

Exploring the growth potential of (peri-) urban short food chain initiatives: a case study of Ghent

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Abstract

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Many cities face the challenge to reduce their ecological footprint, but at the same time improve the quality of life for their citizens. Likewise, the global food system is facing major sustainability challenges. This paper starts from the observation that (peri-) urban agriculture has many potential functional ties with the city (e.g. reconnecting farmers and citizens, productive use of space and urban waste) that could contribute to its sustainable development. In the city region of Ghent, in Belgium, several short food chain initiatives have emerged that show significant potential to increase the sustainability of urban food provisioning by exploring possibilities for multifunctional land use and closing the gap between producer and consumer. However, these initiatives are still very scattered and most of them fail to reach the scale that would be necessary to really challenge the dominant urban food regime and significantly increase its sustainability. Based on in-depth interviews and transition theory, this paper uses a Multi-Level Perspective analysis to identify opportunities and bottlenecks for (peri-)urban short food chain initiatives in Ghent to develop and significantly challenge the dominant urban food regime. The results reveal important opportunities for growth in the stimulating political and social climate in Ghent, but also show that further development of the short food chain initiatives is considerably hindered by traditional views on (peri-)urban land use patterns and difficulties to reach cost-efficiency with small-scale production. Solving these issues not only requires action at the level of the city government, but also a change in regulations at higher institutional levels and change within the consumers themselves.

Keywords: Sustainability transitions, urban short food chains.

1. Introduction

Over the last two centuries the relationship of cities and their hinterlands has drastically changed. The low transport costs have made the distance of many cities to their required resources almost irrelevant, yet they still use a significant amount of land to acquire these resources. Basically cities are “plugged into increasingly global hinterlands” (Deelstra and Girardet, 2000). Everyday products from all over the world are imported into the city, with the origin and (final) destination of consumed

products being often unknown to the end consumer. As a result, the dependency of citizens on nature, more specifically on natural resources, is increasingly invisible to them. Low *et al.* (2005) described this as citizens that live in a ‘virtual world’. Yet due to this invisible linear metabolic system the world is running out of valuable resources. The ever-growing cities therefore face the challenge to increase their (environmental) sustainability. This has led to a growing political and academic interest in models that could enhance the transition to resource-efficient

development pathways (Berkhout *et al.*, 2010). These new pathways should “*meet the needs of the present without compromising the ability of future generations to meet their own needs*” (Brundtland, 1987). Apart from the environmental dimension, sustainable development also includes a social and economic dimension. Increasing sustainability requires an optimal synergy between these three dimensions. In Newmans’ (2006) words, improving the sustainability of the city means: “.....*Reducing the Ecological Footprint (energy, water, land materials, waste) while simultaneously improving quality of life (health, housing, employment, community . . .) within the capacity constraints of the city (p. 286).*”

Apart from the challenge to increase the sustainability of cities, the global food system is also vulnerable and faces major sustainability challenges. Although the estimations vary, there is an emerging consensus that we will have reached 9 billion people by 2050 (Godfray *et al.*, 2010). It is therefore estimated that the future food demands will increase with at least 50% (UN, 2009). Yet the global food supply is very vulnerable to natural hazards and shocks and the erosion of ecosystem services that enable food production (Ericksen, 2008). In other words, the demanded increase in food production must happen in the face of water-, land and energy scarcity and there is a need to reduce the negative effects of food production on the environment (The Royal Society, 2009; Godfray *et al.*, 2010). Moreover, a major challenge in the current food system is the waste and food losses produced throughout the food chain (Gustavsson *et al.*, 2011).

Another problem that the agricultural sector faces is the large percentage of agricultural producers who have difficulties to survive economically because of the rising power of the retail sector and processing industry in the globalized agri-food chain (Kirwan, 2004, Roep and Wiskerke, 2012). In many places this results in reduced agency of farmers, who therefore experience an economic squeeze where costs of inputs are increasing while their profit margins are decreasing (Heller and Keoleian, 2003, Van der Ploeg, 2008).

From a societal point of view, during the last decade several food crises such as the dioxin crisis in Belgium in 1999 and bovine spongiform encephalopathy (BSE) in Europe have affected the consumers’ trust in modern food production. Consumers’ trust is also challenged by the fact that food traded on the world market is often distributed through long non-transparent food chains. In other words, the connection between consumption and production is very limited in many places (Heller and Keoleian, 2003).

