

Deliverable Proof – Reports resulting from the finalization of a project
 Cross KIC Sustainable Cities Amsterdam - EIT-BP2020 - Task
 EIT_9.8.1_201917_P504_1A

<p>Name of KIC project the report results from that contributed to/ resulted in the deliverable</p>	<p>Cross-KIC Sustainable Cities Amsterdam Capitalizing on Collaboration to Drive System Change in Food Logistics and Delivery 201917-Do2</p>
<p>Name of report</p>	<p>Business Plan with Roll out Strategy for Innovative Logistical Service</p>
<p>Summary/ brief description of report</p>	<p>In this document we describe a business model for more efficient SFSCs, including a blueprint for a Regional Food Hub and Roll-out Strategy for establishing a robust regional food system. The blueprint is based mainly on secondary literature, with some feedback from the consortium partners and lessons learnt from the pilot project. It is important to stress that this is a <i>blueprint</i> that needs to be elaborated on in much greater detail before becoming a realistic and relevant pathway for the region and its farmers. The Roll-out Strategy is embedded in the roadmap already under way for SFSC initiatives in the region.</p> <p>In our research and conversation with consortium partners, we have found that while the demand for local food continues to increase there is a lack of <i>scale-appropriate</i> infrastructure and expertise in metropolitan regions to respond to this market pull. Many small and especially mid-scale producers have saturated their market potential in the direct-sales model but cannot supply the minimal threshold required by wholesalers. As such, the need for a new low-carbon logistical model is clear, one which specifically enables small- and mid-size farm to preserve their autonomy and unique offering while providing more food to the wholesale and retail markets. Food hubs are emerging as principal factors for developing viable local and regional food systems because they fill a market function not adequately addressed by the current distribution system.</p> <p>The Regional Food Hub can be seen as an alternative business model based on trust and organizational interdependence, both of which take time to catch on. Each one must determine its own operating structure based on what it's trying to achieve, who it wants to serve, the partners and customers it needs to work with, geographic particularities, its distribution plan, and other unique factors. Starting with the strong consortium here in Flevoland can make the development of a Food Hub particularly interesting and impactful, setting a precedent for others to follow.</p>

CAPITALIZING ON COLLABORATION TO DRIVE SYSTEM
CHANGE IN FOOD LOGISTICS AND DELIVERY

Food Hub Blueprint & Rollout Strategy



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Introduction

Problem Definition: The Disappearing ‘Middle of Agriculture’

The original call to which this project responded asked for a supply chain innovation to improve the logistics and transportation of regional produce from Flevoland to Amsterdam, all the while decreasing the city’s environmental footprint and providing a good return to farmers. We have found that while the demand for local food continues to increase, both from individuals and increasingly large retailers, there is a lack of *scale-appropriate* infrastructure and expertise in metropolitan regions to respond to this market pull. The trend of a ‘disappearing middle of Agriculture’, brought on by consolidation at both ends of the food supply chain, needs to be reversed in order to deliver regionally grown foods to the city at scale. There is a disconnect between growing retail and foodservice demand for local food products and the capacity of small- and mid-sized farms to supply commercial customers with desired items.

We find ourselves at standstill: many small and especially mid-scale producers have saturated their market potential in the direct-sales model but cannot supply the minimal threshold required by wholesalers. We have reached a point where “local demand at the wholesale level cannot be met without aggregation of small and mid-scale farms.” Mid-size farms are particularly at risk as they are too big to rely on direct marketing but too small to supply wholesalers. The underlying reason for this is the high logistical costs for SFSCs; financial and practical costs need to be significantly lowered to enable a greater flow of goods in the region. Furthermore, many zero-emission and low-carbon policies being implemented in cities makes this logistical puzzle even more difficult to solve.

“Growth in local food sales via direct-marketing channels has stalled, creating a challenging environment for farmers who lack the scale to reach wholesale buyers. This standstill is the biggest issue to scaling local food production, and one that a Regional Food Hub comes in direct opposition.”

A new low-carbon logistical model is therefore needed to enable these small- and mid-size farm to preserve their autonomy and unique offering while providing more food to the wholesale and retail markets. This involves both planning (via digital systems), administration and dedicated physical infrastructure. Short Food Supply Chains must also be redefined. The key indicator should no longer be number of intermediaries between farm and end consumer. Very distant banana producers might only go through one or two ‘middlemen’ but should not be considered SFSCs. On the other hand, food produced locally might pass through several hands, all in the region, strengthening the local economy, before ending up on our plates. In order to bring about lasting change in the food system, we have to have a more nuanced understanding of SFSCs with the key differentiating factor being the community building aspect, and social bonds the SFSC creates.

Regional Food Hub: An Old Structure in a New System

In recent decades, regional food supply chains have become an essential issue, and food hubs are emerging as principal factors for developing viable local and regional food systems (Perdana et al, 2020). Regional food hubs fill a market function not adequately addressed by the current distribution system: the aggregation and distribution of food products from small to mid-sized producers into local/regional

wholesale market channels. The working definition of the regional food hub (Figure 1) is as follows: “a business or organization that supports local and regional producers, principally as an aggregator, distributor, and marketer of source-identified regional food products to wholesalers, retailer, and/or institutional buyers.” (Regional Food Hub Guide USDA, 2012).



