally, however, on a few conditions:

- They must always be able to receive the amounts they need
- The products have to be of good quality
- The products have to be prepared (washed, peeled, cut, etcetera)
- The entire delivery for one day has to be delivered at once

**Summary overview of the other most important student studies (conducted in conjunction with Hanze and Van Hall Larenstein University of Applied Sciences)**

| Year | Subject | Key conclusions |
|---|---|---|
| 2015 | Starting a regional meat herd with dairy farmers. | A regional meat herd is possible and contributes to multiple value creation. |
| 2015 | Opportunities for a regional cooperative butchery. | A butchery on the correct scale level is missing. |
| 2016 | Opportunities for cooperation in the meat chain. | Chain links are willing to cooperate in a cooperative context and indicate that sustainability aspects are becoming increasingly important. |
| 2016 | Financial consequences of starting a meat cooperative. | By organizing in a cooperative way, the costs per chain link can be lowered and possible higher revenues might be possible. This requires transparency and good cooperation. |
| 2016 | Marketing research 'natural meat'. | Natural meat from the Westerkwartier, there is a market for that. There is a market for self-aware customers. Additional opportunities lie in the awareness of the "normal" consumer. This can be done by telling the story behind the product. |
| 2016 | Research into setting up short food chains (Regional Food Broker). | This research has shown that amongst small regional customers there is especially demand for fruit such as apples and pears, vegetables such as coal, carrots, leeks and potatoes. These products must be of good quality, affordable and sustainably produced. |
| 2017 | Research into the feasibility of the cooperative productions of hops. | Hop production in the penitentiary institution (PI) Veenhuizen is actually possible. PI Veenhuizen and the Maallust brewery have started a trial with the production of hops. |
| 2017 | Research into new ways to use roadside grass (normal waste) as a new revenue model. | Regional parties are interested in a cooperative revenue model. In addition, there is sufficient roadside grass present. |
| 2017 | Research into the new food initiative "re-connect cooking", whereby the social agenda is linked to regional food. | Food has a connecting role and is a means to support the social agenda. |
| 2017 | Promotional film REFRAME. | Link: https://www.youtube.com/watch?v=a-pDoCUiP3M |
| 2017 | Research into internalizing externalities in the food chain. | Externalities (external effect or external costs) are not compensated costs incurred by third parties or damage suffered due to an economic activity. As it turned out, no clear and comprehensive method to calculate this is yet available. By the means of this research, a clear, transparent and a practically simply manageable model has been drafted, with which alternative prices for products could be determined for the period 2015-2017. |
| 2017 | Research into the regional business model of legumes. | By investing more in growing legumes you can make important steps in terms of economy, ecology and society. In terms of nutritional values, legumes are a good alternative to beef. |
| 2017 | Research on the purchasing needs of large office institutions and catering. | The costs are less important in higher professional education and higher education than vocational education. In these organizations, quality and sustainability come first. Large office organizations are divided in this.<br>Schools and large office organizations have the most requirements for quality, price and logistics of the food products. Buyers of these organizations want convenience and customization. |
| 2017 | Research into the purchasing needs of large catering establishments. | By weight, potatoes are the product that is purchased the most in the hospitality industry. Hospitality is looking for regional products with a story. |
| 2017 | Research into purchasing needs of healthcare institutions. | Healthcare institutions are looking for innovative food concepts. Hygiene and delivery security are very important. Academic hospitals must tender, but regional pilots are possible. |
| 2018 | Research into a business model for a cheese cooperative. | There is a good chance of multiple value creation, although due to competitive pressure and due to laws and regulations there are still uncertainties. This cooperation can only be successful with lots of products. |
| 2018 | Research into regional business models with open data. | The market for open data is growing and has potential for the regional chain. However, there is not yet a concrete business model. |
| 2018 | Research into marketing and communication DrentsGoed. | By responding more to e-commerce, DrentsGoed can better reach its target group and improve its sales. |
| 2018 | Research into business model vertical agriculture. | For two of the three major-kitchen groups researched, vertical agriculture is possible as a production method. Schools- and office organizations have, relatively relatively peaking, the lowest demands, which is why all business-profiles of a vertical farm qualify to meet the purchasing needs. The next step should be to research if these profiles can be implemented in the urban field Groningen. |
| 2018 | Investigation into business model vertical agriculture. | There are various (types of) organizations that are interested in investing in vertical agriculture. Material and energy are major costs. |
| 2018 | Investigation into block chain in the food chain. | Block chain is a suitable method to apply in the food chain. Transparency can be achieved with this. |

| Year | Subject | Key conclusions |
|---|---|---|
| 2018 | Research into more sustainable valorization of fertilizers. | Technically, it is possible to value fertilizers, however, laws and regulations are an obstacle. |
| 2018 | Research into business model for a cooperative supermarket. | |
| 2019 | Research into the tax challenges and opportunities within the Natural Meat Cooperative Westerkwartier. | |
| 2019 | Investigation into the added value of each link in the meat chain. | |
| 2019 | Research into the relationships between and type of shapes within the regional food chain. | All studies are currently in progress. |
| 2019 | Research into marketing concepts for the Natural meat cooperative Westerkwartier. | |
| 2019 | Comparative international research into transport and logistics in a regional food chain. | |
| 2019 | Research into marketing concepts for the Food Factory. | |

"The weekly meetings in the Innovation Lab have been very inspiring for me. Hearing the problems that other graduates face and how they resolve this gives me the inspiration needed to tackle my own thesis problems. Furthermore, fun meetings have been organized, which has been very useful for my personal development. Examples of such meetings are the meetings with the municipality of Zuidhorn and the pioneering café of Rabobank. I considered the guidance I experienced in the innovation Lab as pleasant. Whenever I needed help, I could ask for it. One of the biggest advantages of the Regional Cooperative is that they have a huge network and they allow their students to make use of this. Because of this I also obtained very valuable connections myself who will undoubtedly help me after graduation."

*Lonneke Hoekstra, MER graduate,*
*Hanze University of Applied Sciences*

## Learning Lab

The Regional Cooperative works according to the method of the Innovation Lab. The Innovation Lab functions as a learning lab. Work is conducted here with learning communities consisting of, among others, students, teachers, lecturers, entrepreneurs and other stakeholders in the area. The communities work on a variety of issues. With a community is meant a group of people based around one theme, which meets regularly, makes agreements, has a sense of responsibility towards each other and works on projects together. In the community we work on new business models. (See section Learning community in part 3 for more details about the setup and functioning of a learning community).



In the image below, the circular working process in the learning lab is shown. Every phase has different tasks and process steps, all of which are related to the triple helix. Every participating partner brings in its own identity and expertise for the benefit of the integral learning and development process. Very important is the triple helix collaboration. Both in the shared agenda as well as in every phase of the working process, the 'golden triangle' is represented.


Circular working process in the learning lab

Stakeholders from the triple helix are talking with each other

Because we work together with the entrepreneurs in the region on a regular basis, the current issues and challenges are known. If there is a challenge that exceeds a region or an organization, the option of starting a new community will be examined. This starts with organizing a meeting to which all relevant stakeholders are invited. Because the chain approach is one of the starting points, the different links in the chain are – if possible - present, for example a farmer, transporter, slaughterhouse, butcher and buyer. Together the problem is being analyzed and together they work towards an integral and interdisciplinary project group, possibly subdivided into smaller theme groups that are linked to education and research within the knowledge institutions. The knowledge institutions participate in practice and add value to the region.

The project groups work on a business model in a product-oriented approach. A product group relates to a manageable, recognizable and coherent assortment of products. The precise effect can differ per product group, depending on, amongst other things, the company structure in the relevant sector and the type and size of the companies.

The learning communities are a form of 'Next education'. Craftsmanship and new competencies develop along with demand from the labor market and the society. This also applies to knowledge creation and there is a constant process of professionalization.

> "The great thing about working with Innovation Labs is that the students come into direct contact with companies and governments (society). One can immediately put into practice the theory learned, which is a great enrichment of the learning process".
> *Marcel van der Werf, Lecturer / Researcher, Hanze University of Applied Sciences*

## Product group cooperatives

Through learning communities emerged a cooperative thought to establish within several product groups product group cooperatives, for example the Nature Beef Cooperative. In this example a new cooperative business case was developed with a combination of meat production and nature management. Stakeholders involved are dairy farmers, meat farmers, forestry management, a slaughterhouse and a care organization. However, not in all product groups are many entrepreneurs involved, sometimes even just a few. In these cases there will be no special cooperative to be established, only a purchase connection.

