



# Urban grassroots food initiatives and the diffusion of innovation in Rotterdam

**SIRIUS Working paper #1**, December 2020

By Aleksandra Jovanovic, Aniek Hebinck and  
Timo von Wirth  
*DRIFT, Erasmus University Rotterdam*

### **About SIRIUS**

SIRIUS (Sustainable, Innovative, Resilient, and Interconnected Urban food Systems) will develop interdisciplinary methods, innovative understandings, and practical insights bridging socio-spatial contexts in China and Europe. It will shed light on trends of urban food production and consumption and identify the natural and societal factors that will influence the vulnerability and resilience of urban food supply chains. The research will contribute to a better understanding of necessary governance capacity for transitioning urban food systems.

### **About this working paper**

This working paper sets out research done within the scope of work package 3 of the SIRIUS project. This work package focusses on exploring social innovation within the urban food system and the local diffusion of sustainable alternatives. The research set out in this working paper maps a diversity of urban food initiatives, how they relate to broader food system transitions, and to the innovation environment of Rotterdam.

### **Suggested citation**

Jovanovic, A., Hebinck, A., von Wirth, T. (2020) *Urban grassroots food initiatives and the diffusion of innovation in Rotterdam*, SIRIUS Working Paper #1, EU Joint Programme Initiative Urban Europe and Chinese Academies of Science, Grant agreement number JPI UE: 17133728 / NSFC: 71961137002.

**Date:** December 2020

**Authors:** Aleksandra Jovanovic, Aniek Hebinck and Timo von Wirth (DRIFT)

**Contact:** Aniek Hebinck, hebinck@drift.eur.nl



## Introduction

Food systems are a crucial lever for sustainability transformations. Current system configurations are considered a main contributor to climate change and at odds with many of the Sustainable Development Goals (SDG's) (Oliver et al. 2018; Willett et al. 2019). It is increasingly acknowledged that immediate and urgent action is required to redirect the dynamics of today's food systems (Gaitán-cremaschi et al. 2019). Particular attention is paid to food system activities in cities, as they are considered promising sites for innovation and change (Ilieva 2017; Olsson 2018). Innovation processes are essential to food system transformation, as they shape alternative practices and knowledges that might be more sustainable than the current system configurations (Wittmayer et al. 2019). The dynamics and practices of actors engaging with food innovations in urban contexts are in the focus of this SIRIUS working paper, as we attempt to make sense of their position and leverage potential in food system transitions.

In the SIRIUS project, Work Package 3 aims to explore pioneering urban food innovators and how these might contribute to broader food system transformation or sustainability transitions. We do so through the concept of social innovation, in order to capture the social dimensions of innovation, which may or may not include the use of technology. The definition of social innovation varies in the literature, but can comprehensively defined as any initiative product, process, programme, project, or platform that challenges and over time contributes to changing the defining routines, resources and authority flows of beliefs of the broader social system in which it is introduced" " (Westley, F. as referred to in: Avelino et al. 2019 p.196). In other words, something can be considered a social innovation in the food system when it is able to bring about changes in its practices, knowledges or institutional logics among system actors.

The ability of such innovations to bring about change hinges on many factors. In this report we focus on two key aspects. Firstly, these changes often involve shifts in the actor networks and coalitions constituting elements of food systems. In transition theory, such processes of change are understood as "shifts in power" among "a broad range of actors" (Rotmans and Loorbach 2010). Therefore, key to an understanding of food system change is to create insights into the actors and coalitions that shape the structures of the food system as well as the power relations between them (Clapp 2016). Secondly, the broader context in which the innovations emerge and diffuse is of major influence on the diffusion (or: transformative impact) of innovations. In the literature, reference is made to the need for a specific 'nurturing' and 'shielding' environment (Smith and Raven 2012; Smith et al. 2015) that is supposed to be supportive for sustainable alternatives to further stabilize and flourish out of their niche status. What can be considered characteristics of a 'nurturing' environment is different for each innovation and can be understood as a specific 'innovation habitat' (Heiligenberg et al. 2017). Uncovering what constitutes an *innovation habitat* for diverse innovation types in urban food systems may allow targeted guidance and redirecting the governance of innovation processes in the light of sustainability transitions.

In order to unpack the dynamics of urban food innovations and to empirically study an ‘innovation habitat’, we start with mapping a selection of urban food innovators in the city-region of Rotterdam-The Hague, The Netherlands. Our guiding research question asks, to what extent the city-region provides the necessary ‘habitat’ for food system innovations to emerge and flourish. We are particularly interested in the factors and local characteristics that constitute to such a habitat. Within the city-region, our study focused on emerging practices and their embedding in the local food system context, while we also critically examined their potential to play into long-term sustainability transitions.

## Social innovation in urban food systems

### Food systems approach

To better understand the diverse and interconnected societal processes that take place in urban food systems, we build upon the theoretical lens of ‘food systems thinking’. This is useful in unpacking the complexity of urban food systems and allows to make sense of the configuration and dynamics that generate the system. By studying its elements and relations, we involve actors, activities, outcomes, and drivers in the analysis. A diverse range of food-related actors perform food-related activities that together result in food system outcomes. Their ability to deliver these food system outcomes is influenced by diverse drivers of the food system, such as environmental change, market dynamics, and demographic changes (Ingram 2011; Zurek et al. 2018).

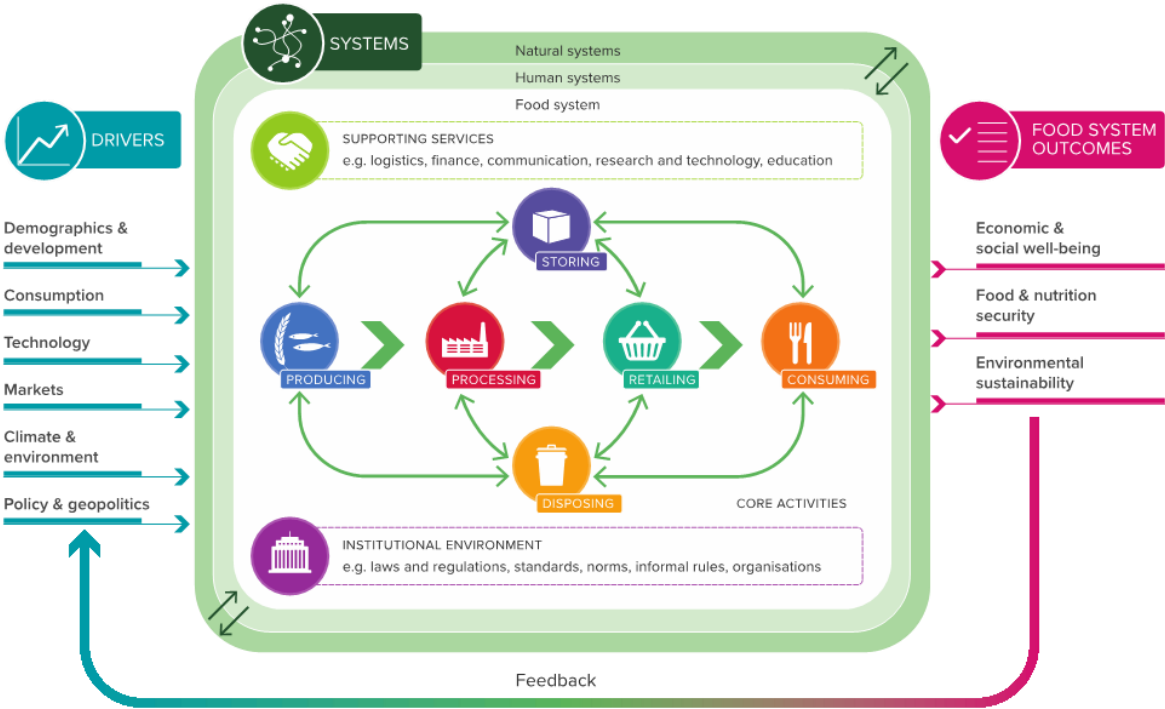


Figure 1. Food systems framework (Source: Woodhill 2018)

Beside its uses in making complex dynamics visible, it also enables to look beyond the production and consumption practices alone. As Figure 1 illustrates, the food system perspective includes a diversity of activities as part of the broader food system, such as policy-making and entrepreneurial activities (Woodhill 2018). Looking through a food systems lens entails the identification of the diverse actors and the activities they perform, while making sense of their context that is an interplay of structures as well as enabling and disabling drivers. It is this context that strongly influences the ability of food actors to deliver on their envisioned food system outcomes and objectives. We explore those actors and activities that take place in the city-region, as food production processes stretch beyond the urban core alone (Wiskerke 2015).

### Urban food initiatives

Within the urban food system, innovation is emerging from many different actors. For example, diverse actors that are associated with the food supply chain (e.g. food industry, retailers, producers) are testing alternatives to their existing practices and processes. However, diverse innovations in urban food systems to date remain at the stage of incremental changes, often driven by a logic of optimizing existing practices through efficiency gains. Next to these dominant types of innovations in food systems, there are also alternative practices emerging that can be considered as deeply challenging the existing ways of producing, processing, distributing, or consuming food in cities. We are particularly interested in these latter alternatives that the literature on sustainability transitions and food system change often considers as ‘transformative’ initiatives and ‘radical’ innovations (Rossi 2017; Gernert et al. 2018; Gaitán-cremaschi et al. 2019). The focus of this report is guided by the framework by Hebinck et al. (2020), which outlines types of initiatives that operate within urban food systems. Based on the findings made in our work, we add two types of initiatives that have not been explored extensively – *urban (food) entrepreneurs* and *gastronomy innovators*, as they appear to emerge in various city-regions and make up a crucial part of the urban food system (see Table 1).

**Table 1. Types of urban food initiatives (based on Hebinck et al. 2020)**

Urban Food Initiatives	Aims and objectives
<i>Food networks and policy</i>	Underscore potential for food system change; assessment of existing food policies and strategies; explore inclusiveness and participation.
<i>(Peri-)Urban agriculture</i>	Production of sustainable food in the urban environment; increase ecological resilience; increase number of green urban areas.
<i>Community gardens</i>	Contribution to cohesion in the neighbourhood; foster social resilience; allotments as a source of leisure for urban citizens.
<i>Short food supply chains</i>	Develop local, transparent, and equitable food supply chains; improve proximity between producer and consumer; improve rural-urban dynamics.
<i>Care and educational food initiatives</i>	Improve dietary health; use of green space to improve mental health; fostering food awareness.
<i>Urban (food) entrepreneurs</i>	Local economic activities; social entrepreneurship.
<i>Gastronomy innovators</i>	Reimagining of food in a sustainable and culinary sense; reinterpreting cultural food practices; reconnecting people to food culture.