Figure 1: Conceptual framework of the Regional Food Hub highlighting key processes of (1) Aggregation, (2) Distribution and (3) Supply Chain Management

This definition is vague on purpose: seeing as food hubs are embedded in a specific geography, each hub will be different from the other, providing a variety of both overlapping and unique services. It is up to each individual food hub to agree on the specifics, starting with the basic proposition of providing (logistical) support to producers with the aim of strengthening the local food system. Nonetheless, it is possible to outline some base characteristics that all Food Hubs adhere to in practice (Adapted from Barham, 2012):

- Carrying out or coordinating the aggregation, distribution, and marketing of regionally produced product **from multiple producers to multiple markets.**
- **Committed to buying from small to mid-sized local producers** whenever possible and considers these producers as core to their business model.
- **Utilizing one or more product differentiation strategies** to ensure that producers can get a good price for their products.
- **Working closely with producers** to ensure they can meet buyer requirements by either **providing direct technical assistance** or finding partners that can provide this technical assistance.
- **Aiming to be both financially viable and have positive economic, social, and/or environmental impacts** within their respective communities.

How is the Food Hub different? Defining Characteristics

First and foremost, *the Regional Food Hub is tightly bound to a value-based food supply chain* which distinguishes itself from a traditional food supply chain through a combination of i) the strategic partnerships it engages in and ii) how it differentiates its products (Pirog et al, 2020). Unlike logistical food hubs where cutting costs is the main priority, the Regional Food Hub operates to benefit regional farmers and seeks to de-commoditize and democratize the food supply chain. It collaborates with people and organizations willing to enter into long-term partnerships towards a common goal.

Regional Food Hubs are also political in the sense that they are not passively responding to market forces but are rather trying to force a change in the market by creating enabling conditions for a distinct group of people: farmers wishing to engage in SFSCs. *The hubs have moral agency, they are not neutral entities.* By playing an active role in helping grow regional food systems they communicate a set of values. The commitment to the region also means that their geographic scope is limited, and growth cannot occur through expansion but rather by investing further into the region to ensure a healthy business trajectory into the future.

Why in Flevoland? Why Now?

The region is ready for more structural change. Farmer, urban residents, and politicians are all experiencing the lack of progress from past policies attempt at 'sustainability'; they are hungry for more structural changes. A Food Hub does present a large investment need but with potentially large and long-lasting benefits.

There is momentum and demand for regional food is growing. The municipalities of both Almere and Amsterdam are looking to invest in enabling SFSCs. A food Hub is both a tangible, and very necessary infrastructure that would greatly spur the development of regional food webs. Furthermore, only through larger-scale and organized aggregation can the region hope to meet the growing demand for local food from wholesalers specifically but all urban residence more generally.

The Food Hub model has proven successful in other contexts. Both in the US and the UK food hubs have proven to successfully help farmer get a better deal for their produce, strengthen local economies, and provide a greater diversity of local products more reliably to customers in urban centers. Flevoland has the added benefits of having a very highly productive and concentrated agricultural region close by to several large cities.

Actors along the supply chain all reap benefits from a Food Hub, and all show interests in its establishment. Makro, Flevoland, Foodlogica, Local2Local, all of these consortium partners agree that a Food Hub would benefit them in a variety of ways. Logistics and transportation is something that each actor along the supply chain currently deals with. However, it is difficult if not impossible to offload this task as no SFSC 4PL exists that would be capable of overseeing the entire chain, from farm to fork. While L2L to some extent plays such a role, the focus is more on online wholesaling. Establishing a dedicated 4PL together with a physical Hub would enable supply chain actors to confidently place the responsibility of logistics in the hands of somebody else, somebody they know has their best interest at heart. Wholesalers like Makro will be able to access a greater amount of food, and no longer make a loss in their procurement and sales of local food. Last-mile logistics partners would have one point of access for locally produced foods as opposed to farmers coming into the city with their own vehicles.

Business Case

What is a new from a business model perspective is: i) the design of a joint distribution service; ii) the usage of a common category warehouse; and iii) the establishment of the new forms of distribution channels. Startup expenses for regional food hub projects include the cost of conducting business and enterprise feasibility studies as well as market feasibility evaluations. Additional costs, if a project is deemed feasible, may include equipment, land, physical plant construction, permits, signs, and expert labor. Operating costs will vary according to the specific type of aggregation, processing, storage, marketing, and distribution business activities planned.

“The basic underlying principle of the food hub is that by improving the individual business case of producers, the business case for the food hub also improves. As such the food hub exerts its influence both on the systems-level, but also on the individual farm-level.”