The past three years we have been working on forming communities within the product groups vegetables, grains, legumes, beef, pork, chicken, fish, potatos and dairy. In 2019 we established cooperatives out of some of these communities and made agreements to supply to the Food Factory. A new regional processing factory. The starting point is that the regional food chain is set up in a way that the needs of the region can be met, both in assortment and quantity. Products that cannot be

Staatsbosbeheer is one of the partners in the regional nature beef cooperative

produced in a sustainable manner in the region, like some fruits, are not part of the primary product range.

The geographical delimitation of the region can differ per product group. For product groups that are hardly represented in the region, reintroduction into the region can be chosen. Some product groups are added, others may fall off. Also, in this respect the regional food chain and its organization is not static but shows some dynamics.

The product group cooperatives are new and collective business models for stakeholders that want to generate a higher and predictable income in the food chain. This benefits the smaller SMEs in the region. With their membership they can take responsibility for the direction and policy. At the same time these new forms work on reducing the environmental impact and contributes to the social inclusion. The Regional Cooperative Westerkwartier has an advisory and coordinating role in setting up, facilitating and guiding the cooperatives.

The Regional Cooperative concludes a letter of intent with Mts. Rozema-Kranenborg / Komrij to jointly develop a regional chain for potatoes and onions

## New education: Food, Life & Innovation

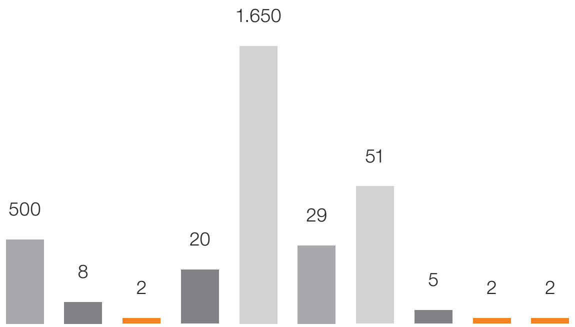
With the development of a regional food chain new activities and jobs are created. Therfore new skills and knowledge are needed. Terra started, in collaboration with Nordwin College, with a new course: Food, Life & Innovation. Also findings from the REFRAME project were used in the development. Within the course they use case studies. These serve as guidance for the development of the content for the lessons.

The program has a Sector Advisory Council (SAC) in which a number of companies are the key players to form, propagate and be responsible for the implementation. They deliver among other things case studies. In addition, they try to attract other companies that can provide new case studies.

The education meets the requirements of the qualification file. They work with formats to ensure that all facets are met. In addition, the progress will be reflected. This is discussed with the teacher / coach and a relevant company. All progress will be recorded as is the case with other educational programs.

There were not enough students that signed in for the 2018/2019 school year to actually start the program. Potential students did not get a clear picture of where the study program was about. The different facets and the new kind of program with the case studies must therefore be better developed and students must better be able to see why this new program is useful for them.

## Quantitative stats of the past years




Actively involved SMEs and other stakeholders 500
Developed business models 8
Operational business cases 2
Congresses and symposia 20
Involved scholars and students 1.650
Graduation assignments 29
Involved teachers 51
Involved professors 5
Awards 2
PhD's 2

## Explanations

### Actively involved SMEs and other stakeholders

SMEs and other regional stakeholders are the key players in this process. The program is set-up through them and with them, for new market opportunities in production, processing and marketing of food in the region.
The reintroduction and innovation of the regional chain is only possible if the regional SMEs own the chain. They are in many different ways and phases involved, and especially as active members of communities within product groups.

### Developed business models

In close triple helix collaboration SMEs, knowledge institutions and government bodies developed the following business models, which are now being made operational for implementation:

- Business model cooperative slaughterhouse
- Business model nature meat cooperative
- Business model cooperative supermarket
- Business model cheese cooperative
- Business model cooperative and social social supermarket (Fruitcafé)
- Adjustment of DrentsGoed business model
- Business model vertical Farm
- Business model Food Factory


Students in the lead role at symposium Regional Cooperative

**Congresses and symposia**

Regional congresses and symposia are the means to bring together all involved around a certain topic. Through presentations and workshops the stakeholders involved can tell their story and pass on knowledge.
This happened during:

- Presentations at International REFRAME meetings
- Pioneer café Rabobank
- Foodweek SMEs meeting
- Symposium Energy Barn Regional Cooperative Westerkwartier
- Purchase Seminar Groningen
- Presentations during internal conference Marian van Os Center, Hanze University of Applied Sciences
- Annual Congress of the European Association for International Education EAIE 2017

**Pupils and students involved**

In the development of a regional food chain educational institutions are actively involved. There are multiple benefits:

- Within the project, education is a partner in the food chain
- Educational institutions are connected to practice and the region, making education better, more flexible and faster in line with the developments of the labor market
- Practical goals are achieved with the help of education

Start of the Foodweek at Terra Groningen

In this way, education helps to innovate and making the chain more sustainable. And thereby contributing to the livability of their own region.

*This involvement was expressed among other things during the Foodweek*

Both secondary education, secondary vocational education and higher professional education have delivered a contribution or are still involved. In the fall of 2016 started the mapping-phase with the Foodweek. A manifestation week with numerous activities, in particular aimed at mapping the region on the field of food, implemented by many schools and 1150 scholars / students. This mapping-phase runs the entire duration of the project and is a dynamic process. The Foodweek is of great importance for the results and the connection with the educational institutions.

About 500 scholars and students went into the region for interviewing food related organisations. The teachers have received a school package with an instruction for the interview app and a lesson about conducting interviews. So all scholars and students were well prepared in the field.

**Teachers involved**

With our Innovation workplace and our projects, we try to bring education, and thus the teachers, more in connection with practice. We work together with dozens of teachers from Hanze University, Terra and Van Hall Larenstein.

**Professorships involved**

Within the regional food chains program there is collaboration between different professorships.
The Professorship Sustainable Cooperative Entrepreneurship, Hanze University of Applied Sciences, with Professor Willem Foorthuis is the driving force behind this collaboration. Professor Foorthuis coordinates the research and works closely with the Regional Cooperative Westerkwartier. Within the Hanze University there is collaboration with 16 Professorships within the Marian van Os Center for Entrepreneurship. Outside the Hanze University, there is collaboration with Professor Esther Nederhof, Professorship Healthy and Sustainable nutrition and lifestyle diseases, Van Hall Larenstein.

## Short food chains in the Netherlands

In scientific literature but also in common day to day speech, short food chains are described by two defining characteristics: (1) The producer is easy to identify and trace but also (2) There are few -preferably none- links between the farmer and consumer. This is not the definition that we developed for REFRAME. REFRAME is about a strategic regional and cooperative approach regarding links in the food chain.

This approach fundamentally differs from the sale of farm products to consumers. Even so, almost all initiatives that are in effect right now are all themed ‘short food chain’ in the previously mentioned category, with exception of the three food clusters in the Netherlands.

We carried out a short review on short food chains that are currently being used in the Netherlands, and there are plenty of them, too many to mention. You can however discover a certain pattern or system in the way these chains have been formed. We would like to briefly explain this in the paragraph below.

**Clusters**

There are three food clusters in the Netherlands. These food clusters are: Food Valley in Ede, a triple helix collaboration with the Wageningen University, the Agri & Food Innovation in Zwolle where an innovation team is stimulating entrepreneurship and innovation in the Agrifood sector and lastly the Rotterdam Food Cluster where three programs are carrying out different kinds of projects.

Strictly speaking, these food clusters are not participating in initiatives regarding short or regional food chains. Each one of these three clusters bring a big number of projects together. This does not necessarily mean that there is a coherent food strategy at the base of these organisations. The approach in these clusters is mostly aimed at preserving and development of the prominent position in regional, national and international food sector. Knowledge institutions and companies are co-financed by authorities to develop new revenue models and markets, mostly on a global scale. They are working on solutions for international food questions, with the research of nutricion, personalized food and urban farming.

