



The role of private sector in city region food systems

Analysis report

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Summary

A call for sustainable and resilient city region food systems

Food increasingly features on the agenda of cities and city regions. It is recognised that urban growth and increasing urban poverty, food price hikes and climate change, changes in consumption patterns and the increase in diet-related health problems, all call for increasing attention to how cities and their inhabitants are fed. It is also understood that urban growth is directly related to increased demand for natural resources (land and water) that provide vital food and ecosystem services and that integrated territorial development and balanced urban-rural linkages have to be pursued for the benefit of the urban and rural population alike.

City region food systems (CRFS) are considered to offer concrete policy and programme opportunities within which multiple development goals (such as sustainable urbanisation, food and nutrition security, environmental and natural resource management, rural development and sustainable agricultural production, distribution, marketing and consumption) can be addressed and through which rural and urban areas and communities in a given city region are directly linked. They can be a key tool to operationalise the linkages between Sustainable Development Goal (SDG) 2 (food security, nutrition and sustainable agriculture), SDG 11 (inclusive, safe, resilient and sustainable cities), SDG 12 (sustainable production and consumption) along with several of the other SDGs.

To do so, the CRFS concept requires further operationalisation and testing in reality. This should build on ongoing strategies and initiatives set in place by different city regions and other stakeholders (researchers, NGOs and community groups, private sector). Further operationalising and testing of the CRFS concept should also develop from a clearer vision on development and policy aims as this will set out the required behaviour of different stakeholders in reaching these aims.

It is understood that any city region will always be fed by both local/regional as well as national and international sources of food. For the purpose of this study however, the following vision of a more sustainable and resilient city region food system (CRFS) is applied, seeking a more balanced and diversified food supply system as well as multiple social, economic and environmental food system outcomes. This is in line with the recently adopted New Urban Agenda (October 2016) that emphasises the need for cities to 'strengthen food system planning' and recognises that dependence on distant sources of food and other resources can create sustainability challenges and vulnerabilities to supply disruptions. The agenda includes a commitment to: 'Support urban agriculture and farming, as well as responsible, local, and sustainable consumption and production, and social interactions, through enabling accessible networks of local markets and commerce as an option to contribute to sustainability and food security'.

For the purpose of this work, sustainable and resilient CRFS are envisioned to make affordable, nutritious, and fairly traded foods from local and regional producers more easily available to all consumers in the city region from rich to poor, rural to urban. Access to markets and support for alternative markets (e.g. community-supported agriculture, farmers' markets, cooperatives, local guarantee schemes, etc.) become available to smallholders and other small-scale producers from urban, peri-urban and rural areas, not just large ones. Shorter value chains, and more broadly efficient and functioning agricultural value chains that link hinterland producers to urban market systems, can contribute to sustainable diets, generate employment and stabilise livelihoods in the localised distribution, processing and

manufacture of food and fibre products. Urban and peri-urban agriculture are promoted, not only for food production, but also as strategies to enhance social inclusion, community building, city greening and adaptation to climate change. Food loss and waste is prevented, reduced and managed along the food supply chains in the city region, including the recovery and redistribution of safe and nutritious food for human consumption in both urban and rural areas. Ecosystem and natural resources management is promoted, as is agro-ecological diversity, and urban ecology and ecosystems are protected. The ecological footprint of the urban food system is minimised from production to consumption, and greenhouse gas emissions in food transport, processing, packaging and waste management are reduced. Improved governance ensures transparency and participation in the food system. Private sector has a role to play in building more sustainable and resilient CRFS, but it is also understood that public goods will not be delivered by market forces alone and that greater transparency and public participation in the food system are required.

Role of private sector in sustainable and resilient CRFS

Private sector players are recognised to have the potential to contribute to more sustainable and resilient CRFS. Traditionally, a wide range of private sector organisations have been and are involved in different parts of the food system (from input and service supply to production, processing, retail, catering and consumption). Examples of such private sector players include small, medium and large agricultural farms and production enterprises, food value chain enterprises, individual entrepreneurs, cooperatives, family-run businesses, social enterprises and large corporations operating in the formal and informal sector. More recently, players from (urban-based) non-food sectors such as water and energy companies, technological companies, private funds and landowners, social housing corporations and real estate are playing an increasingly important role. Their involvement includes, for example, supporting urban and peri-urban agriculture production, developing short chains and promoting local processing and procurement, developing food hubs in the city region and optimising food waste reduction and re-use. Many of those players are based in and around city regions which are at the centre of supply, markets and consumer demand.

However, information on such private sector roles and initiatives is quite rare. In addition, little is known about the reasons or drivers for their engagement, the extent and type of impact of their interventions, their support needs and supportive policy environments. Therefore, RUAF Foundation, supported by the Food & Business Knowledge Platform (F&BKN), undertook a study in order to better analyse the role of the private sector in building more sustainable and resilient CRFS, to provide suggestions for business and policy support mechanisms and to identify key lessons learned. The two overarching questions addressed by this study are:

- How can the private sector help shape more sustainable city region food systems?
- What business and policy environment is needed to better engage the private sector in building sustainable city region food systems?

Based on three city region case studies, 19 smaller case studies featuring private sector and government interventions, and a complementary literature and online review, this study gives an overview of:

- The type of private sector that is currently engaged in building more sustainable and resilient CRFS
- Current private sector roles and innovations
- Drivers for increased engagement from private sector players

- The support needs to increase existing or new private sector engagement
- Recommendations for the private sector
- Policy recommendations to support private sector participation and innovations.

At the same time, the report further explores the concept of a sustainable and resilient city region food system and addresses some of the issues that need further exploration to help to progress the debate. By doing this, this study aims to serve as a starting point for enhancing private sector engagement and putting in place (support) mechanisms to build more sustainable and resilient CRFS in different city regions.

Examples from three city region case studies

Rotterdam city region food system, The Netherlands

The city region food system of Rotterdam is principally characterised by a high dependence on national and international trade and a more centralised, consolidated food supply chain with reduced reliance on local production. At the same time, a growing local food movement is developing a number of (smaller) initiatives based on social, environmental and commercial values, including various short supply chains that focus on minimising the distance between producers, retail and consumers in the city region. This model has the potential to contribute to the development of a more sustainable and resilient CRFS due to its role of raising awareness and starting trends (in terms of a new food culture) and it builds on both the presence of engaged entrepreneurs as well as consumers demanding (and are willing to pay for) locally/regionally produced food. Innovations are found in the development of new catering concepts (e.g. a restaurant or food shop using produce from the region), new product concepts (e.g. local product varieties or recipes) and new production-marketing concepts (e.g. restaurants growing part of their own food and urban farms selling produce on-farm).

A specific innovative feature of the Rotterdam CRFS is the role played by a variety of new and non-traditional food players, such as landowners, health organisations, social start-ups and entrepreneurs, energy and water companies, social housing and real estate companies. Social housing and real estate companies, for example, are supporting local (small-scale) urban agriculture production and gardens and facilitating access to land and building stock for other food related (such as cooking) and training activities. They are motivated by social reasons (e.g. Corporate Social Responsibility, provision of improved living environments for tenants) and economic reasons (increasing real estate value and reducing the turnover of tenants). The importance of these new players' contribution to more sustainable and resilient food systems is not so much due to the scale of their interventions but to their contribution to creating a supporting environment for food initiatives in the city region. Interventions range from providing access to financial support, land, human resources, knowledge, expertise, networks and peer knowledge to initiating the development and delivery of projects.

Given the still limited scale, vulnerability and impact of private sector engagement, important local challenges remain with regards to how existing initiatives can be sustained, up-scaled and how impact can be monitored. Longer-term financial and political support is required. Both constraints and opportunities can be found in municipal, provincial or national legislation and programmes (Rural development programmes, the Rotterdam Food Strategy, National Housing Law, climate change programmes) that may support and fund (or limit) the further development of urban agriculture and short supply chains, the current and future engagement of new food players in the food system (including participation of possibly new private sector such as health insurance and investment companies) and procurement of

locally grown food. New building certification schemes that now include criteria and points for local food production and waste recycling may constitute another future driver. Individual city region based food initiatives will also benefit from better coordination and sharing resources, infrastructure, marketing channels and knowledge exchange.

Quito city region food system, Ecuador

The city region food system in Quito is characterised by a combination of national and localised food systems. A large number of small and medium-scale producers, local markets and traders still exist alongside a rapidly growing modern and globalised food system which is dominated by a small number of larger processing and retail businesses and greater consumption of processed food. The latter is particularly relevant in the meat, bread and grain-based and dairy sectors where consumer demand is also the highest.

Due to the presence of small-scale producers and intermediaries in the city region and the fact that small and large food processing and retail enterprises are still connected to a local supplier base, there are real opportunities to develop a more sustainable and resilient CRFS in the Quito city region. The Ecuadorian government is very concerned about social inclusion aspects and the government stimulates and enforces links to a local supplier base through several support programmes and national legislation. Most striking is a 2014 national policy that stipulates the inclusion of small-scale producers in supermarket distribution channels. A small but growing number of largely high-end consumers are also driving the presence and development of alternative short supply chains, where small-scale producers from the Quito city region directly connect with urban consumer groups.

The potential scale of interventions in, and impact on, a sustainable and resilient CRFS in the Quito city region are quite high considering the (potentially growing) involvement and size of several actors in the food supply chain (a large number of small-scale producers, intermediaries and a large processing and retail industry with a dominant market share). Nonetheless, the pressure for the processing and retail companies to be efficient, to offer standardised products and to reduce costs presents challenges and obstacles to small-scale farmers, small enterprises and artisanal entrepreneurs. Those groups particularly struggle with the requirement for regular supply, larger volumes, specific products, hygiene and quality standards, cold storage and transport infrastructure.

For reasons of efficiency and scale, new strategies may need to be found where small-scale producers coordinate production and supply and link up with medium-scale intermediaries that can afford the transaction costs to deal directly with supermarkets. The inclusion of city regional provenance criteria in procurement and local guarantee schemes (concerned with the regulation and price barriers around product certification) will also help ensure participation of small-scale producers and SMEs in the city region food system.

Expanding existing support programmes (that are based on social responsibility values, traditional supplier relationships or address product improvement concerns) that processing and retail companies offer to their suppliers could also further strengthen local food supply chains and increase the positive impact on employment and livelihoods. All the recommendations above would need to go hand in hand with improved information systems, multi-stakeholder dialogue (focussed on potential CRFS players and their improved collaboration), increased consumer awareness and education to further stimulate consumer demand.

Bristol city region, United Kingdom

The city region food system in Bristol presents a combination of a globalised and concentrated food system (similar to Rotterdam) and explicit government and private sector engagement towards a more re-localised food system and a sustainable and resilient CRFS. There is a huge range of food produced and available in the city region but only a small proportion of that is labelled and sold as such to consumers in the city region. Existing networks of community groups, organisations and entrepreneurs, all of whom are interested in good, sustainably produced food, can be strengthened and form a basis for a more sustainable and resilient CRFS.

In addition, awareness of and demand from institutional buyer, as well as public awareness raising campaigns, prove to be effective drivers of change towards a more sustainable and resilient CRFS in Bristol. In Bristol (and in the UK) a novel (national) catering mark scheme is used by a significant number of public sector buyers (such as hospitals, schools and universities). The Food for Life Catering Mark is a voluntary accreditation scheme with a focus on provenance and traceability. North Bristol NHS, for example, prepares 3000 meals a day for Southmead Hospital in Bristol under this scheme. Eden Food Services, a national catering company that also adheres to the catering mark, holds Bristol City Council's contract to provide school meals in 126 schools in the Bristol city region. Driven by strong public pressure for improvements to school and hospital meals the catering mark proves to be an effective tool for driving qualitative change in public sector catering while providing unique opportunities for city region producers, processors and other suppliers.

Given the scale of intervention (in terms of number of meals provided and volume of production that needs to be sourced regionally), the social and economic impact of a more sustainable and resilient Bristol CRFS is likely to be high but cannot be quantified.

Supplying buyers at the city region scale suits businesses which are small to medium size. Catering is generally one of several market outlets for those businesses. When supplying the public procurement market they generally either have a direct relationship with the public sector buyer or they use a regional wholesaler. The city region supply chain runs separately from the centralised national and international food supply chains that buyers generally use through employing specialist large- scale catering companies.

Up-scaling interventions (aiming for a larger number of catering businesses who source from the region and increasing the percentage of products sourced from the city region) requires Bristol companies to change some of their supply chain arrangements. It also requires specialist wholesalers or processors to meet the requirements for provenance, volume, quality and audit specifications. There is potential for the catering mark to apply even stronger local sourcing requirements and targets and thereby support the up-scaling of regional sourcing. Consumer demand, policy support and information/education for public sector buyers need to support this.

Other private sector players and innovations

In order to complement the three city region case studies, an additional 14 private sector cases were documented to illustrate other types, roles and innovations of private sector players not present or covered in the three city regions. These showcase how mainstream business models can include innovative and more sustainable food system strategies at a city region scale. These include examples of large-scale retail and catering, such as airport food shops (run by Autogrill and HMSHost), (inter)national hotel (such as Accor hotels, which include Pullman, Sofitel, Novotel, Mercure and the Ibis chains, and local hotels in

Rosario) and supermarket chains (in Brazil, Ecuador and the Netherlands), involved in (food) waste reduction, local/regional sourcing and on-site food production for reasons of social and environmental responsibility and marketing and in response to consumer demand.

A growing role is also played by technology companies (including companies like Philips, Sharp and Panasonic) engaged in urban food growing for urban markets (such as vertical farming, rooftop or indoor greenhouses) or in supplying technologies to urban food production companies. They do so to increase asset value (for example of unused production facilities), to benefit from incentives offered through building certification schemes and to create new revenues (for example LED light or hydroponic plant growing systems).

The development of more sustainable and resilient CRFS also offer opportunities for waste and electricity companies (including documented examples from Brazilian, French, Ghanaian and Swedish enterprises), as large volumes of food and organic waste are generated in the city region food supply chain. Their engagement is driven by environmental and economic values (recycled waste products like compost or fertiliser briquettes and new energy products like biogas may have a market value and job creation potential). New financing models such as carbon credits (as applied in Brazil and Quito) may be used to recover investments.

Other new forms of financing applied include community (supported) investment (in product shares or land trusts such as developed in Germany), local investment funds supplied by government (as done in Toronto and Ontario, Canada), non-profit and private investors and new public-private partnerships. Examples of the latter include a Quito water fund were major private sector water users (for example a water bottling and a beer company) support the fund work towards conservation of natural resources and rural farming areas and farming livelihoods in a city region in order to avoid or reduce future costs for water treatment and supply. Other examples include partnerships between government and food retail companies (as in Belo Horizonte, Brazil and Rosario, Argentina) to promote more local sourcing and livelihood improvement of rural farmers and increase accessibility of basic and healthy food items for urban poor consumers.

Innovations in direct producer-consumer trade include Internet-based platforms or distribution hubs to connect producers and consumers, as set up by the Food Assembly in Europa or Jinghe farm in Beijing.

Promising examples of policy support mechanisms

The study also set out to document examples of public policy support (at local, regional or national) supporting private sector engagement and behaviour in building more sustainable and resilient CRFS. Such policy support is driven by interest to mobilise private sector investment and resources, to enhance environmental, social and economic development objectives and to advance innovations.

Support mechanisms include legal and regulatory instruments, such as setting of procurement standards and targets (as done in Rome, Malmo and Ecuador), 'green' building regulations, zoning and agricultural land protection (as done in Toronto, Rosario and Belo Horizonte). They also include financial instruments (like public or public-private investment funds as developed in Quito, Linkoping and Ontario, taxes and subsidies). Communication and education, direct implementation or support to CRFS projects (like urban farmer markets, urban agriculture projects) and provision of business support services (including granting access to land, markets, infrastructure and resources, but also

encompassing training and advice) are complementary strategies delivered by many of these governments.

Governments and public institutions can also generate large buyer demand for city region products through their own public procurement (offices, schools, hospitals, prisons). In order to enhance impact in various domains, it is important that apart from provenance criteria, emphasis is given to aspects of health, social justice and inclusion, regional employment and environmental sustainability.

Lessons learned and recommendations

Drivers for private sector engagement

The documented case studies illustrate that a combination of several drivers is instrumental to guide further city regional sustainable and resilient food system development.

These include:

- Economic drivers (e.g. market niches for new products, consumer demand and asset value creation but also pressures from globalised food markets driving alternative and more localised food systems)
- Social drivers (e.g. building on traditional localised supplier-buyer relations, private sector social responsibility concerns, social inclusion values)
- Environmental concerns (closing resource loops in the food system, food waste and greenhouse gas emission reductions), and
- Political drivers (e.g. policy incentives and legislation, procurement regulation and targets).

In the end, however, private sector interventions will always be determined by economic motives (i.e. market opportunities, price concerns). Building consumer demand is crucial in this respect.

Consumer demand can be mobilised by building new food cultures (offering of new products and building specific marketing campaigns around food values, provenance or food tasting and cooking experiences), public awareness campaigns, catering mark schemes and product logos and accreditation (local/regional, quality and healthy food). Short food supply chains directly linking producers and consumers and a growing number of online platforms offer opportunities for diversifying market outlets for existing producers in the city region as well as for new private sector players.

However, concerns about social inclusion should continue to receive due attention. Many city region food markets are still targeting middle-to-high income consumers or large-scale food retail and catering may exclude small-scale producers and food supply business. That is why a sustainable and resilient city region food system vision cannot be achieved by the private sector alone.

Business characteristics supporting city region food system engagement

City regions offer some unique opportunities to traditional and new private sector players given the presence of large consumer markets, opportunities for more direct consumer relations and close collaboration between different players in the food supply chain. The

increased recognition of the role that food can play/plays in responding to various urban sustainability concerns also offers new market and engagement opportunities.

All three city region case studies, as well as the additional 15 private sector examples outlined in the report, provide a practical illustration of the fact that private sector players located in a city region may or may not contribute to various extents to the development of a more sustainable and resilient CRFS. They also shed more light on the specific characteristics of food businesses, located in the city region, that seem to have the highest potential to supply city region markets and provide or source city region products. Based on this information, there appears to be a set of business characteristics that are common to many of these private sector players:

- Small to medium size enterprises that have relatively low levels of overhead and low levels of profit extraction, offer flexibility, a wide range of skills (to be able to engage in different production, processing, marketing and other services) and for whom city region markets make economic sense
- Ownership and behaviour: family run, run by a small partnership or have sole owners that keep labour costs low (family labour) and may drive more human scale operation and affinity with the region and pride and passion in connecting to local suppliers (often based on longer-term relations) and offering good and quality food to their consumers (with whom they also may have more personalised relations)
- Efficient use of capital inputs (by sharing infrastructure) and access to suitable processing and distribution facilities (i.e. in terms of distance, volumes, quality, equipment, skills, and specialisations), either individually or collectively owned or offered by other private sector or the government
- Access to both local and mainstream markets. This requires amongst others, ability to supply sufficient volume and offer proof of traceability
- Retail control of their own markets (through for example short supply chains, internet platforms, offering both production and catering services at the same location).
- Ability to innovate and respond to quickly changing consumer demands and needs.

The above does not deny the potential of large scale processing, retail and catering (such as supermarkets, hotel and restaurant chains) to drive important change due to their scale of operation and financial resources (as earlier examples demonstrated). However, current examples seem to show that their impacts on other sustainability and resilience areas (like local job creation and social inclusion) are more limited. Although such larger enterprises could generate impact by offering supply and job opportunities to local farmers and SMEs, this often requires government regulation or incentives, as well as consumer demand and business awareness.

Advocating a cooperative and food supply chain approach

Challenges for smaller and medium-scale private enterprises generally lie in volume (bulk) requirements and price settings, product quality and standards. Economies of scale can be created by pooling consumer groups (like forms of community supported agriculture or internet buyer groups) and producers/SME networks (product aggregation through cooperatives or intermediaries). Collaboration among SME and mainstream private sector players is another strategy documented in some of the case studies. Examples include alternative, value-driven local food players integrating their products into mainstream distribution (like supermarkets) or mainstream companies (such as Catering Mark award holding caterers or national and international chains such as Santa Maria supermarkets in Ecuador, Autogrill airport caterers and Accor Hotels) increasing their procurement of locally sourced products.

Product and market innovation can be a solution to address affordability by both addressing (higher-end) niche markets as well as lowering production costs. Examples for reducing costs include changes in packaging material, creating specific input supply channels for SMEs as done in Brazil or sharing infrastructure and resources as done in Rotterdam.

Direct producer-consumer relations based on trust, local guarantee schemes and accreditation (see Quito and Rosario examples) and catering mark schemes (e.g. Bristol) are strategies to deal with required product provenance, traceability and quality guarantees.

The impact of private sector contributions to sustainable and resilient CRFS seem to be highest if a food supply chain approach is advocated, where support is not provided to individual businesses but to the entire network of city region producers, wholesalers, processors, caterers and shopkeepers. 'Trickle-down' effects of support to larger processing businesses or caterers that in turn source from a number of city region suppliers are documented in the Quito and Bristol case studies.

Network facilitation and business support

Increasing and up-scaling of (current and new) private sector engagement in sustainable and resilient CRFS requires network facilitation to assist with the promotion of a cooperative and food supply chain approach and support the development of a network of players. Such facilitation can also share and promote specific innovations and good practices and facilitate learning. Increasing participation of the private sector in food system planning and policy, for example through food policy councils or other multi-stakeholders platforms, will also be key.

Further business support would need to evolve around the setting up and improving of (shared) processing, storage centres or food hubs, ICT services, commercial and logistics training. Up to date information on the food system (food supply sources, retail market and consumption trends) is required. Businesses also need to better understand the options available around contract specification and contract management, the availability of products, the businesses that can help them with sourcing and supporting the case for doing it. Consumer awareness and education on the benefits of city region food supply are also needed. Catering certification schemes are proven mechanisms to drive systemic change.

Business behaviour

Private sector players themselves can also take various steps to increase their engagement in sustainable and resilient CRFS. These include:

- Applying local/regional procurement and sourcing criteria (retail and catering business)
- Targeting city region markets (establishing direct relationships with retail buyers and consumers in the city region, providing new product concepts and innovations and specific urban services)
- Aligning corporate social responsibility strategies and resources with a sustainable and resilient CRFS vision (by promoting or directly engaging in localised sourcing, own production, food waste reduction and management, prioritising links with small-scale producers, SMEs and social enterprises)
- Pooling production, sharing infrastructure/ resources and grouping consumer demand
- Pioneering innovations with social inclusion criteria
- Innovating financing: for example use of carbon credits (see Quito experience), public-private partnerships

- Developing business relationships and networks with both mainstream and other CRFS business partners, customers and public sector stakeholders.

Limits of the current CRFS debate and need for further research

The current debate on CRFS is still limited by ambiguous definitions and concepts. There is furthermore a lack of clarity on specific development objectives (towards sustainable and resilient or other forms of CRFS) that is needed to guide understanding of the requirements for specific stakeholder engagement and their desired behaviour. Likewise, data on the impact of interventions on food production, availability, regional employment and other services are rare, limiting monitoring and the adjustment of strategies. Availability of such data would also be important for specific private sector players. For example, the housing and real estate sector can benefit from (or inspired to increase their engagement) by impact studies on how their investment can result in lower transfer rate (of housing tenants) or higher rental or sales income.

Further understanding of current and potential future private sector engagement and required support mechanisms is also limited as the available examples are mainly anecdotal and do not describe internal private sector working mechanisms such as cost allocations, and risk management strategies for example.

The small number of city region food system studies that are available do not allow yet to analyse opportunities for sustainable and resilient CRFS, or for private sector engagement in these, in relation to varying local context. Research in all these areas would benefit further sustainable and resilient CRFS development.

1. Purpose and methodology

1.1 Purpose and limits of the study

Acknowledging processes of accelerated urban growth and challenges related to urban poverty and food insecurity, vulnerability to food price hikes and climate change, recent international declarations by national agricultural ministers¹, (international) support organisations² and cities³ call for an increased focus on the role that cities and city regions (could) play in enhancing food security, local economic development and resilient and sustainable development of both urban and rural areas through the development of City Region Food Systems (CRFS).

The term 'city region food system' was defined in December 2013 in a multi-stakeholder expert consultation meeting hosted by FAO as the: 'complex network of actors, processes and relationships to do with food production, processing, marketing, and consumption that exist in a given geographical region that includes a more or less concentrated urban centre and its surrounding peri-urban and rural hinterland; a regional landscape across which flows of people, goods and ecosystem services are managed'⁴. According to Thomas Forster (2016) the term 'city region' refers here not only to megacities and the rural and agricultural areas surrounding them, but also to individual or clusters of larger, smaller and medium-sized towns that link surrounding rural small-scale producers and their agricultural food supply chains to urban centres and markets (Forster et al., 2016).

In the New Urban Agenda, adopted in Quito last October 2016, that will guide implementation of the Sustainable Development Goals for the coming years⁵, food security and nutrition are now indeed placed at the centre of urban and territorial sustainability. In *Our Shared Vision*, food security and nutrition are first in a list of public goods and services that fulfil the social function of cities 'including the social and ecological function of land' (11a). The same vision paragraph recognises the territorial functions of cities 'as hubs and drivers for balanced sustainable and integrated urban and territorial development at all levels' (11e).

The New Urban Agenda also emphasises the need to 'strengthen food system planning' and recognises that dependence on distant sources of food and other resources can create sustainability challenges and vulnerabilities to supply disruptions. The agenda includes a commitment to: 'Support urban agriculture and farming, as well as responsible, local, and sustainable consumption and production, and social interactions, through enabling accessible networks of local markets and commerce as an option to contribute to sustainability and food security'.

¹ www.gffa-berlin.de/en/kommunique/

²

http://www.bmz.de/de/zentrales_downloadarchiv/themen_und_schwerpunkte/stadtentwicklung/Berliner_Empfehlungen.pdf

³ A growing number of cities increasingly recognise their responsibility and opportunities for building more sustainable and resilient CRFS. This becomes evident with over currently over 130 cities from around the world, including larger cities as diverse as London (UK), Toronto (Canada) and Shanghai (China) and smaller to medium sized cities such as Ghent (Belgium) and Windhoek (Namibia), having signed the Milan Urban Food Policy Pact.

<http://www.milanurbanfoodpolicypact.org/>

⁴ www.cityregionfoodsyste.ms.org/; see also: <http://www.ruaf.org/ua-magazine-no-29-city-region-food-systems>

⁵ <https://habitat3.org/the-new-urban-agenda/>

City region food systems (CRFS) are considered to offer concrete policy and programme opportunities within which these developmental issues can be addressed and through which rural and urban areas and communities in a given city region can be directly linked. Integrating food into urban and territorial planning can result in:

- Making food more accessible to the urban poor and reducing overall inequalities in access
- Creating opportunities to address rural malnourishment and poverty by boosting market opportunities for food producers, especially smallholders
- Improving functionality of food markets and their distribution through spatial planning of cities and territories
- Better connectivity between urban and rural areas
- Improving the use of urban and peri-urban agriculture
- Reducing greenhouse gas emissions due to transport, and
- Improving urban and territorial ecology through better use and management of land, water and waste.

In this way, (improved) CRFS allow to specifically address Sustainable Development Goal (SDG) Target 11a (to support positive economic, social and environmental links between urban, peri-urban and rural areas)– and will be instrumental in linking SDG 11 with SDG 2 (on sustainable agriculture and food and nutrition security) and SDG 12 (on sustainable production and consumption) (Dubbeling M., et al. 2016).

It is generally agreed that the involvement of multiple stakeholders from the public, private and civil society sector is required for development of CRFS initiatives. In general, there is growing, but still limited, evidence and documentation about the involvement and (required) contribution of specific stakeholders. As with other development efforts, the private sector is seen as an important and necessary player or stakeholder in the development of (more sustainable and resilient) CRFS⁶.