The food hub aims to both reduce costs and increase value-added, creating greater profit margins which translate into better prices for individual producers and investments in the food hub itself. Broadly speaking, costs are reduced by optimizing logistics and sharing infrastructure. How much can actually be saved, and what volume is needed to go from an inefficient to cost-effective logistical system still needs to be calculated. A key question therefore is: What volumes are needed for the hub to break even?

Business Model Canvas

In the business model canvas (Appendix 2) outlines several aspects of the new low-carbon logistical model. The following elements are summarized below: customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure.

Customer Segments

To be successful we need to support all market segments from a regional aligned market making strategy. We will assist B2B, B2C and B2B2C strategies. The business models are ready for the next phase, moving from early adopters to early majority.

We will execute demand-driven sales by utilizing our ‘Early Adopter’ customer base to reach and activate the ‘Early Majority’ consumers. We establish a demand-driven chain based on primary residual streams from farmers and create new products based on the Sustainable Development Goals.

Value Propositions

We will build validated chains of trust through the facilitation of collaboration and value creation between stakeholders locally, regionally, nationally and internationally, aiming at ecological, social and economic impact.

Channels

We will follow a multi-channel approach and will address all market segments through our partner network of short food supply initiatives that are committed to the collaboration

Customer Relationships

We will collect data of all market segments and try to realize a long-term connection between consumers, farmers, business partners, and knowledge partners. All these partnerships are driven by measurable impact indicators based on the sustainable development goals. All individual initiatives have their own goals, brand and market approach and will maintain autonomy within regional alliances.

Revenue Streams

Our goal is to create an ecosystem of collaborative organizations that create value together on top of the underlying physical structure of the Regional Food Hub. We will furthermore combine the following revenue streams:

- Variable cost: We will charge a fee for individual services. For example to make use of the logistic service initiatives pay the real cost of the services.
- License fees: We will charge partners that want to make use of developed tools a fee to recover some of the investments. For instance we will charge a fee for the use of the Online platform
- Subsidies: By working together as an alliance we are able to apply for several programs on local level, regional level, inter regional level, national level and EU level.

Key Partners

The collaboration represents a large ecosystem of change agents, listed in the table below. All partners will bring in their knowledge, data, resources, combined volume and are willing to invest together in our common goal (Appendix 3).

Partners	SFSCs	Knowledge Institutions	Suppliers
<ul style="list-style-type: none">• Amped Concepts• Flevoland• Rabobank• Amsterdam• Floriade• Taskforce short food supply chain• Makro• Foodlogica	<ul style="list-style-type: none">• Boeren voor Buren• Local2local• Vereniging Flevofood• Boeren van Amstel	<ul style="list-style-type: none">• Amsterdam school of applied science• Utrecht University• HKU• Aeres school of applied science	<ul style="list-style-type: none">• 30 farmers connected to Flevofood• 70 farmers connected to Local2local

Physical Infrastructure

The Regional Food Hub is the physical infrastructure, the geographical center of the SFSC, and it is the specific innovation around which this consortium has now become activated. While the Food Hub alone will not achieve the system changes we envision, it is one of the underlying pillars necessary to scale up the current operations of SFSC and can be seen as a means to an end, which is enabling collaborations among SFSC actors within the coming years.

Regional Food Hub Blueprint

It is important to recognize that the development of food hubs is still nascent, meaning that the best business models have yet to emerge. Every fledgling food hub needs to determine its own most favorable operating structure based on what it's trying to achieve, who it wants to serve, the partners and customers it needs to work with, geographic particularities, its distribution plan, and other unique factors. As the saying goes: "If you have seen one food hub, you have seen one food hub." Nonetheless, many resources exist to guide this fledgling movement of food hubs with an overarching lesson being "that at minimum, building these fundamental supply chain businesses requires patience, considerable business skill, and discipline to ensure that farmers benefit." In other words, this is not an easy path if it is to be done right.

The Regional Food Hub can be seen as an alternative business model based on trust and organizational interdependence, both of which take time to catch on. This is why starting with the strong consortium here in Flevoland can make matter that much easier and set a precedent for others to follow. In this section we begin to hypothesize on more concrete characteristics the Flevoland Food Hub needs to have to be successful, meaning both to serve the needs of the farmers, the MRA, and to be financially sustainable.

The Basics

Organization Type

RFH come in many organizational types: they can be non-profits, privately held companies, cooperatives, or public-private partnerships, among others. Each comes with a set of advantages and disadvantages.

In a cooperative model, the Food Hub is owned and operated by a group of producers. Profits are then distributed to members based on amount of usage. This gives a big incentive to invest in the success of the Food Hub, but it can also prevent many from committing because of the high degree of involvement. A big disadvantage of for-profits is that they are ineligible for grants, which can help fund necessary start-up costs, but can have access to private investment which can be faster to secure. A non-profit food hub would function to advance a social or environmental mission. A big advantage is that nonprofits can apply for a myriad of grants and funding. However, producers and partners may not feel that a mission-based nonprofit has the business acumen and industry knowledge needed to successfully run their business. Public/Private Partnership are common in rural development initiatives and can take many different forms. For instance, a municipality can provide needed infrastructure (land, packing house, packing equipment, etc.) and a private company might own and operate the facility as a tenant without seeking full ownership of the property.

