

## **Towards a resilient food network for the Rotterdam - The Hague Metropolitan Region (MRDH)**

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### **Synopsis**

New trends and techniques to produce food will produce major changes in the Dutch food network in the next decades. This research visualizes the network of the Rotterdam – The Hague Metropolitan Region (MRDH) by mapping current food hubs. The resulting overview is compared with the Food Strategies drawn up by the cities of Rotterdam and The Hague. Important issues remain unaddressed in these strategies and opportunities in the MRDH are not yet seized. With our recommendations we would like to inspire the recently founded MRDH authority to set an agenda for a Regional Food Strategy.

### **1. Introduction**

#### *Introduction*

The call for more transparency in our food network, more regional and organically produced food, combined with new food trends and a growing world population, will generate major changes in the food network of the the Netherlands in the next decades. New production technologies are introduced, markets change and all these changes will ask for an adaptation of our food distribution network. By analysing the current food network, recent developments and trends this paper aims to inspire the Dutch MRDH region to set an agenda for a Regional Food Strategy.

#### *Demarcation*

Food supply has a strong spatial dimension, both in production and processing as in distribution and consumption. The metropolitan food region is a promising area to focus on. Recent researches of food networks in the Netherlands focus either on the national or global scale or on local initiatives and their influence on their surroundings. The same goes for policy that has been developed in the Netherlands so far. The scale is either local (municipalities like The Hague and Rotterdam) or national / global (national government). The intermediate scale of a food region is highly interesting since at this scale both the local and the global influences come together. This regional scale might offer a better overview and makes it possible to effectively establish a connection between urban and rural areas. Moreover, municipalities are often considered too small to deal with global players, such as exist in the food industry.

#### *Motivation*

The MRDH is a young administration, which has become operative in January 2015. One of its main goals is to improve conditions for establishing businesses. As for now, it still needs to prove itself as an institute that can help to contribute to the spatial en socio-economical development of the region. Food might be a crucial instrument in the development of the

MRDH, since it links large sectors in its economy and spatial configuration with many local urban initiatives and goals; the harbors of Rotterdam and the greenhouses of the Westland can meet local initiatives like 'Rotterdamse oogst' and the 'Fenix Food Factory'.

### *Research question*

This research aims to inspire the MRDH to set an agenda for a Regional Food Strategy which might, in return, help the MRDH to reach its development goals. How can we help to set such an agenda?

In this paper, we will attempt to answer the following subquestions :

- which are the current policies regarding food supply? (chapter 2)
- how is the current food network structured? (chapter 3)
- which major trends in the food network can be distinguished? (chapter 4)
- In the light of the metropolitan metabolism, what would be a good starting point for a Regional Food Strategy in the MRDH? (chapter 5)

### *Method*

In chapter 2 the existing Food Strategies of Rotterdam and The Hague will be analyzed and compared to the vision of the Scientific Council for Government Policy (WRR) as described in their report "Towards a food policy" (WRR, 2014). The current food network in the MRDH will be described and visualized by mapping current food hubs of the food network, in chapter 3. This analysis will be followed by a description of recent trends and developments in the food network (chapter 4). The paper concludes with recommendations to the MRDH region and especially the MRDH authority, regarding the urban-rural metabolism of the metropolitan region and the importance of an integrated food strategy.

## **2. Current food strategies**

As in other countries, local and national governmental institutions in the Netherlands, begin to recognize the opportunities that food chains can offer as a means to achieve many different policy goals, ranging from health issues and economic growth to generating sustainable development and attractive landscapes. The strength of food as a topic is that it appeals to everyone (City of Vancouver, 2013). Food is an integral means.

### *The national context*

As the Netherlands form an important transport and trans-shipment hub, food is of a huge importance to the Dutch economy (PBL, IABR 2014). The Rotterdam harbor in particular forms an important trans-shipment hub for food transport to the hinterland of Europe. Underlining its significance, the Dutch government has declared Food and Agriculture as one of the so-called 'top sectors' of the economy. The sectoral approach however (agriculture, public health, economy etc.) impedes an integrated approach towards the food supply chain.