In this context, the need for sustainable food provisioning of cities has come into focus. For

decades food has hardly been part of the urban public domain. Agriculture and food production mostly belonged to the rural areas¹ (Morgan, 2009). However, Steel (2009) argued it is the city where the demand for food, the challenges for distribution and diminishing waste streams are the greatest. Short food chain initiatives provide many mutually beneficial ties (e.g. reconnecting farmers and citizens, productive use of space and urban waste) that could contribute both to the sustainability of the food system and to the city (Viljoen and Wiskerke, 2012). In other words, when short food chain initiatives are connected to other flows (e.g. waste, employment) they can be a form of sustainable food provisioning for cities. In this sense, short food chain activities in cities are a proactive response to the challenges posed earlier and can be viewed as radical bottom up innovations that involve new practices and offer interesting solutions to create a transition in the dominant agri-food system and increase its sustainability.

Also in the city region of Ghent, in Belgium, several of these short food chain initiatives have emerged, showing interesting solutions that could potentially increase the sustainability of urban food provisioning. Next to the general problems with food chains that were just mentioned, Belgian agriculture is facing the additional problem of a lack of available land, especially in and near cities, due to the high population density² and claims on land in the country. As a result, the sector has increasingly intensified, leading to pressing environmental problems (especially with nitrate and pesticides) (Flemish Environmental Agency, 2013). Based on in-depth interviews, this paper uses a Multi-Level Perspective analysis based on transition theory to explore how innovative urban short food chain initiatives in the Ghent city region can actively support the efforts of the agri-food chain and the city to increase their sustainability, and which are the opportunities and bottlenecks respectively supporting and hindering this. The theoretical framework we use, based on sustainability transitions theory, is further explained in the next section. The methodology, including a description of the case of Ghent and the interviews tool, is described in section three, while section four presents the empirical findings. Finally, conclusions are drawn for the sustainable development of cities and their food provisioning, transcending the Ghent case, and suggestions are made for further theoretical improvements.

¹ Although activities such as allotment gardens always have existed

² 355 inhabitants/km² (462 in Flanders and 208 in Wallonia)

2. Challenging the dominant urban food regime: a theoretical perspective

From a theoretical perspective, short food chain activities in cities can be viewed as niches developing innovative alternative solutions to the sustainability problems in the urban food regime and as such contribute to a higher welfare of the city population. In this section, we apply transition theory, positing a multi-level perspective, to increase our understanding of the dialectical relationships between micro-level niches and dominant macro-level regimes.

In the face of sustainability challenges there is an increased interest in the factors that foster sustainable development in cities and the urban food system (Shove and Walker, 2010). Transition studies help to identify these factors as they offer useful insights in the failure or success of 'green' innovations by actors outside of the dominant regime that improve well-being without compromising environmental quality (Smith *et al.*, 2010). An important conceptual framework for transition analysis is the Multi Level Perspective (MLP) framework of Geels and Schot (2007). Within the framework, transitions are defined as '*outcomes of alignments between developments at multiple levels*' and recognized through a change from one sociotechnical regime to another (Geels and Schot, 2007). The theory has identified three analytical levels that influence a transition process: the regime, the niche and the landscape pressures.

A socio-technical regime sits at the heart of the MLP framework. A regime is conceptualized as a network of actors and institutions that have '*established practices and associated rules that stabilize existing systems*' (Geels 2011). Regimes are mostly stable in their internal dynamics, power relations and rules, and are typically characterised by path dependency (Lawhon and Murphy, 2011). In the food sector, the dominant socio-technical regime combines global trade in increasingly standardized food products with anonymous producer-consumer relationships, an economic squeeze on farmers and growing sustainability problems. Next to farmers and consumers, important actors within this regime are the increasingly merged and powerful input providers and retailers, and –as food production is a highly subsidised- policy makers.

Historical studies have demonstrated that under certain conditions the accumulation of experimental projects or innovations in 'niches' can trigger a regime change or transition (Geels and Schot, 2007). Niches are situated at the micro level of societies (Geels and Schot, 2007). They exist of 'relatively small networks of dedicated actors outside the regime'. The rules are unstable and 'in the making'. It is at this level where more

radical novelties emerge. Compared with the regime, niche actors are more forgiving and are teething troubles in order to support their expectations of future performance (Smith *et al.*, 2010). By doing so, they develop novelties that cannot (yet) compete with the dominant socio-technical regime (Smith *et al.*, 2010; Geels, 2011, Murphy and Smith, 2013). In the food sector these niches can be detected in the form of small-scale local –and often organic- initiatives like community supported agriculture, vegetable box schemes, growing food on brownfields in cities, slow food etc. All these initiatives offer alternative practices for the dominant food regime, reducing the distance between consumer and producer, increasing ecological performance, providing a fair income for the farmer and healthy, high quality products for the consumer.