The organizational form that a Flevoland Food Hub would take is still to be determined. Regardless, it was clear for consortium partners that the Hub should be run as a company based on the idea that to really present itself as a viable alternative to the status quo, it has to be financially viable and profitable. In other words "If you want to be a resilient mission-driven organization, then you need to generate profit."

Especially seeing as the aim of the Food Hub is to work on par in terms of *volume* to conventional supply chains the non-profit and coop model seem less desirable. The for-profit model seems exclusionary for a business case based on collaboration, although could be an option with creative participatory governance structures. The Public/Private partnership appears a very relevant organizational form. The municipalities

of Almere and Amsterdam have already expressed support for the Food Hub idea, and several existing SFSC SMEs could be combined to perform the tasks of managing the hub.

Product Range

The Food Hub needs to have the capacity to handle ultra-fresh, fresh, frozen, and processed foods. This is generally seen as a barrier to setting up regional food hubs: they have to give up specialization for diversity, which can make logistics expensive when handling low volumes. RFHs must have the necessary infrastructure to ensure the safe and efficient handling of a diversity of products. This applies to both the vehicles used for transportation, processing infrastructure, and storage facilities.

Location

The location of the Flevoland Food Hub has to ensure that it is close to major transport routes to Amsterdam, but also in a central location to ensure efficient milk runs. The vicinity of Almere has been deemed an appropriate location, although this decision requires more input to be decisive.

Furthermore, the physical existence of a warehouse space of appropriate dimensions and characteristics will be a limiting factor to selecting the location. Called Optimized Facility Location Selection in the literature, such a process involves selecting the optimum number and location of warehouses with attention given to various characteristics including access to markets and producers important, labor availability, environmental factors, etc. The physical requirements of a food hub will largely depend on i) what the customers demand and ii) what is being produced in the region. Once such market research is done, finding and financing the acquisition or access to a suitable space will be a challenging step. Luckily, the Almere Municipality has expressed interest in assisting our consortium in securing access to appropriate space to start setting up the Food Hub.

Membership

The question of membership and usership is very important, the answer to which will be determined in future workshops and consultations. The idea is that the RFH, and its associated services, are not available for everybody. Potential criteria for membership include:

- Be a member of farmers' cooperative (e.g. Flevofood)
- Minimal requirement of produce supply (in percentages of total harvest or weight)
- Commitment to data sharing.

Outside of membership, whereby a farm or producer participates in the SFSC organized by the RFH, there is also the potential for usership. Here a farmer or producer does not sell his/her products through the hub but can pay a fee for the services offered. This can form an additional revenue stream and strengthen the business case of small-scale farmers who want to continue engaging in direct relationship with consumers but would benefit from access to machinery for processing or storage.

Labor

It is important to estimate the number of people that would be hired and for what positions. Effective labor utilization, which includes adequate employee training, cross-training is important, improves flexibility and worker satisfaction, is an often-underestimated aspect of RFH success.

The most recent benchmarking study found that, on average, Food Hubs in the U.S. employ 4.3 FTEs (full time equivalents) which translated to roughly 11 people working a variety of part-time arrangements. Defining the role of volunteers is important early on such that the food hub can be structured around a

volunteer-labor model. However, consortium partners described agreed that volunteers should also assist in positions that are non-essential to the successful operations of the Food Hub. In other words, all essential position should be fulfilled by employees.

Services

On the most basic level Food Hubs perform aggregation, distribution, and marketing of source-identified products. Support services are to be determined in a following stage but should all contribute toward increasing the resilience of the Food Hub, the farmers that supply it and the regional food system it supports.

Competitive advantage is gained by performing *strategically important activities* more cheaply or better than its competitor. To help identify the strategically important activities, the Porters Value Chain comes in handy to structure thought (Figure 2).

There is already empirical proof that RFHs have added value to regional food systems and economies by: serving specific functions such as coordinating buyers and sellers; overseeing inventory management and logistics; providing product source identification. The first two it seeks to perform ‘better’ than the farmer working on his or her own, the last one it seeks to do ‘better’ than wholesalers who can often only go as far as to state which country their products come from. Combining the volumes of wholesalers with the more detailed product information is where Food Hubs find their competitive advantage.

