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# The Role of the Regional Cooperative Westerkwartier as a Food Chain Agent in the Regional Food Chain

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## ABSTRACT

*Recent challenges such like climate, demographic, political, economy and market changes are the foundation for the establishment of the Regional Cooperative Westerkwartier (RCW) in the Northern Netherlands. This RCW is managing a vast range of regional programs and projects developed by multi-stakeholder groups within the region. These stakeholders are representatives of market, public administration, education, research and civil society. All the activities of the cooperative focus on strengthening the regional economy. One of the major programs is the development of a regional food chain (RFC) based on cooperation between small and medium sized enterprises and corporate purchasers. The cooperative is identifying its role within this RFC to develop this chain in an effective way. This article reflects the results of a literature study in the fields of green supply chain management and industrial symbiosis to understand the most important factors of chain development and enterprise symbiosis. Based on these results multiple in-depth interviews and a survey have been conducted. This results in a list of factors, ranked according to their importance for small and medium-sized enterprises. In the role of a RFC-agent the cooperative should focus on creating trust, achieving one overall goal and ensuring clear agreements within the RFC. Surprisingly, the factor "achieving a fair distribution of costs and benefits" throughout the chain is not as important as was expected to be. Based on these ranked factors the role of the RFC-agent has been clarified and an additional circular chain business model can be developed.*

**Keywords:** Cooperative model, Circular economy, Regional food chain, Small and medium-sized enterprise, Industrial symbiosis, New governance

## INTRODUCTION

### *Low carbon society calls for market and society change*

The European Union (EU) faces a huge environmental challenge. Recently, the Intergovernmental Panel on Climate Change [1] concluded once again that society's actions cause global warming leading to long-lasting and irreversible changes in the climate system with severe impacts for people and ecosystems. To countermeasure global warming the EU has set the goal to become a low-carbon society in 2050 [2]. The IPCC calls for even more far reaching goals and pleads for a global exclusion of fossil fuels by the year 2100 [1]. Accordingly, local governments, provinces, and municipalities feel the need to innovate in order to reduce greenhouse gas emissions and (energy) waste streams in their own (green) value chains and in the production processes of factories in their geographical area.

These goals are only reachable with a collaborative operation of government, enterprises, and society. Therefore, not only governments but also companies and society have to take responsibility. Previously stated challenges can be combined with the challenges faced in The Netherlands by a neo-liberal government changing the welfare state into a so called "participation state" which implies more responsibilities for the people themselves. One can notice a decrease of social services in elderly and healthcare and on the other hand the need for regional labor places is emerging. A shift can be observed towards individual or collective responsibilities in these fields at local level.

However many tasks could be more effective and efficient when these tasks are organized by a coordinator in a larger setting.

Within the Northern Netherlands these challenges are combined with the challenge to cope with local population shrinkage which even stronger pronounces the decrease of services in the region. It can be concluded that in this Northern region several challenges are faced at once. Combining these different challenges might create one bigger challenge which could be coped with by one solution: joining local forces to create a new economy, at regional level in the first place.

In the North of the Netherlands, multiple stakeholders with their multiple interests in one region joined forces to empower themselves in finding solutions for the wicked problems described. They call themselves the Regional Cooperative Westerkwartier (RCW). The RCW sets itself the task to develop a new playing field on which these wicked problems can be solved. The cooperative is developing new models and economic incentives for a new regional circular economy, specifically for circular economy business models which create added value by regional chain development. The aim of this article is to create a role description for the cooperative Westerkwartier to act in the regional food chain based on cooperation of small and medium-sized enterprises (SMEs).

## METHOD

In this article the challenges in the fields of environment and regional chains to create a local focused economy are placed in the light of the circular economy to create next business in the region. The circular economy is a concept that has recently gained much attention from both policy makers and business practitioners. “The circular economy is an industrial system that is restorative or regenerative by intention and design” [3]. The EU has adopted the concept of circular economy as a spearhead in the policy to deal with the environmental challenges [4]. One of the basic principles of the circular economy is that resources circulate at high quality and waste does not exist. However, achieving these principles proves a huge challenge in practice as can be learnt from existing work in two approaches: the green supply chain management (GSCM) that focuses on enterprise level, and in industrial symbiosis that focuses on enterprise system level [5].