Finally, both niche and regime are situated in the same 'landscape' context (Brunori *et al.*, 2011). The landscape is shaped by deep cultural patterns and macro- economic and political developments. Examples of socio-technical landscapes are demographical trends, political ideologies and social values. The exogenous environment characterizes the landscape, which is beyond the influence of the socio- technical regime and niche innovations, but may have a big influence on both. Increasing environmental problems and changing societal values, triggering stricter environmental and social regulations, exert an increasing pressure on the dominant food regime to increase its sustainability. This type of landscape pressure is characterised by Geels and Schot (2007) as a 'disruptive change' which starts off slowly, but gradually becomes more pressing. Disruptive landscape changes are linked to a sequence of different transition paths. Firstly, the regime follows a 'transformation path' in which it responds to the landscape change using its internal resources, possibly integrating some innovations from niches, but not changing the essential 'regime architecture'. If the regime architecture does change, but the regime still consists of the same actors who were able to successfully adapt, then the theory speaks of a 'reconfiguration path'. However, as the landscape pressure continues to increase, opportunities are created for more radical niche-innovations that exert an even growing pressure on the regime ('de-alignment') and eventually may become so successful that they become able to replace it ('re-alignment') (Geels and Schot, 2007). An application of the theoretical framework to the food system is schematically presented in Figure 1.

In this paper we specifically focus on innovative short food chain activities in and around the city of Ghent and investigate the potential of these niches, given existing landscape pressures, to challenge the dominant urban food regime and

transform its 'architecture' towards higher levels of sustainability. The next section gives more insight on the specific situation in Ghent and the methodology that was followed.

3. Methodology

This research was done in the city region of Ghent. Ghent is the second largest municipality in Belgium, has about 248 thousand inhabitants and a high population density with 1589 inhabitants per km². It is located in the province of East-Flanders, in the North of the country, at the confluence of the rivers Scheldt and Lys. The Ghent city region comprises not only the city of Ghent but also the fourteen surrounding towns³. Together with the city of Antwerp, Ghent, whose economic structure is strongly determined by its port, provides almost one sixth of all jobs in the Region of Flanders (Stad Gent, 2013). Looking at food retailing, about 95% of the food in Belgium is sold through supermarkets, with large chain supermarkets representing the highest share of consumption (51.9%) (Nielsen, 2013). Gradually, however, regional farm products find their way to the supermarket. The large chain supermarket Delhaize is currently experimenting with this in several Flemish regions. Next to sales in grocery stores, there is an increasing number of short chain initiatives for food, such as vegetable and fruit boxes, self-harvesting gardens, sales (and automatic selling machines) on farms, internet shops and farmer markets. Official statistics, however, are only available for sales on farms and on farmers markets, representing a market share of 0.55% for Belgium (0.7% for Flanders).

The pre-dominant forms of food retailing at the Ghent city-region level are not so different than those at the level of Belgium as a whole. Nonetheless, within Ghent itself and in the surrounding municipalities several projects have been initiated that promote sustainable short food supply chains, and there seems to be a growing interest of people in discovering these and getting involved themselves. In the framework of the SUPURBFOOD project, we interviewed 11 of these initiatives, which are described more in detail in Table 1. A common characteristic of all these initiatives is that they support small-scale, sustainable (mostly organic) production, and try to bring food production closer to the urban consumer, thereby increasing the transparency in the food chain. The majority of these initiatives are also involved in a multifunctional use of land: urban and peri-urban land that very often has no agricultural destination in terms of spatial planning is used to produce food, but at the same

time it creates green zones in and around the city that people actually use (unlike some of the city's parks), it creates awareness about sustainable food production among citizens and tries to increase the welfare of the city's underprivileged and most vulnerable inhabitants.

In order to properly identify the opportunities and bottlenecks for (peri-)urban short food chain initiatives in Ghent to grow and significantly challenge the dominant urban food regime, the in-depth interviews (Patton, 2001) with the initiatives described in Table 1 were supplemented by 10 additional interviews with government actors and the innovation support department of the Flemish farmers organisation Boerenbond. In the group of government actors we interviewed four civil servants from the city's departments of economy, green management, environment and urban planning, two city councillors and two civil servants from the Department of Agriculture and Rural Areas of the Province of East-Flanders. All 21 interviewees were identified based on the researchers' knowledge of the area and a search on the Internet, after which a snowball sampling method was applied. In the interviews we asked the respondents to describe their organisation/project and its objectives, to describe the network in which they are operating, bottlenecks to achieve their objectives and opportunities to develop (of bureaucratic, market, operational, political or another nature). The data gathering process ran from January 2012 until March 2013. Transcripts were coded in Nvivo10 and analysed using content analysis.