The WRR outlines, in the report mentioned above, the opportunities for a Dutch food policy and the strategic considerations that have to be made to meet the challenges in the coming decades. The main challenges are Ecological sustainability, Public health and Robustness or resilience of the food supply system. In order to face these challenges they make two important recommendations: Focus on the resilience of the food network and shift the orientation from an agricultural policy towards a food policy (WRR, 2014). Especially in the

larger cities in the Netherlands, issues concerning public health (obesity, diabetes type 2), food transparency, food security and food safety arise and possibilities are being explored to reduce food kilometers by stimulating local production. Internationally, cities like Toronto and Vancouver have paved the way for other municipalities to write their own policies regarding food. Rotterdam and The Hague, the two main municipalities in the MRDH region, have both written their own food strategy. To be effective, a policy should at least address the three topics that have been described by the WRR; ecological sustainability, public health and robustness of the food supply system. Let's take a look at the two food strategies and compare them with a city outside of the MRDH, Amsterdam.

	Amsterdam	Rotterdam	The Hague
<b>STATUS</b>	'Voedsel en Amsterdam' / Food and Amsterdam (vision, 2013) drawn up by ANMEC, Amsterdam Economic Board, Program team Healthy Weight Economic Affairs and the Environmental Planning authority	'Food & the city - stimulating urban agriculture in Rotterdam' (strategic document, 2012)	'(H)eerlijk Haags' (start proposal for urban food strategy, 2013)
<b>FOCUS</b>			
health	o	o	o
social participation	o		o (non explicit)
sustainability	o	o	o (non explicit)
economy	o	o	
education	o		o
spatial quality		o	o
<b>RELATION TO OTHER POLICY</b>	Food is included as a theme in the Structural concept plan 2014	Program Sustainability ( up to 2014) Representation of contribution of urban agriculture to policy goals of the municipality of Rotterdam	Document has no binding status since it has not been approved by the board of the municipality
<b>TOP</b>	Wide program with lots of projects and a strong emphasis on education	Emphasis on the relation with the surrounding landscape Benchmark against international examples	Clear delineation of responsibilities: initiatives have to be initiated by citizens, but the municipality also gives a precise description of their own actions.
<b>MISS</b>	Weak connection with spatial quality	Too much focus on urban agriculture, everything else is explained by using this theme	Economic interest is mentioned but isn't specified

Figure 1. Comparison of food strategies of the three largest cities in the Netherlands (image by VerseStad.nl)

### Rotterdam

Rotterdam was the first Dutch city to publish its own strategy, called Food & the City in 2012. As mentioned, the harbor is a major trans-shipment hub and as such, Rotterdam is an important player in the global food network. Furthermore the closely situated Westland produces vegetables that are distributed and auctioned off in the region and then transported all over the world. Rotterdam does focus in its strategy on ecological sustainability, but merely by describing projects that have been initiated by inhabitants and as a means to add green to the city.

Public health is indicated as a major point of interest but the robustness of the food network as a whole is no part of the strategy. As the subtitle indicates, "Stimulating urban agriculture

in and around Rotterdam”, the document mainly focuses on stimulating urban agriculture projects in the city. The Rotterdam strategy does focus on the Westland but leaves out the harbor with its fruit and juices cluster. This is a narrow view on the entire food network spectrum. What stands out in this strategy is the emphasis on the spatial impact of a food network, as well as the recognition of the influence of developments in the food system on spatial quality, an aspect of the food network that often remains underexposed. The report was written in 2012 but there is no evidence that the intended actions described in the report have been undertaken since. A good exception is the forming of a Food Council in 2013 (Rotterdam, 2013). The Rotterdam Food Council consists of actors in the food production-consumption chain and municipalities around Rotterdam. Despite the good initiative, results of its establishment haven't been shared with the public yet.



*Figure 2. Uit je eigen stad (from your own town), Rotterdam. A food production initiative that delivers fresh products to their own restaurant and to others in town. (Image by M. Nefs)*

### *The Hague*

The governmental center of the Netherlands published its strategy on food in the beginning of 2013. Unfortunately the document hasn't been approved by the board of the municipality and has thus no binding status. In the strategy the municipality is very clear when it comes to responsibilities. Local inhabitants and entrepreneurs should take action and the municipality will facilitate. The report describes how the municipality would facilitate initiatives, as well as specific goals to strive for and the budget that is to be reserved to achieve them. This strategy focuses on providing information either by promoting a healthier, greener and more livable city or in the form of educational programs. A clear example is a program that stimulates food production at schools. Although hidden between other sustainable projects, urban agriculture initiatives are presented on a digital map. The Hague also focuses on ecological sustainability and public health in the food strategy. As in Rotterdam we can conclude that there is no real attention paid to the robustness of the food supply system.