**Collaborating farmers**

This is about producers that organise themselves to sell their products through regional markets, shops or online shops. Within this group there are two distinguishable subgroups:

1. Collaboration between a limited number of individual entrepreneurs in the region. This is mostly linked to a specific sector. One of the benefits of having a small group is that the group has the same vision and that will make decision making a lot easier. An example is ‘Hoeksche Hoeve BV’, a company of three potato farmers that made the first leap from individual potato farming to communal production and sales. After this leap the company specialised themselves in the production of artisanal potato crisps that are now for sale in many delicacy stores in the Netherlands. In this case, these entrepreneurs are successful, seeing that the company has been around for more than 15 years. One thing to keep in mind that you will be more vulnerable when you have a limited market. This was the case for ‘Hollands Weidevlees’, a cooperation that bought used cows from two farmers in the milk industry. After two years this cooperation was shut down. Recently the ‘Natuurvleescoöperatie Westerkwartier’ was founded, and much like ‘Hollands Weidevlees’ this cooperation is focused on beef. This cooperation however, does not try to distribute to local fluctuating markets but instead it is part of the Food strategy of the Regional Cooperative Westerkwartier and it therefore makes deals with large regional buyers.
2. Collaboration between a relatively large and diverse group of entrepreneurs, sometimes with non-agricultural entrepreneurs and processors, usually with a regional label. In almost every province or region are similar cooperations, usually with a linked sale to specialty stores, wholesale, retail and online platforms. These platforms then sale the products to consumers, for example, DrentsGoed, Waddengoud, Groene Hart Streekproducten and Oregionaal. The amount of initiatives and cooperations seems almost endless. Some of these organisations are organised in a cooperative manner, so that in turn every member of the cooperation can decide, and others work through a platform where you can function as a provider. The producers become members of one or several platforms and in turn will give an arbitrary amount of profit to retailers. The benefit of collaborating like this is that you can create a big volume of products as a collective, and with a variety of products you can reach a relatively large number of customers. Downside of these collaborations is that you are dealing with many companies, and every company has their own ideas and vision. Some of these visions will differ greatly and can create difficulties when you are trying to form a collective and decisive approach.

**Collaboration between producers and consumers**

These are initiatives that came to fruition by working on two sides. An example of this initiative is ‘Buurderijen’ where consumers and producers work together. Local residents get to choose a package of the offered products and place their orders each week. Once a week a market is organised to complete the transaction.

A different concept is the so called ‘Deelgenoten-tuinen’, also known as CSA (Community Supported Agriculture). This model is based on the agreements between a farmer and his consumers, which are no longer consumers after the agreements have been met. They are now called participants; the participants will compensate the farmer for the costs incurred and in turn the participants can harvest the crops on their own. This way both the risks and profits are shared by both parties.

Some platforms have a different approach, where you can join both as a producer and user. De ‘Streekboer’ in the provinces of Groningen and Friesland is a perfect example for platforms like these. You can order your products online and from here you can choose your collection point. Each week your order will be delivered at the chosen collection point. The benefit of being a member is a lower price for products.

**Collaborating consumers**

The ‘Herenboeren’ is a perfect example for this, where a professional farmer produces food for a group of consumers on a small scale cooperative agricultural business. The average scale is 200 households that are united in a cooperation. This cooperation is the owner of a farm and together they also employ a farmer. The network of ‘Herenboeren’ is being consulted by a group of professionals that support local initiatives and are simultaneously expanding the network.

Initiatives of a more permanent and social nature are communal (picking) gardens. Local residents will use a patch of municipal land, usually next to their houses, to plant and self-manage communal picking gardens. A different variant of this concept are so called food forests, though these forests have a more specific vision when it comes to cultivation and planting methods.

**Urban farming**

A different category is urban farming, urban farming can be a plethora of concepts. For example, urban farming can be about professional and commercial production of food close to cities, but it can also be a place where volunteers can grow their own food. But urban farming can also be about kitchen gardens that are being maintained by local residents, care farms on the city borders, empty offices that can (temporarily) be used as a greenhouse or for vertical farming. In order to strive for a sustainable production method, communal shareholding is key. Not to mention to grow seasonal products. More importantly the most important characteristic to urban farming is the small distance between producers and consumers.

**Conclusion**

With the exception of the three food clusters there are countless initiatives like the ones described above in the Netherlands. All of the beforementioned methods of food production are local initiatives. All of them are relatively small scale, both in size and in production. In all of these cases it's about primary products. Each initiative stands on its own even if the initiative is part of a collective.

There is no regional strategy or policy when it comes to these initiatives, and the added value is therefore limited. Not every initiative can remain indefinitely, mainly because some of these initiatives are on a too small scale and quality and quantity can not be guaranteed. Because of this issue they can not be a reliable source for institutionalised consumers.

In many cases the initiatives contribute to social cohesion and participation, but a noticeable improvement of environment and public health is not met. The economic impact and the transition to a more sustainable society by raising awareness for chain partners, residents and authorities remain relatively limited.

## Insights for development and functioning of a regional chain

We can provisionally conclude from the above that a regional food chain can function based on the following conditions:

1. It appears not to be necessary in advance, as a first step, to show the complete supply side. It makes more sense to start mapping on the demand side. Based on the demand, exploring the supply is more efficiently. You can then focus the search to what extent regional providers meet the demand and fill in the gaps.
2. Suppliers organize themselves on a regional scale.
3. Suppliers co-operate with each other so that they are able to supply the required products in the required quantities, the agreed form and the agreed quality.
4. Buyers express their willingness to purchase from regional suppliers and for that possibly adjust their purchasing policy.
5. Suppliers and buyers organize themselves on a regional scale (via contracts), so that both the requesting and the offering partners have certainty about sales and delivery, volumes, quality, price and punctuality.
6. The supply is cooperative, innovative and organized in the chain (new knowledge and smart specializations).
7. A reliable link in the chain links demand and supply, ensures solid functioning, continuity and possible growth of the chain (regional food broker).
8. At a physical location in the region different lines, routes and links of the regional food chain come together. In the Northern Netherlands this is done in the form of the Food Factory. More about the Food Factory in chapter 3.
9. New knowledge is needed that is both in practice as anchored in education. There are therefore places needed in the region where the involved actors can learn and innovate together and exchange state of the art knowledge about regional food chains.
10. Working on and in a regional food chain is a dynamic process in which constantly new knowledge is needed to anticipate and adjust to new circumstances. This shows the crucial importance of a decisive control that interests all stakeholders and actors.

We must constantly learn, in order to keep up with changing circumstances and to remain competitive in the market

## Review of the definition

With the knowledge from all the research and activities in the first three years we redefine our first definition as follows:

A regional food chain is a chain in which the products that large buyers ask, are regionally produced, processed, traded and distributed.

This chain is organized in a cooperative way and further developed. Regional SMEs are the owners of the chain. They decide on the control, management and the use of income.

The chain consists of sub-cooperatives for the individual product groups, which integrate into one regional food cooperative.

If there is a demand for products that cannot be supplied from the region, the regional cooperative ensures for a sustainable and responsible alternative.

The chain works in a circular manner, that includes the processing of the residual flows.

# Part 3: What comes next?

**In this part we take a look at the focus of the next phase. With this, we are focussing on three main elements. The order in which they are discussed is not indicative of their priority. On the contrary: the knowledge creation only functions when each of the three main elements are interconnected.**

What are we going to look at? Firstly, which business models do we know and which of those fit with the proposed regional organisation. Secondarily: how will you govern such a regional chain? Which models of governance are suitable for governing a multi-stakeholder alliance and how do you ensure a cooperative and democratic approach? And lastly: how do you connect the regional players with each other, how do you connect expertise with the questions in society (including the market sector). How do you ensure ownership and a pro-active commitment alongside the permanent development of processes, products and services?

## The Business Models

### Sustainable Business Models

A business model describes how an organisation creates, provides and sustains value. Is shows what value you offer, which activities you perform, with which partners and resources you do this and who benefits from it all. Secondarily is also clarifies which costs and revenues you generate.

The business models for traditional chains differ from the model that you ideally would want for a regional chain. Traditional foodchains are in the hands of big companies. They are designed to maximise profit. In doing so the values of sustainability are largely neglected. Sustainability is, in this context, the results in regards to the three criteria of people, planet and profit.

In our context, 'people' stands for all the social implications in the region where it pertains to job availability, education and development. 'Planet' pertains to aspects such as food miles, circular production, life cycle assessments ( weighing all the environmental costs of a product, including production, processing, storage, packaging and transport), effects on soil and water quality, biodiversity, etc. Lastly ' Profit' refers to the financial benefits for the stakeholders in the region as well as preventing the loss of value within the region.

If we now take a critical look at the existing business models we can see that each of them is suited for a certain time of business goal or perspective. But none of them fits as a basis for developing a realistic, attainable and viable business model for a regional chain. The business model canvas, for example, provides a framework for the business model that is driven by the individual perspective. It is not suitable for conceptualising an ecosystem and the transactions within. With the modelling technique 'e3' you can design a business model from a business-oriented ecosystem perspective. It describes the different stakeholders, the value-creating activities they perform and the transactions between the different stakeholders. However, this technique lacks the detailed approach that the canvas-model does offer. In this same realm, there are many more techniques, each with their own pros and cons. Therefore there is a need to integrate all the existing modelling techniques into one new approach fit to size.