This article will align the factors of success in developing a green regional chain network and reflect this to the local setting of the challenges presented above in order to create the development of a successful regional chain in the Northern Netherlands. This chain should cope with creating a greener environment; stimulate the local economy which should result in a regional social system. The main question to be answered is how to guide and maintain the building and further development of such regional system, where cooperative structures will come in the place of hierarchic ones.

The case study for which this concept will be applied is the development of a regional food supply chain in the North of The Netherlands. This food chain will include producing, processing, selling and eventually handling the waste stream of e.g. products within the region. Following Nizami [6], the primary sources of food waste are catering services (restaurants, hotels, hospitals, schools and catering companies), food products and expired food. Also professional environments like offices are generating waste streams. These all are included in the food chain we aim to rebuild. At first glance, this seems not a surprising and difficult project. But global supply chains ensure that nowadays it is hard to sell local food in reasonable volumes and for a competitive price. Therefore until now, the regional production chains mostly disappeared after some time of struggle.

The idea to develop this regional food supply chain in the context of a cooperative and circular business model can be based on literature research as on first results of case studies as well. The complex environment in which the regional food supply chain operates can be framed into several fields of knowledge. Interesting fields of practice and knowledge are the fields of Green Supply Chain Management (GSCM) and the field of industrial symbiosis. These research fields bring the knowledge of creating and maintaining global, regional and local value chains. By finding the factors of success in these chains, it can be clear if these factors align with the idea of developing a regional cooperative to coordinate of stimulate the development of this regional food chain exploited by small and medium-sized enterprises. Subsequently the outline of how this cooperative should be organised and operated to work effectively can be developed.

***The case: Regional Cooperative Westerkwartier (RCW)***

**What is the RCW?**

The RCW is a modern 21st century cooperative. It has set itself the goal to create this new regional playing field by developing tight cooperation of regional stakeholders towards creation of next business, next education and a next government. This implies a reorganization of thinking within businesses, education and government.

It is a multi-stakeholder cooperative (MSC) in line with Gray [7], who suggests building cooperatives to address larger systemic problems of unemployment, economic stagnation and environmental degradation. In particular, multi-stakeholder cooperatives according to Gray "may be able to set a community development template for addressing various social, economic and ecological needs, with a more inclusive and hopefully enduring democratic organization" [7]. Following Leviten-Reid [8], the purpose of a multi-stakeholder cooperative is to improve the social-economic perspectives. Therefore a range of actors are formally involved in decision-making in order to meet a common objective, be it the provision of a needed service or the economic revitalization of a community.

By joining forces and creating regional goals the RCW is developing a more intertwined regional economy. The RCW has been established in 2014 and achieved several successes since. Nowadays the RCW exists of 12 regional related enterprises and semi-governmental organizations. These members are divided into A-members and B-members. A-members are non-profit organizations while B-members are for-profit organizations (Tables 1 and 2).

**Table 1:** A-Members of the RCW

| A-members | Translation | Size of the organisation |
|---|---|---|
| Landschapsbeheer Groningen | Landscape Management Groningen | 2.159 Volunteers and 224 citizen participants |
| Staatsbosbeheer | State Forestry | 8.000 hectare in the region |
| ANV De Eendracht | Agricultural Nature Association De Eendracht | 150 members |
| ANV Boer & Natuur ZWK | Agricultural Nature Association Farmer & Nature Southern Westerkwartier | 200 members |
| Vereniging Duurzame Landbouw Stad en Ommeland | Association Sustainable Agriculture in Groningen city and region | 230 members, 30 donors |
| Terra | Agricultural Secondary vocational School | 4.290 pupils and 2.184 students |
| Stichting De Zijlen | Foundation De Zijlen (disability care center) | 1.100 clients |

**Table 2:** B-Members of the RCW

| B-members | Description |
|---|---|
| Cowcept | Coaching company for livestock farmers |
| De GaveSuper | Regional supermarket |
| ImProveZ Marketing & communicatie | Marketing & communication company |
| StreekhoutPlus BV | Recycling Company for wood derived from wood maintenance works in the region |
| Wold en Waard | Local Social Housing Company |

In the first three years of its existence, the RCW created a substantial number of jobs in the region (Figure 1) and this is just starting off. Over these years the RCW started ten regional intertwined projects (Figure 2) in which over one thousand students did participate, in applied as well as in research projects. Almost 800 businesses, governmental and educational participants participated in several regional seminars in the year 2016. With such emerging numbers it is important for the RCW to operate in an effective way and to know its own role description within these different projects.