4. Results

Based on the insights from the in-depth interviews, this section uses transition theory to identify opportunities and bottlenecks for (peri-)urban short food chain initiatives in Ghent to develop and challenge the dominant urban food regime to move towards higher levels of sustainability. Using the multi-level perspective analysis, we first describe opportunities for the initiatives resulting from the existing landscape pressures working in the Ghent city region. Then we focus on two characteristics of the urban short food chain initiatives described in the previous section that distinguish them from the dominant urban food regime, namely 1) multifunctional use of urban and peri-urban land, and 2) small scale, sustainable production, decreasing the distance between producer and consumer. For both characteristics we will identify the current bottlenecks limiting their development and thereby the potential of the initiatives to challenge the regime towards a significant sustainability transition.

³ Afsnee, Desteldonk, Drongen, Gentbrugge, Ledeborg, Mariakerke, Mendonk, Oostakker, Sint-Amandsberg, Sint-Denijs-Westrem, Sint-Kruis-Winkel, Wondelgem and Zwijnaarde

4.1. Opportunities at landscape level

As was mentioned in section three of the paper, there is a growing interest of citizens in the Ghent city region in discovering short food chain initiatives and in being involved in these themselves. Apart from the general drivers pushing people in the direction of more sustainable food consumption, such as food safety issues and environmental problems (Spaargaren *et al.*, 2012), citizens in Ghent were also confronted with specific initiatives in this regard that received significant media attention. First of all, there was the Low Impact Man, a Ghent citizen who took the challenge to reduce his ecological footprint to 1.6 ha and whose experiences were broadcasted every week on national television in 2008. Secondly, the Ethical Vegetarian Initiative (EVA), a non-profit organisation supporting the vegetarian lifestyle, managed to launch the campaign 'Thursday Veggieday' together with the city administration, making Ghent the first city in the world with a vegetarian day. All these aspects together have led to a change in social values which is reflected in the political climate in the city of Ghent. The last elections in October 2012 resulted in a convincing victory for the cartel of the social democrat party with the green (ecological) party and a new coalition was formed between social democrats, liberals and 'greens'. The governance agreement of this coalition suggests a major political shift towards the sustainable development of the city and its food provision.

While in the policy implementation plans of the period 2007-2012 the topic of sustainable food provisioning was hardly addressed, the new governance agreement for 2013-2018 shows a considerable commitment in this field, specifying the following objectives (SPA *et al.*, 2012): 1) supporting multifunctional agriculture "...to anticipate on societal demands (food print, climate change) and demands of citizens (e.g. recreation)..." (p. 59); 2) supporting the short food supply chain (p. 59); 3) investigating "...economic opportunities and innovation of sustainable agriculture in urban regions..." (p. 59); 4) developing "...a supporting policy for urban and peri-urban organic agriculture that strives for direct supply to the city region. The support will also be used to promote and strengthen the culinary assets of Ghent. The support is suitable for smaller initiatives as well (allotment gardens and food teams)." (p. 59); 5) initiating "...a food council along the lines of Toronto. This council will bring local initiatives together and advises the city about topics related to healthy and affordable food." (p. 20); 6) stimulating "...local food production and consumption such as allotment gardens, urban agriculture, food teams and organic farmers

markets" (p. 20); and 7) attracting organic farmers in the peri-urban area (p. 20). These political objectives reflect a clear disruptive change in the landscape, providing opportunities for (peri-)urban short food chain initiatives to develop and challenge the dominant urban food regime.

4.2. Bottlenecks for the multifunctional use of (peri-) urban land

The following bottlenecks can be identified for short food chain initiatives challenging the dominant urban food regime by striving for a multifunctional use of (peri-) urban land: 1) lack of available land in the city and its surroundings; 2) lack of compatibility with current spatial planning policies; and 3) hesitation of the city to break with the traditional view on land use. Each of these bottlenecks will now be discussed in detail.

Lack of available land

One of the main bottlenecks for the development of (peri-) urban short food chain initiatives in Ghent is related to a lack of available agricultural land. Next to the high population density of the region, one of the main reasons for this is the European single farm payment⁴. Farmers owning land with single farm payment entitlements are provided with an income and are therefore less willing to sell or lease the land. As a result, access to suitable land is perceived to be difficult, specifically in the region of Ghent. One producer looked for two years and finally settled 30 km from Ghent. For another producer it took more than one year to find a suitable spot of one hectare just outside the centre of Ghent to start a CSA. This last producer felt significant resistance from farmers to sell or lease their land, even from one farmer at the age of 90. A second reason for the lack of available agricultural land is enormous claims on land for recreational space, housing, forests and so on, leading to a continuous pressure to transfer agricultural land into other spatial destinations.