Across the literature, the diverse activities of urban food initiatives have been connected to transformative objectives. Their purpose or initial mission focusses on

providing sustainable alternatives to the current configuration of food system practices (Smith and Seyfang 2007; Hebinck et al. 2020). Their process of value creation is dominated by purpose-principles such as contributing to a fair and ecologically balanced food provision, while strengthening the regional economy and social cohesion. The initiatives that follow such principles in their practices have also been termed 'grassroots' or 'niche actors' (Smith et al. 2015).

### **Innovation habitat**

Innovative activities in such niches have been a well explored topic in research in studies on sustainability transitions. Besides emphasizing the role of initiatives as a crucial source for innovation, they also emphasize their need for a nurturing environment in order to develop such practices. This is needed in order to 'shield' these new practices from disabling influences and to nurture them in further stabilizing and spreading in their uptake (Smith and Raven 2012; Pel et al. 2018). Similar arguments are made by literature that describes the 'innovation habitat', where particular spaces are described that act as 'incubators' or enabling environments for innovative practices (Machado et al. 2015; Heiligenberg et al. 2017). The notion of 'habitat' originates from biology and helps define the "*distributions [of species] ... based on habitat characteristics*" (Armstrong 2005, p. 1404). Following this line of thinking, certain 'innovation habitats' exist in the urban food environment (Henton and Held 2013; De Vasconcelos Gomes et al. 2018) In a similar vein, the concept of innovation ecosystem is used to describe the broader environment in which innovation takes place. This literature expands on 'innovation ecosystems' as a constellation of actors that make up a network and shape a particular environment (Pel et al 2018; De Vasconcelos Gomes et al. 2018). This environment presents a set of enabling and disabling drivers that impact differently upon innovation practices (Henton and Held 2013; De Vasconcelos Gomes et al. 2018).

We argue that these are useful concepts to capture the embeddedness and context factors influencing urban food innovations. We consider the notion of innovation habitat as nested within the innovation ecosystem. To this extent, we define the *innovation habitat* as the ideal-type environment for a specific type of organisation. We conceptualise the *innovation ecosystem*, as the broader constellation of actors that shapes the environment innovation takes place in. In other words, the innovation ecosystem allows for certain innovation habitats. This may be a balanced ecosystem, allowing for a diversity of innovation practices to unfold, or it may be unbalanced and preferences towards a certain innovation practice. Moreover, leaning on resilience thinking, a balanced ecosystem allows for sufficient diversity to emerge within the system, in order to cope with uncertainty and potential shocks. As such, we argue that allowing for diversity of innovation practices is a sign of a balanced innovation ecosystem.

## Methodology

---

This report extends the notion of innovation habitat to the diverse types of urban food initiatives (Table 1). We build on the notion that different types of initiatives require different resources, knowledges, coalitions, and institutions. The environment that makes up the ideal configuration of those needs can be conceptualised as an innovation habitat. To better understand the enabling and disabling dynamics between initiative and environment, we assess the wider urban food environment and a selected number of urban food initiatives. Comparing these initiatives will provide key insights on how these urban food initiatives interact with their environment and are able to develop their alternative practices. Based on these insights, options to improve certain habitats can be highlighted.

### Research approach

Based on the conceptual underpinning, this report aims to set out what constitutes a food innovation habitat for urban food initiatives and what type of environment the Rotterdam The Hague region currently offers. To unravel these two points, we started with an explorative research into the study context of Rotterdam and mapped the urban food initiatives in this urban environment. This was followed by the selection of urban food initiatives (UFIs) within the city. Initiatives were selected based on the objective to represent and explore the diversity in initiatives that is shown in Table 1. Due to the overlap of the fieldwork period and the Corona pandemic, fieldwork only allowed online communication. As such, semi-structured interviews were conducted with 10 urban food initiatives, as well as extensive research and email contact with one additional urban food initiative.

To understand the diversity of the urban food habitat in the Rotterdam-The Hague region in which these different initiatives are part of, and embedded in, a semi-structured interview guide was developed. Topics in the interview questionnaire were (i) the envisioned food system objectives, (ii) the drivers that affect the initiatives' ability to fulfil these objectives, and (iii) concrete food-related practices implemented by the initiative. Interviews were systematically coded on several thematic dimensions including *aims and objectives; food innovation practices; operational context; enabling drivers of food practices; disabling drivers of food practices; and network embedding*. Based on these initial categories, an analysis of the initiative's perspective on the innovation habitat was performed, paired with a cross-initiative comparison to explore commonalities between the different types of urban food initiatives. This was followed by a broad comparison of the urban environment that Rotterdam offers and to what extent this delivers on the innovation habitats of the initiatives researched. We clearly emphasize here that our research contributes only one perspective on the regional food innovation habitat. As a subject of our continuing research, we will involve the perspectives from other societal actors (food wholesalers, food processing corporations, communal and regional authorities, investors, i.a.) to provide an even richer and multi-actor picture.





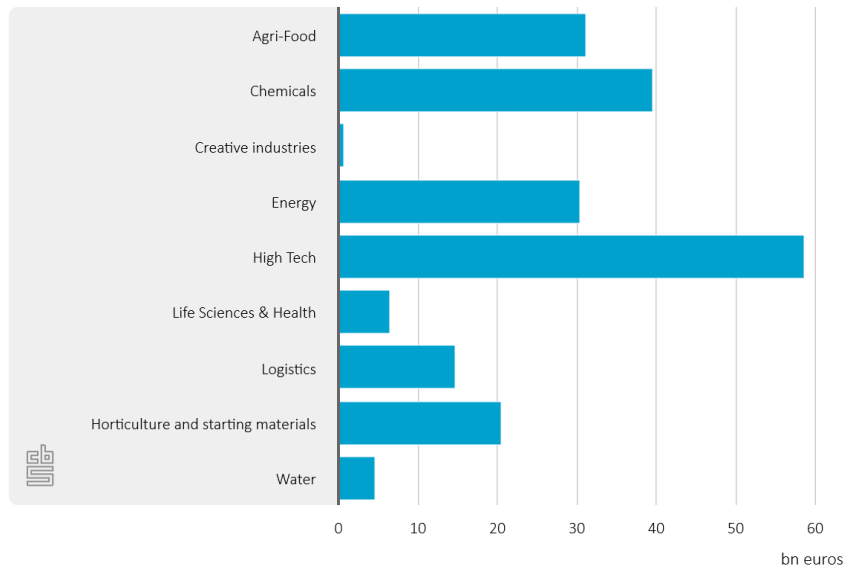
## The Rotterdam food system

---

The Rotterdam The Hague metropolitan region is situated in the west of the Netherlands, split in half by the river Maas. The city-region is home to approximately 1.2 million inhabitants and is characterised by a culturally diverse population. It is known for being an international port-city, that early on attracted labourers from outside the Netherlands. This has also made the city a cultural hotspot, with rich and diverse culinary cultures. Experimentation is highly valued in the city-region, stimulating the emergence of innovative practices by diverse start-ups and civil initiatives emerging across the city-region ([rotterdaminnovationcity.com](http://rotterdaminnovationcity.com)). These cover a wide range of systems, from being focused on circular economy, energy, climate-adaptation, and agri-food. Although Rotterdam is considered being an economic powerhouse with Europe's largest port and serving as a base for several large food incumbents (e.g. Unilever), poverty remains a persistent challenge in parts of the city.

### **“From Rotterdam we feed the world”**

Europe's largest seaport is located in Rotterdam and it imports and (re-)exports goods including a wide variety of food and feed products (e.g. soybeans, grains, tapioca) (Van der Schans 2015). It plays a major role in connecting and distributing the flows of agricultural produce and food on a global scale. As the port grew to be the biggest port in Europe and a crucial player in global trade, city governance shifted focus to encourage international trade and ample food industries have settled in the city-region. The port of Rotterdam has played a crucial role in supplying the cheap import of ingredients for livestock feed, which have enabled the intensive live-stock industry flourishing in the Netherlands (Van der Schans 2015). More recently, the region is focussing on exporting the extensive horticulture knowledge and innovation developed in the Netherlands and pioneered in the city-region of Rotterdam, focussing on sustainable solutions for water, energy and robotics (see for example: [www.westlandhortibusiness.com](http://www.westlandhortibusiness.com)). These two export-flows are considered crucial to the Dutch economy and employment in the region: Export of Agri-food was good for 31.8 bn euros in 2018, and Horticulture and starting materials for 20.6 bn (see figure 2). Beside the port and horticulture, also many agricultural areas can be found in the region, with ample livestock and agriculture (see Figure 3).



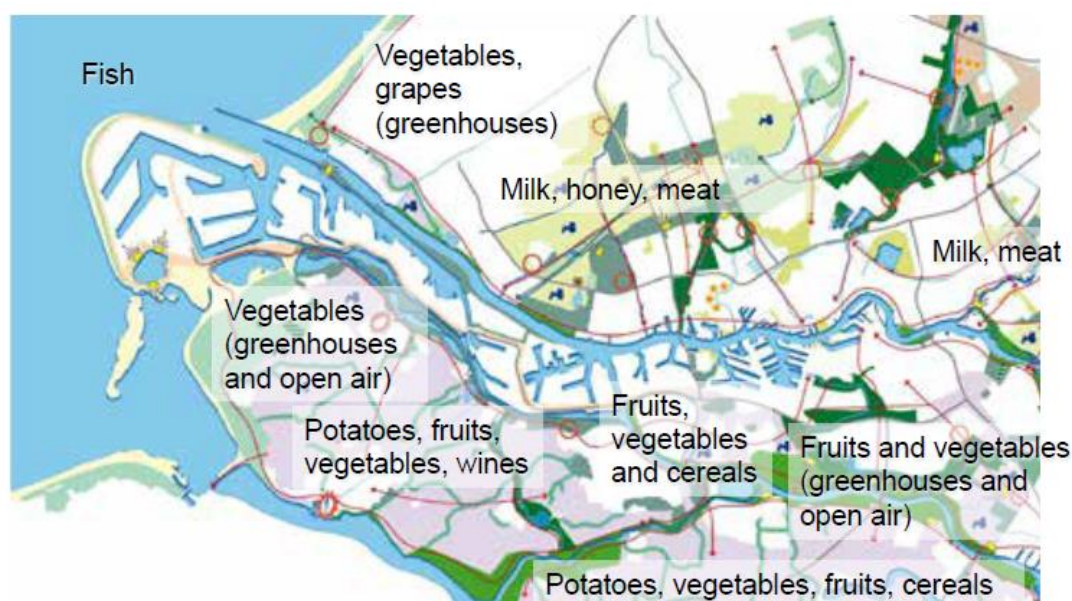
**Figure 2. Good exports by top sector, 2018 (source CBS 2019)**

These facets present a unique city-region food system, incorporating many food system activities within a relatively small perimeter in and around the city. Based on these elements, the notion of *short food supply chains* is increasingly explored in the city-region by local entrepreneurs and farmers. The city has strong ties to food, however a clearly defined regional strategy or food policy for the region is not in place. While attempts have been made in the past through clustering initiatives and local municipal engagement, none are fully institutionalised. Instead, it is argued that lessons learned regarding the regional urban food system are integrated over time (Van der Schans 2015).