Rapid literature and Internet research provides an increasing number of examples and innovations around private sector involvement in CRFS⁷. Whilst it is thus clear that the private sector already plays a crucial role in supporting CRFS and potentially could play an even greater role, the specific role of the private sector is still rarely discussed nor described in-depth. Nor is it clearly described what such roles could practically consist of and how they could be better supported. Local or national authorities and development agencies can for example create incentives for existing or new enterprises that can strengthen CRFS. They can help provide physical infrastructure, land use and access, financial or tax incentives, or set minimum procurement regulations.

⁶ For example, the Framework to Action accompanying the Milan Urban Food Policy Pact recommends 'the collaboration with private sector, along with other organisations, in prevention and re-use of food waste, development of short supply chains, food storage, transport, processing and marketing, adaptation of standards and regulations for sustainable diets and safe drinking water, while promoting decent employment for all'.

⁷ See for example: <http://www.ruaf.org/publications/sustainable-urban-food-provisioning-2015>, <http://www.foodpolicymilano.org/en/ebook-good-practice-en/>; <http://star-www.giz.de/pub?r=42540>; <http://www.ruaf.org/sites/default/files/UAM29.pdf>; <http://www.fao.org/in-action/food-for-cities-programme/overview/what-we-do/en/>

RUAF Foundation and the Food & Business Knowledge Platform (F&BKN) agreed therefore that there is a general need to better understand:

- What type of private sector is currently –or could be- engaged in CRFS?
- What are their current –or potential future- roles?
- What are the possible reasons or drivers for their engagement in CRFS?
- What are the impacts of their current intervention (type of benefits, who benefits?)
- What are the support needs (technical, legal, financial, stakeholder interaction) to increase existing or new private sector engagement in CRFS?
- What are the recommendations for the private sector?
- What policy environment can support private sector participation and innovations in CRFS?

In starting to answer these questions and in communicating with local stakeholders, the authors however also realised that the (local) development vision for a specific CRFS will determine the type of desirable changes in business behaviour or culture that is needed to shape such CRFS. For this reason, the following research questions were added to the list:

- What are the characteristics and goals of a sustainable and resilient CRFS?
- What business behaviour would contribute to these goals?
- How can they be best supported in these specific roles?

Given the limited amount and level of detail of information currently available on the topic and given the limited size of the study, this report only starts to explore answers to these questions.

Therefore, the ultimate purpose of this study is to start informing and supporting private sector stakeholders, professionals and government representatives to further map and investigate the challenges and opportunities for private sector engagement in CRFS and to start putting in place (support) mechanisms that enhance private sector contributions to build more sustainable and resilient CRFS in given city regions.

1.2 Concepts used

City region

It is increasingly recognised that in order to respond to development challenges centred around (urban) food and nutrition security, and sustainable development and climate change, amongst others, integrated territorial development and balanced urban-rural linkages must be pursued for the benefit of both urban and rural populations. In this context, the New Urban Agenda states that ‘we will promote urban-rural partnerships and inter-municipal cooperation mechanisms based on functional territories and urban areas as effective instruments to perform municipal and metropolitan administrative tasks, deliver public services, and promote both local and regional development’ (93). Although contexts differ across cities and regions, such urban-rural partnerships and inter-municipal cooperation always extend beyond traditional administrative boundaries. It is for this reason that the concept of a city region has been coined, to be able to review the relationship between cities and their surrounding areas in a more sustainable way and to be able to promote stronger inter-linkages from urban to rural areas as, amongst others, hubs for food

production and as providers of natural resources and ecosystem services (Dubbeling et al. 2016).

The literature research and case studies undertaken for this study quickly illustrated that apart from this general vision, there is not yet a commonly agreed understanding and operational concept of

- What constitutes a city region and
- What forms a city region food system (e.g. in terms of their geographic boundaries; in terms of drivers and development vision and how these influence behaviour of different stakeholders in further building CRFS).

For the purpose of this study, a city region is therefore defined as a larger urban centre or conglomeration of smaller urban centres and the surrounding and interspersed peri-urban and rural hinterland. The three case studies described in Chapter 3 illustrate how such city regions were locally defined. It is again recognised that this concept needs further operationalisation which is outside the scope of this specific study⁸.

City region food system

Based on the commonly accepted definition of a city region food system (CRFS) given at the beginning of this chapter, this study defines a CRFS as all the actors, processes and relationships that are involved in food production, processing, distribution and consumption in a given city region.

Again, it should be noted that it is outside the aims of this study to further describe, analyse or operationalise the concept of a CRFS in detail. Nonetheless, Chapter 2 in this report briefly sets out a categorisation of urban food system types (or food supply systems), based on existing literature, to provide some more inputs to the further required development of this concept.

It is recognised that cities and city regions will always be shaped by a mix of local, national and international food systems and supply sources. The merits of a local or regional versus global food supply chain or food system are not discussed in this report, both systems are needed and both have benefits⁹.

It is also recognised that there are no blueprints for different types of food systems, that they exist in parallel and that they evolve over time in different directions. However, a categorisation of food systems types is useful when discussing visions for their development ('direction of travel'; policy objectives) and related policy approaches to reach these

⁸ The RUAF-FAO project on city region food systems (<http://www.fao.org/in-action/food-for-cities-programme/overview/what-we-do/en/>) is advancing in the elaboration of criteria that can be used for defining city region boundaries in different contexts. This work however concludes that the extent of such (geographic) boundaries will always be locally specific.

⁹ The importance of multiple city food supply systems are for example illustrated in the Melbourne Foodprint report (Carey R. et al., 2016): 'Other areas of food production outside 'Melbourne's foodbowl' (representing the local/regional food system) are also important in feeding Greater Melbourne. These include areas just outside the city's foodbowl in Melbourne's hinterland, as well as areas of regional Victoria, such as the Murray Darling Basin. Indeed, Greater Melbourne is fed by a global food system that includes other states of Australia, as well as other regions of the world. State, national and global sources of food are all important to the stability and resilience of Melbourne's food system.'

objectives, and for discussing and analysing the role of specific stakeholders- including the private sector- in reaching these objectives.

This study uses a food system categorisation proposed by Jennings, S. et al (2015). Those referred to as food system 1.0 are still characterised by a greater degree of local and national production and greater prevalence of small-scale producers and informal actors in the food market chain. These food systems are still found in many (urban areas in) developing countries. A food system 2.0 is characterised by a larger dependence on national and international trade, a more centralised and consolidated supply chain with greater global integration, reduced reliance on local production and greater consumption of processed food. These food systems are characteristic of countries in Europe, the USA and of rapid growing economies such as China and India, amongst others. A food system 3.0 is a more re-localised food system that seeks to foster a better balance of food supply from global and local sources. This latter approach is also based on an awareness of the multiple food system outcomes for health, economic development, environmental sustainability and resilience. Food systems 3.0 imply a more integrative and sustainable approach (see further Chapter 2). They are promoted in various countries and cities in the world, to various extents and for a variety of reasons. Belo Horizonte (Brazil) for example promotes a more localised food system with the objective to improve food and nutrition security for the poor urban population, as well as to improve livelihoods of vulnerable rural producers (Dubbeling et al. 2016).

Jennings, S. et al. (2015) equate food systems 3.0 with re-localised food systems or city region food systems (CRFS). We have chosen instead to continue to use the concept of sustainable and resilient CRFS in this report. For us, a city region food system –as stated above- emphasizes the territorial dimensions of a food system. In our view, any CRFS includes components of food system 1.0 and 2.0 (depending on the local context) and, generally still to a much lesser extent, 3.0. In line with the earlier mentioned international processes (Milan Urban Food Policy Pact, New Urban Agenda) and with current developments at the level of different city regions, the authors focus in this report on CRFS with strong sustainability and resilience objectives. This responds to the recognised ‘territorial and social function’ of cities in terms of food security and nutrition and more balanced urban-rural linkages and the need for new governance approaches involving all ‘actors, processes and relationships that are involved in food production, processing, distribution and consumption in a given city region’. This implies giving emphasis to the functions CRFS can play, in meeting (future) food needs of the population in the city region, the capacity of the city region to meet the city’s food needs, the contribution of the food system to the city regional economy, and in enhancing food system resilience at territorial level. In other words, developing sustainable and resilient CRFS.

Sustainable and resilient (city region) food systems

Sustainable food systems aim to contribute to social, economic and environmental sustainability benefits (see further Chapter 2). More recently, additional emphasis is also given to the concept of resilient food systems. As defined by Carey, R. et al. (2016): ‘A resilient food system is a system that has the capacity over time to provide sufficient healthy, sustainable and fair food to all in the face of chronic stresses and sudden shocks, including unforeseen circumstances’ (Note: these include ongoing urbanisation processes and population growth, climate change impacts, natural disasters, war, economic shocks such as food price hikes or fuel shortages).

Carey, R. et al. (2016) continue to state that ‘A resilient food system is robust (it can withstand disturbances without losing food security), has redundancy (elements of the

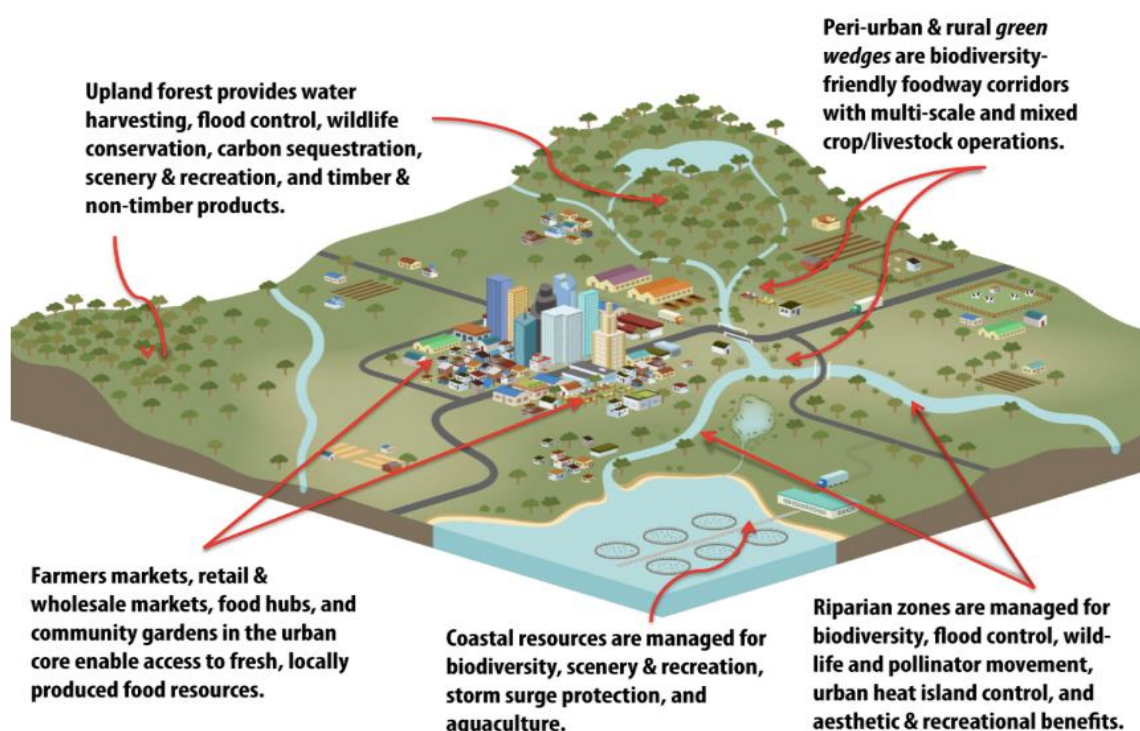
system are replaceable and can absorb the effects of stresses and shocks), is flexible, can quickly recover lost food security and can adapt to changing circumstances’.

Combining the two concepts, sustainable and resilient food systems are likely to have some of the following features:

- ‘The capacity to draw on food sources from multiple geographical regions, including global, national and regional sources, without being dependent on any one source
- Diversified food supply chains that draw on large-scale and small scale systems of food production and distribution, use a variety of approaches to production and distribution, and draw on both commercial and community-based sources
- The capacity to draw on waste streams (waste water, food waste and organic waste) for food production
- The capacity to create synergies and achieve multiple benefits across a range of policy objectives e.g. increasing access to healthy food, and creating jobs
- They are people-centred and inclusive – people are at the heart of the food system, benefiting from increased access to healthy, sustainable food and from employment, and they engage actively with the food system as citizen-consumers’ (Carey R. et al., 2016).

Chapter 2 outlines the concept and components of sustainable and resilient CRFS as currently being defined by RUAF Foundation and the FAO. This concept recognises that, in a context of growing urbanisation, the challenge of food security will become increasingly an urban one, with strong inter-linkages to rural areas as hubs for food production and location of natural resources (see also image 1 below).

Image 1: Generalised diagram of common components of a sustainable and resilient city region food system across urban and rural landscapes



Source: T. Forster and A. G. Escudero, 2014. City Regions as Landscapes for People, Food and Nature. Washington, DC: EcoAgriculture Partners, on behalf of the Landscapes for People, Food and Nature Initiative

This sustainable and resilient CRFS approach suggests a re-localisation of the food system (similarly to a food system 3.0), with – where possible and relevant – a higher proportion of food to be sourced locally (from the city region), through shorter and improved supply chains (with fewer intermediaries, with fewer food waste and losses) in which relationships between consumers and producers are stronger and more transparent and where food systems are considered in a territorial context (from the perspective of a the city region). Irrespective of the size of the city, a benefit of such sustainable and resilient CRFS is diversification and increasing resilience of urban food supply. Local contexts will define the potential and degree of more localised production, processing, marketing and consumption.

There are current very few data on actually how much food –and employment, social cohesion and environmental services- are produced by the food system in different city regions (see further Chapter 2). Only a limited number of studies (and mainly from the USA) exists and comparison of data across city regions is hampered by differences in used delimitations/geographic boundaries of the city region (as indicated above) and by different methodologies applied. Data from city regions in the Global South are virtually non-existent¹⁰.

It is outside the scope of this study –and the case studies- to quantify impacts of specific private sector stakeholders or interventions to specific components of sustainable and resilient CRFS. The scale of private sector involvement is of course important in this regard. Current private sector engagement in the Bristol CRFS is more significant and has a bigger impact compared to the examples given for Rotterdam. The potential scale in the Quito city region could be increased if all supermarkets and processing industry in the city region would increasingly adopt local sourcing policies (see further Chapter 3). The study highlights the lack of such data and the need for more research and impact monitoring. Those points are presented in the recommendations section.

Private sector engagement in different food systems

For the purpose of this study, private sector is defined as organisations that have a core strategy and mission to engage in economic, entrepreneurial activities through the production of goods, provision of services and/or marketing in the food system. It excludes non-governmental organisations, governments and civil society organisations.

Such private sector players include individual entrepreneurs, cooperatives, family-run businesses, social enterprises and large corporations operating in the formal and informal sector. It includes companies whose main purpose is profit-seeking, but that in addition may pursue social values. It also includes social entrepreneurs who, as defined in another FBKN commissioned report, are characterised by their social mission, not profitability. As the author (Quak, 2016) states: Social entrepreneurs ‘could seek profits to increase their social impact, where others would function more as a hybrid social enterprise that needs public money or philanthropy along with their earned income to fulfil their social mission. Their economic, or entrepreneurial, dimension guarantees that the productive activity represents the reason for its existence. Social entrepreneurs face an economic risk in the activities required to meet the demand, which set them apart from NGOs or charities’.

Traditionally, a wide range of private sector organisations have been and are involved in different parts of the food system. This report shows that the types of businesses that are

¹⁰ In order to respond to this gap, RUAF Foundation, FAO, international research partners such as the Centre for Sustainable Food Systems-Laurier University, the International Water Management Institute- IWMI and local research teams are currently implementing city region food systems assessment studies in several city regions in the Global South.

involved in sustainable and resilient CRFS come from across the entire food supply chain (see also Chapters 3-7). These include all traditional food businesses that participate in local, national and global food supply chains and that are based in the city region, such as:

- Producers – farmers and growers, including small, medium and large agricultural farms and production enterprises
- Processors – dairies, abattoirs, fruit & vegetable preparation and packing, processed food manufacturers etc.
- Wholesalers and distributors of all kinds of products
- Retailers – supermarkets, independent food shops, markets, street food traders, home delivery, community bulk buying groups, etc.
- Caterers – public sector meal provision, work canteens, eating out places, hospitality providers
- Waste management – food waste collection and food waste disposal.

It should be noted that examples of urban and peri-urban agriculture and city region producers as a specific category of private sector players are not further included/described in this study as these are already extensively documented in other reports¹¹.

More recently, players from the (urban based) non-food sector such as water and energy companies, technological companies, private funds and landowners, social housing corporations and real estate are also playing an increased role in sustainable and resilient CRFS. Many of those are based in and around city regions which are at the centre of supply, markets and consumer demand.

Different food system types currently or potentially engage different private sector players. Generally stating, food systems 1.0, at one end of the scale, have multiple smaller scale private sector players (including local producers, shops, traders) that connect rural and urban areas, whilst food systems 2.0 are characterised by a concentration of larger and mainstream private sector players (including for example supermarkets and larger food processors). Food systems 3.0 offer opportunities for existing and new private sector players to reconnect producers and consumers and to respond to specific consumer demand or policy concerns linked to more localised food systems. These include for example:

- Private enterprises supporting and promoting urban and peri-urban agriculture production (e.g. large agricultural business or small-scale producers shifting to local production; enterprises providing access to land, offering financial or technical support amongst others). Examples include (social) housing companies, industry, water and electricity companies, health companies, financial organisations.
- Private sector support to shorter supply chains and procurement of more localised products (processing industry, transport, hospitals, supermarkets, industries, restaurants and other retail, ICT, financial and support organisations)
- Private sector establishing or supporting regional food hubs or food enterprises (storage, wholesale, distribution and marketing, consumption, financial and support/service organisations).

¹¹ <http://www.ruaf.org/projects/supurbfood-towards-sustainable-modes-urban-food-provisioning>; <http://www.ruaf.org/projects/urban-green-education-enterprising-agricultural-innovation-urban-green-train>

- Private sector engaged in reducing and recycling food waste and promoting more sustainable consumption (markets, processing, whole sale and retail, transport, waste management).

Of the more traditional food and non-food businesses located in given city regions, some are more invested than others in re-localising CRFS and contributing to their sustainable and resilient development. For example, food related businesses based in the city region may source products through international supply chains, process them and distribute finished products via international markets or customers. However, this does not necessarily imply that these private sector players are more locally embedded and contribute towards a more sustainable and resilient CRFS that is characterised by factors such as territoriality (e.g. improved rural-urban linkages), a larger degree of re-localised food systems, sustainability practices (for example enhancing circular economies) or inclusivity.

1.3 Methodology and report outline

This study applied a combination of city region case studies (based on local interviews and literature review) in three selected city regions, smaller private and government sector case studies as well as global literature and Internet search and analysis. By applying a case study approach, this study aims to complement the current limited literature on the topic, and to generate awareness, show examples and innovations and to give a better overview of ongoing developments and trends. This in order to contribute to an improved understanding of:

- The type of private sector players engaged in different selected CRFS
- The current and possible functions on how different types of private sector players can shape or enable the existence of a (more sustainable and resilient) CRFS -as opposed to a more national or international food supply system-
- Specific private sector innovations
- Recommendations for (specific) private sector to better engage in the development towards more sustainable and resilient CRFS
- Lessons learned and recommendations on what broader business and policy environment is needed.

City region case studies

Whilst there is neither a blueprint nor a perfect example, three city region case studies¹² were commissioned for this study with the purpose of contrasting different types of existing food systems and highlighting examples of the private sector contributing to specific CRFS. City region case studies were selected on the basis of (a) their representation of different (mixes) of food systems; (b) the presence and diversity of specific private sector players engaged in the CRFS; (c) the potential to highlight specific private sector innovations and (d) the availability and interest of local research teams to contribute to this study.

The city region case study reports were elaborated by teams of local researchers, following a common Terms of Reference. Each research team implemented between 10-40 interviews with selected private sector and government stakeholders in their city region. Analysis of the

¹² The total number of city region case studies had to be limited to three or maximum four due to budget restrictions.

interviews and of literature on their city region, taking into account the questions posed above, formed the basis for the city region case study. Draft case reports were validated with people interviewed and reviewed by the authors of this analysis report.

Chapter 3 provides summaries of these case studies from the city regions of Bristol, UK (with a specific focus on public caterers and their supply chains), Rotterdam, The Netherlands (with a specific focus on short food supply chain initiatives and social housing corporations) and Quito, Ecuador (with a specific focus on larger processing and retail food industry). The full city case study reports are available on the RUAF website¹³.

The authors recognise that there is a gap in information and examples from Asia and Africa. This gap is especially significant as urbanisation pressures are the highest in these regions. However, given the timeframe and budget of this study it was not possible to identify African or Asian city regions that could complement the range of insights provided by the other 3 cases (for example in terms of other private sector actors engaged in CRFS). And even in the limited cases where this could have been the case (for example with regards to private actors engaged in food waste stream in the city region or with regards to involvement of technological sectors in CRFS), no local research teams could be found who were interested in developing a city case study within the given timeframe and budget. Consequently, the limited number of case studies does not allow for a comprehensive overview, or a comparison of Global North and South, but they do provide examples of specific localised learnings and recommendations.

The report also uses the anecdotal evidence to highlight opportunities for development of sustainable and resilient CRFS in the studied (and potentially other similar) settings as well as try to conclude on some more generalised learnings and recommendations.

Business/private sector cases

Recognising the limitations of the main city region case studies, an additional 15 short case studies/examples are presented in Chapter 4. Having set out the ideal types of business behaviours that could contribute to the goals of a sustainable and resilient CRFS, these further additional case studies provide a broader overview of private sector actors engaged in sustainable and resilient CRFS. These include large mainstream players, non-traditional and innovative smaller-scale businesses and social enterprise models. Additional private sector roles are also represented. For example, the protection and enhancement of natural resource assets or the re-use of waste. The additional case studies also illustrate further types of city region food supply innovations from the areas of technological innovations, financing, producer-consumer relationships or public-private partnerships that are led by the private sector.

Government and policy cases

A final 4 smaller case studies are presented in Chapter 6 of this report. These 4 case studies were selected to demonstrate examples of government support schemes and policy on how to better engage the private sector in the development towards more sustainable and resilient CRFS.

¹³ The full case study reports and the overall analysis report can be accessed at: <http://www.ruaf.org/projects/role-private-sector-city-region-food-systems>

Some of the business and government cases were researched as part of a joint GIZ-RUAF-UN FAO on City Region Food Systems and Food Waste Management¹⁴, where (with support from this project) specific attention was given to describe the role of the private sector. Other examples are based on literature review and internet research.

Literature review and Internet research

The different case studies were complemented by a review of existing relevant literature which provides a wider and more detailed context for the discussion and analysis of the case studies.

The ca. 50 documents that were reviewed fall into the following categories:

- Academic literature: focussing on the most recent publications and generally restricted to the last 10 years
- Grey literature: e.g. project reports, unpublished papers from relevant case studies and
- Feasibility studies and business-related reports.

The literature review focussed on publications that connect in different ways to the role of the private sector in CRFS and followed key search terms such as:

- Urban food strategy and policy
- Food system planning
- Alternative food systems
- Local food
- Short food supply chains
- Sustainable food systems
- Resilient and sustainable urbanisation
- Private sector engagement.

Analysis of cases and literature

The combined analysis of the city region and smaller case studies, as well as the review literature, is provided in Chapter 5-8.

Chapter 5 addresses drivers for private sector engagement in sustainable and resilient CRFS, varying from economic drivers such as consumer demand, innovations in direct producer-consumer connections to social innovation and policy drivers. It also looks at non-policy mechanisms, for example the Food for Life Catering Mark in the UK, that are proving to be effective drivers of change, at both national and regional level.

Drawing on the 4 policy case studies, Chapter 6 discusses policy environments and government programmes that support private sector engagement in CRFS. This chapter

¹⁴ <http://star-www.giz.de/pub?r=42540>; see also <http://www.ruaf.org/projects/city-region-food-systems-and-food-waste-management-linking-urban-and-rural-areas>

highlights the importance of the public sector, in particular food procurement and the role of food system planning by city/urban policy makers in using their buying power and economic development strategies to support more sustainable and resilient CRFS developments. These examples begin to illustrate various supportive policy approaches that can be implemented at a city region level, some of which also address the needs of more vulnerable groups. Examples include programmes or initiatives that focus on smaller scale family farms or the provision of healthy, affordable and sustainable meals for all school children. Support interventions and instruments can furthermore vary from direct technical and financial support to creating favourable business environments.

Chapter 7 highlights a range of issues in food systems, which to different degrees determine private sector involvement in building sustainable and resilient CRFS. These include:

- Volume requirements and price
- Demand for quality, safety, uniformity, consistency and convenience
- Long, complex and non-transparent supply chains
- CRFS infrastructure – access to processing, distribution and retail
- Requirement for more flexible and innovative business models for city region areas.

Based on a clearer understanding of some of the challenges that businesses face, support needs and examples of practical solutions for better engagement of the private sector in sustainable and resilient CRFS are described. One of the critical factors in enabling a food business to supply markets within its hinterland is its ability to process and distribute; whether by its own means or through other local businesses. Another factor is buyer awareness and demand.

Developments towards a more sustainable and resilient CRFS require more than just supporting individual businesses. They call for support for, and linkages within, the entire food supply chain and require support for farmer, business-led and public sector innovation. Specific recommendations for both private sector as well as city/national policy makers and for procurement and economic development officers in local government are set out in Chapter 8.

2. City region food systems: concept and importance

2.1 Different urban food (supply) systems

The food system of any city across the globe, whether small or large, will always be made up by a mix of players and food supply systems, combining different modes of distribution and consumption (institutional, retail, street foods). Some cities are mainly, although not exclusively, fed by urban, peri-urban and nearby rural farms and food processors, while other cities rely largely, although not entirely, on food produced and processed in other countries or continents. According to Jennings, S. et al. (2015), authors of the publication 'Food in an Urbanised World', three basic types of (urban) food and market systems can be distinguished, each offering specific opportunities for private sector engagement.

Image 2: Commercial food production in peri-urban areas



Source: Yves Cabannes

Food system 1.0

Food systems 1.0 may be found in countries which still have a largely rural population and generally are characterised by a greater degree of local and national production, greater prevalence of small-scale producers and informal actors in the market chain and a greater share of consumption of relatively unprocessed foods.

Produce from rural areas is (often by a trader) taken to nearby cities or small towns. Food may be sorted and packed or transported as 'farm gate' produce. Perishable goods such as vegetables, eggs and milk tend to be produced closer to urban areas. Less perishable products may be transported across larger distances. Food waste mainly occurs at the post-harvest stage and during transport and handling. In urban areas traders sell food to a usually limited number of wholesale or retail markets. The informal sector plays an important role. Regional and global commodity markets are vital when national supply of food is poor.

The food system 1.0 can be understood as a more decentralised local and regional system with multiple (smaller scale) actors that connect rural and urban areas. The private sector in a food system 1.0 is –generally stating- characterised by a majority of small-scale producers, smaller local shops and local traders and a limited number of retail markets. With processes of modernisation, concentration and globalisation, city regions with a food system 1.0 are likely to transition towards food system 2.0.

Image 3: The important role of local traders in the Cape Town food system



Source: Andreas Barth

Food system 2.0

The development and existence of a so-called food system 2.0 is characterised by a larger dependence on national and international trade and a smaller number of actors at different stages in the supply chain. It is characterised by a more centralised, consolidated supply chain with greater global integration, reduced reliance on local production and greater consumption of processed food (processing industry). Such food systems are predominantly found in (more) industrialised countries and cities.

Larger retailers or processors tend to have farmers under contract. For fresh produce, supply is maintained by sourcing food from all over the world. Temperature-controlled supply

chains mean cities are less dependent on the agricultural production and processing in their surrounding regions. Supermarkets are the most common form of food retail, smaller food shops account for a lower percentage of sales and may be more expensive. Highly processed and packed foods are demanded by customers, a lot of food is wasted at the retail and consumer stage. Private sector players include larger farmers, large supermarkets, national and international processing industry and a wider variety of retail and catering businesses.