In the coming months, we want to research how we can design a fitting business model for a sustainable circular regional cooperative food-chain. The goal of this research is the design and validation of a sustainable regional food-chain in the urban field Groningen. Traditional food-chains, design criteria based on literature review and interviews with those involved will serve as input. Several methods will be applied: a Life Cycle Analysis, business modelling with an eye on value chains, value streams, social values and circular economy.

## Development in 5 steps

We are dividing our research into five steps: problem definition, possible solutions, designing the most likely solutions, evaluating the results, conclusion and recommendations. These phases may be iterative.

### Problem definition

The first step is that we understand the problem. In order to do so, we make a model of traditional food chains through which the current food provision for the region is conducted. We also measure the sustainability in terms of the social, economic and environmental aspects. We will execute a literature review to gain insight into the knowledge in relation to the design of sustainable regional food chains. Above all, relevant stakeholders will be interviewed to better understand the problems that arise in traditional food chains. Next to this, we will devise a set of criteria for designing a sustainable regional food chain on the basis of literature review and input from stakeholders.

### Proposing possible solutions

The second step consists of designing two or more possible prototypes based on the criteria that were collected in the previous step. The solutions are developed with the help of the principles of circular economy and in collaboration with the relevant stakeholders. Together with the community, the solutions with the highest chance of success are chosen for further exploration. During this process, we will be continuously reflecting on the existing food chain and points of improvement.



These improvements can be relevant to the using of new technologies and reorganising the food chain by eliminating waste (for example redundant activities for creating value, introducing efficient and / or effective value-creating activities, re-placing value-creating activities and the accompanying cost- and revenue streams to different stakeholders; eliminating stakeholders that do not add a lot of value, etcetera).

### Further development of prototypes

The solutions with the highest chance of success, which were chosen in the last step, will be developed further in this step. They consist of a description of the food chain and their predicted performance in terms of the social, economic and environmental factors.

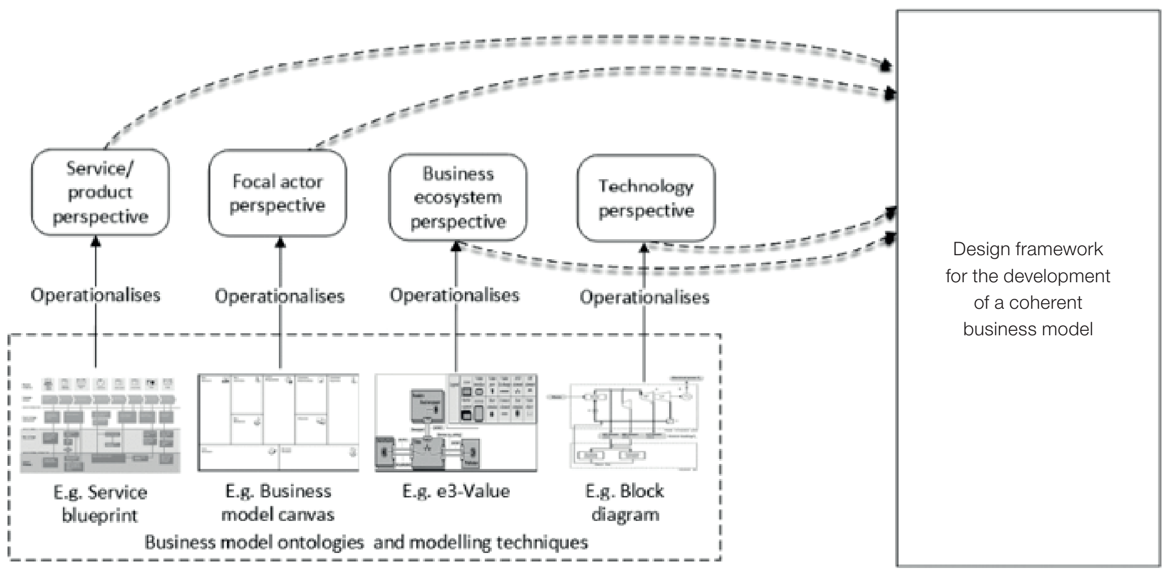
The development of the business models for the food sector is complex. The reason for this complexity is underpinned by the fact that the different stakeholders have separate control of different aspects of the chain. This then leads to various problems, such as contradictory interests and too little innovation within the chain.

Next to this, there are also methodological challenges concerning the design and evaluation of viable business models. We had already earlier pointed out that existing modelling techniques are not suitable for the development of viable business models for a multi=stakeholder alliance within a circular economy.

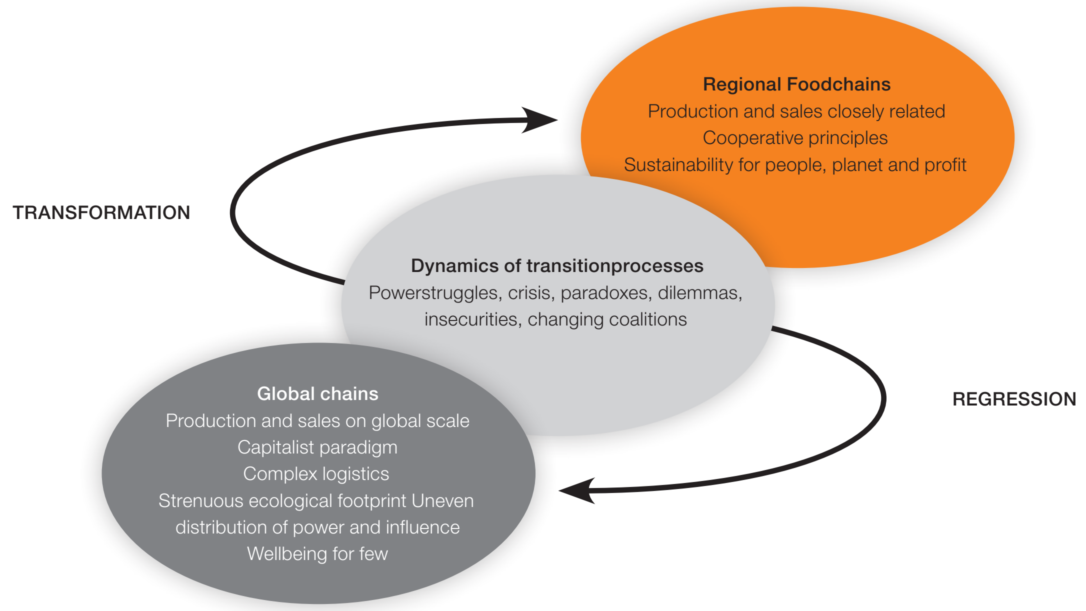
This problem has also been noticed by researchers in other fields. Researchers have for example, by integrating different modeling techniques, succeeded in developing a coherent framework for a cooperative approach to sustainable energy generation and delivery. In which four perspectives are shown, each of which, highlights an essential aspect in the chain.

- Perspective of the primary actor: What does the business model look like for the actor that is responsible for the coordination of the entire network of partners?
- Perspective of the business ecosystem: What does the business model look like from the perspective of the multiple stakeholders and the transactions that are performed between them? Above all, it describes the division of roles, responsibilities, assets, costs and revenues between the different stakeholders.
- Perspective of the supplying of a product or service: which products and / or services are being sold or commercialized?
- Perspective of the underlying technology: Which technological infrastructure is needed to facilitate the business model?

In order to do this you must use different modeling techniques. The following image shows how this design framework uses the different modeling techniques to operationalize the four perspectives. We expect that we, in this way, can design and evaluate a complete and coherent business model for the regional circular chain.




Using modeling techniques to integrate the four essential perspectives of a cooperative and sustainable business model.




Directions for the transition to a regional food chain (from Berkel & Manickam, 2019)

A comparable methodology renewal is needed for designing workable business models for the regional agri-food chain. There are, after all, similarities between the cooperative chain approach in the energy sector and the nutritional sector: the presence of multiple stakeholders, conflicts of interests, systemic level of cooperation with all the stakeholders to fulfil the needs of the buyer, changing customers needs, high level of regulation, etcetera. But there are also differences.

Certain foods can, for example, be relatively easily stored. That is why there are methods and technologies that are developed in a sector that may not translate directly to another domain. Yet, such methodological developments do offer us a first look at new methodologies for new business models.