However, this has led to shifting focal points of strategies, depending on the current political dynamics and actors. While the expert group *Eetbaar Rotterdam* (i.e. edible Rotterdam) previously facilitated debates around the notions of urban agriculture and short food supply chains, currently more focus is given to social entrepreneurship and innovation more generally (Van der Schans 2015). This only rarely includes studying and supporting food-related initiatives. *Eetbaar Rotterdam* attempted to strengthen and support some initiatives but was not able to provide a continuous platform for alternative food system innovators. Nevertheless, a rich diversity of food system actors exists within the city-region which currently starts connecting to initiatives from other sectors in the wider context of experimenting for local sustainability transitions.

### **Public support programs**

The municipality and the province of South Holland consider innovation and experimentation a vital part of the urban food system and have initiated several programs aimed to support actors and innovation processes. The link to food systems varies as the playing field of programmes targeting innovation is dynamic and shaped the financial flows determined by politics (Van der Schans 2015). Currently, public subsidy programs share an entrepreneurial focus and are guided by the overall vision for the region, which centres around strengthening the regional economy through innovation.



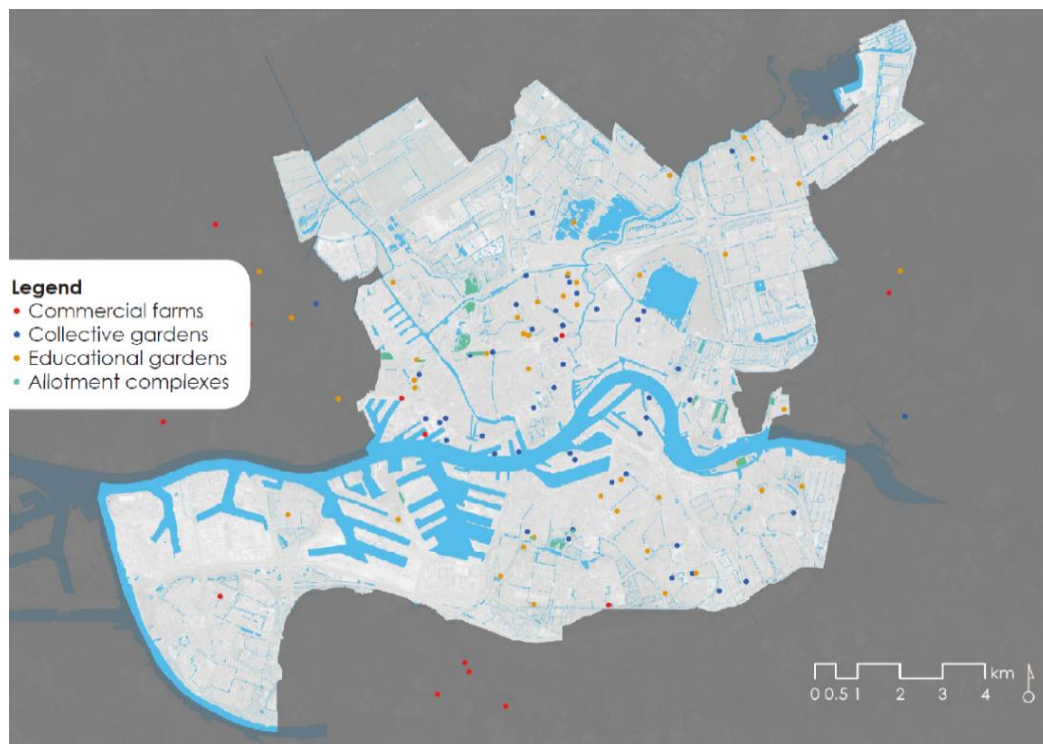
**Figure 3. The Rotterdam city-region food system, here: regional food produce; Source (Van der Schans 2015)**

The *Rotterdam Food Cluster* is a municipal initiative, which explores and supports innovation practices that address food issues through the initiation of projects. This included projects on stimulating circular systems implemented together with the port, and on high-tech urban agriculture ([rotterdamfoodcluster.com](http://rotterdamfoodcluster.com)). The more grassroots oriented *Citylab010* is a non-food specific financial support-competition by the municipality that offers subsidies to the most innovative start-ups. This program focusses on topics such as urbanisation, the energy transition, tourism, and new economies ([citylab010.nl](http://citylab010.nl)). The partnership *MRDH* (Metropolitan Region Rotterdam The Hague) consists of the 23 municipalities in the province and has established several innovation programs at regional level. An agri-food program is in development, but successful programs already took place on health-technology, energy and climate and smart manufacturing ([mrdh.nl](http://mrdh.nl)). These programmes stimulate collaboration between businesses, knowledge institutes municipalities and civil-society organizations, however, there is a strong focus on supporting food industry and start-ups that contribute to the notion of ‘the Next Economy’. While this includes five key transition pathways that are directed to a more circular, carbon-neutral, and smart urban society ([roadmapnexteconomy.com](http://roadmapnexteconomy.com)), no specific mentioning of food occurs in these visions and pathways.

### Urban food initiatives

The regional dynamics of innovation and experimentation emerge among grassroots initiatives and other actors. One of the few region-wide studies from 2013 maps of the urban agriculture activities of Rotterdam (see figure 4). However, a broader variety of initiatives, spanning urban agriculture, short supply chains, food entrepreneurs and policy arrangements emerge across the city (Cretella and Buenger 2015; Hebinck and Villarreal 2016). These were made possible due to high-density of local food production in the region, allowing for strong rural-urban connections to be made. However, at this level, the emergence of initiatives is almost as swift as the disappearance of initiatives. It is

the nature of these initiatives of being highly experimental and not always being able to find a successful model, safeguarding the continuity of their operations.



**Figure 4. Map of urban agriculture in Rotterdam 2013, Source: (Dumitrescu 2013)**

Currently, an explicit *food strategy* for the city-region is inexistent. This means that many food initiatives are unable to receive municipal or public support through networks, platforms, resources, knowledge, or other infrastructures alike. Instead, initiatives are eligible for support when their food innovation fits within the scope of the 'Next Economy'<sup>1</sup>, which focusses on strengthening the position of the Rotterdam region as a front runner in the global food economy. This makes for an uneasy relation between the objectives of most of the grassroots-level food initiatives found in Rotterdam and the main policy strategy for the future of the regional food system.

---

<sup>1</sup> The Roadmap Next Economy is a policy-vision document of the Metropolitan Region Rotterdam-The Hague, which acts as a compass to guide developments in the region. The 5 transition pathways central are: Smart Digital Delta; Smart Energy Delta; Circular Economy; Next Education; and Next Society.

## Sketches of Urban Food Initiatives in Rotterdam

The following section sets out the results of this research, starting with the description of the initiatives and the broader urban innovation habitat. We first provide short portraits of the studied initiatives and their transformative objectives, but also what drivers of change influence their abilities to achieve these.

Name: **Jack Bean**

Type of initiative: **Urban entrepreneur / Gastronomy innovator**

Established: **2018**



### Aims and objectives

*Jack Bean* can be described as 100% plant-based fast food-haute cuisine with highly ambitious sustainability goals. While recently established, *Jack Bean* has two restaurants in Rotterdam. The objective of the founders is not to “veganize the city”, but to “make plant-based food the standard, by focusing on increased affordability and food attractiveness”. The dishes consist mainly of fresh, local ingredients with a seasonal menu, made up of ingredients that are always available locally. They aim to integrate sustainability, health and accessibility in diets, making it easier for the urban consumer to contribute to making food systems more sustainable. This urban food initiative is highly ambitious, critical and self-reflective. They have chosen for a restaurant model as this allows for more customer interaction. The sustainability ambitions lead them to explore the sustainability of their menu throughout multiple aspects of the food system. Beside measuring the environmental footprint of their most popular hamburger, they are also exploring ways to make food delivery more sustainable by partnering up with an initiative that experiments with circular food packaging.

### Enabling and disabling drivers of change

The current momentum for plant-based meat and the broader urban trend for a ‘vegan lifestyle’ is an important enabling driver for *Jack Bean*. However, in their communication and way of doing business they aim to go beyond this trend and put the sustainability aspect of their products centre stage. Secondly, the existing local food supply initiative *Rechtstreex* has enabled them to easily set up food provisioning that meets their criteria of ‘local’ and ‘sustainable’. *Rechtstreex* provides an online platform that allows customers to purchase groceries from local farmers, growers, and producers. Following the online ordering, the food collection then happens at a pickup point in the neighbourhood.

The current Corona Pandemic has been a temporary setback, as governmental measures resulted in a shutdown of restaurants for several weeks. The opening of their second location was therefore unable to generate the desired level of growth. Moreover, while *Jack Bean* argues to keep price at a reasonable rate (compared to other vegan products), most of their customers fits a rather homogenous pattern (better educated, relatively higher income levels). This appears to be both a socio-economic as well as cultural driver that disables *Jack Bean* from meeting their objectives.

Name: **Rotterdamse Munt**

Type of initiative: **Community garden / Educational food initiative**

Established: **2014**



### **Aims and objectives**

On the southside of the river Maas in Rotterdam, the garden *Rotterdamse Munt* has been contributing to urban greening in recent years. This community garden was mainly guided by the wish to contribute urban green to an otherwise brick-dominated urban environment. It allows fellow residents to “experience” nature and simultaneously increases the liveability. Moreover, the initiative set out to connect to issues prevalent in the community, such as a predominantly unhealthy food environment, high child obesity and difficulties with labour reintegration. Initially starting on a temporary location, it has moved to a site that allows for longer term use. Overall, *Rotterdamse Munt* considers itself an *urban green* initiative, rather than a food initiative.