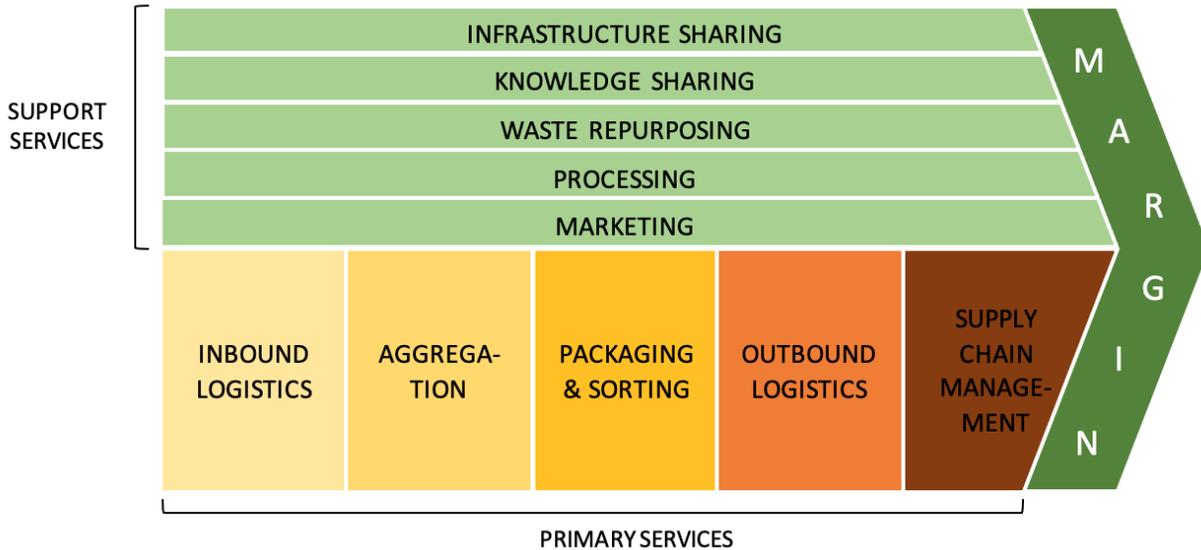


Figure 2: Adapted Porter's Value Chain which helps disaggregating a company into its strategically relevant

Primary Services

Transportation: the movement of inventory from point to point in the supply chain.

- First-mile Milk Run. Here *efficient vehicle utilization* is vital for increasing vehicle load to reducing carbon footprint and decrease transportation costs. Furthermore, Routing and scheduling through strategic design of the distribution network is critical.
- Goods In / Inventory Planning: Having a dedicated transportation fleet will eliminate the need for a dock scheduling system. Nonetheless a schedule will be kept with estimated time of arrival, load type, etc. Upon unloading goods will be checked for damage. Damaged products will be repurposed.
- Goods Out / Distribution: Reducing Empty Backhauling – carrying goods on return trips, bringing in raw materials, what do farmers/producers need from the city on a regular basis?
- Last-mile distribution: Appropriate Vehicle Selection together with Frequent and Timely Deliveries

Warehousing: activities involving physical locations where inventory is stored, retrieved, assembled and packed for distribution.

- Storage
- Picking, grading, and sorting
- Cross Docking
- Washing
- Packing
- Warehousing Policies specifically packaging can lead to cost saving and better sustainability performance.

Inventory management: monitoring and deciding how much inventory to stock, what is in stock, and how inventory should be stored.

- Stock Control: The hub must keep track of all the produce and products that come through.
- Warehouse Inventory Management Systems
- Inventory Tracking and Food Traceability: RFID tag, or similar system for traceability, is used by Metro, can we apply this to Flevofood? While supply chains are being consolidated, produce should not be, ensuring that we can provide customers with goods from particular farmers, not Flevoland as a whole. The use of IT traceability systems (QR codes) will be devised (Local2Local)
- Demand Forecasting: one of the most important and challenging measures in supply chain management. Here data sharing is important.
- Collaboration and Resource Sharing for Inventory Management: Carrying inventory is a cost, keeping inventory to a minimum is critical to supply chain success. Just-in-time (JIT) where items are replenished as they are required. group purchasing, vendor managed inventory (VMI).

Support Services

When the basic services established, a variety of additional services can be added onto the Food Hub to further improve and strengthen the supply chain. Here is a non-exhaustive list:

- **Knowledge center:** the hub can act as a knowledge center to help farmers improve yields, transition to new production systems, try new varieties, etc.
- **Dedicated harvesting teams:** growers who do not have the necessary labor. Since farmers are growing a variety of crops, the peak labor needs will occur at different time. The Hub could provide a dedicated group of people to assist farmers during the most intensive weeks of operations, especially given that the labor needed to grow and harvest produce is much more than a commodity crop.
- **Private labelling / Marketing:** Some food hubs develop a private brand which can help to develop a contract with a large buyer. This goes hand in hand with the marketing work that the hub will fulfill.
- **IT Services:** data services, monitoring, controlling, optimization etc. The Hub would have to onboard all producers only one IT system to streamline operation and standardize information. This will off-take to some extent administrative work from farmers, and will also give them access to new knowledge about their own operations.
- **Circularity / Waste Management:** The hub should be as circular as possible and ensure that food waste is kept to a minimum. This can also extend to offer processing for produce that would otherwise be wasted on farm level. The idea of whole-crop harvest means that the entire crop has a use. During the picking. Produce that is not of high enough quality for the end customer will be repurposed in creative ways to ensure that the nutrients are not lost from the system (eg. turn into juice, kombucha, high quality animal feed, compost).
- **Equipment Sharing:** The Hub can lease equipment out to farmers, or charge an hourly rate for use at the Hub. The type of equipment to invest in will be decided by member farmers with the end goal of giving Flevoland farmers a competitive advantage with regards to the conventional supply chain. Equipment could include a shared use kitchen, canning and preserving equipment, machinery for on-farm use, mill to grind wheat, a butchers, juicing machine etc.
- **Financing:** The hub's success relies on the success of its suppliers, the farmers. The hub can encourage existing producers to scale up and help aspiring produce growers to convert commodity acreage to fresh produce. Once the Hub breaks even and starts making a profit, some of that can be set aside to provide favorable loans to member farmers.