**Evaluation and conclusions**

This step consists of the validation of the solution and reflecting on its generalizability. To validate the solution, it will be discussed with the community and other relevant stakeholders. Subsequently, we will think about the generalizability of a similar solution and look at the contribution to the knowledge field on a higher level. The last step consists of consolidating results, to document and to share them, via a publication of symposium.

## Governance

**Framework for developing a regional food chain.**

The development of a regional food chain is a part of a complex process of transition. This process is aimed at changing the system of our food production, food processing and food consumption. All three are a part of a larger transformation of the local and regional systems on the basis of cooperative principles and governance.

The previous illustration shows how the north of the Netherlands can transform to further develop and strengthen regional food chains. Such transitional processes always include dilemmas, paradoxes, insecurities and so forth because existing practices can rearrange, disrupt and reshape the current practice[25].

In developing the regional foodchains disruptions will occur as a result of new forms of collaboration, business transactions and business- and production models. These can influence and restructure the existing market, organisation and intuitive structures.

**Understanding changes in the system**

In order to explore and understand the broad and interconnected system changes, we want to develop a strategic framework for analysis and intervention. As a basis for this, we will use pre-existing research about integral cluster developments[26]. The new framework will provide a better understanding of the following subjects.

- Current developments with regards to food and regional sustainability, significant trends on the global market, geopolitical and socioeconomic factors, so that regional food chains can be positioned properly in the larger global political, economic and social developments;
- Cultural, historical and geographical factors that can be of influence for food production, food processing and market developments; since together they surely influence the development direction of new models for cooperation methods for the bringing to life of the regional food chains;
- The role of important stakeholders and new stakeholder that can contribute to the realisation of new food clusters and value chains;
- The playing field (scope, boundaries, quality, vision, etcetera) of the regional food chains and the partaking clusters, cooperations, networks, business alliances, etcetera as well as the rules of the game (governance-principles and standards);
- Strategies to make optimal usage of the changing dynamics of food and market developments, globally as well as regionally. In which flexibility and adaptability must be built in to maintain the sustainability aspect and make it futureproof. This also encompasses the collecting of new insights into potential capacities, resources, values, knowledge, technologies, etcetera that could provide new combinations and innovative practises.
- Arrising patterns of interaction and system dynamics that could strengthen and support the development of regional food chains.

Insights from this strategic framework will provide input into the way in which regional food chains are organized and how then can be successfully realised.

25 From Berkel, K. & Manickam, A. 2019. Wicked World: Strategie, Beleid & Systeeminnovatie. Groningen: Noordhof.
26 Manickam, A. 2018. Future of Cluster Developments - Lessons from Energy Valley, The Netherlands. Groningen: Hanze University of Applied Sciences Groningen, Marion van Os Centre for Entrepreneurship



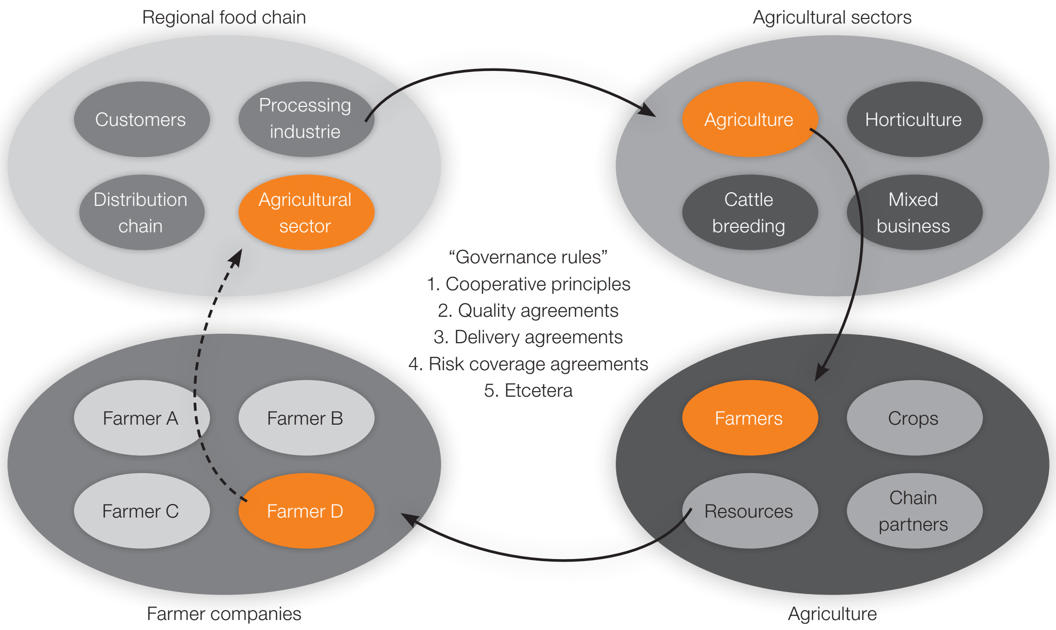
**Frameworks for the development of clusters**

With the development of regional food chains we must look to four system levels in which innovative combinations (or clusters) can be achieved:

1. The regional value chain with which players and processes can be determined on a sector level.
2. A single specific aspect of the value chain, namely the agricultural sector and the different types of agriculture (cattle raising, arable farming, horticulture, etcetera);
3. The business level and the value chain;
4. The individual farmers.

Each of these levels can be organized in clusters on the basis of overarching principles, 'governance-principles', that can be identified beforehand. In the image, the different system levels are shown.

Effect of the cluster Regional food chain with as an example the focus on the 'Agrarian World'. The focus affects further implementation on the other levels.




Elaboration of the regional food chain cluster with the focus on the "Agricultural World" as an example.
The focus has an influence on the further interpretation of the different levels.

Therefore we must look deeper into these clusters and possibly renew them or put new combinations in place. Cross-overs can take place to other system levels when this is logical or desired. To name an example: farmer A may need to work together with other farmers so that they together can offer a larger diversity of crops. Moreover: maybe he must consider expanding to new collaborative relationships and therefore develop new business activities in order to integrate other activities into the value chain. This is not only true for farmers, but for all the organisations in the chain. In this way, you develop a new regional value chain. The key to understanding the regional value chain is the underlying interconnectivity of the different system levels, the position of the independent actors and the elements within and the potential for new combinations and innovation.

Next to the cluster regional food chain, there are of course also other clusters in the region. Think, for example, of energy, bio-based and healthcare. These clusters do not stand separate and there are all kinds of connections to be found between them. A (still to be set up) regional cooperative could play a coordinating part in this.

**Tool for developing clusters**
We are going to develop a framework for the development of clusters. It is a proces controlled tool to identify and develop cluster members and to support their participation. With this, the tool can contribute to creating communal insight and developing communal strategies. As soon as the development framework for food clusters is developed, we will apply it. In doing so, aspects of governance and business models will be integrated. Cooperative principles as a part of cluster collaborations is one of the aspects that have to be researched.

After all, cluster developments are not isolated initiatives but connected with broader regional and contextual developments as was illustrated in the previous model, therefore we need frameworks and strategies to encase these dynamic processes.

## View on chain governance

When we speak on formalizing value creation and thus developing a business model, enterpreneurs often first think of a business model based on market mechanism. The transaction costs play a primary role in this. This is determined by the market and the business can generate more ‘profit’ by producing more, which causes the transaction costs to be put under pressure. We call this the traditional organisation form. But there are also other forms possible. For example is one does not only relate value creation to transaction costs but also to other values such as regional socioeconomic development, sustainability, a circular approach, operationalizing ecosystem services, etcetera.

If this is something that you want to achieve with your organization then you have to consider another organizational form. This means that a form of organisation where value creation is not only meant for shareholders, but for the region as a whole and all the stakeholders that play a role in accomplishing the



Regional meeting at the fruit cultivating company Oudebosch multitude of goals. You need to find an alternative for the market mechanism. This can consist of the cooperative mechanism. Within this, cooperation is key, where through mutual collaboration better, innovative products and services can be developed and offered. Suppliers in the whole chain of production receive fair payment for their product of service. The transactions within such a chain are not coordinated by seperate players in the market, but within the cooperative alliance of regional partners and stakeholders. Here we want to emphasize that this is not about the cooperative being the only form of organisation that is suitable, but one of the possibilities.