While this lack of available land leads to soaring purchase prices, it also creates high prices for leasing land, which are under additional pressure from the federal agricultural land-lease law (the 'pachtwet'). As a result of this law, owners of agricultural land are not inclined to lease it on the long-term as it is very difficult to withdraw from these contracts and lease prices are set at relatively low levels. They therefore prefer to use seasonal lease (Agentschap voor Landbouw en Visserij,

⁴ This payment scheme 'allocates aid to farmers irrespective of their production, provided that they maintain their land in good agricultural condition and comply with the standards contained in the regulation' (Summary EU Regulation (EC) No 1782/2003 and amending regulations).

2007) or other short-term rental contracts which are very expensive, and therefore not feasible for agricultural production in the long run. Finally, land prices are driven up by the problem of land speculation.

Lack of compatibility with current spatial planning policies

Another bottleneck is that spatial planning policies for the region of Ghent do not allow agricultural activities in several spatial destinations, thereby limiting the potential for food production in and around the city. According to the federal zoning and spatial implementation plans, food production is not allowed in industrial areas, recreational zones, neither in areas for commerce or in forestry or nature areas. Nonetheless, some forms of agriculture could fit very well at these destinations. Ghent had many abandoned industrial sites where, for example, the production of mushrooms or aquaculture could be located. In order to run a food production business, a legal spatial destination is a basic requirement to obtain other obligatory permits, such as environmental permits. Some spatial destinations like park zones and living zones do offer possibilities for (multifunctional) food production activities, but only if these activities are not in conflict with additional directives applicable for that specific zone, which -as the interviews have shown- can easily happen. The current spatial planning policy therefore limits possibilities of agricultural production in the city.

Hesitation to break with the traditional view on land use

Although there is a lot of goodwill towards (peri-)urban short food chain initiatives in the Ghent city region, the government actors we interviewed also made a couple of objections related to the multifunctional use of (peri-) urban land. Firstly, most government actors argued that the user rights of public space by citizens are not clearly defined. They therefore feared for a reduced level of engagement in projects situated in the public space over time, until a point where the projects simply run out. Without clear user rights and responsibilities, these public spaces could become abandoned in time and the city would have to 'clean up the mess'. Secondly, some government actors indicated that food production in the public space always involves a certain level of privatization, meaning that public space becomes less accessible for people not involved in the food production. If this is the case, these activities should only take place in areas where there is already enough greenery as they cannot fully replace the greenery. However the line of demarcation is difficult to define. Ghent has for example an eatable park, the Banier park', with fruit trees, raspberries and herbs. People from the

neighbourhood mainly maintain the park. This location is claimed not being privatized but produces food. Apart from that, one government actor noted many urban soils are contaminated. This limits the potential to develop 'eatable parks'. A third concern, finally, relates to the temporary use of brownfields by initiatives like De Site and 'Groe(n)ten uit Gent' (see Table 1). At the start, these initiatives experienced cold feet from the city council but also from the landowners (urban developers) who were afraid the projects would permanently 'occupy' the land and not leave by the time the land would go into development. All these issues reveal a certain path dependency of those in power who clearly hesitate to break with traditional views on land use.

4.3. Bottlenecks for small scale production in short food supply chains

Another way in which (peri-) urban short food chain initiatives may challenge the dominant urban food regime is by their commitment to small-scale production that bridges the gap between producer and consumer. To develop this specific characteristic, the following bottlenecks could be identified: 1) institutions not adapted to the characteristics and needs of small-scale (peri-) urban food initiatives; 2) difficulty to achieve consumer commitment; 3) lack of support mechanisms.

Institutions not adapted to characteristics and needs of small-scale (peri-) urban food initiatives

A first problem is that many regulations regarding agriculture and food safety and the related administrative procedures are designed for large-scale producers, causing difficulties for smaller farmers. This is for example the case for the administration that needs to be done to receive the EU single farm payment, in which it is not possible to indicate more than two crops to be produced on one hectare. Another example are the regulations and administrative procedures regarding food safety. According to some interviewees the high administrative burden caused by the need comply with the 'auto control' of the Federal Agency for Food Safety is one of the reasons why there are currently no farmers from the region of Ghent selling at the five farmers markets in the city. Also the food safety standards that are linked to processed and frozen foods, such as those resulting from the European regulation 89/108/EEG for deep frozen products, are very strict. Selling frozen foods to consumers is only allowed when using regulated techniques that require special machinery. In other words, for small-scale producers, processing and selling processed (frozen) products to consumers involves disproportionately high investment costs due to the strict regulations (EU and federal). As a result fresh products that are left over are easily wasted,

while they could be processed into valuable products.