It is important to note that neither food systems 1.0 nor 2.0 exist in isolation and all city regions may have elements of both. Jennings, S. et al. (2015) highlight an example of a mixture of food system 1.0 and 2.0 using the example of Bogota (Colombia). There, a degree of supply chain consolidation and 'supermarketisation' has occurred but the city at the same time also features strong rural-urban links and a relatively large number of small-scale producers within the region. The city region case study on Quito also describes a similar situation in the Quito Metropolitan District in Ecuador.

It is also important note that there is not necessarily a linear development from food system 1.0 to 2.0. Wegerif (2016) describes a reversing trend in Dar es Salaam, where several international supermarket chains are pulling out the country as a large part of the population still frequents the more "traditional and local" shops.

Food system 3.0

A food system 3.0 is a more re-localised food system that seeks to strengthen the links between urban areas and nearby rural food producers in recognition of social, economic and environmental benefits (Jennings, S. et al., 2015). According to the same authors: 'This food system concept poses the challenge of moving towards new food systems that exemplify the best characteristics of both Food System 1.0 and Food System 2.0. In other words: Food System 3.0. This is not a singular model for food system functions and processes but an approach to change. It does not imply 'creating' a new food system from the ground up but rather working with the multiple and highly context-dependent food systems that currently exist in different settings in order to purposefully and democratically engage with them and shift them towards better outcomes. The food system 3.0 approach suggests conscious and knowledge-based policy to foster a resilient balance of food supply from global and local sources, which is based on an awareness of the multiple food system outcomes for health, economic development and environmental sustainability.'

Jennings, S. et al. (2015) equate food systems 3.0 with re-localised food systems or city region food systems (CRFS). They are of the opinion that food systems 3.0/ CRFS offer opportunities for smaller-scale producers (for example in urban and peri-urban agriculture and rural areas in the city region), alternative short supply chain enterprises, new food IT platforms linking producers directly to consumers and the involvement of new private sector players like health or social housing companies that share a vision for a healthier and more localised food system. Although a food system 3.0 recognises a potential central role of the private sector, it also understands that public goods will not be delivered by market forces alone and that greater transparency and public participation in the food system are required.

It is also understood that developments towards food system 3.0/ CRFS will need to go hand in hand with enhancing sustainability of more mainstream and conventional food supply chains (food system 1.0 and 2.0) benefitting smaller producers and urban consumers.

2.2 Benefits of food systems 3.0/ CRFS

Jennings, S. et al. (2015) report that ‘... improving the effectiveness of CRFS does hold the potential for a range of benefits, especially concerning regional economic development, improved governance and health.’ They also find ‘some evidence of benefits for food and nutrition security and the management of the environment.More broadly, the governance characteristics associated with an explicit CRFS approach are in turn likely to generate wider community benefits.’

Wiskerke, J. (2009) also supports the previous point by pointing out ‘that an integrated and territorial approach to food has the (potential) capacity to contribute to sustainable regional development: increased Net Value Added in the regional economy, more employment in the urban and/or the regional food economy, preservation of the city’s rural hinterland, reduction of food miles and CO² emission, enhanced trust/faith in the food system, increased bridging social capital, etcetera.’

The case studies featuring Willem & Drees and Regionalwert Freiburg AG (see Chapter 4) highlight how some of the pioneering businesses involved in the development of CRFS are redefining the food system with all its aspects, including cultural, social, ethical and human characteristics that are often not included in standard assessments or are indirect results that are difficult to measure.

Food production

Data from Quito city region give figures of food self-reliance of 14-45% depending on the size of the city region¹⁵ and varying for different products (RUAF Foundation, work in progress). Carey R., et al. (2016) indicate that Melbourne’s CRFS currently has the capacity to meet around 41% of the city’s food needs (again percentages differ for specific food types), but this could fall to 18% by 2050 if current urbanisation processes continue¹⁶. Previous research by the University of Colombo, the International Water Management Institute (IWMI), and RUAF demonstrates that for Kesbewa (a medium sized city located in the Colombo city region), average distance travelled is 236 km/ton for the 5 most consumed vegetables/fruits in the city region (gourds and cucumber, eggplant, okra, chilli and capsicum and leafy vegetables). If all available urban and peri-urban home gardens in the city region were cultivated with the selected crops-under current production practices-, total production would provide for 15 % of the current city region consumption needs for the five product groups. The National University of Rosario and RUAF developed similar production/land use scenarios for the Rosario city region. To supply all the 6 main vegetables (potato, tomato, lettuce, carrot, onion and pumpkin) needed to feed the inhabitants of the city region, a total 6151 ha of land will be needed. This entire 6151 ha of land can be found in the urban and

¹⁵ The Quito city region is either defined as the Metropolitan District of Quito that includes the city of Quito, surrounding municipalities and remaining rural and agricultural areas, or as the Province of Pichincha of which Quito is the main city-covering 45% of the area of the Province- but that also include peri-urban and rural areas extending a 100 or more km. outside the Metropolitan District.

¹⁶ The Melbourne study uses the concept of the Melbourne’s foodbowl to define the CRFS. The Melbourne foodbowl comprises many small highly productive regions scattered around the fringe of the city. The project divides these regions into two areas – an ‘inner foodbowl’ and an ‘outer foodbowl’. The inner foodbowl is the metropolitan area of Greater Melbourne – it includes urban local government areas and the ‘Interface Councils’, the local government areas that are on the edge of the metropolitan fringe and border the city’s Urban Growth Boundary. The outer foodbowl is the next ‘ring’ of peri-urban local government areas that includes regions in the ‘Peri-Urban Group of Rural Councils’, such as Bacchus Marsh and Baw Baw Shire. However no clear data are given on the size of these territories (or the entire CRFS), although some of the mentioned areas are said to be located at least 60 km from Melbourne city (Carey R., et al., 2016).

peri-urban zone of Rosario. Local production potential will however be determined by future land use (plans), land prices and speculation, and economic return on production (RUAF Foundation, 2015).

Economic benefits

When further assessing the evidence for a range of commonly associated benefits of CRFS Jennings, S. et al. (2015) found that 'in terms of evidence, the impacts of improved CRFS on regional economic growth were amongst the most consistently high scoring of all the proposed benefits. The specific benefits assessed were regional growth; rural income and jobs; and economic viability, entrepreneurship and innovation. The interventions connected with these benefits are largely concerned with short supply chains, with policies promoting improved physical infrastructure (e.g. rural roads, market places), and the enabling environments to support them.'

The New Economics Foundation's (NEF) applies the LM3 tool to track the 'local multiplier effect' that results from money circulating within the local economy. For example research by NEF demonstrated a UK pound £3 in social return on every £1 invested in Food for Life Catering Mark menus (see for more information the case study in Chapter 3 and the separate private sector report on Bristol¹⁷), with most of the benefit experienced by local businesses and local employees (Kersley, H., 2011).

2004 scenario data from New York State (NYS, that could be taken as the New York city region) for example estimate that 'if New York food producers—both farmers and food manufacturers—captured just 10% of NYS consumer food expenditures, they would increase NYS food system revenues by over USD \$8 billion. If New Yorkers increased consumer food expenditures by 10% for food produced by New York farmers and another 10% for food manufactured in New York, that money could fuel local and regional economic development by generating \$16.5 billion in total income and over 17,000 jobs through regional multiplier effects.' (Herrera H, 2004).

New research focusing on the Soil Association's Food for Life multi-setting programmes and considering value created for health, education, and environment in addition to economy demonstrates a social return of UK pound £4.41 for every £1 invested (Soil Association, 2016).

MacRae's (2015) research in Ontario, Canada provides another example that illustrates the potential impact of CRFS by demonstrating the modelled impact that a 10% substitution of imported fruit with increased local production would have. He reports that 'The Ontario-wide impacts would be Canadian Dollar \$130 million in GDP, an additional 1,837 FTE jobs and an extra \$37.8 million in total taxes.' Similar effects are documented in the Ontario case study in Chapter 4.

¹⁷ Hochberg K. and J. Carey, 2016. The role of private sector in the Bristol (UK) food system – regional food supply into public sector food procurement (a copy of the report can be found at <http://www.ruaf.org/projects/role-private-sector-city-region-food-systems>).

Image 4: Regional food procurement in New York



Regional food procurement can support regional food economies, and in doing so enable farmers to have the financial wherewithal to for example invest in climate change mitigation and adaptation. New York City has funded the Pure Catskills marketing programme to get consumers to buy food produced in the Catskills. Those are cauliflowers, one of the vegetables that grows well in this region. Source: Nevin Cohen

Environmental and social benefits

Jennings, S. et al. (2015) highlight a large number of potential food security, environmental, health and government and cultural benefits of CRFS, including increased livelihood resilience for small-scale producers, reduced food prices for urban consumers, increased resilience of the food supply system against shocks, increased local agro ecological diversity, opportunities for 'circular economies', lower greenhouse gas emissions, increased knowledge about and availability of healthy and nutritious food, greater participation in and transparency of the food system and promotion of a local food culture amongst others.

A more detailed assessment of these and previously mentioned benefits is given by Jennings, S. et al. in Annex 1 of their report.

2.3 Concept and vision for a sustainable and resilient CRFS

Departing from the understanding that the specific development vision for a CRFS governs the definition of required behavioural changes of specific stakeholders contributing to that

vision (including that of the private sector) and building on the work by Jennings, S. et al. (2015), the RUAF Foundation, UN-FAO and international associates developed a concept and vision for a more sustainable and resilient city region food system that would display the following key sustainable and resilient food system attributes:

- Social sustainability and equity: improved health and well-being
- Economic sustainability: increased local economic growth and decent jobs; stronger local sourcing by processors, retailers, caterers etc.
- Environmental sustainability: improved stewardship of environmental resources and promotion of agro-ecological approaches to production
- Urban-rural integration: support a localised food production and supply system as well as circular resource flows
- Increased resilience or reduced vulnerability: increasing the diversity of food supply sources and reducing vulnerability to stresses and shocks
- Food governance: improved governance for sustainable food systems.

An ideal sustainable and resilient CRFS would include the following aims and components (FAO and RUAF, 2015):

- Increases access to food. Both rural and urban residents in a given city region have access to sufficient, nutritious, safe and affordable food. It supports a local food culture and sense of identity
- Generates decent jobs and income. It provides a vibrant and sustainable regional food economy with fair and decent jobs and income opportunities for small-scale producers and businesses involved in food production, processing, wholesale and retail marketing and other related sectors (such as input supply, training and services) in rural, peri-urban and urban areas in a given city region
- Increases resilience. It aims to increase the region's resilience against shocks and lessen the dependence on distant supply sources
- Fosters rural-urban linkages. It connects food, nutrient and resource flows across urban and rural areas (i.e. the use of urban organic wastes and wastewater as resources in the urban agro-food system) and prevents/reduces food wastes in a given city region. It harnesses more integrated urban-rural relations, strengthens social relations between consumer and producers, and promotes the inclusiveness of smallholder farmers and vulnerable groups across the supply chain
- Promotes ecosystem and natural resources management. It promotes agro-ecological diversity and protects urban ecology/ecosystems. The ecological footprint of the city region food system is minimised from production to consumption, and it lowers greenhouse gas emission in food transport, processing, packaging and waste management
- Supports participatory governance. It fosters food policy and appropriate regulations in the context of urban and territorial planning. It also fosters transparency and ownership across the food supply chain.

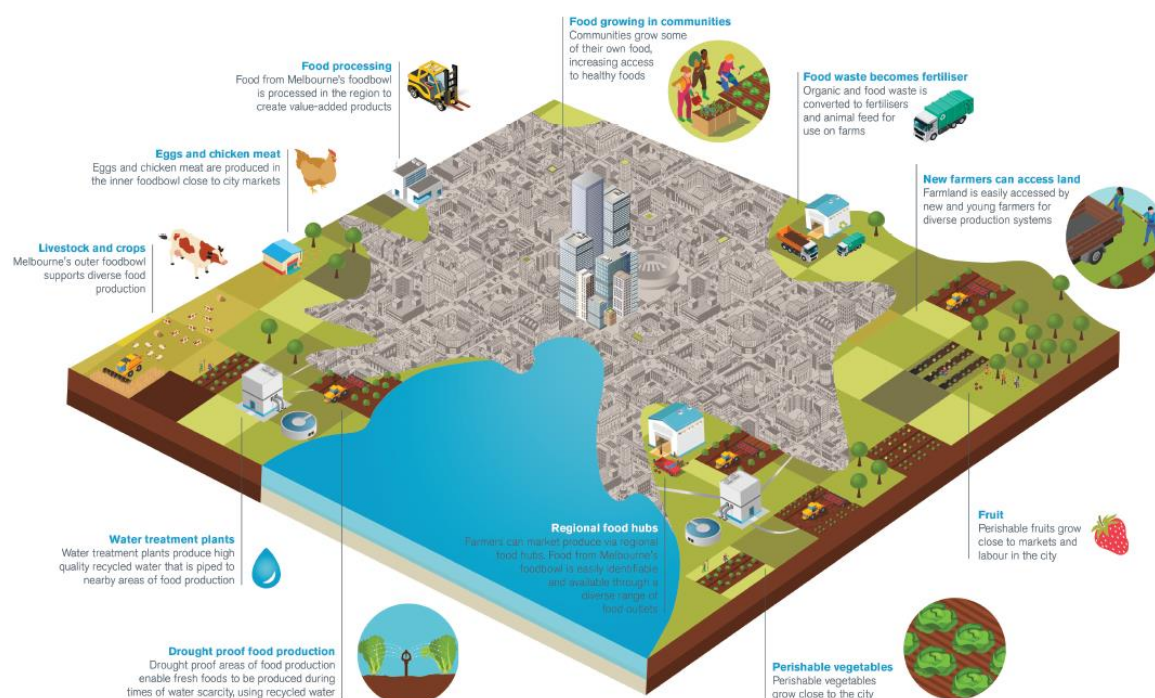
According to the same material: 'Improved city region food systems will help achieve better economic, social and environmental conditions in both urban and nearby rural areas':

The role of private sector in sustainable and resilient city region food systems

- Access to affordable and nutritious food from local and regional producers will improve consumer food security and nutrition and will enhance transparency in the food supply chain
- Access to markets and support to alternative markets (i.e. farmers' markets, community supported agriculture) will improve livelihoods of both small-scale and large-scale producers in the city region
- Local and regional food hubs and shorter value chains and more broadly, efficient and functioning agricultural supply chains that link hinterland producers to market systems can contribute to sustainable diets, reduce food waste along the chain and stabilise livelihoods in distribution, processing and manufacture of food and fibre products
- Water, nutrients and energy can be resourced, recovered and reused in agricultural production in the city region
- Participatory governance structures are created to include stakeholders from multiple sectors from both urban and rural areas in a given city region.

This work is one of the few (but increasing) attempts to characterise the vision and components of a sustainable and resilient CRFS. Attempts to use such vision to define CRFS policies and strategies are also recent. One example is the Melbourne resilient city foodbowl study (Carey R., et al., 2016) illustrated below:

Image 5: Melbourne resilient foodbowl



This infographic presents a visual concept of a resilient city foodbowl for Melbourne. In this vision, Melbourne retains its city fringe farmland as a source of fresh, healthy food as the city grows, reducing the city's dependence on distant sources of food. Valuable city waste streams are harnessed for food production to counter decreasing supplies of water and conventional fertilisers. Areas of farmland close to the city's water treatment plants are developed as 'drought proof' areas of food production. Food from Melbourne's foodbowl is easy to identify and widely available throughout the region, and local and regional food systems are strengthened, growing the regional economy. Source: Carey et al.(2016).

It will be important to agree more widely on such visions- or at least make them locally explicit- as this will help to better define the required or expected behaviour from government, the private and the civil sector in supporting developments to such sustainable and resilient CRFS. For example, several of the case studies described in Chapter 4 and 5 illustrate how visions of a sustainable CRFS (for example in Belo Horizonte based on the 'Right to Food for All' and in Ontario based on a vision of local economic development) shape the choice for specific government (and private sector) interventions in this area.

2.4 Implications of a sustainable and resilient CRFS for private sector businesses behaviour

As indicated above for government behaviour, having a vision for a more sustainable and resilient CRFS begins to shed light on the kind of desirable changes in business behaviour or culture that is needed to shape such food systems¹⁸.

To make progress towards these overarching goals there are specific changes that are required within the private sector and for specific types of food sector businesses in terms of focus, working culture and practices.

Changes required by type of sector are listed below:

- Production: Optimised and more diverse city region food production capacity
- Processing: Sufficient and appropriate regional food processing capacity (that meet food safety standards and provide healthy and sustainable food to the population)
- Distribution: Increased wholesale and distribution of regionally produced food making use of diverse outlets, e.g. markets, food supply hubs, IT platforms
- Retail: Strengthened presence of food outlets (shops, canteens, markets, street traders) that supply local and fresh healthy food to city residents; improved access to and use of safe, healthy/nutritious, culturally appropriate city region food for vulnerable households/groups in the city region (in sufficient quantity)
- Public catering/hospitality/eating out: Increased offer of healthy, safe and nutritious food
- Waste: Increased private sector engagement in food waste prevention and reduction throughout the food supply chain and increased recycling for safe human consumption.
- Local trade: Increased retention of the 'local food dollar' and positioning of the city region agri-food sector to contribute directly to the regional economy
- Local employment: Creation of decent jobs and opportunities throughout the entire food supply chain, ensuring social inclusion/equity and fairness for all workers
- Circular economy: Private sector commitment and support to optimised recycling of nutrients, water and energy for regional food production and wider environmental concerns.

¹⁸ Current work on 'Understanding the CRFS: Planning for a more food secure and resilient city'; RUAF Foundation, FAO Food for the Cities Programme, Laurier Centre for Sustainable Food Systems, 2014-2017. See <http://www.ruaf.org/projects/developing-tools-mapping-and-assessing-sustainable-city-region-food-systems-cityfoodtools>; <http://www.fao.org/in-action/food-for-cities-programme/activities/en/>

Jennings, S. et al. (2015) lay out 'some of the practical implications of a CRFS approach for private sector players in the food system:

Large agricultural business

- May need to alter business strategy to engage with regional markets – routes to market could look very different, requiring new contractual agreements with purchasers
- There may be a need to change of diversity the type of food product being produced, and the agricultural practices used
- May see new corporate responsibility angles in leading on sustainability initiatives that focus on generating local value.

The smaller-scale producer

- May need to change crops and agricultural techniques
- Some farmers might develop new more direct routes to market with greater involvement in retail themselves. For others it might mean new kinds of relationships with purchasers
- Likely to require access to capital and skills development to change production and marketing, potentially through more structured collaborations with farmer organisations.

Food retailers

- Would need clear and supportive policy instruments (grants, regulations, infrastructure investments) to ensure SME's are not squeezed out of the market
- May require involvement in pre-competitive collaborations and investments to develop city region scale solutions to logistics and processing requirements
- For large retailers, may require devolving a degree of authority to regional decision-makers, to link the centralised spine of the operations to regional stores.

Food manufacturers

- May see potential marketing benefits to leading on sustainability initiatives or creating supply chains that incorporate local small-scale growers
- In order to maintain cost effectiveness and business flexibility, would expect proportionality when it comes to city region sourcing targets, and flexibility when it comes to non-indigenous products
- May require involvement in pre-competitive collaborations and investments to develop city region scale solutions to logistics and processing, for example a structured trading forum of brokering services.'

3. City region case studies on the food system in three city regions and the role of the private sector in shaping those

As integral part of this study, local researchers undertook case studies on the role of the private sector in three specific city region food systems. The studies describe the nature of the food system in each city region and the role of the private sector in shaping the CRFS with a particular focus in each city region:

- Public sector caterers and their supply chains – city region of Bristol, UK
- Short food supply chain initiatives and social housing engagement in city region food systems – city region of Rotterdam, the Netherlands and
- The larger processing and retail sector – city region of Quito, Ecuador.

The characteristics, challenges and recommendations regarding specific private sector involvement in building more sustainable and resilient CRFS are also described.

The three city region case studies confirm that the described city region food systems have elements of each type of food system (food systems 1.0, 2.0 and, much more incipient, food system 3.0 or sustainable and resilient CRFS). Therefore the pragmatic approach needs to be agreeing on a direction of travel (vision/policy objectives) in regards to achievable improvements (see also Chapter 2.5). Implications for supporting private sector behaviour and functions to contribute to the goals of a more sustainable and resilient CRFS in each of the city regions vary from support for localised production and processing to engagement with environmental and social sustainability criteria. This is evidenced by both government and private sector aims as outlined below. They show the involvement of traditional food players which are focussed to a greater or lesser extent on sustainable and resilient CRFS and the increased involvement of non-traditional food players such as social housing and retail companies with specific sustainability or social values.

The city region of Rotterdam is characterised by food system 2.0, with a growing number of (smaller) initiatives working towards more sustainable and resilient CRFS. These include various short supply chains that focus on minimising the distance between production and retail outlets in the city region, delivering the most efficient distribution and providing the link between consumers and producers through telling the story well. This model could arguably become a key element in realising the vision of a sustainable and resilient CRFS. The potential for developing a more sustainable and resilient CRFS in Rotterdam lies in the presence of both engaged entrepreneurs as well as consumers demanding –and willing to pay- for locally/regionally produced food.

Innovations in the Rotterdam city region food system are interestingly also driven by non-traditional food players. Financial organisations, health institutes, waste companies, landowners and social housing and real estate companies in Rotterdam are some of the new players that contribute a more sustainable and resilient CRFS. Their engagement is based on a combination of social, public health, environmental and economic drivers. Their main role lies in the creation of a supporting environment for a variety of food initiatives in Rotterdam city region.

Although the documented number and type of private actor players and initiatives is high, the scale of intervention in the Rotterdam city region is still limited and the (expected) impact on

the amount of food that is locally produced, on the number of jobs created in city region food system and on other services, is low. It is estimated that 1 to 10% of food is currently from the city region, depending on the type of product and the set boundaries for the city region)¹⁹. The examples provided in the city case study of Rotterdam are particularly valuable in the sense that they show different innovations –by different private sector players- , raise awareness and initiate trends. At the same time, the Rotterdam examples illustrate the vulnerability of the initiatives and challenges with regards to how existing initiatives can be sustained, up-scaled and how impact can be monitored. Longer-term support and collaboration/coordination among local and mainstream food initiatives are two crucial factors identified.

The city region food system in Quito is characterised by a combination of food system 1.0 and 2.0. In Quito, the food system is increasingly dominated by larger processing and retail. Rapid rates of urbanisation and industrialisation of food practices are changing systemically, and the food market is becoming increasingly concentrated. For example, the leading four grocery retailers' market share of total food sales value for 2013 was over 40% in Ecuador.

Data from a study mentioned earlier (see Chapter 1) indicate a relatively high presence of city region production destined to the city region market (currently corresponding to 45% of consumption needs if the Province of Pichincha in which Quito is located is taken as the city region). This demonstrates that the Quito city region presents real opportunities to develop a more sustainable and resilient CRFS. This is very much due to a remaining large presence of smaller-scale producers and intermediaries in the city region (or the remaining larger presence of a food system 1.0) and the continued larger importance of rural areas (although changing rapidly with uncontrolled urbanisation processes). This is also due to the continued presence of traditional relations between smaller and larger processing companies and city region suppliers. Other supporting drivers for building a more sustainable and resilient CRFS are found in national and local government programmes.

Quito municipality is supporting urban and peri-urban agriculture production and the development of local markets, where small-scale producers from the Quito city region directly connect to (higher income) urban consumer groups. Current national regulation requires supermarkets to include small-scale producers, although it is still uncertain to what degree they will do so. The pressure for these companies to be efficient, to offer standardised products and to reduce costs presents challenges and obstacles to small-scale farmers, small enterprises and novel entrepreneurs. Coordination of supply, linking to medium-sized intermediaries who have the capacities to deal with supermarkets, enhancing consumer demand and including city region provenance criteria in procurement policies would be possible solutions.

The Quito case illustrates that combinations of economic drivers (e.g. market niches), social drivers (e.g. consumer demand and private sector social responsibility concerns) and political drivers (e.g. national legislation), as well as different sustainability concerns, can be used to guide further food system development.

The city region food system in Bristol, according to the case study authors', presents a combination of food system 2.0 and explicit government and private sector engagement towards a food system 3.0 and a sustainable and resilient CRFS. In Bristol, a novel (national) catering mark scheme that is used by public sector buyers (such as hospitals, schools and universities) provides opportunities for city region suppliers. Sourcing products

¹⁹ Preliminary results from a CRFS assessment in the city region of Utrecht (RUF Foundation, in progress).

from the city region meant changing some of the supply chain arrangements and buying (a proportion of fresh products) direct from specialist wholesalers or processors who are able to match the provenance, volume, quality and audit requirements. Because of the scale of interventions (in terms of number of meals provided and volume of production that needs to be sourced regionally), the impact may be higher than in the other two cities, although hard data are not available. The impact can be further increased if even more specific and stronger local/regional sourcing requirements and targets are more strongly advocated and demanded (see some of the local procurement examples provided in the government case study no. 17).

City region food self-sufficiency will differ widely for different food products. As indicated in a separate study on Bristol (Carey, J., 2011) 'the area of land needed to supply the City of Bristol with food extends well across the city region and into Wales. Variations in topography and climate mean some areas are better for pasture, others for arable, so it is essential to look at national as well as regional patterns of production. Meat and dairy are two staples where the production within a fifty-mile radius of Bristol is sufficient to meet the needs of the City.' The impact on employment in the regional food economy seems to be highest if a food supply chain approach is advocated, where support is not provided to individual businesses but to a network of private sector players involved in the city region food system. Institutional buyer awareness and demand, as well as campaigns such as the Food for Life Catering Mark in the UK, prove to be effective drivers of change towards a more sustainable and resilient CRFS in Bristol.

This chapter provides summaries of each of the city region case studies. The full reports are available on the RUAF website (see <http://www.ruaf.org/projects/role-private-sector-city-region-food-systems>). Findings of the city region case studies are further analysed in the following chapters. Drivers for private sector engagement are discussed in Chapter 5, policy environments and government programmes in Chapter 6, while business characteristics are further described in Chapter 7.

3.1 The CRFS in the Bristol city region and the role of public procurement

In Bristol, UK, city region food supply into public sector food procurement and application of the policy instrument 'Food for Life Catering Mark' is driving changes within the city region food system.

The Bristol city region food system and local food supply

Bristol city region is the area within roughly an 100 km radius of Bristol, i.e. the West of England region. Carey, J. (2011) suggests that Bristol falls between the food system categories 2.0 and 3.0 (see Chapter 2). There is a huge range of food produced and available in the city region, but still only a small proportion visibly sold in the city of Bristol according to available data. Carey, J. (2011) provides an optimistic picture for a more sustainable and resilient city region food system if there are efforts to build on the wealth of local producers, wholesalers, processors, caterers and shopkeepers, and if there is support for and nurturing of the existing network of community groups, organisations, and entrepreneurs all of whom are interested in good, sustainably produced food.

The public procurement sector in the UK (and the wider catering industry) has been heavily influenced by the Food for Life Catering Mark (CM). This voluntary accreditation scheme works with bronze, silver and gold standards for UK caterers with a focus on provenance

and traceability. At a time of strong public pressure for improvements to school and hospital meals, it has proven to be an effective tool for driving qualitative change in the public sector catering (for further details see Chapter 6.3).

North Bristol NHS Trust, the Catering Mark and local supply

North Bristol NHS Trust (NBT) has been serving *Silver Catering Mark* meals to hospital patients since 2013, having gained Bronze initially in 2009. NBT kitchens operate 5 days a week and prepare 3000 meals a day on site for the cook/chill system at Southmead Hospital in Bristol. The hospital's staff restaurant also has a CM Bronze award and is working towards gaining Silver.

NBT were inspired to review their food procurement by the ground-breaking work of a London hospital prior to the launch of the Catering Mark. NBT therefore was already starting to go down a more local and traceable sourcing route but the Catering Mark enabled this to happen in a structured way and NBT became one of the first hospitals to gain the Bronze award.