**Design criteria for an alternative organisational form**

For the creation of a cooperative organisational form and the accompanying mechanisms, you need design criteria to get to a workable organisational structure. In the current economy price still plays a central role. In such a frame of mind, it is tempting for a cooperative organisational form to fall back on a traditional organisational form, especially when transaction costs start to rise. This is something you need to consider when you are designing the cooperative structure. From literature, the following three design criteria come forward with the accompanying setback risk[27]:

| Criteria | Risk |
|---|---|
| 1. Democratic model | Constitutional degeneracy, when hierarchical principals are leading, instead of democratic cooperative principles. |
| 2. Democratic control on behalf of the members | Organisational degeneracy, when steering based on time and money is used as a management tool, instead of democratic steering and control. |
| 3. Cooperative goals with added value for stakeholders | Goal degeneracy, when profit goals and capatalist principles are applied, instead of cooperative goals and principles |

**The management structure**

Based on the above-named design criteria, 1. democratic model, 2. control function on behalf of members and 3. provides added value for stakeholders, we come to a possible management structure in the form of a regional cooperative with underlying product cooperatives:

**The management-controle -stucture**

In this paragraph, we explore the controle structure that is present in the above-mentioned management structure. The control structure has to facilitate and promote the cooperative relationship.

It is therefore of high import that the partnership and the collaboration within the cooperation is also based on the building and maintaining a relationship instead of exclusively the doing of transactions.

27 Bakaikoa & Errasti, 2004. Governance of the Mondragon Corporacio'n Cooperativa. Country Annals of Public and Cooperative Economics 75, 61–87.



**General Assembly**
Highest administrative body
Responsible for approving policy
Yearly congress with all the members

**General Management**
Members appointment by the General Assembly
Responsible for drawing up policy

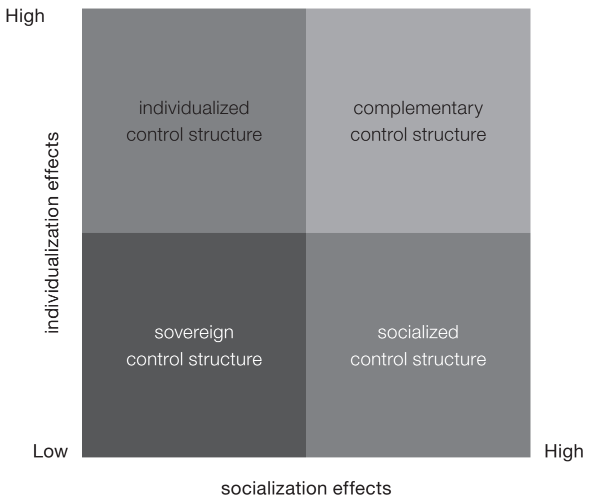
**Daily leadership**
Management hired by the General Management
Responsible for executing policy

**Cooperative Sections**
Responsible for the operational work
in the different product groups

In order to understand the relational process in the context of the control structure Roberts[28] (2001) identified four patterns:

- Individualized controle structure: maintains a connection with market mechanisms and formal hierarchical responsibility;
- Socialized controle structure: maintains a connection with the socialized forms of accountability, connected to face-to-face responsibility between people with a relatively similar level of power, where a feeling of interdependence is present;
- Complementary controle structure; characterized by the dominance of socialized forms of accountability in direct face-to-face management processes, supported by formal hierarchical responsibility.
- Sovereign controle strucuture: includes no individualization, no ability to create trust at a distance, no socialisation, does not provide the opportunity to create face-to-face trust.

28 Roberts, J. (2001). Trust and control in Anglo-American systems of corporate governance: the individualizing and socializing effects of processes of accountability. Human Relations, 54 (12), 1547–1572.

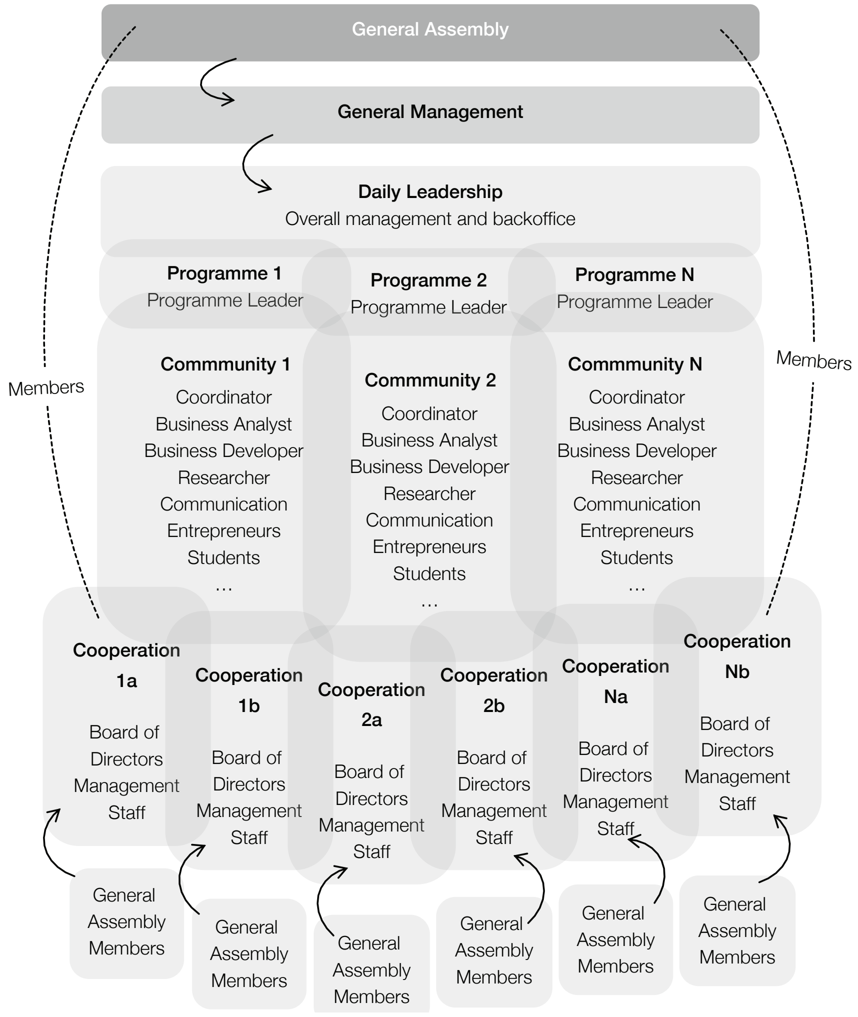



Roberts' Matrix

Roberts has visualized this in a matrix: When you apply this to a cooperative structure a complementary controle structure seems to be most appropriate. This structure leaves room for self-direction, own responsibility and the building of multiple collaborative relationships on the basis of mutual understanding and trust. Simultaneously it provides the necessary direction that is needed for a business-like approach.

If we translate the global management- and controle structure to a detailed setup for the governance structure of the regional cooperatie, we come to the setup as shown in the following figure. The arrows indicate the hierarchical control and responsibility, while the areas of overlap represent face-to-face collaborative relationships.





## Learning Community

In the previous steps we describes how we, the professorship of sustainable cooperative entrepreneurship, can provide input into the development of a regional food chain from the perspective of applied research. We don't do this from the ivory tower. Our partners in the region are not waiting to apply knowledge produced in a lab. It is more about connecting expertise with the needs of society (including the market sector). That is why we do not want to come in with a few scientists who have developed a new concept. We want to act as knowledgeable partners from a research position who can, long term, pro-actively think along about the question of how processes, products and services can be continuously and permanently developed.

How will we put this into practise. By contributing to the creation of learning communities.

In the paragraph about the learning lab we discussed the method of the innovation workplace. Here work is done met learning communities existing out of, among others, students, teachers, professors, entrepreneurs and other stakeholders in the area. In these communities a plethora of questions is being worked on. We see a 'community' as a group of people connected by a theme, who regularly meet up, works on projects together, makes agreements, has a sense of responsibility towards each other and learns systematically and structurally. From out of the community we work on innovations aimed at knowledge, systems, structures and business models.

This is why we indicate the communities as a COIL: Community Of Innovative Learners.

In this paragraph we want to highlight what a coil is and how we think this can perform the best. In order to do this we developed a model that we will introduce here in short.