### *The next step*

The food strategies of the two main cities in the MRDH region show that food is on the agenda of the municipalities. Or at least it has been in 2012-2013 when many municipalities got inspired by the book *Hungry City* by Carolyn Steel (2008). In The Hague, the manifestation “Foodprint, Food for the City” was held (Stroom, 2012). The reports however haven't been updated since the strategies were released. In the case of The Hague the document hasn't even been approved by the board and has thus no binding status. Both

strategies give a good snapshot overview of the initiatives in both cities and their hinterland. Nonetheless a more integrated, regional view is missing. There is no discussion yet about the robustness of the food network in these cities. If we compare these two strategies to the one that has been written by the city of Amsterdam, it becomes clear that an update is needed to make the strategies more concrete. Food & Amsterdam (Amsterdam, 2012) describes the financial means that will be reserved to finance goals that have been set and describes a deadline for these goals, in this case a period of ten years. This gives extra urgency to these goals and shows that partners who have been involved are committed to the strategy. Meanwhile, the Metropolitan Region Amsterdam has started writing a regional food vision (MRA, 2015).

### **3. Mapping the current MRDH food network**

A food network can be subdivided into food hubs (or nodes) and food flows. Food flows go from node to node by air, water or road. The means of transport may change slightly over time, but the linear infrastructure of the MRDH will not change much anymore. This is why this research focuses exclusively on the food hubs: places where different actors meet, such as producer, trader, distributor and consumer. Despite the food strategies of Rotterdam and The Hague that promote local produce and urban agriculture, nearly the whole food supply of the region is channeled through large wholesale hubs and the distribution network of supermarkets and other retailers. Even organically produced food is sold for 75% in supermarkets (Bosatlas Voedsel, 2014). The spatial form of this food network consists of sub-networks per sector. Fish, for example, is landed and auctioned at the harbors of Scheveningen and Stellendam (see figure 3). Afterwards it is packaged and sold through a limited number of wholesale points near the highways, together with the flow of imported frozen fish.

Meat is only produced on a small scale in the MRDH, for example beef. There is a number of meat processing facilities in the region as well (see figure 5). Most of the meat comes to the region via the so-called global cool-chain, where wholesale companies finally deliver it to supermarkets, other retailers and restaurants (see figure 3). The meat network is almost entirely located in industrial areas, because of regulations (odour and noise from the cooling installations). Access to the highways is key for the larger facilities. Dairy products from the pastures in the MRDH, such as cheese and butter, are quite famous and they are exported worldwide. Most milk, however, is collected by the Friesland Campina cooperative and processed near Rotterdam and outside of the MRDH (see figure 5). Fruit and vegetables are an entirely different story, since these are produced in vast quantities in the MRDH region itself (see figure 4). The greenhouse complexes in the Westland area form the world's most intensive production facility for tomatoes, bell peppers, cucumbers and other vegetables. The national government stimulates innovation in this area through the Greenport policy. Much of this produce is destined for export. South from the harbor of Rotterdam, the clay polders produce potatoes, onions, apples and other crops. Therefore, the network of vegetable and fruit wholesalers is much denser and locally rooted. Large auctions such as ABC Westland and the Greenery are located in industrial areas, but many wholesale points can be found in cities and villages (see figure 3). They therefore show much more spatial relations with the residential areas of the MRDH than the sub-networks of fish and meat.