NBT's total annual food spend is UK pounds £1,019,868. The majority of food at NBT is procured through one national catering supplier. NBT also procure 37% of the total expenditure direct through separate contracts from processors and wholesalers in the Southwest region. 24% of NBT's annual food spending accounts for suppliers who are based in the city region and also source the majority of their raw material from the city region. NBT's procurement from the city region focuses on dairy products (milk, cheese and ice-cream), bakery goods (including flour) and meat. The most significant product category for produce sourced from within a 100 km radius of Bristol is dairy, which is not surprising given the dominance this sector has in the region. In the step up from Bronze to Silver (Food For Life – FFL – catering mark) for patient meals, NBT changed to organic mince beef from a city region supplier.

Image 6: Silver and gold catering mark requirements



As it is not easy to find local suppliers, NBT has made use of support with sourcing connections from their regional Catering Mark Development Manager. They have also worked closely with one of their locally-based wholesaler suppliers who has seen the benefit to their own business from having been involved with NBT; has become more engaged in regional/local supply and has been introducing NBT to new local products e.g. a local sausage. This supplier also helps the primary suppliers to become compliant with NBT requirements.

As a result of working with the FFL catering mark, NBT reported a stronger personal interest and awareness amongst the catering management team about provenance and animal welfare. Traceability of food has been important; e.g. during the horsemeat scare, there was not one complaint or need to deal with any concerns because the meat used by the hospital is fully traceable. NBT has gained in terms of reputation and patient satisfaction. NBT also comment on changes to the relationships between clients and suppliers – there is more direct relationship with local suppliers as opposed to just one big national supplier.

Image 7: North Bristol Health Trust catering team with the silver catering mark award



Source: North Bristol Health Trust

Bristol City Council/Eden Food Services, the Catering Mark and local supply

In 2015 Bristol City Council (BCC) included in the new school meals contract that the caterer should hold the Catering Mark Silver level award or should be able to demonstrate clear progress towards attaining Silver. The CM offers BCC independent assurance in regards to standards, particularly when BCC's resource to follow up and monitor compliance with caterers during a contract is very limited. The CM also fulfils the majority of the Governments Plan for Public Procurement (Balanced Scorecard) criteria.

Eden Food Services (Eden) is a national catering company and holds Bristol City Council's contract to provide school meals in 126 schools in the Bristol city region. This began in 2007 as an 8-year contract worth UK pound £40m (£5 million per year). Eden was just one of a handful of suppliers to pilot the catering mark approach from 2009 (elsewhere in the UK). They were the first national caterer to both attain bronze and then silver. The drive came from Local Authority requirements and Eden was able to respond to it as a business. In 2014, Eden became the first catering business in the UK to achieve the Catering Mark gold standard, a benchmark that encourages a significant proportion of produce to be sourced regionally and a proportion of organic produce amongst a wide range of other criteria. In 2015 Eden gained Gold CM accreditation for their Bristol school meals and has opened a demonstration kitchen.

Eden Food Services source fruit and vegetables, milk, yogurt, eggs and halal meat from the South West region. The most significant product category for procurement from the city

region is fruit and vegetables, which are supplied by a Bristol based specialist wholesaler. To attain the 2015 catering mark gold award in Bristol, the company changed to 100% organic milk and free-range pork.

Eden highlight the fact that it takes time to make changes and that there is a need for specialist staff in the organisation who have time to engage in dialogue, to learn about what is available and identify which suppliers are capable of meeting the specifications and required volume. They work with suppliers who are able to meet the volume requirements and audit requirements (prospective suppliers are checked for meeting audit requirements prior to any supply contracts being agreed) but Eden still has to understand and appreciate restrictions that come from dealing with local suppliers. The company has to justify any changes commercially: ethos + value + competitiveness drives change.

As a contracted catering supplier to Bristol City Council, Eden can see the impact of the contract specification trickle down and across the supply chain. 'If you make it a requirement in the tenders then you will pull through major cultural change and make it the norm' (to source from the region etc.). Sourcing of local products means Eden can meet Local Authority tender requirements on local sourcing, so it gives them a business advantage.

CRFS suppliers – types of businesses and common characteristics

Sourcing products from the city region means changing some of the supply arrangements and buying (a proportion of fresh products) direct from specialist wholesalers or processors who are able to match the provenance, volume, quality and audit requirements.

The case study provided support to the common assumption that the size of the city region scale buyers suits businesses which are small to medium size. For them, city region markets make economic sense. The city region businesses who supply the Bristol procurement sector generally engage with a wide range of markets and catering is just one of many outlets. When these businesses supply the public procurement market they either have a direct relationship with the public sector buyer or distribute themselves or they use a regional wholesaler. The city region supply chains run separately from the centralised national and international food supply chains that the buyers normally support via employing specialist large scale catering companies.

Analysis of interviews with the majority of Eden and NBT's direct suppliers of produce from the city region suggests there are common characteristics that the majority of these direct suppliers share.

- Small to medium size enterprises (EU definition under 250 employees and under 50 million Euro annual turnover)
- Ownership: family run, run by a small partnership or have sole owners
- Affinity with the region and pride and passion in running a family business
- Control of their own markets
- Wide range of skills within the family-run business
- Volume and traceability
- Flexibility
- Human scale of operation
- City region markets.

Supporting the increased sourcing of food from the city region

Learning from the buyers – NBT and Eden

The study has identified risks and challenges in sourcing from the city region:

- *Price:* Ultimately it comes back down to the right price. If that works then local sourcing can happen
- *Support:* Help with finding suppliers has been crucial
- *Due diligence processes:* Buying direct from suppliers is a risk because of the due diligence requirements that fall on the hospital. The suppliers have to have evidence of accreditation at a level equivalent or higher than NHS requirements. It is much easier to require the wholesaler to make sure all this is in place. Hospital staff do not have the time to assist the suppliers on this.
- *Meeting requirements:* From Eden's experience, there are no risks/ limitations as long as they work with suppliers who are able to meet the volume requirements and audit requirements.

Learning from the CRFS suppliers

Interviews highlighted a number of challenging issues in terms of maintaining or increasing city region trade. Food service is a notoriously low price market and other markets that these (processing) businesses engage in allow higher prices either because the business can sell a premium brand or can sell direct. All interviewees, procurers and suppliers, highlighted the price sensitivity of these contracts and cited price pressure as the key challenge for a city region supplier.

Challenging issues in maintaining and increasing city region supplies include the following:

- Price pressure
- Demand and wider use of the Catering Mark
- National scale catering companies
- Consistency
- Distribution
- Lack of direct relationships between procurers and suppliers
- Audit requirements
- Availability of city region produce
- Volumes.

What is required to maintain and increase city region food supply

Policy change: In this particular type of supply chain the clearest policy instrument is the food procurement tender specification set by the local authority. Including a requirement for the contracted caterer to work with the Catering Mark accreditation scheme brings an even clearer structure to developing new city region supply and it has a trickle-down effect. 'Often the amount of local product increases during the process of contract management as the

caterer decides to do more. The catering mark has changed the direction of our business and in some respects has enabled us to grow' [in terms of other CM related clients, and carrying new CM-compliant local products]. (Wholesaler)

Consumer perception and demand: The success of the Catering Mark has been in the context of intense public debate. 'It is customers who really drive the change and we have seen a huge change over the last three decades in people's awareness and interest as to where the food is coming from' (supplier). Demand, combined with availability is key to local supply.

Traditional relationships and economic sense: From the supplier perspective the most obvious motivation is price and demand. 'It makes sense (to buy from city region growers) when produce is in season and if the price is competitive'. Other key reasons are the longevity of relationships that have been built up over many years; clear provenance and traceability; shorter trips and time savings. These factors are all part of maintaining a competitive and viable business.

Local champions: Often it requires an early innovation or pioneering effort by just a few individuals to pave the way for others to follow – whether it be a catering manager or a farmer or a chef. One of the wholesalers highlights how the restaurant trade is a key factor in driving local sourcing in their case; 'Chefs in the Bristol region are driving change with their demand for produce with provenance and story.'

Food culture actors: Beyond the immediate task of supplying and preparing food, there are wider non-private sector players who also play important roles in managing and improving processes around quality and provenance of food supply and who establish a particular food culture with specific values. These include the Procurement and Public Health officers of Bristol City Council that manage the school meal contract with Eden and support work on healthy eating in schools; 'client' school communities of parents and staff who have called for improved meal standards and adoption of the Catering Mark; the Senior Directors of NBT who have supported adoption of the Catering Mark by their in-house catering team.

Impacts of supporting CRFS suppliers

Demand from public procurement buyers in Bristol for city region or South West region produce, tends to support small to medium size processors and wholesalers and in turn, their local suppliers. The impact is felt in many ways. From supporting local employment by contributing to the businesses' market outlets, to providing a local market for suppliers further down the chain to the impact a thriving local food processor has on local trade. There is also anecdotal evidence of businesses in these chains focussing on more environmentally friendly management.

Based on interviews with businesses already involved with city region food supply we can highlight the following areas for consideration.

Public sector buyers: Other public sector-related food buyers could perhaps benefit from having more information about Catering Mark; help with making their case (e.g. marketing info on why public procurers should choose city region businesses); help with addressing price pressure (changing menus, using cheaper cuts/less meat),

Suppliers: Having control of appropriate processing capacity is an important factor in enabling a supplier to sell to city region markets, so more support with this would be helpful to businesses considering more involvement in city region food supply.

Business values: Given that there appear to be specific values and approaches held by the types of businesses involved in city region food supply, it might be useful to help the progressive/emerging companies sustain their founding values over time. Working with Catering Mark (either as a caterer or supplier) could be part of this process.

Recognition of the importance of wholesalers: The processors, wholesalers and distributors are often overlooked in discussions about the food system but they are key players in the case of supply to the public sector and potentially offer a scale of operation where impacts can be felt at a city region level.

Recommendations to local authorities

Public investment in sustainable and resilient CRFS: Where there is public money, it should be required to benefit the local economy using the policy support framework of the social value act; Red Tractor; the local act; the CM. Use example of NBT and milk purchasing. If NBT can spend somewhere between 25-30% of its annual food budget on products sourced and purchased from the city region, so can others. And it will have a positive impact on the local economy.

Information for public sector buyers: There is an on-going need to focus on the buyer and enable them to understand the options available around contract specification and contract management, the availability of products, the businesses that can help them with sourcing, the case for doing it.

Role of 'voluntary' mechanisms: These can be very helpful tools for local authorities to use, especially now that they are becoming 'industry norm'. In this case, top-down policy is only (a small) part of the story. Driving a cultural shift using policy instruments from within the 'industry' is clearly effective. The Catering Mark is voluntary but has been promoted to great effect, in line with public opinion and national campaigns. It has also linked in with other drivers such as the 'industry-led' Red Tractor (a food assurance scheme that looks at production standards on safety, hygiene, animal welfare and food production) that is now a normal requirement for retail and currently also seen as an assurance of UK provenance.

3.2 The CRFS in the Quito Metropolitan District and the role of the processing and retail sector

The food system in the Quito Metropolitan District (DMQ) can be characterised as a mixture of a food system 1.0 and 2.0.

Ecuador's internal food market has consistently grown over recent years. Food consumption statistics show that fresh and processed food household expenses have grown annually by 3% over recent years and totalled nearly 6.9 US million dollars in 2013. At the same time the country has increased its exports and the food processing industry now accounts for 45% of all manufactures and nearly one third of exports.

In Quito, food processing is increasingly dominated by a small number of national enterprises. Whilst these businesses are still traditional and are still sourcing from some regional SMEs and producers, they are involved in a process of modernisation (for example by centralising logistics) and concentration (a limited number of businesses share the majority of market share and turnover). This is particularly true in the meat, bread and grain-based and dairy sector, all sectors that have the highest growth in consumer demand. For each of these sectors, no more than 5 large companies account for over 80% of the sales.

Alongside these larger enterprises a much larger number of small to medium sized enterprises tries to maintain and develop their place in a (changing) market.

The meat sector

The largest meat processor PRONACA runs production plants in all the regions of the country, including the DMQ area and the surrounding Pichincha Province. According to PRONACA'S sustainability report from 2015, 80% of their total procurement budget of 866 million US dollars per year is sourced from national suppliers. Local suppliers near to operation centres account for 45% of the procurement and the business therefore contributes to 'the development of these territories'. Whilst the socio-economic characteristics (e.g. large or small enterprises or producers) are not known, suppliers near to the PRONACA operation centres in the DMQ/Pichincha area could be classed as Quito city region suppliers.

Smaller enterprises in the DMQ area, such as MACAFRI, are selling directly to consumers via social networks and a retail store in the north of the city. According to its director, smaller firms such as MACAFRI are closer to their suppliers (which are intermediaries or small-scale producers) and they are more interested in investing in their continuous improvement by offering incentives for regular supply and good quality products.

The bread and grain-based sector

Four major companies account for the majority of sales in this sector. The remainder of the market is shared between more than 70 small companies. This sector is different due to the fact that primary materials are rarely available in the country and Ecuador imports almost 98% of its wheat. Therefore there are no local producers in this sector. However, the companies usually work with local middle-men in charge of distributing their products to local stores. Public procurement (schools) accounts for 10% of the sales at one of the main businesses which illustrates that even this sector has potential employment and consumption related impacts on the city region food system.

The dairy sector

In this sector there are also four companies that account for more than 50% of the sales. These companies collect milk from producers all over the country which are mostly small and medium cattle breeders. Almost 22% of the milk is produced in the Pichincha province where Quito is located. These producers deliver their product to middle-men or, in a few cases, directly to some of the processing companies. For example, El Ordeño a medium-sized milk processing company (responsible for 5% of all sales) collects milk directly from medium and large farmers and (cooperative) collection centres. In contrast to other companies they have not lowered payments to suppliers in the past year (due to the economic crisis and lowering of household budgets and respective consumer demand). According to the managers this was only possible by excluding middle-men from the chain. They think that by building more direct relationships they are better positioned to contribute to building a fairer and more sustainable (and to a certain extent local) food system.

The retail sector

Similar to the food processing system, in the food retail sector modern supermarket supply chains continue to co-exist alongside traditional players like public markets where complex subsistence economies continue to thrive. However, it is important to point out that food expenditure is highly segmented by class and ethnicity patterns. Supermarkets represent

only 8.7% of the total food purchases of Ecuadorian families, although for the countries' two largest cities such as Quito and Guayaquil this percentage can increase up to 17%. Popular traditional markets and local stores, as well as the informal sector represent the other main sources of food procurement for a large part of the population. This dominance is related to the existence of a mass of semi-independent (low-income) workforce, strong commercial links between rural and urban populations (in which ethnicity is a key factor) and demand for low priced food in the cities.

Again, four large supermarket chains dominate the food retail sector in the country. The biggest supermarket, Corporación La Favorita (CLF), operates using a single distribution centre near Quito, where they take in stock and distribute to their stores around the country on a daily basis. The company requires its suppliers to meet strict specification such as presentation, frequency, fixed delivery schedules, volumes). In the Ecuadorian food system which still has such the large number of small farmers and food enterprises, only a small group of powerful companies has the capacity to meet the CLF's requirements. This supports further concentration across the supply chain.

In contrast, another company (Mega Santa Maria (MSM) still sources from several small and medium enterprises. This practice was supported by the *Good Commercial Practices Manual for Supermarkets*. Issued in 2014 (*Manual de Buenas Prácticas Comerciales para los Supermercados*), the policy calls for inclusion of small-scale producers in the distribution channel. However, MSM's CEO acknowledges that small suppliers often cannot afford to distribute the products directly to the supermarket and they need to sell their products to a commercial company (intermediary) that can undertake the logistics. Due to operational and efficiency concerns MSM has started more recently to look for bigger suppliers that can in turn source from several small and medium sized producers. The question remains to what extent MSM's motivation to reduce costs and to ensure product quality (and standardisations) leaves room for such a diverse (and less centred) food retail system.

Image 8: The supermarket Santa María in la Victoria, Quito complies with the Good Practices Manual by exhibiting products from national producers



Source: http://www.elheraldo.com.ec/index.php?fecha=2015-09-07&seccion=Varios¬icia=n&id_varios=2446

Social ex- or inclusion?

The processes of modernisation and concentration can lead to the exclusion of small to medium enterprises, producers and low-income consumers. Innovations in the food processing, retail and government sector are aiming at increasing wider food access for the large number of small-scale producers, SMEs and low-income consumers.

The previously mentioned *Manual for Good Commercial Practices* obliges supermarkets to source 11% of their total procurement from smallholders and artisan producers. The regulation does not consider factors such as provenance. Instead, the goal is to promote competitive markets and set formal restrictions to limit oligopolistic consolidations (such as the ones reported above). MSM, like other supermarket chains, argues that smallholders cannot supply the required quantities on time, they don't meet the required food hygiene standards, the quality of their products is not consistent and they lack access to a cold chain. The new regulation could support the existence of the middle-men as it is easier for farmers to sell their produce to them instead of incurring the required transport and logistical costs when dealing with supermarkets directly. And although middle-men play an important role in the city region food system and can offer important job opportunities, the extent to which these systems favour inclusion of small-scale and local farmers is still to be analysed.

SMEs and short supply chains

Small to medium enterprises (SME) are often family owned and are more likely to work with small-scale producers and local traders. In fact, these enterprises have (traditionally) closer

connections to their suppliers, whether they are producers or intermediaries. Many of them also have the ability to respond fast to changing contexts and to innovate by, for example, looking for direct ways to sell their products to consumers.

Most SMEs entrepreneurs are proud of their products and they care for issues such as improving their practices to improve product quality and providing information to consumers. In addition, SME processors/distributors in Quito also offer more opportunities for localised sourcing as they are less likely to operate a centralised logistics system. Strengthening their procurement systems with inclusive practices that involve local producers, promoting diversification through the creation of organic and/or healthier products coming from nearby producers and facilitating their access to consumers are some of the possibilities to strengthen the engagement of SMEs in a more sustainable city region food system.

At the same time such strategies should be accompanied by supporting the numerous smallholders who produce nutritious, healthy food and who can offer their products (fresh or processed) directly to consumers or to the SME sector. Quito has seen a rise in short food supply chains over recent years. Consumers can now access locally grown organic food in several markets, mostly at open-air fairs. The majority of producers who participate in these spaces are low-income farmers with restricted access to land and who rely on family labour. In contrast, consumers belong mostly to middle and high income classes.

Image 9: Thursday organic vegetable market



Source: VECO Andino

If smallholders cooperate better they can raise their negotiation position and demand more transparent and inclusive relationships from all players in their supply chains. Specific programmes under the *Local Guarantee Schemes* and direct support mechanisms for small producers and their organisations (such as storage centres or food hubs, irrigation channels, ICT services, commercial and logistics training, knowledge exchange) will be key to ensure a fairer and more equitable distribution of benefits to all players in the food supply chain.

Creating a platform for dialogue including state institutions, supermarkets, processing companies, small and medium enterprises, producer organisations and consumers, may enable all parties to find more common ground. Finally, updated information on the food system is required (where does the food come from; who processes, sells and eats different types of food), as well as transparent communication on food policies and consumers awareness and education are required.

3.3 Food and non-food private sector engagement in the CRFS Rotterdam, with a focus on the role of social housing corporations

The CRFS of Rotterdam is characterised by the paradox of being an international port – a gateway to Europe, particularly for fruit and feed – while at the same time having a small but prolific local food movement that consists of citizens and entrepreneurs who are motivated by environmental and social aims with strong local connections. Rotterdam is still largely supplied by supermarkets and conventional just-in-time distribution, a classical example of food system 2.0 and it is hard to see how this could change in the short term. Nonetheless, the more sectoral approach to food (production, processing, transport and retail) is making way for a more integrated approach to food (i.e. also considering environmental, public health, social justice, education, employment concerns as is characteristic of a more regionally embedded food system 3.0 and of a sustainable and resilient CRFS). This is reflected in the increasing participation of players that are traditionally not considered part of the food sector such as health organisations, schools, social housing companies, commercial real estate, innovative start-ups, proactive NGOs and social entrepreneurs.

Short supply chain initiatives

Rotterdam has seen an increasing number of short supply chain initiatives over recent years. Although these may have social and environmental motives their main driver is commercial viability and they aim to serve a growing niche market. Short food supply chains may involve direct sales on farm, online sales and box schemes, farmers markets, retail and catering (hotels, restaurants, public institutions and private companies).

There are several websites that show where to buy your food directly from farmers or growers in the Rotterdam city region. Farmers work on their own or as a cooperative. Relatively new categories of direct supply are urban farms or urban production sites inside the city. Initiatives range from urban to peri-urban and from self-organised citizen initiatives to professional farmers.

The number of online shops and box schemes is rapidly increasing in the Netherlands and the Rotterdam city region, with new initiatives starting up, but also closing down, regularly. An increasing number of farmer and festival markets offer opportunities for organic local (and national) producers and traders.

In retail and catering, a current trend is the differentiation on the basis of provenance claims. This is expressed both in new catering concepts (e.g. a restaurant using produce from the region) and new product concepts (e.g. local product varieties or recipes). There are restaurants that have on-site production facilities to complement the products that they source locally. There are also urban farms that run a restaurant to market their products. There is a fast food (snack bar) chain that is trying to source potatoes for its world famous Flemish chips from the region. They recently introduced a new food concept where they cut potatoes without peeling them and serve the chips with home-made ragouts and sauces.

Another project re-introduced a traditional dairy breed for meadows on peat soil in the Rotterdam city region. The meat is used in hamburgers served at snack bars in the region.

The high number of new initiatives seems to indicate, on the one hand, the opportunities that are provided by sustainable and resilient CRFS, and on the other, that start-ups in the food sector require founders with a strong drive as it is difficult to achieve financial viability in the early years. For the founders of more profit orientated initiatives such as Fenix Food Factory and Uit Je Eigen Stad en Rotterzwam, the balance between their ideals and financial viability (becoming independent of public or private capital inputs) is an ongoing challenge. Another tentative conclusion is that short food supply chains may benefit from sharing resources, infrastructure and knowledge with mainstream food supply chain players rather than attempt to compete with them. Additionally, logistical efficiency can be much higher when several local initiatives co-operate.

Image 10: Rotterzwam entrepreneurs grow mushrooms on coffee waste collected by bike from local restaurants



Source: <http://www.eetbaarrotterdam.nl/2014/03/er-groeit-eetbare-paddestoelen-kweken/rotterzwam/>

Non-traditional food players

In general it can be stated that the increasing non-food private sector engagement in the Rotterdam CRFS is primarily driven by a wide range of urban motives. These motives range from improving social cohesion, improving public health and building a sustainable future to securing real estate value by providing a beautiful and appealing living environment. Several types of involvement on the part of these players can be distinguished, for example, providing access to financial support, land, financial and human resources, knowledge and expertise, networks and peer knowledge and initiating the development and delivery of projects.

For example, private funds from the Rotterdam region that support social, cultural and/or environmental goals have facilitated city food region initiatives through grant support. Typically they support events, delivery costs and investment in materials and consumables such as plants, containers or kitchens. The Dutch Rabobank (originally a cooperative with a focus on agriculture) offers regional funds (as part of their Banking4Food strategy) to support initiatives by local citizens and entrepreneurs who use food as a focus.

It is striking that social housing corporations (SHCs) such as Havensteder, Vestia and Woonstad Rotterdam, as well as commercial real estate developers, have played an important role in facilitating urban agriculture and food related initiatives by providing access to land and financial support. They own vacant land that is not immediately being developed (because of the economic crisis) and they have vacant office space. For urban food-related initiatives, access to (production/ retail) space is essential and access to temporarily unused land (or vacant office space) is one way to avoid the competition for scarce and valuable space in the city. Vacant land can be turned into a collective (edible) green space with possibilities for interaction. Vacant office space can be used as a neighbourhood restaurant that allows children to learn to cook. SHCs in turn appreciate the benefits of such initiatives as these urban CRFS activities have the potential to contribute to increasing social cohesion and the quality of shared and public spaces and to improving a perceived 'sense of place'.

Commercial real estate developers also consider an (urban) farm as a facility for residential urban development, or even as a central force around which an area can be developed. The same mechanism can be observed in the way food distribution and retail is used as a driver for urban development. As high streets are under increasing pressure from online competition, retail property developers are looking to develop different shopping experiences. As demonstrated by the privately developed Markthal and Fenix Food Factory, food offers plenty of opportunities for an enjoyable shopping experience through smelling, tasting, touching and eating, all things that cannot be done through the internet. It is assumed that this will reflect on real estate value, i.e. increasing or at least maintaining value. Such initiatives also have the potential to extend the average length of residency for tenants in the neighbourhood. This point and the impact on real estate value both translate into savings and profits from a real estate point of view.

SHC/real estate supported projects involve Uit Je Eigen Stad (UJES), an urban farm on a derelict site in the Rotterdam area (SHC/real estate roles: site design, building services, pre-investment to be recovered through rent); Hotspot Hutspot, a pop-up restaurant that teaches children how to cook a meal from scratch (SHC roles: financial support, access to land and building space); Stadslandbouw Schiebroek, a network of urban gardens for residents in a social housing neighbourhood (SHC roles: access to land, water and hiring of a coordinator/coach) and the mentioned Markthal, a retail real estate project with a focus on food (real estate role: owner of the Markthal, renting out space). Their motives range from Corporate Social Responsibility, asset value addition to place making. SHCs often have a longer term relation with urban food initiatives than real estate agencies do. Most food-related projects, such as Hotspot Hutspot and Stadslandbouw Schiebroek supported by SHCs directly benefit their main target group; the tenants of social housing. A longer-term commitment, and one that combines different support strategies, seems to be the most successful.

There are also various private land owners who make some of their land available to food production or related activities. Inside the city, Trompenburg Gardens and Arboretum are planning to turn 1.2 hectares of its 8 hectares public gardens into a food forest in collaboration with, and initiated by, a group of social entrepreneurs.

Social care and rehabilitation organisations have been and still are involved in food-related activities as part of their work to help people heal or enable them to get back to work.

Although the active involvement of traditional utility companies (e.g. energy and water) in developing specific solutions to support short food supply chains has been limited, some innovative projects have emerged. Between 2006 and 2009 the energy company E.ON was a partner in a project that used waste heat from its plant in the Rotterdam harbour to grow tropical shrimps (Happy Shrimp). Other initiatives are developed around the safe re-use of food waste for human consumption. This is done by the Food Bank and also by pop-up restaurants such as Hotspot Hutspot. These initiatives target people with low income and they are therefore socially inclusive by design. Another initiative is the start-up Kromkommer that turns discarded (odd shaped and surplus) vegetables into products such as soups and they now also supply supermarkets.

This wide range of food system innovations also attracts engineers and consultants, such as suppliers of technological solutions as well as engineering firms.

Future roles of the private sector

Following the implementation of the New Housing Law in 2015, SHCs are required by the government to return to their core tasks (e.g. providing social housing). Their future involvement may be limited to focussing on more socially and economically deprived areas, to maintain current levels of involvement or to share support and responsibilities with other (municipal) actors. At the same time, and in the long run, a completely different approach to urban design and development may be needed. An approach where housing, food production, waste recycling and energy production are all integrated at the local level.

The benefits of supporting urban agriculture and urban food programmes are also not officially valorised. SHCs would welcome further impact studies to establish evidence for supporting such initiatives. Partly as a result of this lack of data and information, it is left to interested staff in the organisations to support specific projects. SHCs that are supporting community gardens are also criticised for addressing issues in the neighbourhood at a cosmetic level rather than solving the real problems, such as renewing the social housing stock. Closer engagement with the city's spatial (selecting the most appropriate locations) and food strategy would also be helpful in this regard. SHCs could use urban agriculture and other local activities in closing loops in sustainable regeneration efforts. The City of Rotterdam and SHC should develop common urban regeneration plans which should include the use of urban agriculture as a regeneration strategy. They should coordinate their activities, their funding and exchange knowledge and experience with private property developers and the relevant municipal departments.