The additional services will emerge organically, based on the needs of regional food supply chain actors, from the farmer to the consumer, with the end goal of making the whole supply chain more 'environmentally friendly' meaning it should limit negative impacts on the environment (whether in the form of pollution or waste) and even work towards being regenerative. It should also seek to give farmers the best price for their produce, whether by re-distributing cost savings or adding value to their product through processing.

Aligning ordering and logistics systems

The onboarding of products from local producers is a time consuming process but it helps makes local producers able to sell their products via web shops and wholesaler channels. Local2Local already oversees this onboarding process in collaboration with regional alliances. This process consists of several steps. First the producers need to be listed in the system and agree to terms and conditions in order to sell products. Then an integration of needed product information in the content management system (CMS) occurs. Finally, local producers set their price and Local2Local manages the orders and logistical processes in the food distribution software (FDS). The detailed activities needed to be conducted within each of these process steps are listed in Annex 4.

Risks

Seeing as the Regional Food Hub model has not been implemented in the Netherlands in the way that we describe, there are many unknown and therefore many risks that need to be fully assessed in a more in-depth feasibility study. The following are among some of the topics that would need to be addressed:

- **Replicating efforts** (aka competition): Rio Romeo, UDEA, Fresh Food Partner etc. These companies are already involved in local food logistics. It will be important to analyze their business models to ensure that efforts are not being replicated, and to ensure a fill the very real gaps that exist in regional food provision to Amsterdam.
- **Ownership**: the question of “Who owns the product at the time of warehousing and who is taking the added financial risk?” regarding products that pass through the Hub are critical to answer. The topic of ownership at various stages of the supply chain needs to be crystal clear before embarking on this venture.
- **Flexibility**: The need for varying supply could be one of the biggest barriers to success. Flexibility must therefore be ingrained in the Food Hub business model. This has to do with the seasonality of produce, the limited geographic scope, and the potential for un-matched supply and demand.
- **Carrying capacity**: This refers to the carrying capacity of a region. It is important not to inflate the demand for local food and ensure that there is space for significant growth in this market.
- **Financial sustainability**: Initial capitalization and ongoing access to capital are one of the greatest challenges for food hubs.
- **Staying on track**: “Start-up food hubs sometimes get so focused on simply moving the food that they struggle to live up to their commitment to changing the food system. Farmers are the core element of that system, and they can’t bear the brunt of food hubs’ cash flow problems.”

Commercialization Agreement

The Cross KIC Sustainable Cities project can be the start of a robust roll out of a network of collaborative smart cities working together to build regional food systems, based on the aforementioned roll-out strategy. A unique opportunity has been created by a combination of factors, creating a ‘perfect storm’ with the following elements:

1. Corona showed the relevance of short food supply chains in feeding the city;
2. Local2Local is expanding the operation in the MRA with several stakeholders.
3. The GAIN transition model is showing the first results and promises great impact from a Smart City ecosystem perspective;
4. The Horizon Europe program and the Farm to Fork policy are a perfect fit;
5. Cities all over Europe are focused on short food supply chains;
6. On a national level the aligned partner Taskforce Korte Keten (TKK) created a new alliance between short chain entrepreneurs, cities and regions in the Netherland, supported by a mandate from the Dutch Ministry of Agriculture.

The specific problems we are tackling are local and regional food security and access, facilitating collaboration between cities and regions towards regenerative agriculture, countering rising food costs and lack of trust in quality trademarks, lacking future perspective for farmers, 50% decline in farmer

population in NL within 10 years, collapsing ecosystems, unsustainable and highly polluting food systems, regaining 80% loss in nutritional value since 1950, and tackling 30-40% food waste.

To counter this problem we need to build short food supply chains through digital innovation, enhancing collaboration between all stakeholders, creating alignment between all levels based on transparency, facilitating farmers/local producers, creating regional alliances and creating Smart City innovation ecosystems.

The role of smart city logistics in this project is fundamental. It facilitates new and value-driven business models and is at the core of innovation and collaboration. We have completed the first step of building smart logistics between Flevoland and Amsterdam. The Province of Flevoland is willing to invest in the creation of the first Regional Food Hub.

The role of technology in this project is fundamental. It facilitates new and value-driven business models, is at the core of innovation, and makes it possible to redesign democracy based on data and multilevel, cross-sectoral collaboration and gamification mechanisms.