Difficulty to achieve consumer commitment

Several respondents indicated that the growth of urban short food chain initiatives was limited by the mind-set and lack of knowledge about the food system of many consumers. Low food prices in supermarkets, together with a limited knowledge of consumers about agricultural production processes made it difficult for producers to demand a fair profit margin for their locally supplied products. Additionally, in the short food chain the demand and supply is a difficult balancing act of consumers' and producers' commitment. In most short food chain systems producers depend to a large extent on the commitment of a fixed group of consumers (e.g. vegetable box scheme). Especially during summer-holidays (the time when producers have a lot of vegetables available) this proves to be difficult as consumers tend to order fewer products. But also from a consumer perspective the short food supply chain creates a certain level of dependency towards producers. Typical for the short food supply chain is the limited availability (seasonality) and limited volume of products. This requires a flexible attitude of the purchasers. Especially for some businesses, such as restaurants with fixed menus or (public) catering this is perceived as a bottleneck to overcome. A final problem to be mentioned in this regard is that most (peri-)urban short food chain initiatives and their ideas attract and inspire middle-class people with Belgian roots. Although all initiatives put effort into involving local citizens from different ethnic and social backgrounds, only one project (De Site) truly succeeded in that.

Lack of support mechanisms

Financial support from the government represents both an opportunity and an obstacle for the development of urban short food chain initiatives. In Ghent, and also at regional level, several sources of funding were available. In spite of this, respondents indicated that this was mostly ad hoc funding rather than structural support that was limiting the potential growth of different projects. Furthermore, funding mostly came from social departments and innovation schemes, and not from regional or local agricultural departments. Apart from the lack of structural financial support, the governance structure both at city as well as regional level was a problem. Responsibilities and knowledge related to (urban) food production were scattered across several departments (those of green management, urban planning and environment). As a result it was difficult for new initiatives to gather information about the (legal) requirements to start up an initiative that involved food production in the city. Sharing of knowledge

and experiences between the several initiatives was quite scarce, limiting the growth of urban food initiatives. Finally, there was also no exchange of technical knowledge with regime actors such as professional farmers active in the peri-urban area of the Ghent.

5. Discussion/conclusion

In this paper we have investigated the potential of (peri-) urban short food chain initiatives in the Ghent city region to contribute to increasing the sustainability of urban food provisioning. We have identified two characteristics of these initiatives that can challenge the dominant urban food regime towards a sustainability transition, namely 1) their multifunctional use of urban and peri-urban land, and 2) their small scale, sustainable production, decreasing the distance between producer and consumer. Based on in-depth interviews and transition theory, we used a Multi-Level Perspective analysis to identify opportunities and bottlenecks for the development of these short food chain initiatives and their specific characteristics challenging the dominant urban food regime.

At landscape level we identified a clear opportunity in changing societal values regarding sustainable food consumption, reflected in the people's political choices. The new 'greener' political coalition running the city of Ghent officially supports (peri-) urban short food chain initiatives, enabling the initiatives to push the boundaries of social and formal routines, for example in the field of spatial planning, as such creating more possibilities for short chains and multifunctional land use in the city. An example of the latter is the use of temporary brownfields or public land, like parks or other recreation areas, for food production. This, in theoretical terms called 'disruptive' landscape change, as it is rather a continuous process of successive change, not only provides opportunities for niches to develop, it also exerts immediate pressure on the dominant urban food regime. Supermarket chain Delhaize, for example, is now experimenting with offering produce of local farmers in their Ghent branches.

However, despite these opportunities created by landscape pressure, the (peri-) urban short food chain initiatives are still very scattered and most of them fail to reach the scale that would be necessary to induce a real change in the architecture of the dominant urban food regime. Some problems related to the development of a multifunctional use of (peri-) urban land are not easily solved in the short term and at the level of the city region, like land speculation and the pressure of regulations such as the federal agricultural land lease law and the rules regarding the European single farm payment. However, the city government does have the possibility to break

with traditional views on land use by adapting spatial plans so that more zones become available for food production. Another possibility is to develop alternative financing of land through, for example, cooperative land ownership or to involve large landowning organizations, such as churches or social welfare organizations in (peri-)urban short food chain initiatives.

Also for the other characteristic of the initiatives, namely the small scale production in short food supply chains, bottlenecks could be observed which require action beyond the level of the city region: food regulations and policies that have not yet taken into account the specific nature of (peri-)urban short food chain initiatives and a lack of consumer commitment. However, these problems can partly be overcome by stimulating cooperation and cross-pollination among the numerous (peri-)urban short food chain initiatives. In several cities around the world this cooperation framework has taken the form of a Food council. This is an open network of organizations that are dedicated to improve the sustainable food provisioning of their citizens (Fridman and Lenters, 2013). But in order to change routines at regional federal level and European level such cooperation should, extend the local scale and result in a broader multi-level supporting governance framework. A good example of this is the national urban agricultural network in The Netherlands (Stedennetwerk stadslandbouw, 2014).