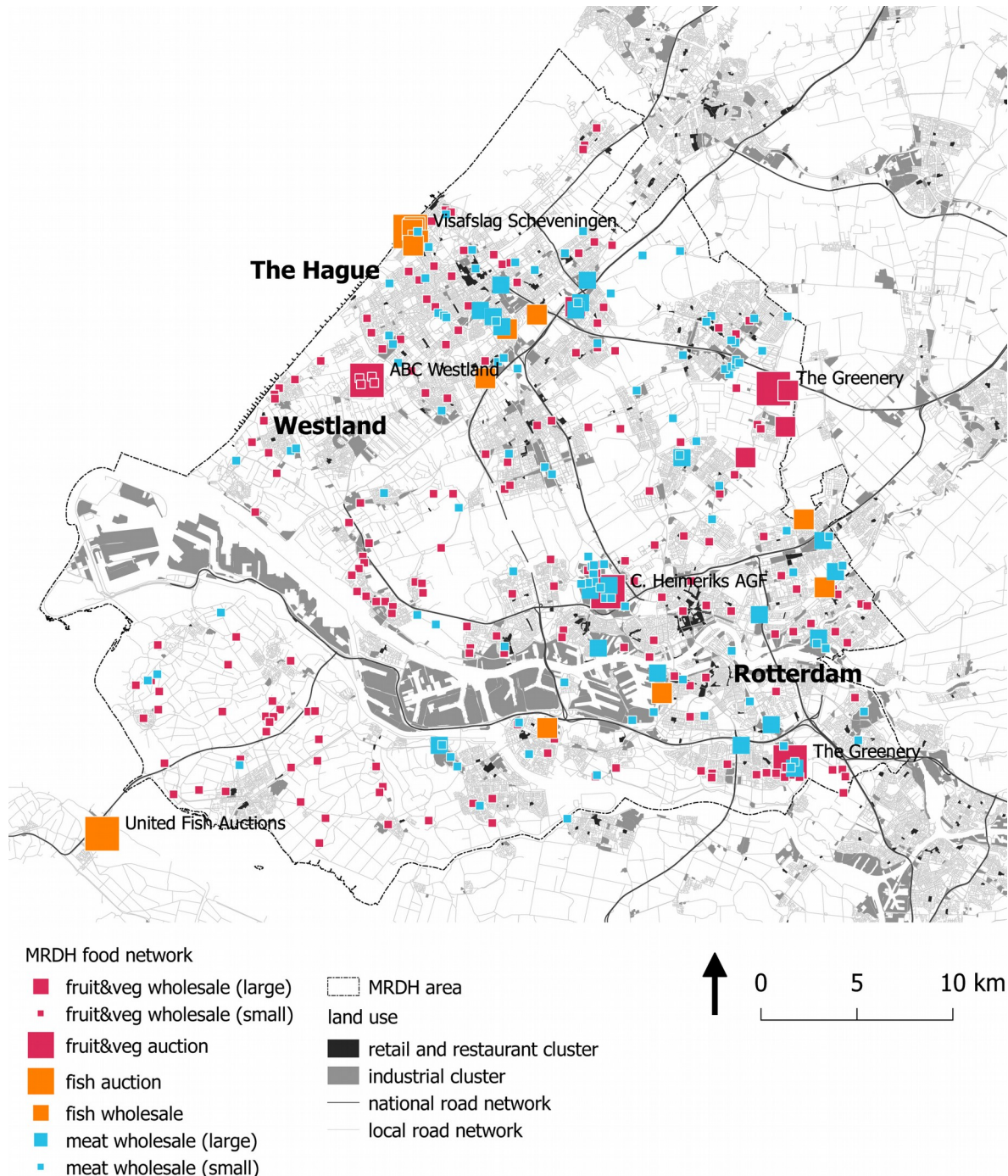


Figure 3. Map of the MRDH region food network, sectors: fish, meat, fruit & vegetables  
(Source: Top10Vector, google maps search per sector for 'groothandel', 2015; Image by VerseStad.nl)

As mentioned above, much of what people eat is purchased in supermarkets. And precisely this sector is centralizing and scaling up, driven by heavy competition. Most supermarket chains obtain their fresh products from just a few distribution centers in the whole country. Market leader Albert Heijn is planning to concentrate all fresh products in one distribution center near Utrecht (Volkskrant, 2015). This is a move in the opposite direction of what

municipalities mention in their food strategies: strengthening the link between local producers and consumers while reducing food kilometers. Closing loops in the urban-rural metabolism and the circular economy, a goal frequently expressed by designers and policy makers these days, does not play a role yet in the management of the largest food flows, dominated mainly by cost-efficiency.