Demand for short food supply chains in the Rotterdam city region is still growing. There is also a trend amongst short food supply chain initiatives to cluster part of their activities with other short food supply chain initiatives in order to become more efficient. Another trend for short supply chains is the diversification of market outlets. For example, Willem & Drees products can be found in the supermarket, at train stations, at the Rotterdamse Oogst farmers' market and they can also be bought from their online shop and delivered home or delivered to customers' workplaces. Both the long supply chains as well as the shorter supply chains need to become more responsive to the market, less focussed on bulk and more focussed on adding value.

At the provincial level, short food supply chains are one of the priorities in the Provincial Rural Development Programme (the other priorities are closing resource loops and biodiversity). These priorities support the further development of a sustainable and resilient CRFS. However, such priorities also have to be supported by the national programme in order to benefit from European funding. Making rural funds available for sustainable and

resilient CRFS development (as a kind of re-ruralisation of the city) could offer new possibilities for financing food-related initiatives in the Rotterdam region.

Public procurement may also offer new opportunities for city regional food production. In 2015, the city of Rotterdam and the Province Zuid-Holland jointly commissioned a study into the potential for growth in short food supply chains. Catering for institutional buyers (hospitals and homes for the elderly) was identified as a potential growth market.

The subjects of circular economy and closing resource loops (water, energy, waste) in local and regional agriculture are worth exploring. Another potentially promising link can be made between short food supply chains and the health sector. In the longer term it is quite possible that health insurance companies will reward people with healthy eating patterns and a healthy lifestyle with lower insurance premiums, even though the scientific validation of such health claims is still being debated.

Private sector support would have more impact if urban agriculture and food projects would be supported for longer and in a more coordinated manner. Real estate companies could integrate food production and waste recycling in their standard development strategies. Certification systems for sustainable buildings (e.g. BREEAM and LEED) now include points for food production in gardens or on roofs and local waste processing such as anaerobic digestion or composting. A good score provides access to green funding.

Future private sector roles are not limited to retrofitting and optimising the current city region food system. For example, the role of private sector players in redesigning a sustainable and resilient CRFS as part of a major redesign of the delta metropolitan landscape could address the mitigation of risks associated with climate change impacts.

Further development of the Rotterdam Food Strategy should include short as well as long food supply chains, the engagement of food start-ups and established (multinational) companies and the link of a social agenda to an economic one. It should also include a spatial strategy of where to produce, process and distribute food for the local and export market. Urban food has become a city marketing tool. It also seems that investment funds are more actively looking at city regional food systems as a new investment opportunity. A policy environment that acknowledges the broader impact of food related activities and supports private sector players to actively engage in these activities could offer further opportunities.

4. Case studies on private sector initiatives that support sustainable and resilient CRFS

The case studies included in this section focus on private sector driven change and include a range of business types and reasons for engagement in more sustainable and resilient CRFS. These include large mainstream players, non-traditional, innovative smaller scale business and social enterprises models and innovative financing arrangements that help to protect and enhance natural resource assets and to increase the efficiency of waste recycling. The section also highlights examples of specific (technological and financial) innovations. The latter includes examples of innovative grant support that specifically targets the private sector's ability and motivation to support sustainable and resilient CRFS. The chapter concludes with examples of public-private-partnerships (PPP) illustrating how PPP can be strong instruments in creating businesses that become an integral and very significant part of more sustainable and resilient CRFS.

4.1 Innovation in the mainstream food system

There are many existing reports and case studies on 'alternative' sustainable food networks coupled with an on-going debate about how to scale up innovative supply chain approaches. The examples below have been selected because they illustrate how mainstream business models can include innovative strategies at a city region scale or how mainstream models themselves can become more sustainable, innovative and at the same time operate at a city region scale.

Case study 1: Autogrill: large scale private sector retail & catering engaged in reducing waste and local sourcing

Autogrill manages over 1000 service stations located at international airports, railway stations, motorways, shopping centres, trade fairs and museums. They all provide food and beverages for travellers. HMSHost is the subsidiary which operates in North America.

Autogrill is committed to reducing and recycling waste and food waste and to sourcing more products locally as part of its corporate sustainability and social responsibility programme. For example, left over food which is still suitable for human consumption is donated to community food banks (HMS Host donated food worth £1.6 million in 2015). Autogrill also promotes better quality diets in their meal offers for customers. The company works in partnership with local communities, its supply sector and international organisations like FAO and WWF to meet its sustainability goals. Examples of the initiatives that Autogrill supports are listed below.

- A joint initiative with WWF (part of the One Planet Food programme) involves the collection of organic waste that is generated at the Villoresi Est, Brianza Nord and Brianza Sud Autogrill restaurants in Milan, Italy. The waste is composted and used at a WWF educational vegetable garden close to the city
- Autogrill Italy also promotes regional specialties. The market area in the stores is dedicated to food products and other items and particularly the 'La Bottegaccia' corner aims to promote local products to tourists
- Some airports in Northern Europe and Indonesia are offering a large variety of local specialties, such as locally produced bread without additives. At the Amsterdam airport the meat used at the Harvest Market and Dutch Kitchen restaurants comes from an organic company (De Koningshoeve) that is based 15 km from the airport. Eggs are sourced from Rondeel, an innovative farm that prioritises animal welfare and the environment. Organic products on sale

also include fruit juices from local producers. Additional agreements were negotiated with local farmers for the delivery of fruit and vegetables in order to reduce the carbon footprint

- In Chicago O Hare Airport (USA) the Urban Garden is a pioneering experiment in terms of environmental sustainability. The project resulted from a collaboration of HMSHost and the Chicago Department of Aviation. The garden is located in Terminal 3 and is designed as an aeroponic garden (plants are cultivated with their roots suspended in air and sprayed at intervals with nutrients) consisting of 26 towers on which over 44 plant species are grown. Those plants including beetroot, sweet basil, a mix of gourmet lettuce, habanero chili peppers, edible violets, thyme, oregano, green peppers and sweet peas). The vegetables, herbs and edible flowers are sold at the airport's HMSHost shops, ensuring a constant supply of fresh, quality products with a 0 km supply chain.

Image 11: Urban gardens in Chicago O Hare Airport



Source: <http://www.autogrill.com/en/stories/ohare-urban-garden-hanging-between-gates>

Airports, railways and city restaurants are part of the city region food system mainly in capitals and larger cities. Autogrill's commitment illustrates how their efforts can have a trickle-down effects on other parts of the city region food supply chain by offering supply opportunities to local farmers, increasing access to food to those in need through food bank donations and reducing food waste.

Case study 2: Accor hotels: large scale private sector catering growing their own vegetables and reducing food waste

Accor hotels, which include Pullman, Sofitel, Novotel, Mercure and the Ibis chains, plan to plant vegetable gardens at many of its hotels (with a target of 1000 hotels by 2020) as part of a plan to reduce food waste by a third. Its restaurants will be required to weigh and record food that is thrown away in order to identify the best strategy for reducing waste. The number of main courses on the menu will be reduced in the interest of waste reduction. Menu development will accommodate more local products.

In France, the Pullman Paris Tour Eiffel has established a large kitchen garden with 650 square metres of fruit, vegetables, flowers and aromatic herbs as well as four beehives and a chicken coop. The ingredients in some of the dishes are 100% from the garden. Nearby the Mercure Paris Montmartre grows its own grapes on the rooftop garden, echoing the famous Paris hill's vineyard. Further south in France, bees are kept on the roof of the Sofitel Marseille Vieux Port and the honey is used for the guests' breakfast. The Novotel Siam Square in Bangkok (Thailand) produces spirulina, a microorganism that is high in protein and amino acids. In Côte d'Ivoire they grow tomatoes, onions and other vegetables on the Ibis Abidjan Plateau hotel's rooftop terraces.

Case study 3: A short chain wholesaler providing seasonal products from the region, Willem & Drees (Netherlands)

Willem & Drees (W&D) is a grocery wholesaler specifically dedicated to short supply chains in the Netherlands. W&D started in June 2009 supplying locally grown vegetables, potatoes and fruit to shops and supermarkets. From initially operating in one town, by 2013 W&D were operating across the entire country and they established a full presence in each region by 2014. W&D now supply supermarkets, catering companies and other out-of-home consumption points throughout the Netherlands with products from selected farmers located as close to the point of sale as possible. W&D's innovation is that they offer mainstream consumers the opportunity to buy seasonal products from their own region. The typical W&D consumer sometimes buys online, sometimes at organic shops, but they are just as likely to shop at conventional supermarkets. W&D offers sustainable local products through mainstream retailers and thereby making it easy for consumers to choose sustainable and local food.

Image 12: Sale of W&D products in a supermarket in the Netherlands



Source: Willem and Drees

W&D is a social enterprise financed by private equity. The financiers support the company's philosophy and business approach. From the start it has been clear that profit has to be made but not at all costs and the main motivation is changing the food system. This creates a different approach to doing business and opens up room for innovation and creativity. W&D have not made a profit yet. However, the company is doing well and growing exponentially. W&D is becoming a brand. Once a brand is established it opens up various opportunities for further innovation.

At the start in 2009, W&D maintained a strict principle of a 40 km maximum distance between farmer and consumer. However, as their business developed they applied the concept of 'locality' in a more dynamic way. Its philosophy is *'from as close as possible'*. W&D developed its own ICT tool to measure the distance between each product and available retail outlets. The ICT tool compares the postal codes (PC) of the products to the PC of the retailer and then automatically chooses the product with the shortest distance. The reason for switching from a fixed distance approach to a more dynamic approach of 'locality' is that a strict distance approach can result in food being transported in half empty trucks (particularly perishable produce with a short shelf life). Since the company started up W&D's product range has expanded dramatically which has resulted in larger distances for most products. The approach also needs to take into account variations across the product range. For example potatoes are widely available throughout the Netherlands,

while organic horse radish is only grown in certain parts of the country. It is important to point out that all produce comes from the Netherlands and the national borders also represent W&D's boundaries.

All products are transported from the place of production to W&D's central distribution centre before being distributed. The products are packed at the farms and labelled at the distribution centre. The label contains information about the product origin and the name of the farm and sometimes a picture of the farmer to further personalise the product. W&D puts a lot of effort into 'telling the story of the farmer and the provenance of the product'. On the website each week a different farmer is highlighted with a story and/or video. In the stores W&D present their produce in wooden branded crates to stand out in the fresh fruit & vegetable section.

W&D focus on selling seasonal products which means consumers have access to varieties of vegetables and fruit that are not usually available (for example rainbow carrots, parsnip, cabbages, special varieties of potatoes or strawberries). The product range has been expanded recently with a focus on more diverse varieties of standard vegetables. The impulse to expand the product range comes from both farmers and from W&D. Farmers may show W&D a special variety that they are growing or W&D encourage farmers to grow something new, such as round courgettes. Farmers experiment with these new varieties or products at their own risk.

W&D work with around 130 farmers throughout the season. None of the farmers sell exclusively to W&D and neither the farmer nor W&D would want to create such dependency. The maximum amount W&D buy from farmers is about 50% of their outputs and on average it is less than 20%. The number of farmers does not expand as rapidly as the number of customers as W&D are able to buy more from the growers they already have. Farmers have to comply with certain W&D standards which are not necessarily organic but in practice 90% of the produce is certified organic. Most suppliers are small-scale farmers and they fully share W&D's vision and mission. Farmers' cooperation with W&D gives them the opportunity to express their ideals. W&D farmers tend to be more innovative and progressive in their farming techniques and choices of crops. Whilst W&D doesn't guarantee the farmer any sales, they guarantee a fixed, mutually agreed price which is considerably higher than mainstream prices. All farmers know what price other farmers receive which illustrates W&D's philosophy that relationships need to be based on trust and transparency. W&D found a way to integrate local food in mainstream logistics whilst containing the core features of short food supply chains, trust and transparency.

4.2 Technological innovation in city region food production

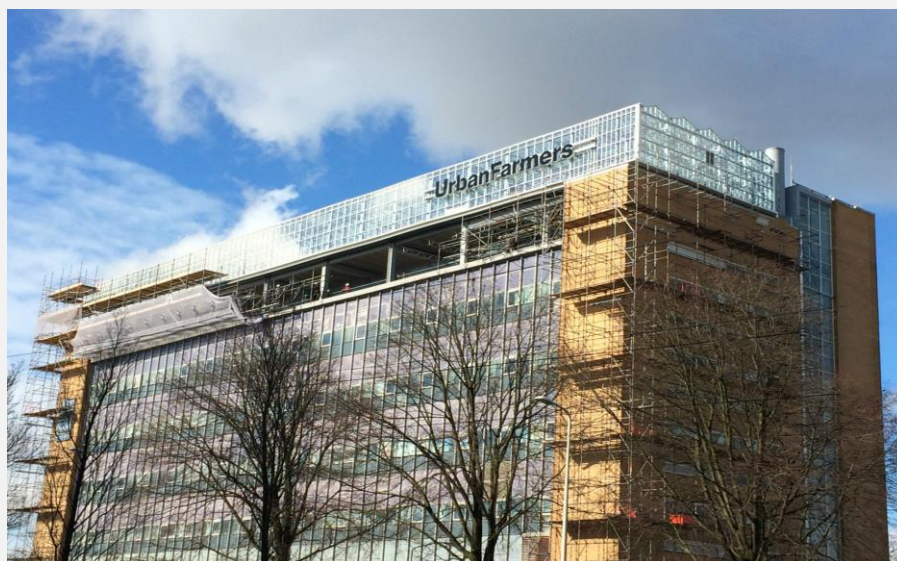
Technological innovation in city region food production makes use of the specific opportunities or constraints offered by city regions. Vertical farming is receiving increasing interest in response to scarcity of land for production in urban areas. Other technological innovations respond to opportunities for connecting urban and agricultural resource flows. These and other technological innovations offer opportunities for new private sector players and engagement for examples as part of corporate sustainability programmes. Examples highlighted in the Rotterdam study (Chapter 3.3) refer to recycling of waste heat (energy), compost, nutrient and water flows. Technological innovation is at the same time also a requirement for business to adapt to the city region market. The latter is illustrated in an interview with a Toronto farmer/processor who is committed to providing good food to their local customers. As Sally Miller highlights 'Steve Martin at Martin's Fruit Farm, a successful commercial apple grower/ processor, described the series of choices and changes that allowed them to remain focused on local markets during decades of pressure from imported apple purveyors that drove many growers out of business. Success for Martin's includes relations with retailers who emphasise local products, flexible market partners (national markets to provide back up when local markets were insufficient), machinery manufacturers

to increase automation, packaging producers (for printed plastic bags), product innovation such as apple chips without preservatives, etc. (personal communication, February 2016).’

Case study 4: Vertical farms

A diverse range of vertical farms (small and large schemes, low and high tech) are being set up by entrepreneurs and companies around the world. The focus is largely on hydro- and aquaponics. For example in the USA, the first commercial vertical farms began operating in 2012. Farmed Here (in Chicago) makes use of aquaponics (a symbiotic system of fish and plants) and produces and sells basil, lettuce and tilapia fish to local supermarkets. Green Spirit Farms began production in 2014. It was established in collaboration with Philips (the world’s largest supplier of horticultural LED grow lights).

Image 13: De Schilde rooftop farm in the Hague



Source: <https://www.facebook.com/UFDDeSchilde/photos/a.678520608885436.1073741830.622839334453564/997641110306716/?type=3&theater>

In The Hague, The Netherlands, the Schilde vertical urban farm is located on the rooftop of buildings that were previously part of an industrial production facility. It was set up by a consortium of Swiss and Dutch Companies, including UrbanFarmers AG, Priva BV, Koppert Biological Systems and Rijk Zwaan, who all have a background in traditional horticulture and technical growing support systems (such as climate control systems). The farm, opened in May 2016, features a production system based on aquaponics production techniques. With an initial 2.7 million Euro investment, The Schilde aims to produce 50 tonnes of vegetables per year on 1500 m². The farm will also grow ca. 20 tonnes of fish. Although the farm will produce far less than conventional greenhouses, the owners aim for a ‘*Fresh Revolution*’ by directly selling local fresh products to local consumers, supermarkets and local restaurants and avoiding expensive distribution systems that are not transparent. The project will provide a showcase for the technologies used in its production system (with an aim to sell applied technologies or licences) and serve as a platform to engage with the local horticulture sector.

In Japan, there are already over 350 vertical farms, called ‘plant factories’, in operation. These mainly grow leafy green vegetables and can be found in old or new warehouses, universities, restaurants and even grocery stores. Recently, some of Japan’s biggest tech-companies (Sharp, Fujitsu, Toshiba and Panasonic) entered the vertical farming business to make use of their unused semi-conductor production facilities and to create new revenue streams. The largest vertical farm in Japan, a collaboration of Mirai and General Electrics, produces roughly one tonne of fresh lettuce per day on 18 levels of stacked environmentally controlled systems. This lettuce is sold in

supermarkets at double the price than conventional products. The demand for these products is already exceeding supply and more vertical farms are being developed (See for some other case studies: <http://mvonederland.nl/publicatie/h-t-business-model-voor-vertical-farming>).

While the vertical farming industry is becoming a more prominent feature in future city region food systems in cities in North America, Japan, China, Korea and more gradually in Europe, they also raise some challenging and fundamental questions.

According to recent research by the Wageningen University, vertical farmed lettuce in the Netherlands is not cost-efficient, e.g. lettuce can be produced more cheaply in the field. Furthermore vertical farming requires high investment costs, using vertical layers only allows for the production of a limited number of crops (leafy vegetables and herbs) and many questions remain about its environmental impacts (e.g. high electricity costs). Beyond costs, concerns also include:

- How to ensure that the rapid development and introduction of technology in vertical farming does not ignore questions of social inclusion (products that are affordable for low-income customers and focussing on crops or seasonal production that does not compete with farmers from the city region)?
- How to ensure that vertical farming is economically feasible for a wider variety of plants and a more balanced diet? and
- How to integrate vertical farms into the energy and water grids of existing cities?

Case study 5: Connecting resource flows

Sadia is one of the world's leading producers of chilled and frozen food. The company was established in Brazil in 1944. Its products can be found at over 300.000 retail outlets throughout Brazil and several others abroad. As part of its corporate sustainability programme, Sadia's Programme for Sustainable Pig Production was designed to assist more than 3,500 pig producers in reducing greenhouse gas emissions from their farm operations through the use of bio-digesters. Investments would be recovered through carbon credits. By supporting rural livelihoods, Sadia aimed to (amongst other factors) reduce rural-urban migration that could increase unemployment rates and poverty statistics in urban areas.

Resource recycling also offers opportunities for new business ventures. In 2014, the company Moulinot Compost & Biogas started to collect bio-waste from 80 restaurants in Paris for the production of biogas.

In Ghana, a public-private partnership (PPP) called CapVal (Creating and capturing value: Supporting enterprises for urban liquid and solid wastes recycling for food, energy and clean environment) was recently established with the support of the International Water Management Institute (IWMI) and the RUAF Foundation. The PPP seeks to develop three solutions for resource recovery and reuse, all of which have strong potential to incentivise local sanitation planning and management in Ghana, to reduce the transport cost of waste, to increase the lifetime of landfill sites, to reduce environmental impacts and to contribute to a more resilient food system in the selected municipalities. Selected local entrepreneurs invest in the following businesses: (1) A co-composting facility in Tema with an annual capacity to transform 5000 m³ faecal sludge and 300 tonnes of organic solid wastes into 200 tonnes of safe, pelletised compost ('*Fortifer*') that can be used in agriculture in the city region. (2) A wastewater-fed aquaculture business in Kumasi producing African catfish in treated wastewater. (3) A briquette plant sited at Koumbi City (Afiénya, in Tema). The plant '*Jekora Ventures*' will transform 2,900 tonnes /annum of organic solid waste into '*Jekora Briquettes*'. In addition to job creation and improvement in environmental sanitation, this enterprise will increase households' access to clean energy with long term positive impact on forest resources and on food security (energy for cooking).

More business cases engaged in waste management are documented in a recent report published by IWMI (http://www.iwmi.cgiar.org/Publications/wle/rrr/resource_recovery_and_reuse-series_6.pdf?galog=no).

4.3 Innovation in finance

The examples below illustrate innovative ways of raising or co-managing finance and how finance is used in an innovative way to protect (and invest in) city regional food economies and natural resource management.

Case study 6: An innovative stakeholder model supporting sustainable food supply chains at a regional scale, Regionalwert AG Freiburg (Germany)

Regionalwert Freiburg AG applies the Community Supported Agriculture concept of community finance for sustainable agriculture to a regional-scale network of food enterprises, from primary production to processing, catering and retail. The network also functions as a land trust, aiming to ensure that farmland is managed sustainably, addressing farm succession problems and creating opportunities for new and young tenant farmers. As Hiss (2015) states, the 'purpose is to create a sustainable regional economy through a participatory and sustainable approach by making it possible for citizens to hold equity shares in local ecological agriculture and food sector enterprises.'

In 2007, Christian Hiss, whose father was one of the first biodynamic farmers in Germany, turned an agri-horticultural family business into a publicly held company with an innovative shareholder structure. The initial company started with two holdings (16 ha of veg and 30 ha of dairy) and capital of 350,000 Euro. The farmers who provided the original assets are now tenant farmers leasing land from Regionalwert AG. It took the company less than 6 months to raise an additional 1.3 million Euros to complete a number of proposed projects designed to meet the economic, social and environmental values that the company set out to maintain and create. A third round of raising capital is planned for this year (2016). Shares are offered for 500 Euros in the name of the stipulated person. Shares cannot be sold without the board's agreement. The main opportunities for capital growth are thought to come from the synergies between all businesses involved and the anticipated increase of the value of the farmland in the medium to long term. Shareholders receive one vote per share and voting is limited to a maximum of 20% of voting share. Some of the values that shareholder invest in:

- Food security and security of quality of food
- Maintaining the varied typical local farm landscape
- Maintaining the fertility of soils, animals and crops
- Nature conservation, environmental protection and biodiversity
- Supporting the regional economy
- Creation of jobs, meaningful employment and training.

The business works with academic partners to quantify the social and environmental values when reporting to shareholders. A catalogue of 64 criteria is used for the annual reporting. Factors range from social (e.g. jobs, remuneration, quality of work), ecological (soil fertility, biodiversity, organically managed land) to regional economy (regional engagement, dialogue within the value added chain, value-added production). Through their voting rights shareholders decide on current priorities. Projects that shareholders have in the past voted on include for example buying more farm land for organic conversion, investing in housing for farm staff or plans to develop an organic catering business for supplying the local public procurement sector.

Regionalwert AG Freiburg includes now, after 9 years of existence, 16 enterprises covering all aspects of the regional food supply chain, from primary production to independent retail and they have the support of 520 public shareholders. The model is being replicated in other regions in Germany.

Case study 7: Local investment funding and legislation supports regional food production in Ontario, Canada

The Greenbelt Fund is managed by the non-profit *Friends of the Greenbelt Foundation* and funded by private foundations as well as the Ontario Ministry of Agriculture, Food and Rural Affairs. The fund aims to increase the amount of local food that is consumed in Ontario. With leading-edge grants to build agricultural business success, agri-tourism and supportive policies to innovative businesses (such as 100 km Foods Inc., Local Food Plus), the Fund seeks to create sustained and systemic change to the food system. They want to ensure that more Ontario-grown food is purchased and distributed through public institutions and retail markets. By 2015, the Fund has dramatically increased the amount of local food consumed in the province. For every one CAD invested, it has realised an increase of 13 CAD in local food sales and in the process replaced imported food (<http://www.greenbeltfund.ca/>). Grantees have been able to diversify and expand their business strategies.

Funding support is coupled to changes in regulations and legislation. The establishment of the Local Food Act, representing policy, intergovernmental and cross-sectoral collaboration, and financing (mostly delivered via the Greenbelt Fund mentioned above), has been an important enabling policy framework. This legislation, the first of its kind in Canada, is designed to help build Ontario's economy, create more jobs and expand the agrifood sector – by making more local food available in markets, schools, cafeterias, grocery stores and restaurants throughout the province. For example, Ontario wineries have been permitted to sell Ontario VQA wines (wines made from 100% Ontario-grown grapes) at farmer's markets across the province. Since May of 2014, over 75 wineries and 140 farmer's markets have taken advantage of this market expansion opportunity under the Ontario Wine & Grape Strategy. Sales from this two-year pilot project have surpassed 1 million Canadian Dollars²⁰.

Image 14: Local food promotion and trade in Ontario



Source: Henk Renting

Innovative grant funding: 100 km Foods Inc. and distribution capacity

100 km Foods Inc. was established after the owners attended Ontario food seminars in 2008 and realised there was a lack in availability of Ontario food options in public institutions. After receiving a Greenbelt Fund grant in 2011, 100 km Foods increased their number of delivery trucks from two to four, enabling them to reach more suppliers and customers. In 2013, 100 km

Foods received another round of Greenbelt funding, allowing them again to double in size. Increasing their fleet meant the company could now pick up and deliver products in the same day, giving customers the added benefit of serving food that had literally been picked at the farm that morning.

While hotels and restaurants have been much quicker to get on board with going local, institutions are typically slower to change. 'Having a local food champion on the inside is paramount to an institution successfully integrating local food items.'

Innovative grant funding: Newmarket Meat Packers processing and distribution capacity

The Ontario-based business Newmarket Meat Packers has sold local meat across the province since 1968. The business started by selling beef and pork and now, 46 years later, Newmarket Meat's commitment to evolving their business practices has enabled them to thrive in the changing landscape of Ontario's meat sector.

New immigration patterns in the province have caused the sheep industry in southwestern Ontario to grow significantly in the last ten years. Newmarket Meats have adapted to meet the demand for local lamb and veal thanks to a grant from the Greenbelt Fund.

The meat processing company used their funding to purchase a delivery truck and a rollstock machine, a unit that deprives packaged meat of any oxygen, thus eliminating bacteria and extending the product's shelf life. A longer shelf life means Newmarket Meat products are now a more viable option for grocery stores.

Image 15: Newmarket meat packers Ltd



Source: http://www.oimp.ca/wp-content/uploads/2015/01/NewMarketMeatPackers_JanFeb-2011.pdf

²⁰ Source: <http://www.omafra.gov.on.ca/english/about/wine-grape-strat.htm>

Until recently, most lamb sold in Ontario was imported from halfway around the world, coming primarily from New Zealand and Australia. Thanks to a new partnership between Newmarket Meat and Longo Stores, consumers can now purchase top quality local lamb and veal grown in their own region. Transparency is a key part of Newmarket Meat's success.

Without involvement from the Fund, the company would have struggled to make the changes necessary to keep up with the increase in demand for lamb and veal in Ontario. Longos' hands-on approach with customers has been a huge asset in helping Newmarket Meat and their partnering local producers ensure they are giving the consumer exactly what they want. Customer feedback gathered by front-line deli workers at Longo's is shared with Newmarket Meat who in turn can report back to the producers and give them vital information to help them with raising prime lamb.

Innovative grant funding: Toronto Enterprise Fund

The Toronto Enterprise Fund is a unique funding partnership between a not-for-profit network of community organisations and three levels of government. It supports and finances 'social enterprises'. These are businesses with the twin goal of generating an income and serving a social purpose.

An example is John's Bakery that sells handmade bread using organic ingredients and 200-year-old recipes from Brittany, France. Like other artisan brands, it sells its bread at farmers' markets and to Bay Street bankers, restaurants and specialty food stores throughout Toronto. The bakery employs people at the edges of society, those who have little opportunity of finding work elsewhere, from refugees who speak little English, former drug addicts, homeless people, to those with physical or mental disabilities.

Case study 8: Using carbon credits to finance urban food production in Quito, Ecuador

The Metropolitan District of Quito, in collaboration with civil society and private players, supports the development of urban and peri-urban agriculture through its AGRUPAR programme. Although still largely funded by the municipality, in the future it is hoped that investment in AGRUPAR gardens can be supported from a carbon emission compensation scheme carried out by Quito's private sector. Climate change mitigation and adaptation has been incorporated as one of the key sustainability indicators in the Development Plan of the city and urban and peri-urban agriculture is highlighted as one of the relevant carbon compensation mechanisms and included as an 'Indicator of a Sustainable City'.