The garden is intended as a multifunctional space, that is both public and inspires people to learn about urban green and food, but also offers room for education and development. While the initial aims were to sustain the initiative by producing high-end herbs for local gastronomy and residents, however this did not prove profitable enough. The focus of the initiative now lies in educational programmes for local school and in the design and planting of edible gardens for private actors. Both are crucial to the initiative’s finances. Thirdly, the garden addresses issues of labour integration by encouraging “green talents” and to receive further education at Rotterdamse Munt. The future ambition of *Rotterdamse Munt* is to become a healthy social enterprise.

### **Enabling and disabling drivers of change**

The founder of the initiative has a history in landscape architecture and urban planning, therefore being familiar with formal procedures and already connected to crucial networks. This familiarity with the use of urban land was an enabling factor in earlier establishment of the garden and later move to a longer-term location. Second, there is a broader trend of aiming for increasing liveability and urban green spaces, connected to climate change awareness and sustainability in Rotterdam. This has enabled *Rotterdamse Munt* in establishing their design and gardening service of edible gardens in office spaces and on rooftops.

The initial aims of *Rotterdamse Munt* were to produce food for gastronomy and residents. While some local chefs do routinely source food from *Rotterdamse Munt*, residents rarely purchase foods from the garden. Instead, occasional customers from other parts of Rotterdam travel to the garden to purchase foods. The inability to create a strong and steady stream of customers has been a disabling factor for *Rotterdamse Munt*’s objectives to produce by and for residents. Another disabling driver is the difficulty to be marked as a formal work-integration space by the municipality, thereby missing out on subsidies or financial support for their practices to develop ‘green talent’.

Name: **Rechtstreex**

Type of initiative: **Short food supply chain / Urban entrepreneur**

Established: **2015**



### **Aims and objectives**

Rechtstreex is a social enterprise that contributes to transparent, local food supply chains, while creating rural-urban linkages to strengthen the local economy and social connectedness. It allows urban consumers to buy food from local farmers, growers and producers within a radius of 50 km around Rotterdam. The supply chain is built around an online purchase platform and aims to increase accessibility to local, high quality food for a relatively affordable, yet fair price by shortening the distance between producer and consumer. Not long after founding the initiative, a spin-off was established in the region of Utrecht, however, this was not as successful as the initial Rotterdam network and was later disbanded.

Acting as a middleman intermediary organization, *Rechtstreex* mediates between producers and consumers via an online platform and distributes through an ever-growing number of pick-up locations managed by 'district chiefs'. The latter are paid commission for the provision of a consumer-friendly pick-up point, while many emphasise, they aim to also increase a sense of local community. Besides offering more seasonal produce by selling what is available within 50 km, *Rechtstreex* is also able to give a platform to a diverse range of farmers and the stories behind their produce. In terms of future ambitions, *Rechtstreex* hopes to be able to open a conventional-style supermarket based on their concept, but also to further stimulate innovation practices in the region through their sustainable local supply chain.

### **Enabling and disabling drivers of change**

A temporary and fast emerging enabling driver has been the Corona Pandemic, which has resulted in triple-fold number of customers (from 1000 to 2500 orders per week and an increased value per order). As conventional supermarkets in urban areas were challenged by empty shelves (e.g. flour was sold out in supermarkets for about a month), customers explored alternative routes for produce. These are both new customers that purchase at *Rechtstreex* food for the first time, as well as an increase in the amount of produce ordered. It remains unclear to what extent this trend will continue. Corona has also led to an alternation in producers connected to *Rechtstreex*, as they have been more lenient regarding their criteria to become a supplier, to support the local economy. Second, the high-density of local food producers in the region has been another enabling driver, allowing *Rechtstreex* to create a strong local food network.

The continued dominance of conventional supermarkets and their efficiency and their low-price logics remain a challenging factor for *Rechtstreex* and the producers that are connected to the initiative. The initiative strongly relies on the existence of reliable food producers in the region, making it essential that they can maintain a decent livelihood. Secondly, while key to their supply chain, the strict sustainability criteria for inclusion of food producers, also disable *Rechtstreex* to grow much more within the current location.

Name: **Klimaattafel Consumptie**  
Type of initiative: **(Food) network and policy**  
Established: **2019**

**Klimaatdeals**  
**Consumptie**

### **Aims and objectives**

Within the context of the Paris Climate Agreement, five climate discussion tables were held in Rotterdam in order to contribute to the overarching 'Rotterdam Climate Agreement'. The *Klimaattafel Consumptie* (or Climate table Consumption) was put forth after a student-led initiative. Erasmus Sustainability Hub, which had the ambition to integrate the subject of food consumption and food waste management within the broader Rotterdam Climate Agreement. The table discussions took place and resulted in a non-binding 'agreement' about furthering changes in consumption patterns in Rotterdam.

However, not long after the governance of this agreement was moved to people within the municipality, who felt that the points in the agreement were not feasible for the municipality to impact upon as they were argued these were primarily focused on the behaviour of individuals. As such, the focus of the agreement was put on aspects that were considered manageable, such as circularity and waste streams. This would go beyond food waste alone and instead also include green residual flows and expansion of circular consumption within the areas of electronic waste, textiles, and fabrics. To further this, the municipality has paired up with the well-established circular-initiative BlueCity but has yet to define projects and activities to further the goal of circularity in the city. Meanwhile, inputs of the original Consumption Agreement have been used as input for a food policy that is currently in development in Rotterdam.

### **Enabling and disabling drivers of change**

A key disabling driving for the *Klimaattafel Consumptie* was its starting point of being a student-led initiative. The table was unsympathetically branded 'studentish' and lacking expertise, which made it easy to dismiss or override any agreements made. This eventually led to the shift in topic and argument that the implicit focus should rather be on circularity. Whether this change in focus will turn out to be disabling or enabling remains to be seen, as this refocussing might result in more concentrated impacts. Moreover, by shifting the focus of the table, it has let go of its extensive participatory process that led to the input of the original agreement, risking the legitimacy of newly found initiative. At the same time, student may be even in a better position to speak "truth to power" and address contested issues around local food policies and food waste due to their status.

Nevertheless, in its current shape an enabling driver for the *Klimaattafel Consumptie* is the close ties with the broader network of the 'Rotterdam Circularity Programme'. Having appointed a well-known figure in the region when it comes to circularity will contribute to both legitimacy and relevant policy. This will enable its ability to further the financial stability of circular-oriented initiatives and can better support these initiatives through policy.



Name: **Edible EUR**

Type of initiative: **Peri-Urban agriculture / Educational food initiative**

Established: **2017**



### **Aims and objectives**

Starting out as a guerrilla garden on the Erasmus Campus, this has grown into an university-association centred around sustainability and edible urban green. This student-led initiative uses the campus ground as a physical space for experimental gardening, attempting to test agri-food theories into practical realities. As such, it continues to explore radical methods for sustainable agriculture and aims to maintain its radical and alternative character. The founder of the initiative, an alumnus of the university, is particularly interested in testing low-maintenance farming practices based on the principles of nature-inclusive agriculture and to create an alternative sound to the dominant food industry and food-tech innovation practices.

Key to this urban food initiative is the objective to foster awareness about sustainability issues, to reconnect people to food and to increase the green spaces on the campus, as well as the focus on sustainability. The initiative is now supported by the Erasmus University and is appointed a dedicated space to grow food on the Campus ground. Future aims of *Edible EUR* are to establish a broader network, that provides a space where students can develop skills in sustainable gardening, but also can become a platform for farming entrepreneurship.

### **Enabling and disabling drivers of change**

The connection to the university and participation of students and staff has been a crucial enabling driver for the initiative, allowing it to get access to land and to grow from merely a guerrilla initiative, to something established with a long-term appointed space. Meanwhile, *Edible EUR* takes up parts of the management of green space on the campus and contributes strongly to the university's outward sustainability image. This leaves a high potential for the further greening of the campus area. Even though *Edible EUR* is (student)community-driven and sees the many benefits of collaborating with existing, local food networks in Rotterdam, such connections to other food community and gardens in Rotterdam have so far been unestablished.

Connecting to the urban gardens and initiatives outside of the campus is considered a challenge by *Edible EUR* given the long-standing network that comes with a (perceived) implicit hierarchical structure, in which *Edible EUR* is somewhat of an underdog – potentially to do with it being a student-oriented association. While there is serious potential to grow within the university bounds, beyond that, few connections outside the university have been made. Establishing connections to peer-initiatives would enable *Edible EUR* to benefit from the network's lessons learned in how to scale-up and widen their scope. Secondly, the initiative so far leans strongly on the responsibility of the founder: it would benefit from a more concrete vision or governance strategy for the initiative to scale-up and move ahead.

Name: **Voedselfamilies**  
Type of initiative: **Food networks and policy**  
Established: **2018**



Voedselfamilies

### **Aims and objectives**

In the region South-Holland, *Voedselfamilies* is an innovation network that facilitates interaction between a wide range of food actors. It aims to offer an experimental space for food innovation practices by initiating projects and stimulates collaboration between diverse pioneers. In doing so it attempts to contribute to local, sustainable, healthy and affordable food provisioning. This non-profit organisation sees a role for itself in furthering the localisation of the food system, countering the export-oriented agenda of food that dominates food governance debates in the Netherlands.

A key value of the network is openness and inclusivity, meaning there are no strict criteria to join the network: “anyone who is committed to healthy, sustainable and affordable food is welcome!”. In terms of content, the network is entirely guided by the objectives, needs and values of the members of the network. Therefore, the town hall style gatherings are crucial for this innovation network, both in terms of sharing best practices as well as establishing a sense of cohesion within the network. *Voedselfamilies* has only recently been established; so far, network activities are mostly project-based and driven by temporary funding schemes, rather than based on the input of network members. The future ambition is to become a network ‘community’, in which members instigate their own projects and innovation processes.

### **Enabling and disabling drivers of change**

Financial partners are a key enabling driver for *Voedselfamilies*. The province of South Holland supports the initiative via the *Innovation Agenda Sustainable Agriculture*; however, this also entails a certain alignment to the content of the programme towards agricultural challenges that public actors deem urgent in the region. Here, this financial input can be disabling in terms of the ambitions of *Voedselfamilies*, as this might influence their network’s ability to primarily focus on short food supply chains and local food systems.

The Corona pandemic has been of major influence on the members of the network, both, in a disabling and enabling sense, depending on the situations of particular network members. For *Voedselfamilies* it entailed a time for critical self-reflection regarding the direction the network should take and the role for *Voedselfamilies* in facilitating this. The focus will remain on place-based food communities to connect urban consumers to local producers, while pushing for fair prices. A broader and longer-term vision is yet lacking, which is connected the varied level of commitment of the current network members and difficulty to establish such a vision.