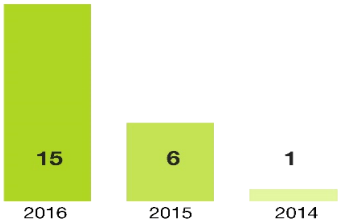


**Figure 1:** Newly by RCW created jobs

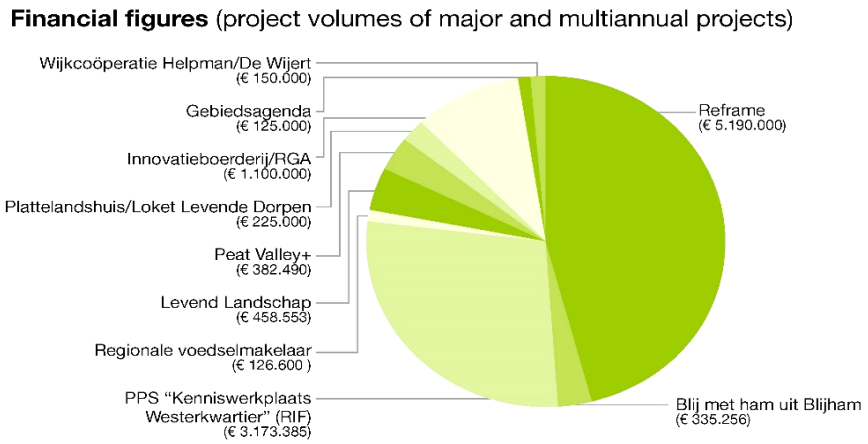


**Figure 2:** Existing projects within the RCW

**Difference between RCW and traditional cooperatives**

The Regional Cooperative is a social enterprise [9]. It is based on the main thoughts of the cooperative business model: plough profits back in the business and pay dividend to its members. However, there are five important differences as to the traditional understanding of the cooperative enterprise [10].

• The RCW has a focus on the entire region and the regional economy, instead of concentrating on one single industry. It develops and stimulates economic activities with a benefit for the region and the people who are living and working there.

• Following from this, the members are from many different sectors, which make it a so called multi-stakeholder alliance.

• The members and stakeholders aim to establish a learning and innovating regional community. Cooperation between the various members and stakeholders is key, rather than competitiveness.

• Thus, the RCW links diverse sectors and connects entrepreneurs, public bodies, educational institutions and civil society together in the region. Collectively they deal with the challenges and prepare next generation business models based on circular economy, social inclusion and multi-stakeholders' engagement.

• In addition, the Regional Cooperative stimulates communication and education towards a change in attitude and behavior. It raises awareness of various target groups and supports public and private agencies and organizations, entrepreneurs, teachers and their students on how they can contribute to and profit from the cooperative economic development model.

It is impossible to try and turn the tide throughout an entire region by applying just one uniform policy. However, a new business and economic approach is key. The Regional Cooperative's focus is to adapt the proven cooperative model (an evidently successful business model as to employment and turnover) and prepare the next generation cooperative business models by creating the new playing fields.

**The RCW objectives and its working programme**

The Regional Cooperative aims to realize significant and sustainable regional social and economic development and progress. In particular, the focus is on:

• Developing a usable next generation cooperative business model;

• Building capacity to understand and implement the cooperative next business models by educating and training teachers, students, entrepreneurs, agencies (local & regional), authorities and citizens;

• Establishing regional next generation cooperative businesses and start-ups

• Creating expertise in governance, legislation and finance;

• In order to reach these objectives, the Regional Cooperative demonstrates in practice how entrepreneurs, authorities, knowledge institutions and practitioners from a range of organisations can collectively learn, innovate and cooperate.