### Wat is a COIL

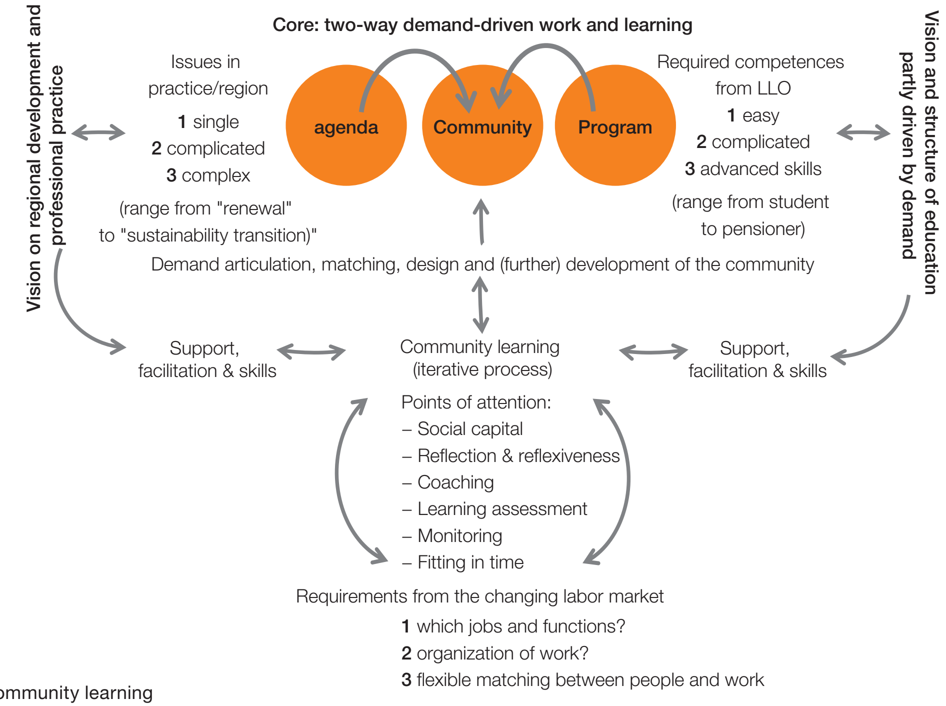
A COIL is shaped as a 'learning community'. This is a form of organisation where a heterogenous group of people, across boundaries of formal organisations, projects or departments, share and develop knowledge, works together and contributes to solving questions or problems. They do this continuously, which promotes the learning of the individual participants as well as the collective as a whole. The learning community works on the basis of communal goals, values and practises, such as involvement, partnership, continuity, individual approach, trust, responsibility, team spirit, flexibility and togetherness.

The core characteristics of a learning community are:

- Shared and supportive leadership: leadership activities on formal and informal positions, where formal leadership is necessary to build a learning community and maintain it, but always in the background and with room for others.
- Shared vision and values: people who work in the same context only start shaping a community if and when they have the same vision in mind and are working based on the same values.
- Goal oriented and collective learning and application from what is learned: continuous / iterative process: learning (by doing), reflecting on experiences, generating and sharing new insights, communal decision making and putting what is learned into practise.
- Personal work experience: sharing best practises and giving/receiving feedback/feedforward, not judging, put as a part of 'peers help peers'.
- Supporting conditions: conditions and capacities within a (educational)organisation in order to build and maintain a learning community. This is referring to both culture and relationships as well as material facilities.

### A model for community learning

In the past months we have thought about how best to describe learning is a community through a model. With a model, in this context, we mean a simplified representation that includes only the core elements of a specific proces or system.




Model for community learning

This representation can be aimed at two different goals:

1. Showing how something works, for example in a sketch, diagram or schematic;
2. Provide a framework that helps to understand the different principles and methodologies and possible allow for adjustments.

We have developed a model for option two. With the help of this model you can position, name, describe and compare the different ways of collaboration of the regional triple and quadruple helix. In that sense it functions as a tool to indicate and improve processes. You can point out where things went wrong or right and learn from that.

One of the distinguishing features of community learning is that work is being doing in countless concrete, and thus very different, real life environments. Every environment has come to in different ways and thus has different distinguishing features. The model can be used as an overarching instrument to describe and indicate the current state of affairs. It can also be used to indicate the development perspective and possible phasing of each process.

In the following paragraphs we will elaborate on what we mean by this and how you can use the model. It might be superfluous, however it is important to note that this model is not the final iteration. As part of the learning process we expect this to be improved on many aspects.

**What is visualized through the model**

In the previous model you see elements - and the relationships between them - which are necessary to come to a functioning community. On the left hand side the point of view of the region and the regional questions. On the right handside the point of view of education and research. We see the communities as a vehicle for a democratic way of working. In that way you can find innovative solutions and develop yourself for the whole duration of your life (life long learner). Underneath there is the point of view of connecting with the regional labor market and the notable points that play a role in having the learning community flourish.

**Clarification**

We will now quickly clarify the elements in the model:

1. Opinions and points of view:
   - On the left side we see the starting point from the perspective of the region. This can be filled in on different levels, for example a region or neighborhood. A learning community does have a limited size in order to still be considered a community. The maximum depends on the contect. Working and thinking from a shared vision on the coherency of the questions from the region make it possible to develop a (medium to) long-term-agenda, with a break down in seperate projects. On the grounds of the coherency that is applied in the agenda, the results of one project can contribute to the results of another and cause a logical continuation throughnew projects.

   As this vision becomes more aimed at the region as a sustainable ecosystem, the agenda will be more powerful, the community more appealing and the space to learn for a multitude of participants will become bigger.

   **One-fold - complicated – complex**

   The issues on the agenda can be seen as one-fold (known context and working method), complicated (broader context and method adapted thereto) or complex (unknown context with new method and solutions) with a range from “renewal” to “sustainability transition”. The insights from this the latter can lead to the breaking of old patterns, both conceptual and practical.
   - On the right side of the model the view from education has been displayed. Traditional this is usually designed so far on the basis of defined modules within production and supply-oriented educational environment. Demand-driven learning, on the other hand, is based on openness learning environments where every “user” (participant) can shape their own learning. These are learning environments with a high degree of (individual) flexibility, within which each participant on his / her own (desired) level can learn. It is defined a learning community when working with a large variety of “assignments”, also in terms of level. This assumes an integral state-of-the-art vision of learning and LLO, also within the existing educational institutions with the required structural adjustments.
   - The block at the bottom is about the job market. At this time it is difficult to predict which jobs and functions will disappear or arise the coming years. It is also a question of how the labor market works and will look like in the future and how we will organize work. This not only emphasizes the importance of making learning flexible but also making the matching between people and labor more flexible. Networking and a community with many partners at various system levels can provide information quickly and adequately and identify gaps and fix them.
2. Conditions for success
   - With a view to regional food chains there are transitions in three areas: region, education and labor market. We see the learning community as a way of bringing these three transition movements together. The success of the learning community depends on four elements:
   - The way in which the community is composed: who are part of it, are the relevant players on board, are the interests clear etcetera;
   - The way the community is formed and works: not as a static blueprint, but in one interactive process, with attention to social capital, reflection and reflectivity, sufficient coaching, quality, transparent monitoring etcetera;
   - Urgency and commitment with the facilitation from the region and education: support with manpower, space, communication, expertise and vision, money, etcetera;

- The flexibility and resilience which the community adjusts to new circumstances and also the pro-activity that anticipates this.

3. Further development and growth

   The regional issues and the requested competencies may differ in view of their complexity. There are two development paths conceivable:
   - Start with one-fold issues and then expand by iteration.
   - Start with complex issues and advanced skills on a very small scale and derived from that working on complicated and one-fold issues, after that expanded through iteration.

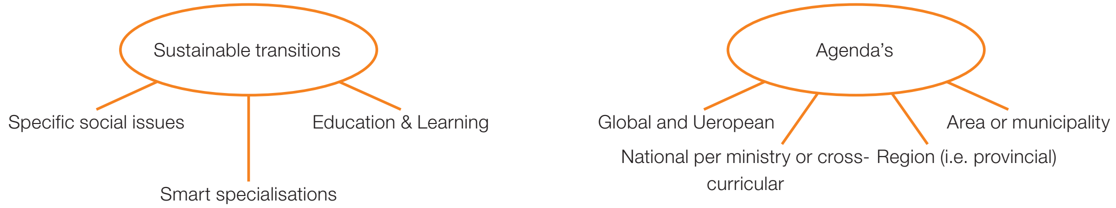
Which of both options is chosen depends on the context and ambitions concerned. The nature of the question is (from both sides: region and education) leading here.