Name: **De Krekerij**

Type of initiative: **Gastronomy innovator / Urban entrepreneur**

Established: **2018**



### **Aims and objectives**

*De Krekerij* is a food initiative that produces high-end food products made of crickets and grasshoppers. The aim is to alter the public perception of the consumption of insects. Their insect-based version of the popular Dutch snack 'bitterballen' has become their signature product, especially popular on street and music festivals and among urban-early adopters. *De Krekerij* aims to integrate health, accessibility, and sustainable diets via their products. However, key is creating insect-based food products that are accessible in terms of taste and food culture, making their venture innovative with respect to gastronomy.

Beside reimagining products, they also aim to impact farming practices and encourage a shift to circular farming methods. As such, *De Krekerij* is exploring the feasibility of insect-production more locally, by helping Dutch dairy farmers shift to insect production. They are currently exploring such a production location within the Rotterdam city-region in collaboration with *JOYbugs*. Based on these ambitions, *De Krekerij* is also engaging with academia in researching the role of insects in circular agriculture. Their ambition is to contribute to a dietary transition, where "everyone eats at least one insect-based product a week". Furthermore, they aim to build up expertise that allows them to consult on insect-based production internationally.

### **Enabling and disabling drivers of change**

The search for alternative protein sources is certainly an enabling driver for *De Krekerij*. Not only is research growing in this field, so is the demand among restaurants to explore such products and the interests of adventurous consumers. This meant a serious increase in their sales to local restaurants, festivals, and events. However, the recent impacts of the Corona pandemic have been severe, impacting their sales as all events and festivals were cancelled. Searching for alternative outlets, *De Krekerij* was able to continue sales of their products via the local food supply chain initiative *Rechtstreef*.

However, food culture continues to be a barrier and disabling driver for *De Krekerij* as the general consumer regards insects as inedible, making it difficult for the initiative to establish a solid and growing supply chain. They are still novel in the field as there is little competition, indicating that this is far from mainstream. Secondly, EU novel food law is also a disabling driver for *De Krekerij*, as the current food safety requirements complicate the export of their insect-based products to other EU countries. While plant-based products are hardly subject to food safety requirements, animal products are; this still puts constraints to the scaling opportunities for the initiative that are yet to be overcome.

Name: **Slow Food Youth Network Rotterdam**

Type of initiative: **Food network and policy / Food education initiative**

Established: **2015**



### **Aims and objectives**

The *Slow Food Youth Network Rotterdam (SFYN O10)* is the Rotterdam based youth network of the global Slow Food Movement and is committed to a good, clean & fair food system. This local youth branch is connected to other branches in the Netherlands, of which the Amsterdam one is the overarching branch. This network argues that young people have an important role to play in shaping the future of food systems. This open food network aims to develop transformative projects and connections by bringing young food-related actors (consumers, producers, farmers, chefs, students, etc.) together. A key value for *SFYN O10* is to be open-minded and accessible by “welcoming any idea that can make our local food systems fairer.” They believe that small and localised impacts can contribute to necessary larger-scale transformation of food systems.

This Rotterdam-based branch considers itself a smaller link in the broader SFYN-chain and they report back to the Amsterdam hub. As of yet, the Rotterdam network is small and is focusing on attracting new members and finding potential partners. Being in the Rotterdam city-region, the *SFYN O10* gets a different view on the food system, urban complexities and infrastructures requires within the food system. Moreover, this initiative is highly community-driven and dependent on the input of active members’ ability to contribute innovative ideas and skills. Communication of the initiative is primarily online and via social media, which encourages connection with young adults. The future objective of *SFYN O10* is to have more continuity in projects and to break out of their current “SFYN bubble”, in order to further food system change.

### **Enabling and disabling drivers of change**

Perhaps the most known aspect of the *SFYN* in the Netherlands is the *SFYN Academy*, which has become a key element of their identity. With this academy they take a food systems approach to education, which has led to some key figures of *SFYN* becoming strong voices in the broader Dutch food debate. This also enables the position and legitimacy of *SFYN O10* and other branches in the Netherlands. Second, the location of *SFYN O10* in the Rotterdam city-region offers proximity to a large variety of food-related actors, allowing for network-building and sharing opportunities.

The broader governance of this nascent branch is a disabling driver for *SFYN O10*, as they are still figuring out how to best attract, inspire and encourage people and members to develop and lead future projects and bring in new, radical ideas. Moreover, while implicit hierarchical structure within the broader *SFYN* network, means a certain reliance on the Amsterdam branch in terms of image and outward communication, but also governance.

Name: **Zero Food Waste Rotterdam**  
Type of initiative: **Urban entrepreneurs**  
Established: **2018**



### **Aims and objectives**

The urban food initiative *Zero Food Waste Rotterdam* is a food distribution centre that aims to reduce food waste, while maximizing its social, economic and cultural potential. This initiative wants to break the taboo of the food industry in not talking about the generated amount of food waste. *Zero Food Waste* aims to do so by going beyond being an awareness foundation alone and becoming a platform for food education, using food waste as subject in education. This for example features the idea of utilising local residual waste flows, which strongly vary seasonally, which could be used to create awareness on local food availability.

Moreover, the initiative has the ambition to scale up and become a financially stable social enterprise, which runs parallel to their education activities. This would allow them to be more independent and have more freedom in the implantation of projects. An example of this, is their innovative partnership with a local cider brewery, with whom they experiment in the use of food waste for cider production. Their ultimate aim is to partner up with food industry, which would allow them to utilise larger surplus food flows.

### **Enabling and disabling drivers of change**

The partnership between *Zero Food Waste* and municipality of Rotterdam is an enabling driver, as this has allowed them to run pilot projects. For example, a pilot research project with municipality is ongoing exploring pathways for the municipality to subsidize the collection of surplus food. There has been increased attention for food waste in the last decade, which has led to a stronger debate on the food waste, both nationally and internationally. This has been embraced by food industry, as it is regarded as an effective way to reduce the costs associated with waste management, as well as sustainable. On the one hand, this has been enabling in the sense that *Zero Food Waste* is able to connect of food industry, of which many are in the city-region Rotterdam.

A potential disabling driver might be the growth of initiatives focussing on food waste, meaning that the competition for surplus food flows will increase. One key example is that of the food bank, which is a charity, and which allows for industry to get tax exemptions. This contrary to *Zero Food Waste* who are aiming to valorise these food flows, instead of donating them. Furthermore, few connections are established with surrounding urban food initiatives, which means they lack the opportunity to share learnings.

Name: **Erasmus Food Lab**

Type of initiative: **Educational food initiative**

Established: **2018**



### **Aims and objectives**

The *Erasmus Food Lab* is an initiative connected to the Erasmus University Rotterdam, which has a physical space for experimental plant-based cooking and critical food research. It aims to connect and educate students, staff and beyond in order to mainstream and market plant-based foods. Through this, they indirectly contribute to gastronomy innovation as it helps to reimagine what sustainable diets mean on a personal and business level.

The initiative has a strong social media presence through which they organise online food awareness campaign, supported by academic research. For example, they do so by offering vegan versions of international recipes and calculating the ecological footprint of these recipes, making it easier for consumers to change their behaviour. The physical space of the *Erasmus Food Lab* is a big kitchen, which is key for the events they organise. Such as the recent 'Cooking with an expert event' which combined a cooking workshop and sustainability education. However, they also aim to create further impact by designing and leading food programs for the university itself, increasing its sustainability for the campus catering. The future objective of the *Erasmus Food Lab* is that the university will start to integrate the food measures in their environmental impact report within the next two years.

### **Enabling and disabling drivers of change**

The close ties of the *Erasmus Food Lab* with the Erasmus University (EUR) have been a key enabling driver for this initiative. They rely primarily on the support from the EUR and several food industry-sponsors that have donated kitchen supply for their physical space. So has the trend for more conscious and sustainable lifestyle among the current generation of students, enabling the food lab to grow in popularity. While corona strongly affected the *Erasmus Food Lab*, they quickly adapted to the situation. During lockdown of the university campus, the initiative instead hosted outdoor cooking workshops, allowing to still have events running throughout the summer.

A potential disabling driver is the lack of a broader vision with respect to their objectives and aims. Currently the initiative is primarily focussing on goals achievable on the campus grounds and spans two years. The initiative would benefit from a longer-term vision to direct their practices, as well as interact with their key partner, the EUR.

Name: Coöperatie **Ondergrond**

Type of initiative: **Peri-Urban agriculture / Food network and policy**

Established: **2019**



### **Aims and objectives**

The *Coöperatie Ondergrond* is a network that is also an active peri-urban agriculture initiative. Their focus is on the development of food forests and edible green spaces based on nature-inclusive agricultural principles in and around the city. In doing so, they aim to connect people to food and nature, while creating multifunctional green landscapes that are designed and managed according to food forestry principles. It has been established recently but is based on the lessons of earlier network initiatives.

The cooperative has the ambition to become a social enterprise, seeking a balance between the profitable elements of food forest, while also achieving the social-ecological values to society that have no monetary value. As such, they contribute to “greening the city, as a service to society”, by planting food forests and maintaining them, if the landowner pays the costs of planting the forest. The network currently includes food forests in varying stages of development and production. Two ‘active’ food forests, in Rotterdam and in Nijmegen, are key to their educational activities. Meanwhile, they are constantly exploring options to develop food forests in other locations, which will contribute to the amount of harvest and profit that the cooperative will yield.

### **Enabling and disabling drivers of change**

Crucial to the *Coöperatie Ondergrond* is the political experience by one of the members of the cooperative. Having previously founded the urban agriculture-network ‘*Eetbaar Rotterdam*’, meant the cooperative already had an extensive network when it comes to public actors. The cooperative has instead taken a narrower focus on ‘urban green’, which allows them to more easily connect to municipal aims and policy than a food focus. Another enabling driver is the commitment on behalf of the Rotterdam municipality to increase the number of green spaces in the city by 20 hectares. The cooperative is considered an eligible actor to help the municipality fulfil this commitment.

A disabling driver for the cooperative is the lack of a clear municipal policy regarding urban food initiatives and a more general inability to recognize these initiatives as social enterprises; and to support them accordingly. This has previously proven a barrier for the urban agriculture-network ‘*Eetbaar Rotterdam*’, which struggled to unify and highlight the many and diverse urban food initiatives in a way that the municipality saw ways to support their activities. More generally speaking, the municipality often considers urban food initiatives as ‘civil initiatives’, not recognizing their social entrepreneurship role. This non-recognition disables and complicates the ability for initiatives such as *Coöperatie Ondergrond* in establishing a meaningful policy-connection with the municipality.