Figure 4. Agriculture in the MRDH region. (Image detail taken from *Maak Ruimte*, a publication by the Deltametropolis Association, 2015)

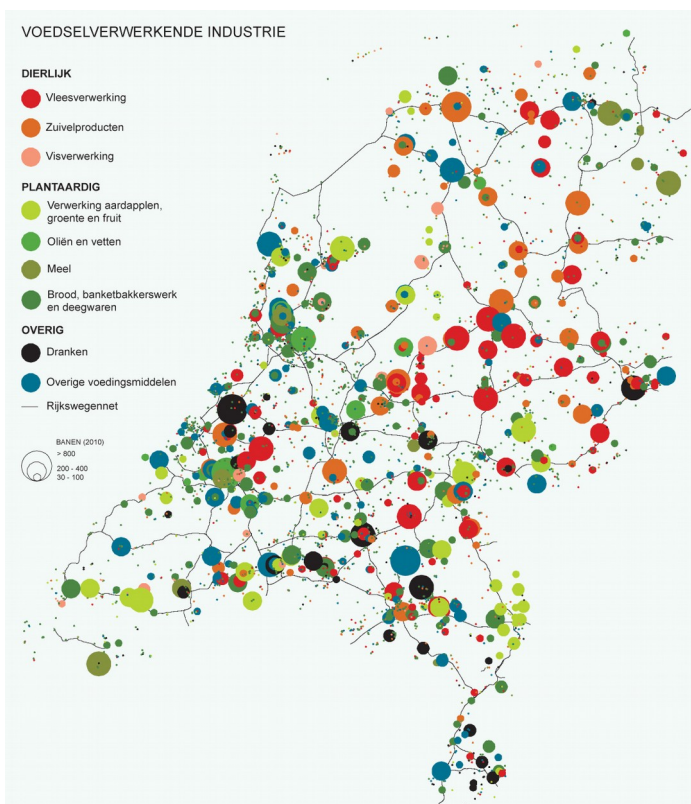


Figure 5. Food processing in The Netherlands. (Image detail taken from *Maak Ruimte*, a publication by the Deltametropolis Association, 2015)

It was already mentioned that the Westland area is a 'greenport' and the harbors of Rotterdam and Scheveningen play an important part in the food network. For such an urbanized region, the MRDH seems to play a remarkable role in the production and trade of food. Figure 6 shows that compared to the Netherlands and the province of South-Holland, the MRDH region has a larger number of food wholesale companies, which grows in a faster rate. The region also goes along with the national trend of increased number of fish retailers and shops for foreign foods, and at the same time decreasing numbers of shops for fruit and vegetables as well as butcher shops and bakeries (figure 7). Compared to the Dutch average, the MRDH region has more supermarkets, another contrast with the ambitions mentioned in the urban food strategies aiming for direct producer-consumer relations. In practice, the whole chain from thousands of producers to millions of consumers passes through a number of trade offices that can be counted on one hand, as shown by PBL in figure 8.

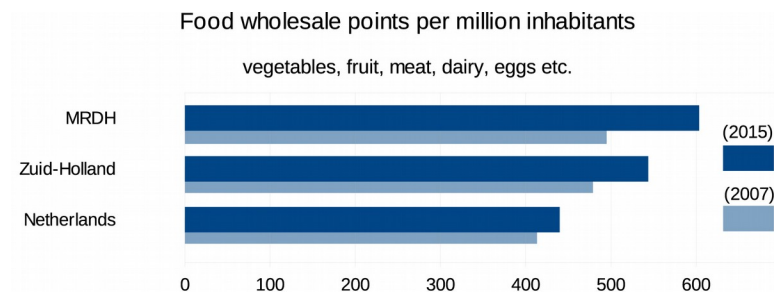


Figure 6. Food wholesale in the MRDH region, province South-Holland and The Netherlands (Source: CBS, 2015; Image by VerseStad.nl, 2015)