4.4 Public private partnerships

Public-private-partnerships (PPP) can be strong instruments in creating businesses that become an integral and very significant part of a sustainable and resilient CRFS. For example in Quito, water catchment protection is intrinsically linked to the sustainability of local farming and the future of Quito's city region food system. The water protection fund FONAG was established as a sustainable finance mechanism for improved management and long term protection of Quito's surrounding watersheds. Major private sector water users (for example a water bottling and a beer company) support the fund due to their interest in avoiding or reducing future costs for water treatment and supply. The water fund is an example of a public-private partnership that works towards conservation of natural resources and rural farming areas and farming livelihoods in a city region.

In Belo Horizonte, Brazil, the *Abastecer* programme builds on public-private-partnerships where the Municipal Adjunct Secretary for Food and Nutrition Security (SMASAN) allows

private commercial operators and rural producers (through Syndicates of Rural Workers, Community Associations and cooperatives) to use public spaces in exchange for price and quality control of specific food products (that are where possible sourced from the city region). The private food sector also collaborates to collect and donate unused food that can be used at food banks and to provide entrepreneurial training to participants in the job- and income-creation programme.

In Linköping, Sweden, the Linköping Waste-to-Energy plant is a public-private partnership between the City of Linköping, the local abattoir (Swedish Meats AB) and a farmers' association (Lantbrukets Ekonomi AB). The plant transforms organic waste from agriculture and slaughterhouses around Linköping (Sweden) into biogas for fuelling the city's public transport system which supports the reduction of emissions and pollution from the urban transport system.

Case study 9: PPP – Supporting rural farmers in the city region in Quito, Ecuador

Drinking water for Quito (capital of Ecuador) is provided by the Public Metropolitan Water and Sanitation Company (abbreviated EMAPS in Spanish). By 2025 (compared to consumption levels in 2000) the city's water consumption is expected to increase by 50 percent as a result of population and industrial growth.

Quito's Water Protection Fund (*Fondo para la Protección del Agua-FONAG*) is a sustainable finance mechanism that allows for improved management and long term protection of its surrounding watersheds. A large percentage of Quito's watersheds are formally protected by nature conservation legislation as part of the National Protected Area System. Nevertheless, they faced a number of potential threats such as overgrazing, burning and development projects (e.g. installation of an oil pipe line and hydro-power plants). These land use changes resulted in reduced water availability downstream.

Agriculture in the Quito city region is an important user of water and the viability of farms critically depends on the future availability of sufficient and clean water. On the other hand agricultural activities are an important factor influencing the management of water and soils in catchment areas and, depending on the type of production, can either reinforce or undermine the sustainable management of watersheds.

Over the past years, FONAG has developed into a well-established investment fund with a lifespan of 80 years that provides a sustainable finance mechanism for the protection and rehabilitation of the catchment areas that supply water to Quito. It brings together government agencies like EMAPS, NGOs and private actors such as Quito's Electricity Company, the National Beer Company (*Cervecería Nacional*) and the water bottling company Tesalia Springs.

Quito's experience shows that water utilities can go beyond traditional engineering solutions and apply innovative governance, financial and management arrangements to their work with upstream farming communities in the city region. The Quito water fund has already served as a model for numerous other water funds in the region.

Case study 10: A PPP that benefits local food supply chain players as well as low-income urban consumers, Belo-Horizonte (Brazil)

Since 1993, the Municipality of Belo Horizonte has aimed to develop new innovative food programmes that would combat hunger in the city. Today, the Municipal Belo Horizonte Food and Nutrition Security programme has a budget of 27.2 million USD per year which represents less than 2% of the total city budget. 59% of the budget is directly spent on food procurement. Strategies include free food distribution to low-income groups, school meals in municipal schools, subsidised

food sales of basic food items, the regulation of prices in food markets and support for agricultural production and marketing in both surrounding rural areas and within the city itself.

A specific set of actions is directed at the private food trade sector. Through partnerships with private food suppliers, the programme has been able to bring food to areas in the city that were previously neglected by commercial outlets. It also has adopted policies to regulate food prices, to control the quality of basic food staples, fruit and vegetables that are supplied under the programme and to provide regular price information for key food items.

Under the *Abastecer (Supply) programme* licensed local traders are allowed to sell fruit and vegetables in designated areas. In return they have to comply with the requirement that they offer at least 20 basic food items for a set price. This includes fresh fruit and vegetables, which are produced to a large extent by regional farmers, and oil and basic staples at fixed, reduced prices which are generally 20-50% below the market price. Prices of other products are not regulated which allows operators to make a small profit.

The Municipal Sub-Secretariat for Food Security and Nutrition (*Secretaria Municipal Adjunta de Segurança Alimentare Nutricional – SMASAN*) inspects the quality of the food that is sold and they also provide technical assistance for commercial operators on subjects such as product display, safe storage and handling. In 2015, there were 21 licensed traders and approximately 4.1 million individuals benefitted from this programme. Abastecer licensees also commit to selling the selected food items at discounted prices from vans in the city's low-income, peripheral areas which are often neglected by other commercial outlets. This is in exchange for being allowed to also operate in more profitable city-owned locations.

Image 16: One of the shops participating in the Abastecer programme



Source: Prefeitura de Belo Horizonte

Case study 11: PPP – Contribution of an energy company to regional agricultural development, food waste recycling and urban sustainability

Linköping is a fast-growing municipality with 153,000 inhabitants located in the heart of southern Sweden. The city is located in the centre of an agricultural district.

Linköping Biogas AB was formed in 1995. The company decided to build a biogas plant to supply all the city buses in Linköping with gas and received funding of Euro 140,000 from the city government. Since 2005 the plant has been owned and operated by Svensk Biogas (Swedish Biogas), a subsidiary of the City of Linköping. Over the past few years the plant has undergone several upgrades to increase its capacity to match the growing demand for biogas.

The Linköping plant receives the majority of its waste from different food industries (waste fat, vegetable waste, slaughterhouse waste, etc.). Organic waste (manure from animal farms located in rural areas surrounding the city) and food waste from canteens and restaurants is incinerated for the production of biogas and bio-fertiliser. Aggregation of rural and urban waste production is needed to ensure sufficient waste volumes and biogas plant efficiency. In addition to the production of biogas, the plant supports regional agriculture through the production and supply of 52,000 tonnes of bio-fertiliser per year for farms in the region. The fertiliser is certified according to the Swedish certification system SPCR120 and thereby approved for recycling on farmland. In 2001 the project expanded to include waste from school canteens and restaurants and three waste macerators were installed throughout the city.

Svensk Biogas currently owns and operates 12 public refuelling stations in Linköping and in the surrounding area. The filling stations are used by private cars as well as by taxis and distribution vehicles from different companies.

The Linköping biogas plant has made it possible for the city of Linköping to decrease fuel costs for their transport system, decrease CO₂ emissions from urban transport and also to decrease the local emissions of dust, sulphur and nitrogen oxides.

The biogas from the plant replaces about 5.5 million litres of petrol and diesel each year which substantially decreases the need to import fossil fuels. Carbon dioxide emissions have been reduced by about 9000 tonnes each year and air quality for citizens has been improved. Due to increased recycling less waste is sent to landfill.

The majority of bio-fertiliser is recycled on 17 farms in the area surrounding Linköping. The bio-fertiliser is re-sold to farmers by Biototal. Thanks to the production of bio-fertiliser, resource loops are closed and the use of energy-intensive, fossil-fuel-based fertilisers is reduced.

The plant also contributes positively to the city's economy. Including local farmers in the production of biogas and sale of bio-fertilisers has increased their competitiveness and keeps financial flows within the local economy.

5. Drivers for private sector involvement in sustainable and resilient CRFS

The interplay between social, public and private sector activity shapes the specifics of a city region food system. As McInroy, N. & Longlands, S. (2010) point out 'Local economies aren't simply an isolated silo of private sector activity that can be encouraged and shaped. They are made up of a network of social, public and commercial economic activity. These aspects are interconnected and dependent on one another.'

Kelly (2013) also draws attention to the importance of a culturally supportive environment by pointing out that 'institutional change and cultural shifts tend to go hand in hand.' The Bristol case study evidences this point. In response to increased consumer awareness, a non-governmental policy (Food for Life Catering Mark) has helped accelerate a major cultural shift (increased sourcing of regional supplies) in the public procurement sector. As described in Chapter 3.1 and in the case of a major hospital trust in Bristol, this policy provided a framework and motivation for major changes in the procurement policy which resulted in shifting a quarter of annual supplies from a global international player to a number of small and medium sized city region based suppliers.

Cultural shifts indeed include to responding to consumer demands (as also evidenced by the Quito and Rotterdam case studies), but also to innovations in direct producer-consumer trade and addressing of social aims. These form important drivers for private sector involvement in sustainable and resilient CRFS and are further described below.

5.1 Responses from the private sector to consumer demand

In the Bristol case study one of the city region suppliers suggested that it is not government policy that drives change but consumer interest instead. 'Government is not usually good at making things happen. It is customers who really drive the change and we have seen a huge change over the last three decades in people's awareness and interest as to where the food is coming from.' This view is supported by one of the procurers who in observing the changing customers' expectations started to review their supply chain model a decade ago, in advance of the Food for Life school programme and Catering Mark pilot projects. A meat supplier adds that over the last 10 years they have seen even national catering businesses requesting UK products as a norm.

Describing a case study from Peru, del Pozo-Vergnes, E. and Vorley, B. (2015), state: 'Growing food demand and higher incomes are opening up more possibilities for local chains. The gastronomic movement and the promotion of national and traditional food diversity has contributed to the recognition of the importance of local food supply chains for the economy, culture and health.' This is also evidenced by the Rotterdam case study (see Chapter 3.3 and the full report).

Support to catering marks, quality control, consumer awareness campaigns and new food movements may provide (new) CRFS private actors the opportunities to establish or expand their business.

Image 17: Buy fresh, buy local marketing campaigns



Other opportunities to work with the power of consumer demand and consumer interest are highlighted in the case studies provided in Chapter 6. The Brasilia (PROVE), Rosario and Belo Horizonte illustrate the important role governments can play in safety and quality promotion and control and in creating consumer trust (by using product logos and government accreditation). In Quito, participatory consumer certification is being promoted as alternative to other food certification schemes (see Chapter 3.2).

Case study 12: Hotels and restaurants in Rosario, Argentina offer local and ecological products

Embedded in its urban *Sustainability and Climate Action Plan*, the Municipality of Rosario, in collaboration with the Province of Santa Fe (Argentina), decided in 2014 to develop a programme aimed at ensuring sustainable localised food production (i.e. free from chemical and biological contaminants). The programme aimed to improve the quality of life of the participating producers and their families living in the areas surrounding the city, whilst supporting initiatives to preserve the environment.

As part of the programme the following activities were implemented:

- Promotion of Good Agricultural Practices and conversion to ecological production Substitution of imported horticulture produce for local and region production and
- Promotion of short food supply chains and direct marketing.

The municipal/provincial government programme provides support to peri-urban farmers through the development of demonstration models in good agricultural practices and for conversion to ecological agriculture. Technical staff from the municipal and provincial government provide training and technical support on production and marketing through regular support visits. The programme also provides financial support (low-interest credits) to farmers for the purchases of new equipment and materials.

In addition, new marketing channels for ecological produce have been developed to ensure that producers have sufficient income and have future security. The city signed an agreement with the Association of Gastronomic Hotels in Rosario (*Asociación Empresaria Hotelero Gastronómica de Rosario – AEHGAR*) to promote direct marketing of peri-urban/rural horticultural products in the city's hotels and restaurants that are part of the Association.

Hotels and restaurants can use the quality label displayed on the products for their communication with customers. The 'Product of My Area' (*'Producto de Mi Tierra'*) logo is a quality label provided by the Government of the Province of Santa Fe. The logo's criteria, which form the basis of products' presentation in the market place and consumer recognition, include location of production, traditional production and excellence. Producers receive a 20% premium for their 'cleaner' products which are based on ecological production practices. The Association's hotels and restaurants purchase the products directly from the farmers and the buyer also covers the distribution costs.

Image 18: Product logo and quality label



Source: Municipality of Rosario

In 2014, two 5-star hotels and three restaurants participated in the programme. Their interest stemmed from providing a specific offer to interested customers who increasingly demand healthy food.

5.2 Innovation in direct producer-consumer trade

Consumers are increasingly interested in buying their food directly from farmers. They may be interested in more healthy and safe food, in supporting local communities and producers and in having more control over where their food comes from. A recent 'Responsible consumers' initiative in Ecuador tried to mobilise 250,000 citizens in the country (5% of the population) to form a grass-roots counter-response to 'modern' food and to play a larger role in the transformation towards a sustainable and equitable CRFS in Ecuador. For many families this implies investing in locally, ecologically produced food which will provide new opportunities for localised production systems and food-based enterprises.

Internet-based platforms support a range of short supply chains, support direct connections between producers and consumers (farmers markets, delivery of food boxes, etc.) and offer new opportunities for city region food businesses (see Chapter 3.3., Rotterdam case study).

Two examples of internet-based platforms are described below. Whilst using a different geographical approach they both aim to inform their consumers about the origin of their food. Both also function as a platform or distribution hub to connect producers and consumers.

Case study 13: The Food Assembly – in various places across Europe

The Food Assembly (originally started in France as *La Ruche qui dit Oui!*) is a social and collaborative enterprise that has grown to a team of 80 staff over the past 5 years. Using an internet-based platform, the Food Assembly links people buying fresh food, local farmers and food processors. All food is produced within 150 miles from where consumers live. Producers set their own price at a rate that means they receive a fair payment for their work. They are charged a 16.7% service fee on the retail price which leaves suppliers with a higher return than what mainstream market places offer.

According to Cathy Michel, Ferme du Bois Champeau, Île-de-France, France: 'From the start of my adventure with the Food Assembly I have chosen to work together with other producers. In this way we can optimise the logistics. By jointly organising delivery to the Assembly we can reach more Assemblies and present a more complete and diversified offer of products. This support and solidarity among producers is very valuable. You are not on your own anymore and that is very comforting and allows for social contacts.'

Image 19: Delivery of products to the Food Assembly



Source: <https://laruqueditoui.fr/en#buy>

Marie Amorison, dairy farmer and cheese maker from Ferme Amorison, Basècles, Henegouwen, Belgium, adds: 'The Food Assembly has offered us a great market since 2004 and has allowed us to reduce our dependency on the stark price volatility in the milk market. We now process almost all our produce in an artisanal way. We have been given the opportunity to invest in higher performing equipment and to integrate more family members in farm jobs. We have also diversified our product

range to respond better to consumer demands. We wanted to give visibility to the concept of the Food Assembly and therefore started one on our own farm.'

Image 20: Cheesemaker participating in the Food Assembly



Source: <https://laruchequiditoui.fr/en#buy>

The Food Assembly does not act as a middleman but as a service provider. Each Food Assembly is an independent and local project while being part of The Food Assembly collective.

Since starting in France in 2011 the movement has grown across Europe and they are now more than 700 Assemblies in France, Belgium, the United Kingdom, Spain, Germany and Italy.

Case study 14: Jinghe Farm, China

In recent years urban consumers in China have experienced a number of serious health scandals following incidences with unsafe food. Membership farms established themselves in the big cities in China in response to those problems and they have grown rapidly. Consumers feel that they can trust food more and have more control if they have more information and direct contacts with farmers.

There are two kinds of models for these membership farms: the community supported farm and the online farm. Jinghe is an example of an online farm where members can order their vegetables. With the support of the local government, Jinghe developed an online virtual platform in 2003 that functions as an online market place. It is run by the Sunlong group. They are in charge of packing, distributing and website maintenance and they have 15 employees. The platform is linked to many cooperatives and other producers who are responsible for delivering products to consumers.

Jinghe started out by selling vegetables only but they are now exploring other products like fruit, meat, eggs, milk, poultry, grains and oils. People can also buy imported fruit and seasonal vegetables through the expanding system. Using an online tracking system for each product, people can track the products all the way starting from the farm, which helps people feel more confident that quality and safety standards are met. Jinghe also organises visits for consumers to the food enterprises and farmer cooperatives to give them more information about the process of farming and food production.

5.3 Addressing social inclusion

Some of the case studies illustrate food system approaches to addressing food access, job creation and community engagement and participation with more vulnerable groups. They tend to be part of what is often called the 'solidarity economy' or 'alternative food networks'. Typically they put people before profit within their business models and are innovative in both value base and operational structure. They also tend to address a combination of social and ecological issues alongside affordable food supply.

For example, many of the social entrepreneurs and housing companies engaged in the Rotterdam CRFS have a clear social aim to change the food system for the benefit of producers and consumers alike (improving environmental services and management, reducing food waste, enhancing food security for vulnerable groups). However, the same social entrepreneurs that execute and sometimes initiate urban agriculture and food projects are not yet formally acknowledged as a provider of services such as care or education. In addition, social entrepreneurs are also lacking the monitoring and evaluation structures to quantify and valorise their performance which are required for outsourced contracts. This is an issue because these municipal or institutional contracts could offer a more reliable market-based source of income for social entrepreneurs (as opposed to relying on private funds or grants) and this could contribute to their inclusion in the food system.

Successfully addressing inclusion also remains a challenge for short supply chains. Various alternative schemes still tend to attract well-off people (see the example of the Quito short supply chains). Nevertheless, the Rotterdam case study highlights a number of initiatives that focus on supporting low-income citizens by using food that is not used in retail supply chains. One initiative uses vegetables that do not meet the retail specification (odd shapes etc.) for the production of soups, for example. Also, the provision of healthy and sustainable schools and hospital meals in Bristol helps address this to some extent.

Another challenge relates to larger processing and retail buyers being able to include small-scale farmers and SMEs, as illustrated in both the Bristol and Quito case study. Volume requirements, logistics and quality criteria may limit their participation, even if government regulations, voluntary or procurement schemes prioritise their engagement. This is further addressed in Chapter 7.3. The social supermarkets in Ile-de-France, as illustrated below, have found strategies to include low income consumers as well as smaller to larger farmers from the city region.

Case study 15: Social supermarkets: increasing food access for lower income groups and reducing food waste, in Île-de-France region

The Île-de-France region (the region around Paris in France) has the country's largest social inequalities and highest rate of food waste. Consumer food waste in the Île-de-France Region stands at nearly 114 kg/person/year compared to the national average of 20 kg/person/year. Social supermarkets emerged in France in the 1990s in response to these challenges. They are not-for-profit and charitable organisations and, similar to traditional supermarkets, they primarily sell food and consumer products as well as offer corresponding in-store services. However, social supermarkets have three specific features:

- They offer a limited assortment of food and household products, mainly coming from food producers, processors and retailers that would otherwise discard them
- Access to these supermarkets is limited to people living at risk of poverty or below a certain income threshold and
- Prices are 90% lower than in conventional supermarkets.

The main challenge that social supermarkets face is ensuring a stable and continuous supply and provision of a wide product range, from perishable to staple food products. Fruit and vegetables are mostly collected from wholesalers and distribution centres located at the *Marché d'Intérêt National* (MIN) of Rungis (the world's biggest wholesale market for agricultural products). They are then sorted, washed and packed by the programme's staff at MIN of Rungis. The MIN of Rungis is a public infrastructure run by the private company SEMMARIS and provides also in-kind financial support to the programme by offering a 60% rent discount for the packing area.

The programme furthermore purchases from local farmers, local food businesses (wholesalers, distribution centres, trading and import companies and food processors) and occasionally also receive customs' seized products. Stakeholders providing food items benefit from a tax exemption of up to 60%. The re-use and redistribution of safe and nutritious food for human consumption also allows them to reduce storage and disposal costs.

In addition, long-term partnerships with local farmers are established which offers farmers stable and fair prices and helps them to plan their long-term farming activities. Farmers' products are bought at a fixed price for a long-term fixed period ensuring sustainability for both sides. The programme also helps farmers in setting up their business or converting to organic agriculture. The programme benefits different players in the food value chain and supports reduction of food waste at city region level.

6. Policy support for private sector engagement in sustainable and resilient CRFS

McInroy, N. & Longlands, S. (2010) highlight the primary influence of the public sector on the private food sector by pointing out that 'Our fresh food is dependent upon economic distribution chains and shops using water, electricity and transport provision, which are fully or partly provided by public services and public taxation (the public economy).'

The second key influence of the public (e.g. local and national governments) sector on the private sector's ability and motivation to engage with sustainable and resilient CRFS is through providing incentives and support programmes.

6.1 The case for policy intervention

Policy interventions to engage the private sector in building more sustainable and resilient food systems are motivated by a range of aims, including:

- Mobilising the private sector's investment and resources
- Creating job and income
- Enhancing development impacts (such as food security, poverty alleviation, environmental management) and
- Advancing innovation.

Moragues, A. et al. (2013) point out that 'generally speaking, the food system can be influenced by:

- (National and) municipal legal and financial instruments (e.g. legal and regulatory frameworks, planning, taxes, subsidies, public spending, infrastructure support)
- Communication strategies, awareness raising, training and advising (e.g. campaigning, workshops, festivals, awards)
- Developing concrete activities, initiatives and projects (e.g. promoting short food supply chains like farmers markets, community supported agriculture, urban agriculture or starting sustainable food businesses).'

An additional point to the ones raised above has been identified by the analysis of the case studies in this report:

- Developing business support services that enable longer-term private sector development, focussing, for example, on technical assistance, capacity development and financial support for SMEs.

Each of these strategies will be further illustrated with specific examples below.

6.2 Legal, regulatory and financial initiatives

National policy can have a strong influence on supporting private engagement in sustainable and resilient CRFS. One example includes the national government of Ecuador specifically aiming to support smallholder and SME inclusion in the (mainstream) food supply chain (see also Chapter 3.2). The policy regulates that 11 percent of retail supply has to be sourced from national smallholders and SMEs. Although the main objective is to fight retail concentration and exclusion, this policy has the potential to support city region suppliers.

Specific support activities for which often a role for governments appears to be required as incubator and facilitator in the setting-up of urban agriculture and food provisioning initiatives with a focus on social needs include the following:

- Support to disadvantaged groups to get them involved and started on a business or other livelihood enhancing activities (see for example the cases of Toronto and Belo Horizonte)
- Secure access to land, markets or infrastructure (illustrated by Belo Horizonte and Quito)
- Creating awareness about healthy food (mobilising consumer demand; see Food for Life Catering Mark)
- Facilitating credit mechanisms and financial support (see cases on Toronto, Ontario, PROVE)
- Using public demand by means of procurement mechanisms to develop markets for local or organic produce (see cases on Belo Horizonte, Toronto and various European examples).

Renting, H. and Dubbeling, M. (2013) state that: 'Government support measures especially seem key in the start-up phase of the initiative (e.g. in the Chinese Jinghe farm case where initial website development was financed by the government) and in cases where social support to poorer/vulnerable groups is a main objective. A good example of this is the PROVE case in Brazil where public investment in food distribution channels seems to be a cost-effective means of employment generation in comparison to investments in other urban sectors.'

Del Pozo-Vergnes, E. and Vorley, B. (2015) report 'As we have observed in Senegal and Peru, both countries are supporting local food supply chains through diverse market mechanisms (such as import regulations or promoting gastronomy and local diets), at the same time as supporting agro-export diversification, both in new products and in new market destinations.'

Case study 16: Government support for family-owned food processing and marketing enterprises in Brasilia, Brazil

From 1995-1998, the Federal Government of Brasilia, Brazil supported the PROVE programme (literally translated meaning 'Programme for Verticalisation of Small-Scale Family Production') to support integrated small-scale agro-production, processing and marketing enterprises to increase their income sources and generate local economic development. This programme aimed to counteract trends towards market concentration in larger scale processing facilities which left smaller enterprises in the city region without sufficient livelihood and income opportunities.

PROVE supported a wide range of food enterprises from horticulture, fruit production, animal husbandry, egg production, added-value dairy products, sausages, smoked meat and processing fruit for jam, pulp and juice.

PROVE provided a whole set of complementary support strategies to a select group of enterprises:

- Instruction and training. Farmers received training on improved production and processing, associative and cooperative marketing, enterprise management (costs and marketing), food hygiene and food handling
- Ensuring adequate processing facilities. Most farmers were used to process agricultural products in their own houses and kitchens. In order to comply with the food hygiene standards they needed specific processing facilities. The PROVE programme developed a basic pre-fabricated processing unit which costs USD \$2,100 or \$4,200 (depending on size). These units were bought by the producers themselves and financed with a bank loan
- Ensuring loans from banks. The programme convinced banks to adapt loan agreements for the target group who were normally not able to comply with all loan requirements (e.g. minimal loan volumes that were too high, high interest rates, short pay-back period and guarantee requirements). The PROVE programme (and other programmes) constructed a mobile agro-processing unit that functioned as a guarantee for loans
- Reviewing food hygiene legislation and regulations. The regulations that were in place dated back to the 1950's and were aimed at big industrial players. It was impossible for small scale producers to adhere to those. The Federal District government agreed a series of norms and quality standards that were specifically tailored to small scale agro-industrial units (30 to 40 m²)
- Enhancing availability of supplies. PROVE set up the *Small Agro-industry Counter*, a place where farmers could buy supplies in small quantities for their businesses (buying such small quantities from standard suppliers was generally not possible). The agro-industry counters had the added advantage to reduce transport costs as they were located close to the farmers
- Publicity and marketing. This involved the branding of the 'PROVE' product (which also means 'taste' in Portuguese), the development of a logo and government sponsored publicity, including weekly television programmes featuring one of the agro-industries and increasing the visibility and credibility of the products. Using the PROVE brand, a well-known project as a result of large media attention, established them as quality products. Products are also given bar-codes to allow for sales in formal market chains
- Commercialisation by organising sales channels through producers' stands (either government stands or independent producer stands) in supermarkets, such as the main Carrefour supermarket. As farmers could sell their products directly and exclude middle men they received higher prices for their products (as well as selling them to higher-end markets). The programme not only enhanced family businesses and livelihoods but also ensured their inclusion in markets from which they were formerly excluded.

Image 20: Left: mobile agro-industry PROVE; Right: PROVE kiosk in supermarket



Source: PROVE

Political institutionalisation of the programme was achieved by formulating and approving a law by the District House of Representatives which gave the PROVE programme a legal status and established regulations for the simplification of fiscal policies for small scale agro-industries. This offered farmers new opportunities to broaden their activities and their production and processing capacity. At a later stage the PROVE programme was also expanded to other regions which led to building over 500 small agro-industrial facilities in Brazil and other countries in Latin-America up to 2010.

Families owning the enterprises increased their income fourfold from an average of US \$27/month before the programme to \$108/month at the end of the programme. PROVE also created jobs for on average 6 people per agro-industry (involving a larger number of family members as well as creating jobs in the input supply chain like the production of processing units, the agri-counters).

Financial state support, according to the programme initiators, involved a cost of \$745 on average per agro-processing unit. When taking into account that about 6 jobs per agroindustry were created, an investment of about \$125/job created can be considered to be a very low-cost investment.

6.3 Public procurement

Cities can use their buying power to influence the food system in a direction they want: e.g. more healthy food, more organic food, more vegetarian food, more local food, more culturally-appropriate food, etc. Those measures might be specified and implemented via legislation (see the case studies below).

Wiskerke J. (2015) indeed highlights the power of public procurement by stating that: 'particularly because the public sector represents a significant part of any national food economy, its potential in delivery healthy and sustainable communities is large.' Hospital and school catering (see Bristol case study providing examples of both, the last tendering document for school catering in Rotterdam did include a criterion for short food supply chains, see also the case of Belo Horizonte) seem to be two evident catering sectors where sustainability, healthy and local criteria could be applied. A report published by the European Commission's Joint Research Centre (JRC) in 2006 estimated that the social food and catering market in the European Union was worth Euro €70.6 billion in 2010, €45.7 billion of which was operated by the public bodies themselves (JRC, 2015).

Case study 17: Public procurement

In Rotterdam, public procurement of local and sustainable food has not been on the agenda for long. Rotterdam does not have a public school meal programme but the canteens of the municipality are served by a commercial catering company on a five or six year contract. Short food supply chains (less than forty kilometres) were specifically mentioned in the tender document during the last tendering process.