## Grassroot initiatives and food system changes

---

Nurturing and shielding grassroots initiatives in their development of and experimentation with innovative food practices is one way of instigating changes in food systems (Gernert et al. 2018). Beside exploring the initiatives individually, we look here across the initiatives for commonalities as well as key differences in their alternative practices. By doing so, we distil information on how the stability and (intended) impacts of these initiatives is influenced by e.g. organizational factors or the urban innovation environment that the Rotterdam-The Hague is offering. By exploring how these initiatives engage with transformative change, we can make sense of how the innovation habitat becomes relevant to the initiatives. With ‘transformative change’, we refer to “*fundamental changes in the structure, system functions, and relations within and between elements of a given food system*” (Hebinck et al. 2020 p. 1). To do so, we interrogate the broader drivers of change and to what extent they influence the urban food initiatives more generally. First, we explore their intended engagement with transformative change of food systems, followed by an interrogation of drivers that influence urban food initiatives.

### Activities and mechanisms to instigate transformative change

Different aims and objectives for change can be signalled across these initiatives. While all are connected to notions of sustainability, we can distinguish between initiatives that *imagine* alternative food practices, *experiment* with alternatives, initiatives that *accelerate* the sustainable alternative practices, and initiatives that *build coalitions* for enacting alternative pathways for sustainable food systems (Loorbach et al. 2017). We apply the aforementioned activities as guiding criteria for our analysis of the initiatives’ engagement with transformative change. It must be noted that the urban food initiatives under review often employ multiple activities and relate to transformative change in varying manners. For example, an initiative could engage in both imagining of alternative pathways as well as accelerating them.

#### → Imagining sustainable alternative pathways

Expectations and imaginaries of alternative, more sustainable food practices are a relevant element of long-term change processes. The ability to imagine new or reassemble practices based on a different configuration of values, actors and interactions is essential to shaping pathways to sustainable systems (Hebinck et al. 2018). The process of imagining of alternatives is key to break out of the structures of existing and established ways of doing, underscoring that different pathways are possible. Both the *Erasmus Food Lab* and *Edible EUR* are examples of initiatives that focus on active imagination of alternative pathways, which contribute somewhat to the embedding of practices. They do so by offering a space to people where they are encouraged to reimagine new ways of doing and thinking. While *Rotterdamse Munt* sees a crucial role in educating and inspiring people to think differently and to reappraise (urban) nature, they attempt to scale up from and further embed their initiative into the regional Rotterdam context.



Each of these three initiatives sees a key role for themselves as educator, focussing on various aspects of the urban food system. *Erasmus Food Lab* for example, does so by providing the space and knowledge to reimagine cooking in more sustainable ways. Offering recipes to make traditional dishes vegan, is a simple and effective way of highlighting alternative ways to consume more sustainably. Similarly, the garden-hosted cooking events showed participants a glimpse of the cuisine from different cultures and how certain dishes are inherently sustainable in terms of health and environmental footprint. *Edible EUR* and *Rotterdamse Munt* aim to educate people about the value of nature in the city. For *Edible EUR* the focus is on farming practices: showing and letting people experiment with nature-inclusive farming practices in urban areas. In this, it allows people to develop a basic level of skills that ultimately may enforce their connection to nature. Similarly, *Rotterdamse Munt* sees a role in educating people how to grow, but mostly in inspiring and enlightening people about the value of nature in the city. The chefs that source produce from the urban garden, become a source of inspiration in terms of cooking: demonstrating what surprising things can be made with the produce. While the actual design of the gardens is intended to spur on visitors, children from local schools, and volunteers to themselves grow (edible) plants elsewhere.

→ **Experimenting with sustainable alternatives**

To test the viability of newly imagined pathways, experimentation is one possibility if implementing learning-by-doing contexts. This allows actors to put their ideas in practice, as well as to tweak practices and novel approaches while adapting to the regional dynamics being exposed to. Often, this process starts in a nurturing environment, which offers the conditions in which the alternative pathway was imagined. When this is deemed successful, experimentation is necessary: both to see how the alternative practice might play out when faced with the conventional practices, with the risk of being outcompeted, as well as finding ways to expand the practice by scaling, translating and embedding. This generally combines both innovation and entrepreneurial practices. Multiple examples of initiatives experimenting with sustainable alternative practices can be found across Rotterdam, such as *De Krekerij*, *Zero Food Waste*, and *Coöperatie Ondergrond*.

*De Krekerij* experiments with newly imagined food and continues to embed their practices and has the objective to scale. *De Krekerij* is exploring ways to expand and scale their sustainability reach and is doing so by convincing current dairy farmers to switch to insect-breeding. Key to this initiative is their gastronomy innovation: They continuously experiment with flavours and textures of insect-based products in order to develop new food that are culturally acceptable to consumers. While the initiative *Zero Food Waste Rotterdam* is exploring ways to scale and embed their food waste valorisation. The topic of food waste has been relatively ‘en vogue’ and has been welcomed especially by the food industry. This initiative’s aim is to scale-up and embed to the extent that they become an essential link in the food system. Key to *Zero Food Waste*’s ambitions is their ability to partner up with the food industry. *Coöperatie Ondergrond* is already experimenting with the development of food forests. Partly, this is due to the extensive experience that one of the founders of the cooperative has with urban agriculture and engagement with the municipality. Based on this familiarity, they



are easily connected to the municipality commitment to expanding urban green in the region. As such, they focus on the embedding and scaling of their food forestry initiative.

→ Acceleration of sustainable alternative practices

Moving beyond the stage of experimentation, initiatives that accelerate sustainable alternatives are seeking to institutionalise and further establish their practices in daily practices and existing markets. They aim to grow in terms of size and prominence in the system, but also must focus on robustness as they need to compete with conventional practices. Initiatives that exemplify the acceleration of sustainable alternative practices are *Jack Bean* and *Rechtstreex*.

*Jack Bean* is an initiative that accelerates sustainable alternative practices. They offer sustainable and healthy products which they intend to market to the general public. *Jack Bean* intends to do so by scaling their practices and to do so while adhering to the strictest sustainability criteria. This entails not only sourcing sustainably, but also proving the sustainability of their products. By measuring the environmental footprint of their most popular burger, they aim to underscore the value of their product. The gastronomy innovation is the foundation of their entrepreneurial practices. They continuously experiment with flavours of unexpected local produce and combine them to invent new dishes. Here, customer experience and taste are guiding, as both are aware they offer foods that are not considered aligned with the norm. The entrepreneurial initiative *Rechtstreex*'s local food supply chain is key to many of the other initiatives: as a source produce and as outlet for products, especially during the COVID pandemic. *Rechtstreex* has ambitious sustainability criteria that give shape to their practices. By limiting the geography of food sourcing to a radius of 50 kilometres around Rotterdam, they stick to an ambitious understanding of *local produce*. The initiative has previously experimented with scaling, which proved unsuccessful. Instead, they are exploring ways to embed their current practices by including more conventional-retail options, such as a supermarket.

Building coalitions for alternative pathways

Building new or alternative coalitions of actors plays a crucial role in instigating transformative change. Through networks, coalitions of actors and governance arrangements, such alternative practices and pathways can be further institutionalised and made robust. As such, they then contribute to the scaling of innovation(van den Bosch and Rotmans 2008)(van den Bosch and Rotmans 2008)(van den Bosch and Rotmans 2008)(van den Bosch and Rotmans 2008)(van den Bosch and Rotmans 2008)(van den Bosch and Rotmans 2008)(van den Bosch and Rotmans 2008)(van den Bosch and Rotmans 2008)(van den Bosch and Rotmans 2008)(van den Bosch and Rotmans 2008)(van den Bosch and Rotmans 2008)(van den Bosch and Rotmans 2008). From the explored initiatives, *Voedsel families*, the *Klimaattafel Consumptie* and *Slow Food Youth Network* are currently contributing to this function.

The *Klimaattafel Consumptie* is centred around participatory policy making. Through the initiation of climate-tables, the municipality aims to bring together a diverse set of partners and stakeholders in order to contribute jointly to a common goal. The climate-table is similarly governance oriented, aiming to find ways to support current practices



and find out which knowledge gaps prevent the making of appropriate policies. While the initial aim of the climate-table was to contribute to the embedding of sustainable consumption practices, the more recently made changes to the agreement have led this initiative back to building coalitions. The initiative *Voedselfamilies* is an open, local food network, aiming to share knowledge, experiences and stimulate collaboration. It is guided foremost by the needs and objectives of its members and aims to strengthen the local network to the extent that they become a community (or 'Food family'). This is done foremost through coalition-building among actors that might be facing the same obstacles, as well as initiating projects on topics that the members consider important. Herewith, *Voedselfamilies* is contributing to the scaling and embedding of other initiatives. Rather similar is our observation for the *Slow Food Youth Network O10*, whose broader umbrella organisation has become a strong network of youth that are united by wanting to promote and initiate sustainable food systems. Herewith, it is a major source for cross-fertilization of good practices and radical ideas, as well as connecting new practices of members to the network. The Rotterdam-branch of the Youth Network is still in a rather nascent phase and is focussing on scaling, embedding, and translating, based on the brand of the entire organisation.

### **Driving forces increasing the pressure for food system transitions**

Besides the role the Urban Food Initiatives take on in furthering transformative change, we see several large-scale driving forces that increase the pressure for food system transitions. In the broader transitions and sustainability literature these have been described as 'Game Changers' (Loorbach et al. 2016) or the 'Landscape level' (Geels 2011) and describe 'macro'. Here we explore several such macro-level driving forces that are increasing the need and desire to transform food systems; some are beneficial to the Urban Food Initiatives, while others challenge the initiatives and force them to adapt.

#### → 'Sustainability' as lifestyle trend

Several initiatives emerge partly because of a growing number of people who are in search of sustainable alternatives in the food sector. Among these examples are the entrepreneurial initiatives *Jack Bean*, *Rechtstreeex*, *De Krekerij*, but also the education-oriented initiatives such as *Erasmus Food Lab* and *Slow Food Youth Network O10*. The sustainability lifestyle trend is an enabling driver to these initiatives, allowing them to further scale-up. The initiatives *Coöperatie Ondergrond*, *Edible EUR* and *Rotterdamse Munt* are similarly enabled by the sustainability trend, but more through the institutional interest in sustainability. Each contributing to increasing greening cities, while fulfilling social values in the city and on the campus.