**How can you use the model?**

Based on the above described criteria, you can examine and describe every community and even individual cases. You can also specify points of attention, for example:

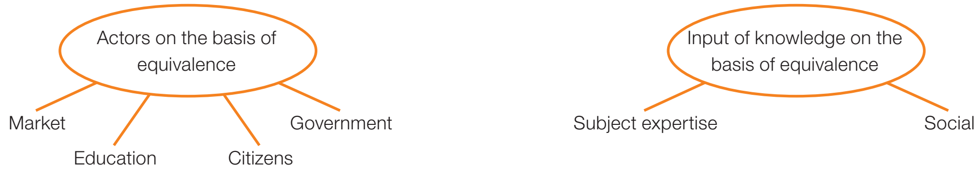
➜ Positioning in time:


➜ Compare visions with each other and connect at different levels and contents:



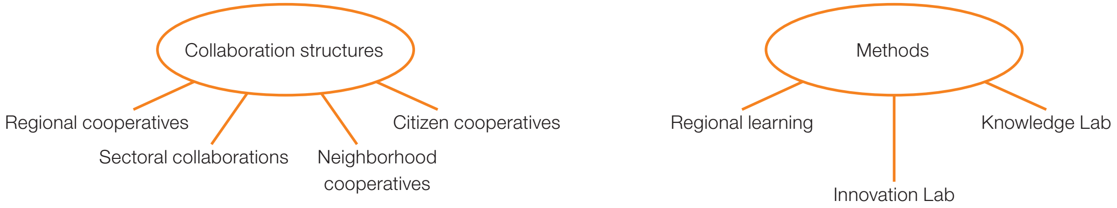



➜ Actors and connecting their knowledge:




NB: To get a process of community learning rolling, hard and soft knowledge is required. That means subject expertise, social qualities and practical organizational science. This requires a transformation from within, for every stakeholder. Together they must feel the need to transform from the current education and business culture to new processes, the precise effects of which you do not yet know: innovative, cooperative, flexible, modular, entrepreneurial.

➜ Clarify perspectives and position and describe (sub) developments:




**How to proceed?**

The model gives us the opportunity to look ahead:

1. At first, we can see exactly where we are now and from there describe our starting point in the model. We take the parts from the model that we have explained above, and we see where we are at the moment.
2. Based on that we can describe where we will focus on the follow-up; What do we emphasis? And what questions do we want to answer exactly?
3. From there we can continue to a dynamic process. On which themes and processes do we want to continue, what ambitions do we have for the sequel, how can we realize this and how do we keep an eye on whether we are (still) on the right track?
4. We can translate this into an approach on outlines.

In this way we can do our research in manageable parts and thereby guarantee internal cohesion. Moreover, we can provide the link between the region and knowledge institutions.

## Sneak preview: The Food Factory

### A regional business model

Through the activities in the region, activating entrepreneurs and mapping the food chain, came the insight that the innovation is not in the development of all sorts of individual business models. Much more important and effective is that the regional producers and processors find the opportunity to organize themselves around their common interest. Therefore we developed the concept of the Food Factory. This implies all activities related to production, processing, marketing and waste management and treats it as a coherent process.

While working we found that a powerful focus point this process can strengthen. A missing link at the moment, that should connect all that regional activities and processes. This missing link is the Food Factory. Initially it was thought this concept as a metaphor for the cooperative efforts, primary producers, processors and the following links in the chain. However, on closer inspection it turned out not only as a metaphorical idea, but also possible as a concrete-spatial-economic translation and could count on great interest. Building a complex with the state-of-the-art principles and techniques for sustainability, where you process regional primary products to high-quality and healthy food products and meals and connect it to perception and education around food.

### Passion for food, sustainability and well-being in the region

It has become clear from the preceding sections that we consider the regional food chain as one of the essential preconditions for a sustainable future and a strong regional economy. Together with the partners in the region we therefore see it as our task to be on an appropriate B2B scale organizing supply and demand regionally. The Food Factory is a collection of the activities related to production, processing, marketing and the sustainable valuation of residual flows. An innovative complex with state-of-the-art knowledge and principles in the field of sustainability. Where the processing from regional primary products to the preparation of high-quality and healthy meals. With the Food Factory we meet the needs of large customers for regional, fresh and sustainable products. Made by people in the region, for the people from the region.

### New processing in the region

From the countryside, the raw or partial pre-processed products are being delivered to the Food Factory. Here multiple processing steps brought together. Nowadays many processing steps are no longer in the region or not on a correct scale. We talk about, for example, washing, cutting, peeling and / or butchery. Which units we will be building will worked out in the coming months. Having several processing steps close together has its benefits. It is, among other things, easier coordination and tuning



An impression of the Food Factory with the various processing stations

between the different steps, fewer food miles are made and there is a lot efficient use of energy and residual flows. This new processing step is an added value for the regional food chain.

### Compose into meal components or complete meals

After the different processing steps have passed, they food comes together in the central assemble hall with the products that cannot come from the region. In this central hall the products are processed into meal components or complete meals, just like the large buyer needs. The order is brought to the large buyer with sustainable transport.

### Sustainable, self-sufficient and circular

The Food Factory is becoming a sustainable complex. The buildings itself are being constructed out of sustainable materials and the energy needed is generated by itself with the Biobased Energy Converter. Organic materials will be converted into high-quality energy carriers. Residual materials from the Food Factory will be converted into electricity for the factory. However, it is also organized that residual products end where they can still be used for example in arable farming, animal husbandry or biobased processes.

**Many target groups**
We work together with large buyers, such as hospitals, healthcare institutions, schools, offices, restaurants and supermarkets. All customers with the need for sustainable, regional and fresh products. However, they also have their own specific requirements. That is precisely where we see challenges and we work together to a high quality process and product. With a wide and exclusive product range the Food Factory can provide high-quality services and be a partner for every large buyer.

**The regional food chain stimulates all your senses**
The Food Factory is more than processing food and preparation of meals. It will be an experience, where you can learn everything about the modern regional food chain, where you can taste, smell, testing, debating, collaborating and meeting each other. You can take a look at high-quality production and processing processes, there will be (cooking) workshops organized, there are student assignments, guided tours and of course a good restaurant.

**Working towards realization**
This concept proved so interesting that even large investors are interested and indicated to support, develop, build and finance the concept. A completely new situation arises. Immediately there is a project team set up consisting of representatives of the Regional Cooperative Westerkwartier, in collaboration with the research group Sustainable Cooperative Entrepreneurship, and representatives of the investors.

The decisive point for realization is the concrete and reliable organization of supply and demand.

After all, without demand no regional food chain and without supply no Food Factory. So, we will be there to identify precisely the customers. First, we can make a segmentation between customers from the “food service” category (healthcare institutions, schools, offices and catering) - customer segments that is buying food and preparing (or having prepared) for their customers (patients, visitors, students, employees, guests). Besides, we have customers in the retail category. These are the supermarkets with a range of products for consumers.

We need to know who their current suppliers are and when the current contracts expire. This information is important to check when customers can participate in our concept. It is also possible that current suppliers play an important role in the chain. In addition, we must know which products large buyers purchase and in what quantities. It is also of importance what conditions with regard to logistics, administration and services they require of their suppliers and what are the expectations for the future. Finally, we must find out what developments customers expect. Are they for example thinking about outsourcing or insourcing? Or are there new cooking techniques in the pipeline that become relevant?

To reinforce all this, a Letter of Interest has been signed. Cooperative efforts, structures and output are an important condition. This is a investment of millions with a big boost for the employment in the region.



Preparations for implementation are in full swing. A project team works on different facets of the project every day. Among other things, it is about organizing the supply from the region, the realization of the processing units, permits, financing, sales, architecture, building plans and the transportation. The commissioning is planned for end of 2021.

A video about the Food Factory can be seen at https: https://www.youtube.com/watch?v=O9bDmsux28E

With the huge support in the region, the countless practical projects, the new business models for SMEs and the construction of the Food Factory, proves the Regional Cooperative’s approach is successful. Winning the Langman Award and the nomination by EURADA confirm this. The smart and cooperative connection of partners in the regional triple helix leads to a strong and constant learning network with many possibilities. We focus on the qualities in the region and have an integrated cross-sectoral approach. A regional food chain is a goal in itself. However, it is moreover a means for new SME entrepreneurship and sustainable regional development. Now and in the future.


GEBIEDSCOÖPERATIE
WESTERKWARTIER
Gebiedscoöperatie Westerkwartier
KENNISWERKPLAATS
Innovatie in de streek en met de streek;
samen werken en samen leren
in innovatieve lerende netwerken.
De kenniswerkplaats koppelt de regio
duurzaam aan kennisinstellingen.
Onderzoekers, lectoren, studenten en docenten
voeren innovatieve projecten in de regio
uit met ondernemers, overheden en
maatschappelijke organisaties

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