In several other cities and city regions in Europe local governments have already managed to promote re-localisation without breaching the EU legislation on public procurement. Malmö (Sweden), Rome (Italy), East Ayrshire (Scotland), Copenhagen (Denmark) and Vienna (Austria) are municipalities that have triggered inspiring processes of change in their public procurement practices. These often start with school meal services and then extend to an overall municipal policy for food procurement across different public services.

The procurement criteria used by Malmö include organic as the most important one and also seasonal food. This helped increase the amount of local food without conflicting with procurement legislation.

Rome also has criteria on seasonality and added a criterion on territoriality: e.g. the certification of meat products and the requirement for bread to be baked and packed within six hours and consumed no later than 12 hours after that, which makes the use of additives in bread ingredients unnecessary. Implementing these principles meant extra effort for caterers in terms of logistics (e.g. sourcing seasonal food) and planning menus at a consistent level of quality. In the tendering process for 2013 – 2017 some new criteria have been introduced, which include a new emphasis on local products. These are defined as products produced within 150 km of Rome.

These examples of local procurement schemes are providing incentives for both local food producers as well as businesses, for example bakeries.

Wiskerke J. (2015) also stated that: 'However, ..., many public sector organisations tend to opt for rather narrow cost-based contracting procedures instead of a broader and more integrated approach that includes aspects of health, social justice, regional employment and environmental sustainability.'

The Quito case study on retail procurement illustrates a similar point with larger retail buyers preferring contracts with larger suppliers for efficiency and cost reasons. The Bristol case study is another case in point. Whilst two of the biggest public sector procurers source a significant proportion from city region suppliers at least 25 other institutions could make further improvements. Anecdotal evidence from Bristol presents examples of how the public sector contracts can support diverse, small to medium scale enterprises which have the potential to offer more local employment and are very likely to procure significant services (maintenance, machinery, farm inputs) from the local area, thereby further supporting the local economy.

Case study 18: National accreditation scheme: Soil Association Food For Life Catering Mark, UK

The Food for Life Catering Mark, developed by the charity Soil Association in 2009, provides a clear accredited framework, initially for improving school meals and is now used by the health sector and other private catering establishments throughout the UK. The aim of the scheme is to encourage and reward caterers, who serve fresh food, to source environmentally sustainable and ethical food, to make healthy eating easy and to champion local food producers.

Since 2009, the Catering Mark has become a significant driver of change in the UK food system in relation to improving the quality of public sector meals, responding to a swell of public support and providing a practical framework and mechanism for embedding policy change from both top down and bottom up. It has been intentionally developed for use both at the policy and consumer ends to help drive a combination of health, environmental and local economic improvements. Policy change at a national level both in the National Health Service and in Public Sector procurement has helped to raise awareness of the Catering Mark. At a local government level, or a Hospital Trust level, the Catering Mark has provided an easy to use externally accredited tool to help manage improvement of public sector meals and of contract delivery over time. At a consumer level it is something that is easy to understand and can be used as a campaign tool to drive change from the bottom up e.g. students, parents and teachers.

A caterer can move up to silver and gold standard by increasing their use of local and organic products, which is where there is the potential for more impact on city region food systems. One of the areas for improvement is in 'championing local producers'. However it is not mandatory to include local products (due to EU procurement rules restrictions) and it could be possible for a caterer to gather points from other categories to achieve silver or gold. The caterer has to show evidence to score points on more sourcing of ethical and environmentally friendly food, making healthy eating easier and then can either score more points in those two areas, and/or can choose to champion local food producers.

Within the Bristol city region there are currently 31 holders of the Catering Mark awards, including some large scale catering companies that hold public sector contracts (see more in Bristol case study under Chapter 3.1).

6.4 Food system policies and city region planning

A number of academic publications highlight both the potential of public sector intervention in the food system at a city region scale and the numerous tools that are available to city region administrations. Sonnino, R. (2009) states that 'Cities, in particular, are providing two main kinds of innovative responses to the food crisis. On the one hand, they are working to improve public food provisioning (which includes the procurement of food in public canteens but also street vending and the creation of food markets). On the other hand, they are developing a more integrated approach to food issues through the development of formal urban food strategies (as in London and Amsterdam) or the introduction of food policy councils (as in Toronto).'

Moragues, A. et al. (2013) explain that ' (next to public procurement) some of the main instruments that city administrations possess to influence the food system are:

- Territorial/spatial planning/zoning: Cities can facilitate local food production by designating land for (peri-)urban agriculture and gardening. Furthermore, spatial planning can support short food supply chains and diversity of food retail by planning for areas for independent food retailers or farmers' markets. (Note that the Rotterdam case study for example also advocates for a new Food Strategy that should include a

spatial strategy of where to produce, process and distribute food for the local and export market)

- Communal infrastructure: Local administration can keep or create facilities which support short food supply chains e.g. slaughterhouses, processing facilities, food hubs and storage facilities etc.'

Jennings, S. et al. (2015) support these points and report that 'City region authorities and stakeholders have the ability to influence how these (e.g. private sector) businesses and enterprises function, by facilitating, supporting, and regulating different types of activity. This might include, ..., taking an approach that supports a diversity of supply chain actors. It might also include promoting innovation and new enterprise in the food sector. Promising areas of innovation and enterprise include new technical innovations to connect farmers with markets and increase information and transparency, as well as new forms of social innovation, such as community funding and ownership, cooperative enterprise, and farmer-controlled enterprise.'

Jennings, S. et al. (2015) recommend key actions such as:

- Enterprise and innovation: Local authorities and development agencies should create incentives for and support the development of new enterprises that link consumers and producers. Existing enterprises should invest in social and technical innovations to facilitate these connections
- Infrastructure and support: Local authorities and development agencies will need to invest in infrastructure such as market places and rural roads, as well as extension services for farmers to enable a greater diversity of viable city region value chains.'

Dubbeling, M. et al. (2016), building on the work done by Jennings, S. et al. and analysing 13 case studies on city region food system policies and programmes, also developed an extensive list of instruments available to city region governments to create more sustainable CRFS. Public sector support documented in this report mainly takes the form of direct technical and financial support schemes or incentives, investment in market outlets (including procurement) and the establishment of structures that engage private sector in food system governance, as practiced in Toronto (Canada).

Case study 19: Toronto government support to city region food businesses

According to the Toronto Food Policy council website there is strong city support for a CRFS²¹. '[Toronto is] A City that recognises the power of food as a main driver in our economy to create jobs, wealth and local economic development. Investing in the food sector makes the City attractive to new food businesses, enhances the region's impressive agricultural capacity, promotes innovation, and creates economic opportunities for our diverse and talented residents. Food producers, processors, and the food service sector are essential to Toronto's economic development. One in ten jobs are in this sector. Although the City has supported new food businesses to establish in Toronto, and contributes to the Golden Horseshoe Food and Farm Action Plan, there is untapped potential to harness the economic potential of food'. Strategies applied by Toronto to support food businesses are illustrated by two practical initiatives outlined below.

Residential Apartment Commercial Zoning

The city of Toronto is supporting the development of new commercial food ventures in originally residential-only apartment buildings. The new Residential Apartment Commercial (RAC) zoning, in previously residential-only zones, opens the door to a myriad of small businesses popping up at the base of as many as 564 apartment towers across the city.

Image 21: Shazia Iqbal cooks for friends and neighbours, and hopes to one day cook for many more, in her apartment's small kitchen



Source: <http://www.cbc.ca/news/canada/toronto/adding-small-businesses-to-toronto-s-high-rise-residential-towers-1.2612266>

The new zoning only applies to buildings of at least 100 residential units. It allows a range of commercial uses including greengrocers, professional offices and services such as hair stylists or catering to establish themselves on the ground floor or basement levels of residential buildings. If the site is large enough it is possible to add onto the existing building or even to construct a new free-standing one. A wide range of potential commercial uses are possible, from food retail to places of worship. Planners hope this move will help revitalise some of these declining suburban neighbourhoods. Some are severely inconvenienced by living in residential neighbourhoods which are a few buses or an arduous walk from the nearest food store.

The size restrictions of 200 square meters for each business and the limit of 1,000 square meters of commercial uses for each apartment building aim to ensure that the ventures stay small to serve only local residents. As the tens of thousands of dollars that are required to set up a store may be too much for some, RAC zoning also allows the pop-up temporary commercial ventures such as flea markets or farmers markets. The ban on selling fruit and vegetables from food trucks on private property would also be lifted.

Golden Horseshoe Food and Farming Alliance

In 2013, the city took part in the establishment of the Golden Horseshoe Food and Farming Alliance, after the development of the Golden Horseshoe Food and Farming Action Plan 2021. The Plan responds to the common challenges and opportunities that this rich agricultural area around Toronto shares. The Plan identifies pathways for a more integrated and coordinated approach to food and farming viability in the area to ensure that the Golden Horseshoe retains, enhances, and expands its role as a leading food and farming cluster. The Alliance coordinates and facilitates farm organisations' participation in food system planning and policy, as well as the input from various food industry associations and civil society organisations. One of its objectives is to encourage innovation and diversification within the food industry.

Food systems planning is a relatively new instrument to work strategically at a city scale and across different parts of city region administrations. The approach involves a wide range of stakeholders and supports the coordination of public sector intervention tools as outlined above. All of the reviewed literature concerned with the concept of 'food system planning' and 'urban food policy' acknowledges and calls for more integrated multi-stakeholder participation, advocating new 'food governance' processes and the need to strengthen relationships between urban and rural areas.

In discussing the role of the Toronto Food Policy Council (TFPC) for example, Blay-Palmer (2009) already highlighted work to 'bring together farmers, planners and public health advocates to promote new opportunities for [the] production and sale of local foods. . . the agenda has been broadened beyond collaboration between local farmers and local eaters. The new challenge is to include local city-based businesses and promoters of 'incubators' alongside local farmers, eaters and public health advocates.'

Often, an initial assessment of the current food system and its vulnerabilities is needed to form the base for further food systems planning. One example is the study *Who Feeds Bristol* (Carey, J., 2011) which represents a 'snapshot' audit of the strengths and vulnerabilities of the food system serving the city. It investigates the role of the different types of private sector businesses that are involved with feeding the city and highlights the collective 'positive planning powers' of the city of Bristol that could be harnessed to develop a more resilient city region food system. More recent city region food system assessments are implemented by RUAF and FAO in 8 cities around the world. They map different parts of the food supply chain against various sustainability dimensions²².

A recent publication by GIZ, RUAF Foundation and FAO (Dubbeling, M. et al., 2016) describes 13 city region food system programmes and outlines specific recommendations with regards to food systems and spatial planning in order to 'regulate urban expansion on agricultural land, by preserving and protection agricultural land from (un-planned) urban expansion and natural resources.' Enhancing producer access to secure tenancies is crucial in this regard. The Belo Horizonte case study (Chapter 4.4) also shows that local

²¹ Source: Toronto Food Policy Council website, <http://tfpc.to/elections2014/#food>

²² <http://www.ruaf.org/projects/developing-tools-mapping-and-assessing-sustainable-city-region-food-systems-cityfoodtools>; <http://www.fao.org/in-action/food-for-cities-programme/activities/en/>

governments can support the development of innovative short food supply chains through the planning and development of designated areas for local traders that are visible, easily accessible and supported with adequate facilities. Infrastructure is also needed for local food processing, storage and food waste management and needs to be located in proximity to sites of production and consumption as well as in different parts of the city.

7. Types and characteristics of private sector engagement in sustainable and resilient CRFS

The case studies documented in this report show that within city region food systems types of businesses, scale and motivations vary widely. This section starts with highlighting some of the key food system developments over recent decades to illustrate (historical) shifts in the types of private sector players and supply chains that are engaged in city region food systems. This section then aims to summarise the different categories and types of private sector players based on their functionality and discusses how they may differ in mainstream and (sustainable and resilient CRFS. This is followed by highlighting key challenges and solutions for businesses. The chapter closes by highlighting the increasing role of players from outside the traditional food system.

7.1 Historical development of food supply chains

A shift in power dynamics are at the core of the changes that have occurred in the food system over recent decades. Wiskerke (2015), commenting on issues in the Global North, highlight how ‘in the last decades the mainstream system of food provision has changed from a supply to a demand driven chain. Concomitantly a shift in power has occurred within the food supply chain from primary production to the retail sector, which has become the main outlet for processed as well as fresh food products.’

Banks, J. and Bristow, G. (1999: 323) differentiate two types of supply chains within this food system for the UK. One, the ‘private retailer regulated supply chain’. Cumulative expansion and concentration in the corporate retailing sector in the UK have affected a gradual shift from a predominantly CAP²³-regulated livestock production system, to a private retailer regulated supply chain approach. In this network, supermarkets by-pass local markets and source their meat through strictly regulated producer clubs, where food quality assurance and traceability are a prerequisite for market entry. This places new and challenging organisational and management demands on farmers, who have to meet certain minimum standards of husbandry and hygiene as well as engaging in new partnership marketing arrangements..... The supermarkets continue to search for cost-efficiency by rationalising their supply base and using integrated slaughtering, processing and packing plants dedicated to their requirements.’

The second type of supply chain within this category that Banks, J. and Bristow, G. (1999: 323-324) identify is what they call ‘The processed food network. This network describes the supply chain in which secondary processing companies producing ready meals, cooked meats, frozen foods and processed dairy products buy their supplies from abattoirs, wholesalers, other processors or from abroad. They then sell their products to retailers and food service companies who exercise considerable control over the supply chain. Thus processors are under pressure to rationalise their supply base, and demand consistency and availability in supplies so that the end product can be offered across national outlets with guaranteed continuity for the consumer. This tends to militate against local sourcing where the costs associated with the regulation, accreditation and presentation of product quality, coupled with deficiencies in processing and freezing facilities, limit the ability of producers and processors in Wales (United Kingdom) to meet these criteria.’

²³ European Common Agricultural Policy

This development is also seen in the Global South. Both processes described are illustrated by the Quito case study in Chapter 3.2 and more extensively described in the full case study report. Reardon (2015) explains how the food supply chain in Asia, for example, developed over the last 50 years. 'In Asia, as in other developing regions, the traditional foundations of the food value chain (characteristic of a food system 1.0) were rooted in farmers' sales to a nearby village or rural town or neighbour. However and as rural towns and cities grew, there was a proliferation of intermediaries in the midstream; rural-urban brokers emerged in dendritic structures to collect from rural areas then sell on to villages then to semi-wholesalers in district towns who then on-sold to cities.' Wholesalers from rural wholesale markets and even urban markets then began to buy directly (via transporters) from farmers; mills got bigger and started to buy directly from farmers; trucking firms proliferated and eased local logistics constraints. This was followed by the emergence – either from inside wholesale markets or outside wholesale markets – of modern 'specialised dedicated wholesalers' that buy direct from first- and second-stage processors and farmers as agents of supermarkets (and processors). ... This latter wave, private-sector led, of consolidation of the midstream features, resulted in the pushing out or acquisition or sometimes mergers of large midstream firms with the small and medium firms.'

The knock on effects of a shift in power dynamics and consolidation impacts on the food sector in a number of ways. As Reardon (2015), in the context of developments of Asian supply chains, explains '.... Second, there has been a shift from no public standards, to the emergence of public health standards and the emergence of private standards. ... There appears to be a correlation between how traded a product is into the international market, and/or its degree of processing, and the degree of public standard emergence for the product. ... Third and more common is the shift from no brands to the spread of branding for packaged and processed foods. Fourth, especially for large retail chains and large processors, there has been emerging organisational change (especially for dry and frozen processed foods; less so for fresh fruits and vegetables, so far) – the emergence of centralised procurement systems of large food industry companies with use of distribution centres, regional and global networks, and specialised dedicated wholesalers.'

The picture is a little different in Africa. The Committee on World Food Security (2015) states that 'As urban populations have increased, there has indeed been concern that the rise of supermarkets and the increase in purchased food would mean that small retailers would be edged out of the market. Recent research however indicates that the majority of urban food expenditure in many countries in Africa is still directed to small family owned shops, and that supermarkets account for roughly 20-30% of urban food spending. The percentage of spending at modern retailers varies by the type of food product, with modern retail outlets accounting for more than half of the spending for processed foods, while meat, fish and vegetables are purchased at traditional outlets. The percentage also varies by household income, with the poorest households spending just a small part of their budget at modern food outlets, and the richest households spending over one third of their budgets. The role of local traders is still key and often not sufficiently recognised. These traders are often able to buy the entirety of the harvest of small-holder farmers, while supermarkets and multi-nationals might only be able or willing to purchase a proportion of it related to relatively strict quality, grading and food safety requirements.' Such combination of food system 1.0 and 2.0 is also documented in the Quito report.

As responses to these shifts in power dynamics in the global food system, in the last years, the Global North has seen the emergence of a more re-localised and sustainable food movement, focussing on increasing connections between producers and consumers, sustainable production and clarity of provenance (see Rotterdam and Bristol case studies).

More recently arising in the Global South, often with a food sovereignty²⁴, such trend is also documented in Quito.

7.2 Characteristics of the private sector in city region focussed supply chains

As illustrated throughout this report, private sector players in CRFS naturally encompass all traditional food sector players including smaller, to medium to larger national and international enterprises.

A CRFS anywhere is by default a complex mixture of international, national, regional and local food systems. For example, while many food system activities and businesses tend to concentrate in urban areas and city regions (see case study on Quito, Ecuador, Chapter 3.2), food businesses do not necessarily or solely contribute to sustainable and resilient city region food systems. Many businesses are part of international, national as well local food supply chains. They might source produce from different (including local) sources and sell them at both local and (inter)national markets. IIED (2015), describe case studies from Senegal and Peru that highlight that 'In Peru and Senegal, local food supply chains are complementary rather than an alternative to imported food, as is the case in other countries (IIED, 2015).'

Sustainable and resilient CRFS however offer opportunities for new private sector players (see Rotterdam case study in Chapter 3.3 and also Chapter 4). Trust, transparency and human scale are core characteristics of sustainable and resilient CRFS. Hiss, C. (2015) highlights the vision that 'The future local supply economy will be organised in new forms that will be driven by the conscious decision of the participating parties. The economic links will be transparent and everyone will know about the situation of the other.'

The case studies in Chapter 3 show that suppliers in a sustainable and resilient CRFS (being located in the city region and oriented at the city region market) tend to be family owned and small to medium sized. These businesses represent what Kelly (2013) calls *Generative Ownership*, in which she also includes cooperatives and social enterprises. Kelly (2013: 67) explains that 'Generative ownership designs are about what the butcher, the baker, and the candlestick maker have always been about. That is, they are about serving the community as a way to make a living. In enterprises with generative ownership, leaders have less ability and fewer incentives for maximising their own income. They tend to define success as their organisations define it – as being about serving the community and keeping the organisation financially healthy over the long term. The purpose, ownership, and governance of these institutions, as well as good leadership and the socially responsible networks of which they are a part, combine to create balancing feedback loops that keep these enterprises rooted in the real world, serving the aims of living communities. By and large, these institutions are profit making. But they are not profit maximising. Alongside the more familiar models of non-profit and government ownership, they add a category of private ownership for the common good.' Examples include the short supply chains documented in the Rotterdam study, smaller processing and retail in Quito, as well as several smaller suppliers to the larger catering services in Bristol.

²⁴ Food sovereignty is defined as the right of peoples and sovereign states to democratically determine their own agricultural and food policies (IAASTD, 2008).

Table 1 provides a summary overview of types and roles of traditional players in the food supply chain, with some specific CRFS examples. Each of the categories is briefly described below.

Table 1: Key players and roles in the food supply chain

Category/ role	Types	Sustainable and resilient CRFS case study examples
Primary food production	Wide range of players, e.g. from large agricultural businesses to small-scale farmers; from landowners to tenant farmers and social enterprise operations in urban, peri-urban and rural areas of the city region	<p>Peri-urban agriculture production in Kathmandu, Nepal. Source: Pay Drechsel</p> 
Processing	This sector includes a wide range of businesses such as dairies, abattoirs, meat cutting plants, mills, fruit & vegetable preparation and packing, meal manufacturers etc.	<p>Family-based fruit processing in Brasilia, Brazil. Source: PROVE</p> 
Distribution and wholesale	This sector includes a wide range of private sector players covering food distributors, cold stores and wholesalers. There is sometimes overlap, e.g. within the meat sector, it is common that a processor may also be a wholesale distributor.	<p>Wholesale market in Bristol. Source: Who Feeds Bristol report (2011), photographer: Jackson Drowley</p> 

Category/ role	Types	Sustainable and resilient CRFS case study examples
Retail	<p>This sector encompasses a huge range of businesses. From large, international multiple retailer supermarkets to small independent stores, from informal markets to street food traders, from home delivery to community bulk buying groups.</p>	<p>Streekbox or 'box from the region' supplies regional products in the Netherlands. Source: http://www.streekbox.nl/</p> 
Catering and consumption	<p>This sector includes a wide range of businesses such as restaurants, work canteens, public sector meal provision and food services.</p> <p>Businesses range from very small scale, such as street food vendors to international businesses such as Autogrill who manage over 1000 service stations located at international airports, railway stations, motorways, shopping centres, trade fairs and museums.</p>	<p>Campaign to eat LOCAL in Winnebago County. Source: http://winnebagobuylocal.com/eat-local-saturday/</p> 
Food waste	<p>Dealing with food waste falls into three main areas: i) reducing waste in the first place; ii) dealing with wasted food that may still be suitable for human consumption; iii) dealing with the disposal of food waste.</p>	<p>Social restaurant using food left overs for healthy and affordable meals in Rotterdam. Source: Hotspot Hutspot</p> 

Primary production

Ownership, scale, relationships: Sustainable and resilient CRFS are more likely, although certainly not exclusively, to be served by small to medium size, family run farms. Those kind of farms are also more likely to be closely linked into a local network of farm-related input businesses from machinery to feed, seeds to maintenance services (see Food Assembly, Ontario, Bristol cases).

Control: Typical mainstream national and international supply chains are usually characterised by farmers selling their primary products to an intermediary (processor, wholesaler or trader) who are either sub-contracted or owned by multiple retailers or catering buyers. If farmers do not add value to their primary outputs and sell independently they are dependent on mainstream supply chains where they are price takers and are required to meet the buyer's specifications and requirements, as discussed in more detail in Chapter 7.3. New forms of producer organisations and support (see Rosario case study), as well as specific regulation (see local procurement cases) are required for smaller local farmers to engage in mainstream chains.

Multifunctionality: In sustainable and resilient CRFS producers are seen not only as commodity producers but also as providers of quality food, as managers of the agricultural eco-system and landscape and as contributors to rural development. Many, especially small scale and social enterprises deliver multifunctional services (education and recreation) in addition to food production (see the various examples in the Rotterdam case studies)²⁵.

Processing

Scale: The food processing industry in the Global North and South has seen significant consolidation over the past 50 years. For example, in Ecuador (see Quito case study, Chapter 3.2) no more than 5 large scale processing businesses account for 80% of the sales in each of the significant food categories (dairy, bakery and grain-based sector and meat). In the Ecuadorian bakery and grain-based sector for example, four major companies represent the largest shares in this sub-market and the remaining one third of sales are shared by 70 businesses. Food suppliers, be it producers or other food businesses, are often required to have a certain minimum size and quality of operations when it comes to delivering produce to larger markets (including retail and caterers) and mainstream food actors. This is again illustrated by the Quito and Bristol case study where larger processing and retail demand specific volumes, standards and other delivery conditions, that are hard(er) to comply with for smaller-scale and individual producers or SMEs. Those suppliers and procurers have all pointed out that the contracts are only possible when the local suppliers have the required volume to meet the procurers' requirements. Product aggregation through cooperatives, collaboration or intermediaries then plays an important role, as does training and technical assistance to smaller SME suppliers. As for primary producers, specific SME oriented support and regulation (as proposed in Ecuador, see also PROVE case) is required to facilitate and support their engagement.

Infrastructure: A sustainable and resilient CRFS depends on farmers and growers having access to suitable processing facilities (i.e. in terms of distance, volumes, quality, equipment, skills, and specialisations). This is clearly illustrated in the PROVE and Ontario case studies. Farmers engaged in city region supplies rely on either their own processing facilities or access to small and medium size facilities, both, even if they are available, can present challenges (see also Chapter 7.3). Banks, J. and Bristow, G. (1999: 323) confirm this point (in the context of the livestock sector in Wales, UK) with their statement that 'Welsh farmers continue to experience difficulties in gaining access to these (local wholesale, catering and retail outlets) markets (particularly quality catering outlets) owing to the difficulties they face in adding value to their products.'

²⁵ See for more examples: <http://www.ruaf.org/projects/supurbfood-towards-sustainable-modes-urban-food-provisioning>; <http://www.ruaf.org/projects/urban-green-education-enterprising-agricultural-innovation-urban-green-train>

Distribution

Logistics: In the conventional global industrial food system distribution relies heavily on refrigerated transport, long distance shipping and centralised distribution centres. In sustainable and resilient CRFS, distribution tends to be significantly different to the mainstream system. Distribution distances tend to be shorter between producer and consumers and there is a wider range of distribution models. However, transport logistics may bring up new challenges as illustrated by the case study on Willem & Drees. The cases of Belo Horizonte and Ontario illustrate the importance of availability of (cold chain) transport for small-scale producers and SMEs. Increasingly there are also models, that for example set up new distribution models or link producers and consumers online (e.g. Food Assembly and Jinghe farm).

The Rotterdam case study suggests another tentative conclusion: that short food supply chains may benefit from sharing resources, infrastructure and knowledge with mainstream food supply chains, rather than compete with these resources, infrastructures and knowledge. An example again is Willem and Drees, a whole sale trading company set up by two former Unilever managers, who brought with them their intimate knowledge of the retail sector, and of the distribution and marketing of fast moving consumer goods. But they were also able to use their Unilever background to access venture capital to grow their initiative beyond start up stage. Another example is Leen Menken, a fresh logistics provider from the Menken family who owned and operated dairy processing factories in the Rotterdam region. They now use their logistical expertise to facilitate short food supply chains. By clustering several local initiatives (Willem and Drees, Streekbox, De Krat) they can obtain logistical efficiencies that each initiative individually would not be able to realise.

Retail

Short supply chains: In sustainable and resilient CRFS, local stores play an important role, next to mainstream retail chains (supermarkets) – see Bristol, Quito and Ontario case studies for example. Short food supply chains, directly linking producers and consumers also play an important role, as illustrated by the cases from Belo Horizonte, the Food Assembly and Jinghe Farms. Retail outlets, characteristic for more sustainable and resilient CRFS vary from on-farm sales, box schemes, farmer markets, food hubs, independent retailers to large scale international businesses offering local produce, all of whom offer distinctive services and a strong emphasis on ensuring transparent and visible production locations and conditions.

The Rotterdam case study (see Chapter 3.3) for example highlights the trend to differentiate the retail offer by focussing on provenance – both for products and the retail concept itself. Two organic retailers source directly from a local grower throughout the summer and then source from an organic wholesaler (with regional and national suppliers) for the rest of the year. The same case study also highlights the trend towards a retail concept that is based on short or transparent supply chains. Other innovations involve some urban farms who now run their own restaurants, a fast food supply chain attempting to source local potatoes, an online platform for restaurateurs and producers to share information and large logistics player who are setting up ‘local 4 local systems’.

At the same time, there are growing efforts of supermarkets to include local (and organic) products that may reach larger number of people and ‘popularise’ these food items (see examples from the Quito and W&D case studies).

Catering and consumption

Procurement: In a sustainable and resilient CRFS, local procurement is an important driver for development of local food producers and smaller to larger private sector catering and

supply businesses as demonstrated in the Bristol case study and some other European examples.

Local sourcing: The Rotterdam case study highlights other forms of innovation in the catering sector. An increasing number of restaurants use short supply chains in order to promote the ingredients' provenance.

Food waste

Technology & management: Business opportunities can evolve around experimentation with and development of innovative technologies in sorting and processing of organic and green urban waste such as biogas units (see Linköping and Brazil case) or improved composting facilities (see examples from Paris and Ghana).