While to each of these, sustainability concerns and societies' expectations for responses have so far proven as enabling factors, it is similarly easy for other initiatives to claim a contribution to sustainability without further proving their actual transformative impacts. This disables the initiatives as they will increasingly be forced to differentiate themselves from these others, underscoring why it is they are going the extra mile. This is for example a conundrum for *Jack Bean*, who are reflecting on each aspect of their business show it can be made more sustainable. Other gastronomy-oriented plant-based initiatives might not go that far but will still appear similarly



sustainable to customers. It then becomes increasingly vital to communicate sustainability in a more profound, comprehensive, and engaging manner. This again drives initiatives such as *Slow Food Youth Network* and *Jack Bean* to skilfully communicate and raise awareness e.g. via social media or to argue for new ways of certification or “proof of sustainability”.

→ **Public and financial support**

Public and financial influences are the sword that cuts both ways, as it can be highly enabling as well as disabling. While the municipality is backing innovation and entrepreneurial practices within the city region, the degree to which transformative efforts and more radical, high-risk alternatives are supported remain limited. One reason may be the strong forces within municipal structures and regional institutions to resist more radical changes of the food system status-quo. That is, local policy and public administration bodies as well as institutions of the regional food fabric (e.g. trade chambers, Rotterdam food cluster actors) still largely promote a regional food system development, which favours eco-modernist innovation in form of incremental steps to optimize existing regional structures and market conditions over substantial transformative attempts as exemplified in the activities of social entrepreneurs and grassroots initiatives. This leads to an ongoing misalignment of local policy making and urban food initiatives.

The history of *Coöperatie Ondergrond* is testament to this: originating from an Urban Agriculture-oriented expert group, the initiative has learned how to skilfully align to policy to benefit from public support, without having to redefine the objectives of the initiatives. Here, policy is in the advantage of the cooperative, as the municipality has made the commitment to increase the amount of urban green spaces. An initiative such as *Zero Food Waste* is reliant on financial and institutional support from the municipality. Having made the connection with the municipality for a pilot-project allows them the necessary room to grow and experiment with their food-waste valorisation practices. While they are exploring ways to become financially independent, in the meantime, they are required to align to policy objectives of the municipality. Nevertheless, it remains challenging to similarly challenge the existing policy regimes and rules for making use of food waste, while being partly dependent on funding streams from these regime actors.

There are also ample initiatives that exist without the connection to public actors. *Rotterdamse Munt* is not connected to the municipality or other public bodies, as they are not eligible for financial support yet and there is not a particular supporting policy in place. Instead, they have focused on carving out their own space within the existing policy-framework and are constantly exploring ways to valorise what they contribute to the city. Other initiatives look for financial support elsewhere: such as *Jack Bean* who received financial support from the independent sustainability investor *Ifund*.



→ **Network embedding and building new coalitions**

The level of connectivity that initiatives establish is key for making effective governance arrangements, partnerships, and social learning. Whereas some seek to connect to initiatives that have an objective in common, others seek to connect broader and across a wider system. Whereas the first contributes to sharing of good practices and lessons learned, the latter promotes multi-level connections. In most cases, network embedding is enabling and accelerates initiatives in their ability to meet their objective.

Some initiatives exist to increase the network embedding of other initiatives, such as *Voedselfamilies* which through their innovation network, connects to *Jack Bean*, *Rechtstreex* and *De Krekerij*. Through membership of the *Voedselfamilies* and the innovation space offered by them, *De Krekerij* has been able to partner up with Wageningen University. Together they do research on insect-production, which is contributing to their understanding and knowledge of insect-based food products. Network embedding has allowed for more spontaneous and creative collaborations during the corona pandemic, especially after measures to limit the spread of Corona severely impacted the business of some initiatives: *Rechtstreex* offered their existing local food supply chain to both *Jack Bean* and *De Krekerij*, who were able to continue sales of their produce through this alternative channel. The *Slow Food Youth Network*, on the other hand, say they want to increase their network as they want to escape their “little bubble” and connect to a more diverse group of people. While their network is rather large, it is a homogenous network, consisting primarily of young and educated urbanites. The O10-branch sees ample opportunities to connect with local farmers, producers, and other food-related actors, because of the high-density of such activities in the region. The initiative *Edible EUR* also aims to expand their network, but primarily relies on the connection to the university. Not being firmly embedded in other networks is disabling the initiative from scaling in any other way than deepening.

→ **Inclusive, accessible alternatives**

Notable across most initiatives this research has explored, is their mentioned ambition to contribute to a more inclusive society by providing their innovative practices accessible to all. For example, *Jack Bean* aims for their vegan burger to become as equally accessible as those from the multinational fast-food chains. Similar inclusivity-ambitions are visible with *Rechtstreex*, *Rotterdamse Munt* and *Voedselfamilies*. However, to date, whether they can positively impact on inclusivity within food systems, specifically on the consumer-end, is unclear. This is partly explained by a broader lack of (academic) understanding of equity considerations in food systems and the mechanisms that directly impact upon equity in food systems (Zurek et al. 2020). While most initiatives are driven by the ambition increase the uptake of alternative sustainable food practices, their current strategies are so far unable to reach a more diverse public. The lack of understanding of equity in food systems, appears to be a universal challenge for Urban Food Initiatives, as well as the scientific community.



## Insights on the Rotterdam innovation ecosystem

---

### **An entrepreneurial focus**

We first reflect our findings in the light of the economic and political context that the studied Urban Food Initiatives are operating in. Our findings are in line with the initial observation that the food innovation environment of Rotterdam is focusing mainly on food entrepreneurship and commercial business logics. Based on the interviews with the alternative food innovators, we found that the region is currently neglecting the innovation potential of alternative food initiatives that focus less on business-model driven growth and more on food-system change. Hence, Urban Food Initiatives that are led by an entrepreneurial spirit, such as *Jack Bean*, *de Krekerij* and *Rechtstreeks* have been better positioned and in line with offers and supporting mechanisms in the Rotterdam innovation habitat. This has led them to flourish due to the financial and network support structures that help circular start-ups and profitable entrepreneurship to grow.

Initiatives such as *Rotterdamse Munt*, *Slow Food Youth Network* and *Coöperatie Ondergrond* are engaged with radical food-system change. Regardless of their current non-profit-status, their activities focus on increasing human well-being and the liveability by increasing the amount of green spaces in Rotterdam. Here, we see that the social and cultural co-benefits of these grassroots practices are not understood and overlooked. The municipal's focus on profit-generating food practices has surfaced as a theme across the majority of interviews: both *Rotterdamse Munt* and *Coöperatie Ondergrond* are aware they operate in a food innovation environment that is dominated by large food industry players. As *Coöperatie Ondergrond* highlights: “the municipality is favouring industry level actors and societal food entrepreneurs above grassroots food initiatives”. Similar remarks were made by *Rotterdamse Munt* who noted that the lack of recognition and support by public actors for their educative practices results in an ‘unstable and fragile financial situation’. *Voedselfamilies* also pointed to the municipality's decreased attention for local food chain initiatives. Overall, *Coöperatie Ondergrond* sees a decline in attention for matters of urban agriculture and food in Dutch politics. The exception is the not (yet) profitable *Zero Food Waste*, who have gained the financial support of the municipality as they are experimenting with ways to generate a profitable and systemic food waste management. The shifted focus of the municipality and the financial support-flows that they manage demand that initiatives adapt their storylines to align with the new focus; or find ways to sustain themselves without public support. A friction, which was already described as one out of several scaling dilemmas of alternative niche practices (Augenstein et al. 2020).

## Change within the Rotterdam-The Hague food environment

The explored initiatives all strive to impact positively on the city region. Several changes are visible, such as a growing focus on environmental footprint, as well as seeking spatial synergies. Jack Bean and Erasmus Food Lab are initiatives that measure the environmental impacts of food and communicating these to the broader public. Where the Erasmus Food Lab aims for integration of environmental impact into the university’s yearly reporting, Jack Bean aims for a “CO2-neutral menu”. Moreover, these two initiatives both contribute to standardisation of plant-based food. Others, such as Rechtstreex and SFYN collaborate for the development of a framework used to measure or assess the impact of food projects on society.

Second, there is a steady presence of initiatives that create spatial synergies. Such as, Rotterdamse Munt and Coöperatie Ondergrond, who each see this as their contribution to society and of which is notable that both initiatives are founded by landscape architects. Rotterdamse Munt emphasised the multifunctionality of the garden: “On the one hand it is used as a space for promotion of sustainable food production and food awareness, while on the other hand, it aims to create a healthy, urban living environment in which society can prosper”. Coöperatie Ondergrond sees similar value in their ambitions to set up a food forestry network: “It is not only a sustainable alternative to agriculture and urban green management, but also as an inspiration to organize our society in a sustainable manner with food as a medium.”

## Future research

Based on this report’s insights, we suggest several future research directions which we argue are key for a deeper understanding of the dynamics among urban food innovators aiming for wider food system transformation. Central to this are network creation and the role of partnerships among initiatives and across sectors (e.g. food and urban planning/greening) to unpack strong and weak coalitions and network effects of urban innovation habitats. Additionally, research should investigate governance for and of radical food innovation, with a specific focus on the role of the municipality in facilitating and supporting these. In this context, Mukhtar-Landgren and colleagues (2019) had recently shown the strategies by which municipalities can become enablers in experimenting with sustainable alternatives and initiatives in urban contexts. Novel intermediaries and multi-stakeholder platforms for addressing food transitions need to be reflected such as inclusive food councils that represent the needs of such alternative food actors and give grassroots food initiatives a bigger voice in the drafting of an integral food vision for a region like Rotterdam. Third, it would be valuable to interrogate the ability of urban food initiatives to contribute to the persistent public health problems in a systemic manner by targeting the unhealthy food environments and (child) obesity. Fourthly, studying grassroots initiatives and their alternative practices apparently provides only one perspective on regional innovation habitat. Within this project we will complement this set of empirical insights with research on established food industry and food policy actors. Hence, the voices of food system incumbents, playing key roles in the current regional food fabric will be integrated as well. Only recently, innovations emerging from “within the heart of the regime” have been emphasized as a focus area for future research on sustainability transitions (Grin 2020).

.....

## **COVID-19 pandemic**

An important driver within the operational context of the studied initiatives has been the global pandemic of COVID-19. This health pandemic has been infiltrating the urban food system of Rotterdam and significantly affected its functioning at least for several months. The implications from the pandemic as well as from the governance response measures such as lockdown, containment, or spatial distancing have had strong effect on purchase behaviours, diets and supply chains for food but also on the financial support and capacities of a regional food habitat to support start-ups. Looking at the UFI's that classify as urban entrepreneurs, Jack Bean and de Krekerij were hit hard financially at the start of the pandemic resulting in the need of 'critical self-reflection' and re-figuring business plans. *Rechtstreex*, on the other hand, has been riding the wave of online shopping and the ever-increasing demand for local food produce. Nevertheless, the stability of these influences is open and should be subject to further studies.