The RCW has developed a working programme consisting of five interrelated sub programmes:

• Landscape. agriculture & food

• Energy, water & biobased economy

• Public space, health & social well-being

• Youth & start-ups

• Next generation cooperative alliances

Within each sub programme projects are running. In the longer run, it is aimed to develop independent cooperatives within the sub programmes under the umbrella of the parent Regional Cooperative.

***One major RCW programme: The regional food chain***

**Need for business innovation**

In the core region of the RCW, the area of Westerkwartier Groningen, many entrepreneurs are working in the food business. However, the agro-food industry in peri-urban and rural areas is changing rapidly. Corporate agricultural businesses thrive, while SMEs more and more vanish. More than half of all farmers is above the age of 55 years, have no successors and under current circumstances it is expected that in 10 years' time we have lost 50% of the farmers in Europe.

In the North of the Netherlands, like in the whole of Europe, SMEs in the food sector have strong potential to be successful on globalizing markets. But the EU Joint Research Centre also concludes that creating regional supply chains instead of exclusively exporting bulk products, leads to increased local sales, employment and multiplier effects. Main challenge is to form efficient value chains which will deliver competitive products and services. Regional Food Supply Chains are one example of regional value chains.

However, there is an important difference between 'traditional' and 'neo-traditional' short food supply chains. Following Santini [11], we describe the former ones as farm-based, such like farm sales through farm shops, roadside sales and pick-your-own produce or sales at producer markets. The neo-traditional short food chains are collaborative networks of producers, processors, consumers and institutions. They intent to add value to traditional rural SMEs through new business models and innovative schemes.

Traditional food chains run short in a vicious circle of small market volumes for local food products, marginal business cases for food related companies, low investment and innovation levels and consequently no incentives to develop to mature regional food markets. In order to move out of this deadlock, short supply chains should increase to higher volumes, which can be found by upscaling from local to regional markets. We here on particular refer to Karner [12] who states that for their success, local food suppliers thrive when joining cooperative networks, which link or even integrate diverse food initiatives, at least on a regional level.

The stakeholders in the Westerkwartier region understood that business opportunities in short chains can only be yielded if handled professionally and on a proper scale. Therefore, in their approach they decided to introduce and combine two novel perspectives:

• A regional scope where the urban demand is aggregated to sizable business-to-business market volumes to be supplied by regional chains of producers, processors, distributors, retailers and other providers.

• A cooperative arrangement to aggregate, connect and consolidate urban demand and regional supply, ensuring the necessary scale and commitment for all.

***Circularity approach***

A regional food chain by its nature cannot be realized without a circular approach (Figure 3). It must within the region connect demand to supply and it must include the diverse links of the food supply chain: production, processing, distribution, logistics and waste.

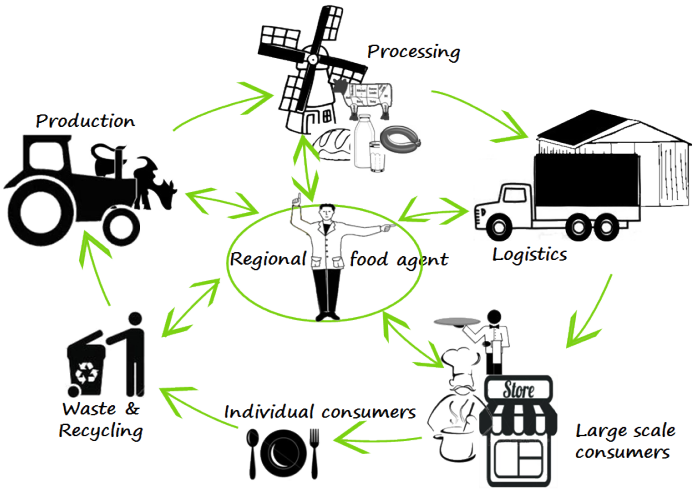


**Figure 3:** The regional food

The cooperative is stating that until now a true understanding of internal mechanisms within functioning value chains and networks in the circular economy are missing. Functioning good practices evolved in specific cases rather than being developed in a structured way. Developing new business cases based on the knowledge of previously well-developed projects is hard since the RCW is acting on a new playing field and the knowledge on business model development is still under necessary construction since there is no consensus about its definition and theory [13,14]. A better understanding of relevant success factors which stimulate or hinder a successful implementation of a circular business model is needed. Therefore this is one of the primary objectives of the cooperative Westerkwartier, and of our affiliated Research Group; Sustainable Cooperative Entrepreneurship at Hanze University of Applied Sciences