This paper shows that although (peri-)urban short food chain initiatives in the Ghent city region have the potential to challenge the dominant urban food regime -and therefore cities- towards higher levels of sustainability, there are still some bottlenecks and problems to overcome. Future research is necessary to explore solutions for development of the initiatives beyond the local level.

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References

Agentschap voor Landbouw en Visserij 2007. Project EPR, seizoenspacht en cultuurcontracten

(Project EPR, seasonal land lease and cultivation contracts) [on line]. Available at: http://www2.vlaanderen.be/landbouw/downloads/epr/infotekst_cultuurcontracten.pdf (17 May 2013)

Berkhout, F., Verbon, G., Wieczorek, A.J., Raven, R., Lebel, L. and Bai, X. 2010. Sustainability experiments in Asia: innovations shaping alternative development pathways? *Environmental Science & Policy* 13: 261-271.

Brundtland, G. 1987. Our common future. Report of the world commission on environment and development.

Brunori, G., Rossi, A. and Malandrini, V. 2011. Co-producing Transition: Innovation Processes in Farms Adhering to Solidarity-based Purchase Groups (GAS) in Tuscany, Italy. *International Journal of Sociology of Agriculture & Food* 18 (1): 28-53.

Deelstra, T., Girardet, H. 2000. *Urban agriculture and sustainable cities*. In: Bakker, N., Dubelling, M., Gundel, S., Sabel-Koschella, V. and Zeeuw, A. (eds.), *Growing Cities, Growing Food: Urban Agriculture on the Policy Agenda*. Feldafing, Germany, RUAf.

Ericksen, P.J. 2008. What Is the Vulnerability of a Food System to Global Environmental Change? *Ecology and Society*, 13 (2). 14.

Fridman, J., Lenters, L. 2013. Kitchen as food hub: adaptive food systems governance in the City of Toronto. *Local Environment: The International Journal of Justice and Sustainability* 18 (5): 543-556.

Geels, F.W. 2011. The multi-level perspective on sustainability transitions: Responses to seven criticisms. *Environmental Innovation and Societal Transitions* 1: 24-40.

Geels, F.W., Schot, J. 2007 Typology of sociotechnical transition pathways. *Research policy* 36: 399-417.

Godfray, H.C.J., Beddington, J.R., Crute, I.R., Haddad, L., Lawrence, D., Muir, J.F., Robinson, S., Thomas, S.M., Toulmin, C. 2010. Food security: The Challenge of Feeding 9 Billion People. *Science* 327: 812-818.

Gustavsson, J., Cederberg, C., Sonesson, U., van Otterdijk, R., Meybeck, A. 2011, Global food losses and food waste: extent, causes and prevention. Save food, Dusseldorf, Germany.

Heller, M.C., Keoleian, G.A. 2003. Assessing the sustainability of the US food system: a life cycle perspective. *Agricultural Systems* 76: 1007-1041.

Kirwan, J. 2004. Alternative strategies in the UK Agro-Food System: Interrogating the Alterity of

- Farmers' Markets. *Sociologia Ruralis* 44 (4): 395-415.
- Low, N., Gleeson, B., Green, R., Radovic, D. 2005 *The green city sustainable homes sustainable suburbs Australia*, UNSW Press Book.
- Murphy, J., Smith, A. 2013 *Understanding transition-periphery dynamics: renewable energy in the Highlands and Islands of Scotland*. *Environment and Planning*, 45: 691-709.
- Newman, P. 2006. The environmental impact of cities. *Environment and Urbanization* 18: 275-295.
- Nielsen, 2013 *Grocery universe 2012. Results of the 50th inventory of the world of retail grocery in Belgium, drawn up every year by Nielsen*.
- Patton, M.Q. 2001. *Qualitative Research and Evaluation Methods*. Thousands Oaks, CA, Sage Publications.
- Roep, D., Wiskerke, J.S.C. 2012. On Governance, Embedding and Marketing: Reflections on the Construction of Alternative Sustainable Food Networks. *Agricultural Environmental Ethics* 25: 205-221.
- Shove, E., Walker, G. 2010. Governing transitions in the sustainability of everyday life. *Research policy* 39: 471-476.
- Smith, A., Voss, J.-P., Grin, J. 2010. Innovation studies and sustainability transitions: The allure of the multi-level perspective and its challenges. *Research policy* 39: 435-448.
- SPA, Groen, OpenVLD 2012. *Bestuursakkoord 2013-2018 (Governance agreement 2013-2018) [online]*. Available at: http://www.gent.be/docs/Diensten%20van%20de%20Stadssecretaris/Stadssecretariaat/Bestuursakkoord_2013_2018.pdf (18 April 2014)
- Spaargaren, G., Oosterveer, P., Loeber, A. 2012. *Food practices in transition: changing food consumption, retail and production in the age of reflexive modernity*. New York, Routledge.
- Stad Gent 2013. *Gent in cijfers - 2013 (Ghent in numbers -2013) [on line]*. Available at: <http://www.gent.be/gentincijfers/> (18 April 2014)
- Stedennetwerk stadslandbouw 2014. *Stedennetwerk stadslandbouw - feeding our cities future (City network urban agriculture – feeding our cities future) [on line]*. Available at: <http://www.stedennetwerkstadslandbouw.nl/> (5 June 2014)
- Steel, C. 2009 *Hungry City: How Food Shapes Our Lives*, Random House of Canada, Limited.
- The Royal Society, 2009. *Reaping the benefits: Science and the sustainable intensification of global agriculture*. The Royal Society. London.
- UN 2009 *World population to exceed 9 billion by 2050 [on line]*. Available at: <http://www.un.org/esa/population/publications/wp2008/pressrelease.pdf> (18 April 2014)
- Van der Ploeg, J.D. 2008. *The New Peasantries: Struggles for autonomy and sustainability in an era of empire and globalization*. London, Earthscan.
- Viljoen, A., Wiskerke, J. 2012. *Sustainable planning: evolving theories and practice*. The Netherlands, Wageningen Academic Publisher.