## Conclusion

For urban food systems to be sustainable and resilient, they need to accommodate actors that can imagine, experiment, and accelerate sustainable alternative practices, as well as the building of coalitions between actors which support innovation practices. Without practices that shape and support transformative innovation, urban food systems risk reinforcing existing system dynamics and unsustainabilities. Ultimately, this increases the risk of pushing food systems into a rigid state which impedes innovation practices (Hodbod and Eakin 2015). An environment that supports diverse practices of radical innovation, creativity, and sustainable food system practices is key to transformation. This makes it essential to understand how urban food innovations connect to the innovation ecosystem that is present in Rotterdam. In this study, we focused on the characteristics and dynamics of urban food initiatives in the Rotterdam region as well as their interactions within an ideal-type innovation habitat of urban food initiatives. By looking for commonalities in alternative food practices as well as enabling and disabling drivers in the regional food and innovation context, we can distil insights on the habitat requirements of urban food initiatives.

The diverse types of grassroots Urban Food Initiatives (Hebinck et al. 2020) require different aspects of the innovation habitat to successfully fulfil and promote their sustainable practices. Our research highlights that the innovation ecosystem of the city Rotterdam offers an environment that matches the habitat-demands of certain grassroots Urban Food Initiatives. We have highlighted how the Rotterdam region provides a somewhat unbalanced innovation ecosystem, by preferring entrepreneurial activities following market logics and supporting their acceleration. This is partly due to the strong influence of market dynamics into shaping the broader innovation ecosystem. As such, these alternative practices are nested within the conventional environment, making them dependent on dynamics by conventional (powerful) actors. Following the thinking of strategic niche management, public actors could better support these alternative sustainable practices by shielding, nurturing, and protecting them towards further maturity and institutionalization.

However, our research also underscored that the role of public actors in shaping such a nurturing environment for urban grassroots food initiatives strongly fluctuated over time. The diverse objectives of the public support programmes show this meandering recognition, ultimately shifting focus away from initiatives that are not for profit. In order to secure the valuable contributions of the non-for-profit initiatives and increase the diversity of alternative food practices, the municipality should ensure stable policy that goes beyond a term, as well as recognizing where the Rotterdam innovation ecosystem is not able to fulfil the needs of certain initiative types.

The embedding of an initiative in a network generally provides opportunities to learn from other peer-initiatives and connect to other promising actors for partnerships. These contribute to the robustness of the initiatives themselves. The diversity of the urban food initiatives reported on displays a wide range of social, environmental, and economic values. As of yet, this category of initiatives that can be described as social entrepreneurs, is not well understood by public actors which leaves the contribution of

initiatives underutilised. A better overview of the dynamics between urban food initiatives, their environment and how they contribute to sustainable city regions, will be beneficial for the governance of cities and would allow public actors to better understand and support such initiatives.

## References

- Armstrong DP (2005) Integrating the Metapopulation and Habitat Paradigms for Understanding Broad-Scale Declines of Species. 1402–1410. doi: 10.1111/j.1523-1739.2005.00117.x
- Augenstein K, Bachmann B, Egermann M, et al (2020) From niche to mainstream: the dilemmas of scaling up sustainable alternatives. *GAIA - Ecol Perspect Sci Soc* 29:143–147. doi: 10.14512/gaia.29.3.3
- Avelino F, Wittmayer JM, Pel B, et al (2019) Transformative social innovation and (dis)empowerment. *Technol Forecast Soc Change* 145:195–206. doi: 10.1016/j.techfore.2017.05.002
- Clapp J (2016) *Food*, 2nd ed. Polity Press, Cambridge
- Cretella A, Buenger MS (2015) Food as creative city politics in the city of Rotterdam. *Cities* 1–10. doi: 10.1016/j.cities.2015.12.001
- De Vasconcelos Gomes AL, Lucia A, Facin F, et al (2018) Technological Forecasting & Social Change Unpacking the innovation ecosystem construct: Evolution , gaps and trends. *Technol Forecast Soc Chang* 136:30–48. doi: 10.1016/j.techfore.2016.11.009
- Dumitrescu V (2013) Mapping urban agriculture potential in Rotterdam. [https://www.academia.edu/31505686/Mapping\\_Urban\\_Agriculture\\_Potential\\_in\\_Rotterdam](https://www.academia.edu/31505686/Mapping_Urban_Agriculture_Potential_in_Rotterdam)
- Gaitán-cremaschi D, Klerkx L, Duncan J, et al (2019) Characterizing diversity of food systems in view of sustainability transitions . A review. 2:
- Geels FW (2011) The multi-level perspective on sustainability transitions: Responses to seven criticisms. *Environ Innov Soc transitions* 1:24–40. doi: 10.1016/j.eist.2011.02.002
- Gernert M, El Bilali H, Strassner C (2018) Grassroots Initiatives as Sustainability Transition Pioneers: Implications and Lessons for Urban Food Systems. *Urban Sci* 2:23. doi: 10.3390/urbansci2010023
- Grin J (2020) ‘Doing’ system innovations from within the heart of the regime. *J Environ Policy Plan* 22:682–694. doi: 10.1080/1523908X.2020.1776099
- Hebinck A, Selomane O, Veen E, et al (2020) Exploring the transformative potential of urban food: a future research agenda. In: *SocArXiv*. <https://osf.io/preprints/socarxiv/4k6dh>
- Hebinck A, Vervoort JM, Hebinck P, et al (2018) Imagining transformative futures: participatory foresight for food systems change. *Ecol Soc* 23:16. doi: 10.5751/ES-10054-230216
- Hebinck A, Villarreal G (2016) “Local” level analysis of FNS pathways in the Netherlands: Two case studies, Urban Agricultural Initiatives and the Food Bank. *TRANSMANGO*, Grant 613532
- Heiligenberg HARM Van Den, Heimeriks GJ, Hekkert MP, Oort FG Van (2017) A habitat for sustainability experiments: Success factors for innovations in their local and regional contexts. *J Clean Prod* 169:204–215. doi: 10.1016/j.jclepro.2017.06.177
- Henton D, Held K (2013) The dynamics of Silicon Valley: Creative destruction and the evolution of the innovation habitat. doi: 10.1177/0539018413497542
- Hodbod J, Eakin H (2015) Adapting a social-ecological resilience framework for food systems. *J Environ Stud Sci* 5:474–484. doi: 10.1007/s13412-015-0280-6
- Ilieva RT (2017) Urban food systems strategies: A promising tool for implementing the SDGs in practice. *Sustain* 9:. doi: 10.3390/su9101707
- Ingram J (2011) A food systems approach to researching food security and its interactions with global environmental change. *Food Secur* 3:417:431
- Loorbach DA, Avelino F, Haxeltine A, et al (2016) The economic crisis as a game changer? Exploring the role of social

construction in sustainability transitions. 21:

- Machado ADB, Borba ML De, Catapan AH (2015) Responsible Editor: Leonel Cezar Rodrigues, Ph. D. Evaluation Process: Double Blind Review NNOVATION HABITAT: SUSTAINABLE POSSIBILITIES. 55. doi: 10.5585/ijiv3i2.55
- Mukhtar-Landgren D, Kronsell A, Voytenko Palgan Y, von Wirth T (2019) Municipalities as enablers in urban experimentation. *J Environ Policy Plan* 21:718–733. doi: 10.1080/1523908X.2019.1672525
- Oliver TH, Boyd E, Balcombe K, et al (2018) Overcoming undesirable resilience in the global food system. *Glob Sustain* 1:1–9. doi: 10.1017/sus.2018.9
- Olsson EGA (2018) Urban food systems as vehicles for sustainability transitions. 40:133–144
- Pel B, Wittmayer J, Dorland J, Jørgensen MS (2018) Unpacking the Social Innovation Ecosystem: a typology of empowering network constellations. 10th Int Soc Innov Res Conf 0:1–26. doi: 10.1080/13511610.2019.1705147
- Rossi A (2017) Beyond food provisioning: The transformative potential of grassroots innovation around food. *Agric* 7:9–14. doi: 10.3390/agriculture7010006
- Rotmans J, Loorbach D (2010) Towards a better understanding of transitions and their governance: A systematic and reflexive approach. In: Grin J, Rotmans J, Schot J (eds) *Transitions to sustainable development: New directions in the study of long term transformative changeable development: New directions in the study of long term transformative change*. Routledge, pp 105–222
- Smith A, Fressoli M, Abrol D, et al (2015) *Grassroots innovation movements*. Earthscan, London and New York
- Smith A, Raven R (2012) What is protective space? Reconsidering niches in transitions to sustainability. *Res Policy* 41:1025–1036. doi: 10.1016/j.respol.2011.12.012
- Smith A, Seyfang G (2007) Grassroots Innovations for Sustainable Consumption. *Env Polit* 16:584–603. doi: 10.1080/09644010701419121
- van den Bosch S, Rotmans J (2008) Deepening, Broadening and Scaling up: a Framework for Steering Transition Experiments.
- Van der Schans J (2015) Developing the Rotterdam City Region Food System: acting and thinking at the same time. *Urban Agric. Mag.*
- Westley FR (2013) Key note speech: The history of social innovation. In: NESTA Conference Social Frontiers: the next edge of social science research. 14–15 November 2013, London UK
- Willett W, Rockström J, Loken B, et al (2019) Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. *Lancet* 393:447–492. doi: 10.1016/S0140-6736(18)31788-4
- Wiskerke JSCC (2015) Urban food systems. In: de Zeeuw H, Drechsel P (eds) *Cities and agriculture: developing resilient urban food systems*. Routledge, London, pp 1–25
- Wittmayer JM, Backhaus J, Avelino F, et al (2019) Narratives of change: How social innovation initiatives construct societal transformation. *Futures* 112:102433
- Woodhill J (2018) The dynamics of food systems: a conceptual model. In: Foresight4Food.net. <https://www.foresight4food.net/2019/12/18/the-dynamics-of-food-systems-a-conceptual-model/>
- Zurek M, Hebinck A, Leip A, et al (2018) Assessing sustainable food and nutrition security of the EU food system – An integrated approach. *Sustainability* 10:1–16. doi: 10.3390/su10114271
- Zurek MB, Hebinck A, Selomane O (2020) Looking across diverse food system futures: Implications for climate change and the environment. *QOpen*

.....