The cooperative needs a business model approach which is applying economic, technological, social, financial, governance and regulatory innovation and embeds a strong focus on design, interaction and distribution of value across all actors in a value chain or value network. In other words, business models need to be understood as interwoven throughout the whole value chain and intertwined with actors, supply chain, product, customer and all other relevant elements when describing a value network on a sustainable circular basis. Next to the development of a circular chain business model, the cooperative Westerkwartier has to define its role within such a business model. Could the cooperative be the "food agent" as presented in Figure 3? And if so, what would this role look like if the cooperative would act in this role in the most effective way?

***GSCM and industrial symbiosis***

To create a better understanding of interactions in green supply chains a short literature review has been conducted in the fields of expertise of Green supply chain management (GSCM) and industrial symbiosis. GSCM is a sub-field of the operations and supply chain management field and seeks to understand the integration and management of environmental concerns in supply chains [15]. GSCM recognizes various types of flows within green supply chains, i.e., material flows, service flows, financial flows, information and knowledge flows and waste flows [16] as well as cooperation among companies along the supply chain. The concept of industrial symbiosis knows technical as social development studies as well, since Industrial Symbiosis implies a narrow collaboration of multiple enterprises in a mutual dependent production system. Industrial symbiosis is based on the re-use of energy resources and by-products or waste flows by collaboration among surrounding industries [17]. According to Chertow [18] "Industrial symbiosis engages traditionally separated entities in a collaborative approach to competitive advantage involving physical exchange of materials, energy, water and by-products". Industrial symbiosis is usually performed through physical connections between companies, although indirect connections are recognized as well. The most famous and successful example of an industrial symbiosis network is the Kalundborg eco-industrial park in Denmark, which developed over a period of 50 years. This network reduces among others yearly 240.000 tons of $CO_2$ emissions and included 27 waste streams exchanges in the year 2010 [19]. Yet, despite the economic and environmental benefits of industrial symbiosis, the development of industrial symbiosis networks around the world occurs slowly [20] and successful networks grow organically over time [19]. Despite industrial symbiosis has a focus on physical local

networks and the regional cooperative has a focus on local networks, missing the necessary physical connection. Much knowledge and experiences of the development of industrial symbiosis networks should be worth full for the development of a circular business model for the cooperative.

***Analysis of previous research***

The literature on industrial symbiosis can be divided over different research lines. Firstly, a large body of contributions can be observed that focus the technical feasibility of the exchanges in the network [21]. Secondly, successful cases such as the abovementioned Kalundborg case have been widely studied in exploratory case studies [22]. Thirdly, and related to the second stream, existing research focuses on the initiation, management and development of industrial development. This is the most interesting stream of literature for the development of circular business. An important line in this research field is the line of Mirata [23] and Chertow [18]. They conclude that the role of a coordinating body is of importance in the development of an industrial symbiosis network. However this role is stated to be extremely important, a role description is lacking in literature. Fourthly, industrial symbiosis has been studied as an antecedent for sustainable innovation and stimulation of regional development [24]. Two underlying aspects appear highly relevant for the RCW and the development of a circular chain business model: a) social aspects of industrial symbiosis, and b) economic geography aspects of industrial symbiosis.

These two research lines, on social aspects and on aspects of economic geography, have been subject of more in-depth research in the field of industrial symbiosis and link to the same goals of the local food chain. Related research has been done on the role of champions and trust development in a network [20]. Additionally, Domenech [21] finds the positive effect of trust on the degree of flexibility and value generation associated with industrial symbiosis networks. Economic geographical research focuses on the most optimal geographical scale of a network and concludes that no preferable scale could be defined [25]. A second economic geographic focus lies on the effect of industrial symbiosis and cluster development [24], with the involvement of suppliers in later stages in the network. It can be concluded that the research field of industrial symbiosis has set the first steps in developing more in-depth research on the internal linkages in a network and on the effects of the network on the region.