Table 1 Initiatives supporting sustainable short food chains in and around the city of Ghent

	Initiative	Description
1	CSA farm Wijveld (wijveld.skynetblogs.be)	Organic CSA farm with about 200 members who can come and harvest themselves in exchange for a membership fee; located on 1 ha of 'park' land in the city (Wijveld, 2014)
2	De Zonnekouter (dezonnekouter.be)	Organic farm on 5 ha of 'high landscape value' land (bought by donations) in the peri-urban area around Ghent; offer vegetable box schemes, deliver to food teams (see later) and have a farm shop
3	Gandazwam (gandazwam.be)	Produces mushrooms on urban waste; in the process of starting up the business in the city; organizes workshops on possibility to use urban waste to grow food
4	Avalon (www.restaurantavalon.be)	Vegetarian lunchroom/caterer using local and seasonal ingredients
5	Apicula (apicula-stadsimkerophoogniveau.blogspot.be)	Produces honey from 15 beehives located at six places in the city; honey is sold at places where it is produced (e.g. on the rooftop of the cultural centre Vooruit)
6	Boer'n Brood (www.boerenbrood.org)	Project organizing picnics using only local ingredients to prove the possibility of consumption via local food chains; run by volunteers
7	Groe(n)ten uit Gent (dokgent.be/de-sleutel-dokbewoner)	Vegetable production on a brownfield in the city by social workplace; first goal is reintegration of people with addiction problems in society; sell through local shop and social grocery store
8	Project 'Let's pick carrots together' (www.vzwjong.be)	Project by non-profit organization producing organic food in the city together with underprivileged children
9	De Site (www.rabotsite.be)	Vegetable and fruit production on a brownfield in the city; combination of allotment gardens and arable land; goal is to improve quality of life in underprivileged Rabot quarter of the city
10	Food teams (www.voedselteams.be)	Socio-cultural organization that organizes distribution of seasonal, sustainable and local products in Flanders; there are 143 food teams in Flanders, each consisting of about 25 members
11	Boerse Poort (www.boersepoort.org)	Allotment garden project including communal gardens initiated by city of Ghent but run by an NGO of neighbours

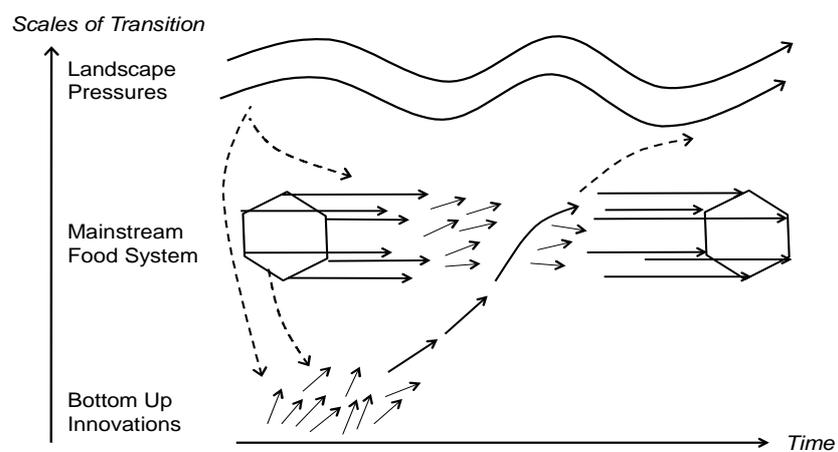


Figure 1. Dynamic multi level perspective on food system innovations
(Adapted from Geels and Schot, 2007)