It will support a greener, more sustainable economic recovery by creating a regenerative food supply system for regions and (smart) cities. This system will be evidence-based and designed for economical, ecological and social impact, enabling a sustainable economic recovery. We have completed the IT platform to implement a short food supply chain in any region or city. We have put this platform in practice in a short food supply chain named Local2Local in the Dutch province of Utrecht. It is up and running and is developing as a successful business case.

The team and organization(s) leading this project are composed of a group of entrepreneurial leaders, regional and national governments, knowledge institutions, several farmer/local producer organizations and leading short food supply chain organizations.

Furthermore they are embedded in a more systematic process, namely a wholesale transformation of the food system in line with the GAIN transition model. The GAIN transition model - developed to support and empower the short food chain movement and align stakeholders towards a smart city approach - offers great opportunities to increase the competitiveness and sustainability of short chains with practical and strategic solutions, accelerating a sustainable food transition by facilitating the collaboration among short food supply chain actors.

Our project will directly impact people as well as the environment, without any foreseeable risk. Consumers will have more and better choices in healthy products, sustainable entrepreneurs will have a more profitable business model, the environment will benefit from a smarter use of nature and land and a reduction in CO2 emission because of the shorter food chain. Transitioning the food system based on measurable impact is at the core of our mission.

If successful, in five years the impact of our project will be that a substantial number of smart cities and regions in the EU have incorporated our tested Regional Food Hub model in their policies and programs, enabling them to secure their food supply through short and sustainable food chains, reach their sustainability goals and work together in a network of smart cities. We will have an impact on a regional, national and EU-level.

Next Steps and Project Rollout

In order to achieve long-term goals and systemic changes building collaborations between different interconnected layers is necessary; the willingness to collaborate starts with practically working together to find solutions (practical layer), synergies develop by connecting activities (tactical layer), in order to collectively build systemic solutions based on shared values (strategic layer).

- **Practically**, we will bundle sales and logistics solutions of the various parties via the short chain with various organizations.
- **Tactically**, we will investigate how existing concepts and activities can fit together and reinforce each other. The basic principle here is that every organization adds value and is supported by its own DNA (Annex 3). For this we must make an exploratory inventory of the activities within the various organizations. Part of this is also forming an alliance of front runners: the Amsterdam Short Chain Alliance.
- **Strategically**, our ultimate aim is to cause a system change by tackling systemic problems from a shared vision based on the GAIN transition model, providing a joint roadmap in which cross-sectoral connections are leading.

Rollout

Based on the project results and establishment of collaborations within the pilot, the Province of Flevoland is committed to realize the Regional Food Hub in Almere. Since this physical Regional Food Hub is just an investment post instead of a business plan, the strategic and tactical parts have to be in place first in order to establish a promising perspective. With this foundation, we continue to build robust, transparent short chains that are able to achieve a 20% market share for local food in the MRA, Flevoland and Utrecht within 10 years (Annex 5). The main challenge here is to create an affordable, accessible and above all a tasty proposition. We do this by bundling forces for:

- structuring and organizing the regional alliances by way of the GAIN Transition Model;
- scaling up the MRA/Flevoland and Utrecht PoC by forming an alliance of companies that wish to bundle their purchase volumes, starting with governmental, semi-governmental and educational organisations;
- forming an execution program from the Defense Line of Amsterdam and Dutch Water Defence Line as a connecting element between city and countryside;
- Implementing a roll out strategy for Hotels, Restaurants and Caterers (horeca) called "het nieuwe normaal, is lokaal", fundamentally reconnecting farmers and horeca and realising a caterers collaborative hotspot with Hello Zuidas;
- expanding producer networks, product portfolios and arranging logistics through logistics hubs of farmers and producers;
- joint investments in IT and data solutions by expanding the Local2Local and blockchain platforms;
- increasing the involvement of knowledge institutions and students in a "Mansholt framed" course and transition movement;
- researching and substantiating new forms of valuations from the regional perspective of farmers, templating the Local2Local concept for implementation in other regions and creating a short food chain toolbox;

- connecting other regions and forming consortia based on the MRA-format, GAIN model and ecosystem approach using previous tools from SMARTCHAIN and other EU consortia;
- actively working together as a consortium in various calls for short food supply chain programs, regionally, nationally and internationally. Amsterdam, Almere and Utrecht will have the best urban food system that offers solutions in accordance with the Sustainable Development Goals.

Work packages and activities

To realize SFSCs as a mainstream revenue model within a healthy and sustainable food system ten work packages have been defined. In some cases they concern connecting with and building on existing activities (and continuing the TKK program implemented in 2019, which focused on the bottlenecks logistics, data and multichannel approach), in certain cases new activities will have to be developed. The work packages that will be emphasized over time (prioritization) is determined by the need and urgency. We propose a growth model, in which we work on a project basis and purposefully build up the implementation activities and the required budgets.