The development of a circular chain business model could benefit from the knowledge of Industrial symbiosis knowledge and existing firm-level insights in GSCM or from the understanding of mechanisms of inter-organizational networks that the *general* supply chain management literature has to offer. With respect to the latter, existing work on trust, power and control in supply chains and trans-organizational relations, supply chain coordination could prove highly useful additions to the study of industrial symbiosis.

***Our research: Skills of the coordinating body***

Chertow [18], Gibbs [20] and Mirata [23] revealed the importance of the social skills a coordinating body should possess to successfully develop a local chain network. Based on the literature research above, we created a basis for in depth interviews to develop a better knowledge of the role of the chain agent in developing green supply chains. Three in depth interviews have been conducted with three experts in the field of industrial symbiosis. Based on literature combined with the results of these interviews a list of ten important decision making factors for a regional network has been developed. In a second round of questionnaire settings these decision making factors are ranked to importance according to experts in the field. In this way an insight is created in the aspects of the successful role of a coordinating body, operating in a regional chain.

***Interviewees***

The interviewees are chosen from a wide range of experts in the field and all cover a different area of the field of industrial symbiosis. The first interviewee is the chairman of Foundation heat network Netherlands (stichting Warmtenetwerk Nederland). This is a foundation which promotes the development of heat networks in the Netherlands. It functions as a centre of knowledge and expertise in the world of heat networks and lobbies at the government for more attention for the development of heat networks. The chairman is selected as an interviewee for the reason that he has a broad overview of the state of art of heat networks and industrial symbiosis in the Netherlands.

The second interviewee is a project manager of heat network projects for the energy company Essent. In this job he is involved in the development and maintenance processes of industrial networks. He is mostly focused on district heating. This interviewee has a good view and much experience on the practical development of industrial networks.

He can create an insight in chances and bottle necks during the development process of a network based on experience.

Third interviewee is a business manager of a company which is willing to cooperate in a industrial symbiosis network. This network is at the moment initiated by this company and the company is trying to find new partners which could connect to the grid. This network is at the moment industrially focused. The interviewee has a good view on how a supplier focuses on a heat network, what a supplier want to achieve and what it's willing to offer. Since the grid is operational there are experiences in working with a heat network and on uniting a supplier and customer. The results of the literature study combined with three in-depth interviews are shown in Table 3.

**Table 3:** Top 10 of important decision making factors in chain networks

| Factor | Description |
|---|---|
| Trust among partners | Partners could trust each other within the project. There are no hidden agendas |
| Fair distribution of costs and benefits | Everyone has to pay their share and has to receive their share |
| Presence of one overall goal | There should be formulated one overall goal for the project which all partners agree on and all parties should strive for. |
| Transparency of the process | Different goals of the partners connected to this project should be clear for all partners. Earning models, financial returns and the different interests. |
| Evaluation of project alternatives | Designed alternatives have to be evaluated in a transparent way and all parties have to agree that the chosen alternative is the best one. |
| Structure of the decision-making process | The presence of a schedule/road map which describes the exact steps in time to be taken to finish the decision-making process. |
| Grant factor | The project needs a certain level of grant factor between partners. A partner has to grant something to a partner without the guarantee getting something directly in return for it on a short time period. |
| Risk sharing within the project | The risks in the project should be attributed to the parties who are most capable to solve it. |
| Clear agreements | Agreements within the network are clear defined and measurable. |
| Understanding of partners | Partners could agree on all statements or views of other partners in the project. |

***Top 10 decision making factors***

**Ranking decision making factors**

During a workshop at the national congress of heat networks (local industrial symbiosis networks) 30 participants, chosen for their expertise in industrial symbiosis network development with multiple stakeholders were asked to rank these ten factors according to importance. The Analytic Hierarchy Process (AHP) will not provide an objective or right answer about the decision-making process but is a tool which helps decision makers to test their intuition. The application will rank the factors to importance relatively to each other.

The analytic hierarchy process is based on a pair wise comparison of factors. However, during the survey of this research there was no directly pair wise comparison of factors. Therefore the pair wise comparison of factors is calculated out of the forced ranking methodology used in the survey. A forced ranking methodology is comparable to a pair wise comparison only executed in one time instead of in many different steps. Forced ranking creates mutual hierarchy between the factors as well. This has been done as follows.