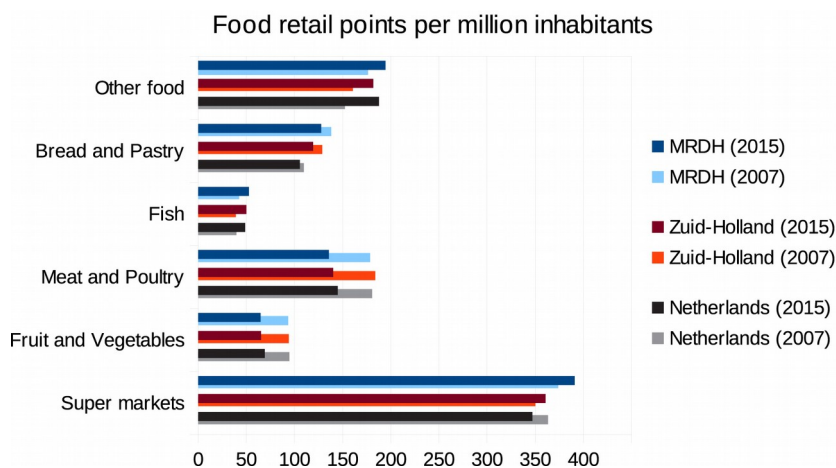


Figure 7. Food retail in the MRDH region, province South-Holland and The Netherlands (Source: CBS, 2015; Image by VerseStad.nl, 2015)

Of course these direct relations do exist, and in increasing numbers as they are promoted by local governments and entrepreneurs. An example is the online map of Dutch regional products (Nederlandse streekproducten, 2015). These relations are very important to create awareness about food and the landscape. Also do they strengthen the economic and political position of the rural parts of the metropolitan region, which generally have the ambition to 'stay green' and not be urbanized. It is clear however, that they cannot feed the entire population of the MRDH on a daily basis, nor is it accessible to all groups. The ambitions



described in the first chapter show a big contrast with the way the food network of the MRDH is currently organized in practice, mapped in this chapter. In the last chapter, recommendations are made for a metropolitan food policy in the MRDH, considering the above and current trends and developments, discussed in the next chapter.

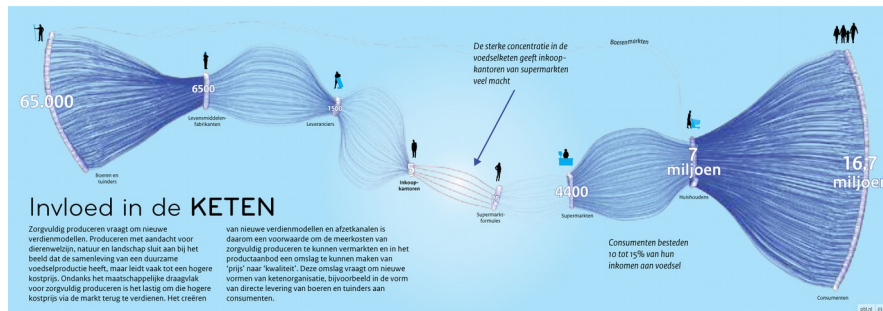


Figure 8. Food chains in The Netherlands. (Image by PBL, 2011)

#### 4. Trends and developments

At the moment food is a hot topic in the Netherlands and it has been for some years. Not only does a large young public turn to urban farming, but the newly built Markethall in Rotterdam as well is a sign of a changing food culture in the Netherlands, connected to global trends. Many organisations and reports about the food network call this moment in time a crucial one. There seems to be an urge to adapt and change the food system (STT, 2015). Feeding the growing world population will become harder and harder as soil and water become scarce and the climate is changing. How can we adapt our regional food system to deal with these challenges?

The food strategies of Rotterdam and the Hague show that municipalities are concerned with these developments. By stimulating urban farming and educational programs, they try to improve the quality of life in the city and stimulate the awareness of its citizens. Another aspect that has the attention of the municipalities is the role food plays in our health. Obesity and diabetes type 2 are two examples of growing health issues that occur especially in our cities. Food programs launched by the municipalities can contribute to a solution for these problems. At the same time trends in consumer behaviour are noticed. Interviews with Dutch actors in the food network (Innovatienetwerk, NVWA, Wageningen University etc.), conducted by *VerseStad.nl* in 2014, show 4 main developments:

##### *A growth of and growing interest in locally produced food*

In the larger cities like Amsterdam, Rotterdam and The Hague, consumers show a growing interest in locally produced food. Initiatives such as 'Uit je eigen stad', 'Rotterdamse oogst' and the 'Fenix Food Factory' in Rotterdam all sell locally produced products, besides national chains like Marqt. Experts are certain that this trends will continue, not only because people like to know where their food comes from and how it is produced (food transparency, food security, due to recent scandals in the meat industry), but also because of a growing awareness of climate change. Locally produced food might reduce food kilometers and might make a city or region become less dependent. Finally, the most important factor that adds to this trend is the demand for a food experience (Retailwatchers, 2014). Retailers in all sectors

underline the importance of adding an experience to distinguish oneself from other retailers. As webshops become more and more popular, the added value of real-life shops is expressed by adding a distinctive consumer experience. This applies to the food sector as well. An example is the Campina "Open farm days" (Campina, 2015). Apart from consumer aspects there is a growing number of people in the city that grow their own vegetables, both professionally on a large scale and in their backyard. Urban farming has assumed larger proportions and initiatives are being stimulated by municipalities.

#### *Multifunctionality*

Multifunctional farming is also seen as a huge opportunity for farmers (Ecorys, 2009). Ecorys estimated that turnover of locally produced food products, education and other rural services in The Netherlands amounted 232 million euros in 2007, excluding landscape maintenance (90 million). They estimate the growth potential of these activities to lie between 1,5 and 4,5 billion euros (Ecorys, 2009). Care farms, or combinations with recreation and nature education can help to raise the income of (urban)farmers. In turn, multifunctionality can also help to make food hubs more attractive for consumers. An example is the Fenix Food Factory in Rotterdam, where one can buy fresh products but also can consume them.

#### *Organic food*

Although the consumption of organic food has grown over the past years, 5,4% from 2012 to 2013, experts don't expect a huge growth of this segment (Rijksoverheid, 2013). The market share in 2013 was a mere 6,1%.

#### *Growing efficiency of food production*

Food production becomes increasingly efficient. In the Westland farmers no longer grow their vegetables in local soil. Development in food production techniques make it more efficient to grow them in specially designed boxes in which they can adjust the amount of water, nutrients and sun. More far-fetching developments like 3d printing of food, vertical and aqua agriculture, sensor technology and even weather modification technologies can play an important role in the food production of the future (STT, 2015).

As agriculture is a complex industry, it is hard to predict which trends and developments will persevere and determine the future. The Netherlands have a prominent role in the development of new techniques in food production. It is likely that new developments will be implemented especially in an already very technology-based, intensive agricultural areas such as the Westland in the MRDH region.

## **5. Recommendations for a metropolitan food policy**

When one compares the ambitions of the first Food Strategies made in Rotterdam and The Hague with the reality of the current food network in the MRDH region, the obvious conclusion is that they describe two parallel worlds, one serving a local niche market and more concerned with awareness, recreation and education, and the other actually feeding the metropolis. This doesn't mean however that it is useless to propose a new food system that can feed the entire region in a more sustainable way, making use of the potential of local producers and traders. This could be the starting point for a new generation of food strategies on the regional scale. Three recommendations are listed below.

### **A. Establish a food region**

A region composed of over 10 municipalities and millions of inhabitants is better able to negotiate with the global food sector, about locations and implementation of food hubs. This is also the best workable scale to close most loops in the circular economy: the metropolitan urban-rural metabolism. Food regions may also be a relevant scale to organize reuse of organic waste flows and (partial) food independence projects.

### **B. If you can't beat them, join them**

Instead of competing with the supermarket and the fast-food chain, use them as a distribution channel and work with them to establish a change from within. This is probably the only way to reach the large public, beyond the 'wealthy & healthy', and to get a grip on the total food network. For bigger impact, food strategies need to leave the comfort zone of the niche market.

### **C. Resilient food system – stimulate the middle scale**

Besides health, awareness and local production, the resilience or robustness of the food network as described by the WRR should be addressed in a metropolitan food strategy. Like in the financial sector, it might not be a good idea to rely only on large food conglomerates that are too big to fail, or too small to feed us. Questioning extreme centralizations and increasing local produce could be part of such a strategy. Especially in a world where the access to affordable fresh food will become less obvious.

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