Data, trends and analysis

Research into measurement and monitoring of the impact of the short-chain market, in order to be able to follow and record developments both regionally and nationally. Developing and experimenting with data models, facilitating mutual cooperation between the different levels. Short chain organizations have a unique dataset that consists of consumer preferences, purchasing behavior, service expectations for consumers in the short chain, etc. Due to fragmentation, the initiatives are not yet able to make good use of these datasets.

Logistics and hub support

Facilitating mutual logistics cooperation between short chain organizations, in such a way that economies of scale can be created. An inventory can be made of the value of developing regional hubs (which can go beyond a logistics function). Also developing a logistics toolkit that organizations can use instrumentally in choosing the best logistics solution.

Multichannel approach and market support

Gaining insight into the various relevant target groups per sector - retail, catering, and healthcare - and how these can best be reached and served. Visualizing best practices, as well as white spots per region and sector. By facilitating regional cooperation, working on clustering where relevant, and stimulating knowledge exchange, short-chain players can better serve multiple market segments. Following up on closed deals by the minister during the Trade Mission.

IT development

As the TKK-program was carried out in 2019, it became clear that IT can play a central role (solution) in almost all bottlenecks, provided that it is implemented efficiently. However, due to their size and technological legacy, players individually are often unable to set this up properly or to maintain / further develop it because of lacking resources or knowledge. We want to work on a joint development of IT instruments and technology based on a collective need, whether or not by connecting with relevant expertise in this field.

Stimulating regional partnerships

The many short chain activities are currently taking place on various levels: local, regional or national. It is necessary to link these activities and the knowledge gained in them. The lack of connections between urban, provincial and national administrators also appears to be a bottleneck. We develop new area-oriented cooperation models between market parties, agricultural entrepreneurs and governments. We try to make knowledge and best practices available in Europe for Dutch short chain development, and vice versa.

Knowledge and product development, training and education

We want to link education and training to the food transition structurally and thus prepare the generation of tomorrow and the day after tomorrow for a sustainable food system. We are currently seeing that new value models are hardly integrated into education. We want to train agricultural entrepreneurs and producers in developing new revenue models and products, and in doing so make connections with both conventional partners (such as relevant knowledge and educational institutions) as well as unconventional partners from other sectors (design, data/IT, marketing, finance, etc.).

Community and networking, campaigns and events

SFSCs can be a powerful way of connecting various actors along the lines of sustainable entrepreneurship and healthy food. This requires mapping out existing communities and networks and bringing them to maturity regionally. Developing a joint network approach to set up efficient collaborations at all levels, without losing one's own (regional) identity. When existing short chains have been strengthened and are able to serve the market in a good way, it is important to stimulate the consumer through a broad public campaign, whether or not tailored to a region. The proposed national trade mission from the ministry can be a suitable prelude in the coming years in preparing the market and short chain organizations to such a campaign to activate the consumer and directly connect it with the agricultural producer.

European cooperation

The Netherlands as a leader in the development of the transition of our agricultural system. The best of both worlds. The GAIN Transition Model is part of the Smartchain consortium. The Task Force Short Chain has embraced this model and it is now being rolled out successfully. The model has also received a lot of attention within Europe. Via the Task Force, the Netherlands can further expand its leading position in various European programs and once again give guidance to the future of agriculture and strengthen its leading position.

Culture, heritage and creativity

Cultural, heritage and creative transitions are complex. There are clashing paradigms in the search for how we relate to each other and what we consider important together. Creativity and the cultural sector are indispensable in this process, in which building bridges and testing new values from a connecting narrative are necessary. The cultural heritage offers the necessary DNA to provide guidance for this, based on historical awareness.

Laws and regulation, lobby and strategy

In collaboration with the Food Transition Coalition and LTO Nederland (both represented in the Advisory Board of the Task Force Short Chain), we act as advocates for the short chain movement. By working closely with regional and national governments, important (political) moments can be used with great potential for short chain development. We are also collaborating with the regional and national government to remove obstructive legislation and regulations, which are often based on traditional long chains.

Final Words

We want to raise the bar for the degree of mutualism in regional food supply chains by showing that collaboration across and along supply chains, involving various actor types, is possible and beneficial. We want to create a new standard for collaboration, embracing inter-dependency and long-term commitment, with the established collaborations within this Cross KIC project and the Regional Food Hub blueprint as a guiding document to enable more such collaboration to flourish. The long-term goals for the development of this Regional Food Hub are to provide 20-25% of Amsterdam's food needs from Flevoland in 2030 by creating a network of regional food hubs to enable pooled inventory.

We want to continue the collaboration with the Cross KIC's as a partner in this learning process. David Brooks writes that structural change starts with realizing that the problem is complex (check), that there is no silver bullet solution (check) and that we cannot depend on pre-determined solutions (check). To achieve structural change a *community* must come together to look at the complex problem from many vantage points and let solutions emerge naturally. This process has begun in the short time of this project and we hope to continue learning and creating, using the KIC platform to spread not only of solutions but also a whole new methodology of collaboration towards structural change.

Appendix

Appendix 1: Business Model Canvas for the Regional Food Hub