The survey results create the opportunity to calculate the average values given by the respondents for each factor. This results in the mutual hierarchy between the factors based on a large amount of respondents which make the input data for the AHP more objective. The AHO works with nine preference scales per factor comparison session. Without the equally preferred option it is eight steps. We calculate the difference between the most highly ranked factor and the lowest ranked factor and divide this difference by eight steps. This results in the absolute width of each preference step.

(Factor A - Factor B)/NR (number of ranking steps)=WP (width of preference step)

(Factor A - Factor B)/WP=PS (Preference step of factor A with respect to factor B)

The final preference step (PS) for each factor comparison presents a weighted preference of one factor above the other in the pair wise comparison of both compared factors. This calculation was executed for each pair wise comparison

between factors distinguished in this survey. This resulted in a pair wise comparison based on the average results of the respondents group of our survey. The AHP analysis creates the priority ranking of all ranked factors. Table 4 shows the rank of each factor in the fourth column.

**Table 4**: Decision making factors for chain development, ranked according importance by the Analytic Hierarchy Process methodology

| S. No. | Category | Priority (%) | Rank |
|---|---|---|---|
| 1 | Trust among partners | 28,2 | 1 |
| 2 | Fair distribution of costs and benefits | 6,4 | 6 |
| 3 | Presence of one overall goal | 20,5 | 2 |
| 4 | Transparency of the process | 6,4 | 6 |
| 5 | Evaluation of project alternatives | 3,1 | 9 |
| 6 | Structure of the decision-making process | 2,3 | 10 |
| 7 | Grant factor | 3,3 | 8 |
| 8 | Risk sharing within the project | 9,3 | 4 |
| 9 | Clear agreements | 13,8 | 3 |
| 10 | Understanding of partners | 6,6 | 5 |

## RESULTS AND DISCUSSION

As can be read, "Trust among partners" is the highest prioritized factor according to all of the respondents followed by "the presence of one overall goal" and "clear agreements". These three factors are followed by a large gap before the other factors are weighted. It is surprisingly to find a factor as "a fair distribution of costs and benefits" ranked in sixth place. By developing a regional food chain business model it was expected to be that the distribution of costs and benefits between the actors would be more important. During the year 2016 numerous students worked on the development of business models for singular projects focused on collaboration between multiple SME members the RCW. Students were acting as objective agents in the process of business model development. They organized multiple collaboration sessions between the SME participants, created and looked after the achievement of one overall project goal and took care of creating clear agreements between the participants. For this purpose, the business model Canvas [26], the sustainable business model of Bocken [27] and the new sustainable business model concept [28] had been used. Diverse projects exceeded the development phase and successfully exist nowadays.

Unless diverse successful cases in linear business model development, the development of a chain business model is more complex and cannot be created by one linear business model. Therefore, next to the development of the role description for the regional food chain agent a regional chain business model concept should be developed.

## FUTURE PERSPECTIVE

The RCW is about to get started with a major multi-annual process for strengthening and deepening its regional innovation eco-system, in particular as to the engagement of regional SMEs. The circular business model for entrepreneurs within the regional food chain has to be properly elaborated. Such business model including the role of the cooperative food agent will be an essential ingredient for further developing a sustainable and long lasting circular based regional food chain.

## CONCLUSION

Transferring these results to the role for the cooperative Westerkwartier to act in the regional food chain based on cooperation of small and medium-sized enterprises (SMEs), we can draw the following preliminary conclusions. Based on literature and applied research we can define the role of regional food chain agent by several social qualities which a coordinating body in this case should possess. Having learnt the three most important factors are "trust among partners", "the presence of one overall goal" and "clear agreements", we can conclude that this would apply to the RCW's role of regional food agent as well. The RCW in the role of a regional food chain agent should focus on creating trust between the chain partners. Create and strive to achieve one overall goal for the food chain and compose clear agreements within the chain and between the partners. The first factors for success appear to be in the social process of the chain development, rather than in creating a valid business case in the first place. Since the ranking of the financial aspects of the chain score relatively low.

For the development of a regional food chain business model, within the process of chain development the RCW should focus on creating these social factors between the possible partners of the chain above creating a valid business case. This valid business case should be developed in a later stage of the development process.

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