Re-use and redistribution: Other businesses aim to reduce and optimise residual food waste streams (see case Ile-de-France; one initiative in Rotterdam uses out of spec vegetables into soup and other products, another local food initiative achieve their aim of a closed loop nutrient and waste cycle by using an aquaponics growing system and using heat from waste processing, while another example is an initiative that grows mushrooms on coffee waste in an abandoned tropical swimming paradise).

Cross-cutting to all these categories are specific characteristics to the nature of businesses shaping sustainable and resilient CRFS, as described below.

The nature of sustainable and resilient CRFS businesses

Proximity to city

Unique market opportunity: Being located in or close to cities offers specific opportunities to food business to engage in sustainable and resilient CRFS: first the proximity to larger markets and clusters of potential consumers; second, the enhanced opportunity for collaboration between business on production, marketing and distribution, and third the opportunity to interact closely with consumers, meeting both an increasing demand for more transparent, healthy and ethical food systems and in providing related community, education or environmental services (Making local food work, 2012). This is illustrated amongst others by the Rosario case study (explaining the motivations for restaurants and hotels to serve local, agro-ecologically grown food in response to consumer demand) and by the variety of short chain cases described by the Rotterdam and Quito case studies. Transparency and responding to consumer demand by maintaining close consumer relations are also crucial to the success of the Newmarket Meat Packers business in Ontario as well as the Food Assembly.

Image 22: The Food Assembly: connecting producers and consumers



Source: <https://laruquequiditoui.fr/en>

Urban sustainability: The Rotterdam case study also shows that engagement of non-food actors, such as social housing companies, real estate, private funds and landowners is also very much related to their engagement with urban sustainability, where they see food as playing a potential role in enhancing impacts of their main activities.

Scale of enterprise

SME wholesalers, processors and primary producers: Several of the case studies suggest that there is a specific scale, most likely that of small to medium size suppliers, which is best suited for city region food system supply. After all, for them, city region markets make economic sense. Conversely, as one of the wholesalers in Bristol pointed out: 'you cannot do local anymore if you are too big.' The Quito case study highlights that SME processors or distributors tend to offer more opportunities for local sourcing as they are less influenced by issues such as economy of scale, product standardisation and logistical constraints. SMEs also may be more competitive because of low(er) overhead and low(er) levels of profit extraction.

Large scale catering and retail buyers: Large-scale public and private procurers can also play a significant role in supporting a sustainable CRFS. The Bristol example highlights a large scale catering business (with the contract for the majority of the city's school meals), which, in response to cultural and policy change, sources a significant proportion of their food supplies from regional supplies. Autogrill, an international large private sector player with over 1000 service stations located at airports, railway stations and motorways worldwide, demonstrates how scale is no impediment to sourcing more products locally. Autogrill's commitment offers 'trickle-down effects' through-out the supply chain by offering supply opportunities for local farmers. The example of some Accor hotels outsourcing management of their kitchen gardens to local enterprises (for example the Pullman Paris Tour Eiffel garden is run by the small local company 'Topager' that employs 7 staff), can also be an example of such larger enterprises contributing to local employment generation. In the case of Quito, government regulations are trying to influence large retail to source a larger percentage of their supply from smallholders and SMEs (although it is not clear yet to what extent this will benefit more local suppliers in the long term).

Business relationships

Determined by a direct connection: Supply chains typical of sustainable and resilient CRFS, are characterised by direct relationships between immediate buyers and city region suppliers. This was a point raised by each of the interviews conducted in the Bristol case

study. The Quito case study also highlights that it is mainly the small and medium sized food processors and retailers that still have close relationships with their suppliers, whether they are producers or intermediaries.

Determined by shared values: Case studies show that relationships across such sustainable and resilient CRFS supply chains are determined in part by shared values (e.g. sustainable production, preservative-free processing) and by working with businesses that they trust or can communicate well with. One of the Bristol city region suppliers pointed out that: 'we tend to work with owner-driven businesses as I prefer to work with businesses where we can communicate directly with the boss and make something happen.'

Higher degree of flexibility

Ability to respond: Businesses engaging in sustainable and resilient CRFS have a tendency to be more flexible and innovate. The Quito and Rotterdam case study both also highlights that it are the small scale local producers and SMEs that have the ability to respond fast to changing markets. The Rotterdam study highlights that companies with a 'place-based background', particularly family businesses that have a history in the area, are more likely to innovate at the city region scale. Inspired by local initiatives they have the ability to scale up innovations from a micro-(neighbourhood) level to a regional scale.

The same was highlighted in Bristol where both buyers and suppliers discussed the benefits of CRFS suppliers offering a lot more flexibility than mainstream suppliers (a function of smaller business size, more direct communication, control of distribution and proximity).

Multiple outlets: The city region businesses who supply the Bristol procurement sector for example generally engage with a wide range of markets and customers. This implies a resilient and flexible business model that spreads out risk.

Ownership and motivation

Family-owned businesses: Family-owned business are competitive because of low labour costs (family labour). The Quito case study research shows that the majority of producers and traders currently still working in traditional and local markets (open markets, local shops as compared to modern supermarket chains) are small to medium sized family owned or run enterprises. Similarly, the Bristol case study highlights that the majority of the direct and indirect city region suppliers who supply the local public procurement sector are businesses that are owned by a family, have a sole owner or are run by small partnerships.

Strong affinity to the region: Statements made by the owner of MACAFRI (see Quito case study) and by the Ontario businesses show that they are proud of the product they offer and they aim to improve their production or processing practices to offer better quality products and to better connect with consumer. The Bristol case study also demonstrates how city region suppliers into the public procurement sector have a strong affinity to the region or feel very strongly about the family business.

Social aims: Another consideration of ownership models is highlighted by Michaels et al. (2012) who investigated the particular issues and opportunities facing social enterprises and small food businesses in the urban fringe and the land surrounding towns and cities in the UK. Specifically, many SMEs have a clear social aim to change the food system for the benefit of producers and consumers alike (improving environmental services and management, reducing food waste, enhancing food security for vulnerable groups). The latter does call for a critical analysis on especially how local and SME businesses can be better supported, as well as more social models of enterprise that not only support city

region food systems, but also community engagement and participation²⁶. Case studies on government support from Brasilia, Belo Horizonte, Toronto and Ontario are starting to address this issue (see Chapters 4-6).

Sustainability motivations: It should also be noted that in addition to the SME sector, major global (non-food) businesses also have the potential to play a role in supporting sustainable and resilient CRFS. Next to normal economic interests, especially larger private sector become increasingly engaged in sustainable and resilient CRFS because of sustainability plans and corporate social/environmental responsibility (as evidenced by the cases on Autogrill, Accord hotels, Linköping and the engagement of social housing corporations in Rotterdam) and/or because of new market niches and economic perspectives (see the rise of new vertical farming and engagement of technological institutes such as Philips, Sharp, Fujitsu, Toshiba and Panasonic).

Ability to process and distribute

One of the critical factors in enabling a food business to supply markets within its surrounding hinterland is its ability to process and distribute, whether by its own means or through other local businesses. A number of case studies illustrate this point, Brasilia (PROVE), 100 km foods in Ontario, Belo Horizonte and Ile-de-France (see Chapter 4).

Ability to access processing infrastructure: Efficient use of capital inputs (sharing infrastructure) will make the system more competitive. The Rotterdam describes how recently a trend is emerging that processing facilities downscale and are decentralising again. Examples include micro-breweries, mobile fruit juice pressing facilities, mobile slaughterhouses and even micro dairy processing facilities that use up-to-date technology for monitoring and quality control. Thus it becomes easier for farmers to add value to their products by including processing and distribution, potentially even marketing and sales at farm level, or work cooperatively with other farmers (e.g. dairy farmers of Midden Delfland). The latter jointly bought pasteurisation equipment and started to bottle and brand their own milk and market it directly to consumers in the Rotterdam area.

Image 23: Local-to-local Delfland's milk



Source: <http://www.delflandshof.nl/>

²⁶ See also: <http://www.ruaf.org/sites/default/files/Supurbfood%20SME%20Finalv2.pdf>

Ability to add value: Some of the Bristol examples also highlight how businesses who have managed to add value and have created their own markets and supply chains, are also able to engage in markets such as public procurement. In order for businesses to do so, they need to cultivate and retain a wide range of skills.

Access to distribution: This is key as both the Quito and Bristol case studies show. The Quito example shows how middle-men are an essential link for producers and buyers alike. The Bristol case study highlighted how producers selling to major caterers either rely on their own distribution or on wholesalers who operate on a regional scale.

Ability to innovate

Innovation at all levels: The ability and interest to innovate is not only a characteristic but a necessity. Innovation, as highlighted by a number of the case studies in Chapter 4 comes in many ways: from new production methods; new ways to sell directly to consumers; new ways to finance operations; to new ways to distribute local products within mainstream systems.

Distribution innovation: The case studies highlight a wide range of distribution innovations that enable the businesses to contribute to a more sustainable and resilient CRFS. Willem & Drees link to mainstream supply chains with an aim to change the food system. Rotterdam producers, processors and caterers sell specific local and new products aiming to create new market niches. PROVE producers connect to supermarkets to sell part of their products to higher end markets. Social supermarkets in Ile-de-France establish alternative distribution channels with specific social aims. The Bristol case study illustrates decentralised distribution where regional specialist wholesalers broker links between primary producers, processors and food service company/caterer, or where there is direct supply to the food service company/caterer. As mentioned before, other models include the direct-to-consumer markets such as farm shops and farmers markets to new models such as food hubs and ICT enabled platforms (such as the Food Assembly and Jinghe Farm).

7.3 Challenges and solutions for sustainable and resilient CRFS

The earlier sections highlight a number of drivers (Chapter 5), challenges and solutions for sustainable and resilient CRFS, which private sector players respond to. Some the most outstanding key challenges and solutions are summarised again below and further support the case for tailored policy support strategies (see Chapter 6).

Volume requirements and price

Challenges: The Bristol case study highlights the twin challenges of volume requirements and price sensitivity of some city region scale markets (e.g. public procurement). One important issue limiting the price competitiveness of regional small to medium size operators (compared to products from global players) is likely to be volumes and economies of scale. Other issues that could influence price competitiveness might be national animal welfare requirements or other production standards, climatic conditions, staff costs and many more factors. As Renting, H. and Dubbeling, M. (2013) explain: 'Consumers pose quality requirements as do supermarkets (demanding a certain quality, quantity, timely delivery) and public administrations (hygiene regulations, etc.). It can be argued that there is a double problem of scale: on the one hand both input supply (favouring buying of bulk and large

volumes of inputs) and supermarket logistics (in terms of volume of produce needed) are generally restrictive and integration in globalised commercial logistic structures (e.g. bar-codes) is often not accessible to local individual and groups of producers. At the same time, the scale of production/supply of short chain initiatives is often still too small, in such a way that they do not reach economies of scale and/or do not have sufficient resources to make larger up-front investments.'

Solutions: Innovative solutions have however been developed by the Brazilian PROVE programme (agro industries supply counter where inputs can be bought in small quantities and specifically serving the needs of small agro-enterprises; setting up of producers kiosks for joint sale at supermarkets; creation of a joint logo) that can serve as inspiration to other new initiatives. Other examples are the (online) farms that pool producers and consumers together and so link demand and supply at larger scales. Similar aggregation of supply is supported by the Belo Horizonte programme where farmers produce and sell as cooperatives. In the Bristol procurement example one supplier adjusted to the price pressure by developing a bespoke catering mark product with cheaper packaging and a simpler recipe for hospitals.

Demand for quality, safety, uniformity, consistency and convenience

Challenges: Product requirements of the global mainstream food system can furthermore exclude many suppliers for a range of reasons. Describing a case study from Peru, del Pozo-Vergnes, E. and Vorley, B. (2015) explain that 'Food safety requirements can exclude small producers and/or small informal food supply chains.... Large food enterprises comply with sanitary obligations and are easy to control but this is not the case for the majority of food processors who are mainly small and micro enterprises.'

Discussing a Welsh case study, Banks, J. and Bristow, G. (1999: 323) discuss how 'Wholesale fruit and vegetable markets, for example, are increasingly becoming dominated by a few, large national subsidiaries such as Fyffes, who are geared to meeting wider commercial markets and thus demand a uniformity and consistency in supply often felt to be lacking from small-scale local suppliers.' Renting, H. and Dubbeling, M. (2013) highlight that 'Especially for ensuring (stable) retail/consumer demand it is important that the product quality is guaranteed and standardised and that attention is paid to the presentation of products (branding, packaging, barcode, etc.).'

Describing a case study from Senegal, del Pozo-Vergnes, E. and Vorley, B. (2015) state: 'A new and often overlooked issue is coming to the fore: changes in consumers' behaviour associated with urbanisation and new aspirations. Consumers, and low-income rural or urban consumers in particular, look mainly at food quantity and price (affordability). But consumers – including the majority of low-income households – are also increasingly seeking different food attributes, such as food safety, taste and ease of preparation. Global products may be perceived as safer as they comply with sanitary controls, while local chains, mainly operating in informal markets, do not. Consumers also have food preferences based on taste and ease of preparation; convenience is important as they tend to work more outside the home and have less time and space to cook.' del Pozo-Vergnes, E. and Vorley, B. (2015) continue to state that: 'For low-income consumers price is important, but in Dakar even the poorest prefer imported rice, onions or powdered milk as they are easier to cook, tastier and/ or easier to store for longer periods. Consumption of processed food is rapidly increasing, driven by fuel poverty, time poverty and lack of refrigeration facilities.' Renting, H. and Dubbeling, M. (2013) add that: 'Customer convenience plays another important role in generating demand.'

Solutions: Increased direct connection between producers and consumers reassures people about the quality and provenance of their food. The ICT based food enterprises or service

providers serve as examples of new and innovative forms of online marketing in combination with office or home delivery. The aim is to inform consumers about the origin of their food, in this way responding to consumer concerns for food safety (China) or product origin (Food Assembly). The UK Catering Mark offers an independently assessed accreditation scheme to caterers that combines a number of quality health of environmental criteria and helps to reassure customers about the provenance of the meal ingredients. Programmes like the Brazilian PROVE or work in Rosario offering local product branding, or the Ontario business improvement grants illustrate other types of solutions to these product development and marketing challenges.

Long, complex and non-transparent supply chains

Challenges: Franklin, A. et al. (2011) point out that conventional mainstream food supply chains and food hubs are designed primarily for the economic advantage of retailers, commodity producers, and/or managing commercial entities that provide a middleman type of service for commercial gain. This has resulted in long, complex and non-transparent supply chains leaving the consumer very disconnected from the origins of where their food comes from. It also leaves the producer invisible and with little or no control of their products within market channels.

Solutions: Building strong community networks, enabling direct contact between producers and consumers through farm visits for example, creating opportunities for buying direct from farms all help to create new markets, particularly for producers who do not want to or cannot meet the requirements of mainstream food supply chains.

As has been long discussed for local/short supply chains, and illustrated in sector 5.2 when discussing ownership and motivation, the 'human scale' or the nature of the relationships across the supply chain cuts to the very core nature of a well-functioning city region supply chain. The Freiburg case study provides a practical example illustrating this point. Hiss, C. (2015) states that 'An important conceptual element of Regionalwert AG is the visibility of each individual entrepreneur and of each enterprise within the value-added chain. Every business and its people, independent of whether they work in agriculture, processing or retail, have to be recognised as individuals. This is a counter principle to the classical practice, in which farmers disappear behind a retail brand or a product brand.'

The Willem & Drees case study further adds to this point by highlighting how they negotiate a fixed, mutually agreed price with their farmers which is one example of how their short supply chain is anchored in trust and transparency. That case study also explains why short supply chains should not be measured by the food miles, rather by the nature of the supply chain, the connection between producer and consumer, the sustainability of production and the efficiency of the distribution.

Image 24: Establishing a relationship of trust with their producers is crucial to Willem & Drees' business



Source: Willem & Drees

ICT plays a key role in new direct producer-consumer models such as highlighted in the Food Assembly and Jinghe models which allow people to buy food directly from local farmers and food processors. This and similar models aim function as a platform and/or distribution hub between producers and consumers and farmers typically receive a significantly larger share of the retail price as compared to mainstream supply chains.

Franklin, A. et al. (2011) offer another example of an alternative supply chain with food hubs that 'coordinate sourcing, supply, and/or marketing on behalf of producers and consumers, providing technical as well as infrastructure support for product distribution. They are aimed at creating an alternative system of economic advantage which benefits producers, distributors, and consumers. At the same time, they seek to enhance the economic viability of local farmers and promote environmental protection and well-being.'

In the Quito case study there is a case being made to support small-scale producers to set up associations or cooperatives. That way they would be able to increase their negotiation power and demand more transparent and inclusive relationships with other food system actors. The case study researchers make the point that programmes and policies should be supported that aim at the consolidation of producers' organisations in order to improve strategic access to resources such as storage centres, irrigation channels, ICT services, commercial and logistics training, exchange of knowledge between organisations. Other support mechanism like selective tax exemptions, space for markets, local or smallholder sourcing priority in public procurement programmes, should also be considered.

CRFS infrastructure – access to processing, distribution and retail

Challenges: The issue of outlets for city region produce within the city region is discussed throughout the cases. These outlets range from alternative retail outlets, such as farmers markets, individual consumers and independent retail shops to food service buyers such as hotels, restaurants or caterers (including social supermarkets as in Ile-de-France and the public procurement sector).

What is less often discussed is the required infrastructure, particularly with a view to increasing the scale of city region food supplies. For farmers and growers wanting to sell their products direct in the city region, from farm gate sales to supplying hospitals for example, access to processing facilities is key. Hochberg et al. (2009), in the context of the livestock sector in Dorset (a county in the UK), found that if farmers ‘could overcome processing and other related issues, they would wish to double the current numbers of animals being processed for direct sales²⁷.’

For eggs, vegetables and fruit, those processing facilities can be relatively basic (depending on the market) and farmers and growers may require a facility for grading, packing and possibly washing. Dairy and meat products require more costly and complex processing facilities. Farmers either set up their own processing units on farm or are reliant on a (usually small to medium size) processor that provides services for direct selling farmers as well as usually serving other bigger customers. Setting up on-farm processing facilities has many advantages (ability to sell direct, control over quality, etc.) and many challenges. Challenges include the requirement for capital investment which is difficult if the farm is leased and not owned or if grant support is not available. Other challenges can include skills shortage, insufficient cold room space and meeting the food safety standards.

Solutions: Some local authorities, like Toronto support processing and retail facilities in residential and inner-city areas through their residential zoning regulations and grant support.

Image 25: Toronto Food Share mobile retail outlet



Source: Lauren Baker

²⁷ The meaning of direct sales in this context is farmers selling direct to the public in their region using farm shops, farmer’s markets, farm gate sales, etc.

The Brazilian PROVE programme shows how issues associated with processing capacity (e.g. skills shortage, capitals requirements, food safety standards) can be systematically tackled in the programme design and support strategy (for further information see Chapter 6). Another example of tailored grant support is Ontario's local investment funding (Chapter 4.3).

Renting, H. and Dubbeling, M. (2013) address the issue of alternative retail outlets. 'In tackling this issue, the development of logistical infrastructures (such as 'food hubs') are of key importance. Product aggregation of products from different producers that leads to a diversified 'basket', and synergies between different short food supply chain channels and outlets have proven to be a success factor in a number of cases (see Belo Horizonte case).'

Requirement for more flexible and innovative business models for urban and peri-urban areas

Challenges: Typical challenges for urban and peri-urban producers include for example high cost and availability of land, and the need to develop new networks of suppliers, customers and business partners. Several EU programmes²⁸ have shown that the specific nature and diversity of business strategies in city region food production needs to be more flexible than business strategies in traditional agriculture.

Solutions: In many cases income generated from traditional agricultural (production) is of secondary importance and instead services and added values activities emerge as key components of the business strategy. This is also illustrated by several food production and short supply initiatives in the larger Rotterdam case study. Agricultural and food production activities are important, but often as secondary, complementary activity.

Several businesses as documented in the Rotterdam study start as conventional (family) farms in peri-urban areas and then continue to diversify (offering new and multiple services) and interrelate their enterprise with urban markets. By doing so they can build on existing skills and resources (see also the Food Assembly, the Rosario, Belo Horizonte and Ontario producers). There are also businesses that start from the city in response to urban market niches or demands (see the Schilde rooftop farm in The Hague).

Farmers and SMEs have been a major source of innovation and knowledge in the food and farming sector in the past. Their potential to drive innovation for the future needs to be recognised and supported (Schmid et al., 2012).

7.4 The role of non-food players supporting sustainable and resilient CRFS

It is finally important to highlight the new roles that can be played by non-traditional food actors in building more sustainable and resilient CRFS. The examples below are largely drawn from the Rotterdam case study which looked specifically at the role of non-food players from the private sector. The case study (Chapter 3.3) amongst others highlights the role that, particularly social housing corporations (SHCs) and real estate developers can play in facilitating urban agriculture and food related initiatives by providing access to land and financial support amongst others. Supporting such initiatives provides a number of benefits that also benefit the SHC or real estate developers, for example the potential for such initiatives to contribute to increasing social cohesion and the quality of public spaces, to

²⁸ <http://www.ruaf.org/projects/supurbfood-towards-sustainable-modes-urban-food-provisioning>; <http://www.ruaf.org/projects/urban-green-education-enterprising-agricultural-innovation-urban-green-train>. See also: <http://www.ruaf.org/sites/default/files/Supurbfood%20SME%20Finalv2.pdf>

increase or at least maintain real estate value or to extend the average time of residency for occupants in the neighbourhood.

The table below does describe different non-food players that can be important stakeholders in the development of sustainable and resilient CRFS.

Table 2: Non-food actors shaping sustainable and resilient CRFS

Category	Type of players	Example of non-food players shaping sustainable and resilient CRFS
Service providers	Service providers include a wide range of private sector players, all of whom are influenced by the nature of the CRFS. These include upstream sectors in the economy (i.e., input suppliers), such as animal feed from feed manufacturers, crop inputs from local dealers, electricity and fuels from energy suppliers but also professional services ranging from veterinarians to accountants and private funders (banks).	In Brasilia, Brazil, new jobs were created in the service sector, including the agribusiness counter and the construction of agro-industrial units. In that case, banks also played an important role in supporting enterprise creation. The Rotterdam case study highlights how private funds that support social, cultural and/or environmental goals have facilitated city food region initiatives through making grants available. Typically they support events, project delivery costs and consumables.
Social housing companies, real estate, private land owners support to CRFS production	Private enterprises supporting and promoting city region agriculture production, e.g. enterprises providing access to land, offering financial or technical support. Examples include (social) housing companies (see Rotterdam case study), industry, water and electricity companies (see Linköping), health companies and financial organisations. This category also includes private / collective land owners who make some of their land available to food production or related activities. One example is the privately owned nature conservation organisation Natuurmonumenten in the Netherlands which makes some land available for local food initiatives. Also private sector care organisations in Holland are often involved in food related activities that have a strong social motivation.	In Rotterdam, for example, these businesses have played an important role in facilitating urban agriculture and food related initiatives by providing access to land, property and financial support. Social housing companies own land that prior to development can be used as a temporary space for food initiatives. Vacant property in their possession can also be used and in one example a vacant office building provided the space for a children's cooking school. Similarly, in Rotterdam, real estate developers, starting with the original garden city movement and today's concept of 'place making', have been involved in facilitating urban agriculture initiatives by providing access to property and land as well as financial support. A growing trend there is that real estate developers consider an (urban) farm as a central force, around which an area can developed.
Hospital and schools, ICT and finance support to local distribution and procurement	Private sector support for shorter supply chains and procurement of more localised products. These organisations might include hospitals and schools or non-food retail and catering, ICT, financial and support organisations.	One example includes the food waste and kitchen garden initiatives at Accor hotels, also hotels and restaurants in Rosario specifically support procurement of more products from the region. As illustrated in the Bristol case study, there is significant power in public sector food procurement, which, if channelled into the local economy can have significant impacts on city region food suppliers. Where this is combined with a nationally recognised quality accreditation scheme like the UK Catering Mark, there is likely to be increased impact through its increased inclusion as a requirement of public food procurement contracts.
Technology support	Private sector actors exploring new designs or technologies for food	The city region food system in Rotterdam for example also attracts engineers and

Category	Type of players	Example of non-food players shaping sustainable and resilient CRFS
	<p>production (see the vertical farming cases, see engagement of Philips²⁹). Innovative projects provide a breeding ground for new ideas and for new business opportunities.</p>	<p>consultants, such as suppliers of technological solutions as well as engineering firms. One company (PRIVA) that provides air conditioning technology for greenhouses and utility buildings sees the city as a potential growth market for their technological products and urban agriculture offers a testing ground.</p>
<p>Utility companies</p>	<p>With the increased focus on a circular local economy and closing material and energy cycles in society at large, and in the food sector in particular, water companies, the waste collection and recycling industry and energy companies are now also considered part of the food system.</p>	<p>Rotterdam's case study also highlights that the involvement of players from the environmental management sector such as water, waste and energy in the development of sustainable CRFS's is often still limited (although the cases from Linköping and Quito show promising initiatives). Some initiatives in Rotterdam give other indications of future possibilities. Examples include an initiative that aims to digest bread waste into gas and they have placed containers at strategic places in the city to collect bread that would otherwise be binned or fed to pigeons and seagulls (which causes problems).</p>

²⁹ http://www.newscenter.philips.com/main/standard/news/press/2015/20150706-philips-delivers-tailored-light%20growth-recipes-to-produce-fresh-food-locally-indoors.wpd#.VZus_E1T_IU or <http://future-of-food.com/events/india>

8. Conclusions and recommendations

With a clearer understanding of some of the challenges that businesses face and their support needs (Chapter 7), it is easier to identify support mechanisms for better engagement of the private sector in sustainable and resilient CRFS. One of the critical factors in enabling a food business to supply markets within its hinterland is its ability to process and distribute, whether by its own means or through other local businesses. Another is the capacity to address buyer awareness and demand.

However, developments towards a more sustainable and resilient CRFS require more than just supporting individual businesses and call for the consideration of the entire food supply chain, support for farmer and business-led innovation and public sector innovation.

This last chapter provides some final findings and lessons that the authors feel are an important contribution to this report. These complement the conclusions and recommendations (solutions) that have been presented in previous chapters.

Finally, the chapter provides some selected recommendations for specific stakeholder groups.

8.1 Key findings and lessons

Scale of the business operation: Although this is not much discussed in the reviewed literature, the case studies suggest that the scale of business operation is a crucial issue. Medium to smaller scale businesses appear to be more invested in sustainable and resilient CRFS because the city region market makes economic sense to them. At the same time these businesses seem to maintain a capacity to innovate. Operating at a ‘human scale’, where direct relationships can be established between businesses and between food suppliers and their consumers, also seems to be very important. However, large companies such as Autogrill can also drive significant change very quickly due to their scale of operation and financial resources. This suggests that behaviours are as important as scale or type of business.

Nature of ownership: The analysis suggests that it is crucial to understand what drives businesses, to better engage in sustainable and resilient CRFS. One crucial factor appears to be the nature of ownership. Family-run, place-based companies seem more likely to be motivated by creating something that serves the city region community.

Level of control of product and markets: This is another important factor in determining the capacity of private players to contribute to more sustainable and resilient CRFS. This also calls for an approach that does not just look at individual businesses but focusses on the entire food supply chain and the so-called trickle-down effects that are described by some of the case studies.

Capacity and ability to add value and engage with local markets: Having access to processing and distribution lies at the heart of the CRFS discussion and they are key requirements. These issues need to be addressed for individual CRFS businesses or clusters of businesses, or as illustrated in Rotterdam, by pooling short and long supply chain logistics and resources. The discussion about challenges in engaging with local markets (Chapter 7.3) is also covered in the Bristol case study (Chapter 3.1).

Supporting the increased sourcing of food from the city region: In addition to the obvious public procurement opportunities, there is a lot to learn if we listen to buyers and suppliers (as illustrated by the Bristol and Quito case study research). Particularly linking small-scale farmers and SMEs to (larger) processing and retail requires specific technical and financial support or it requires the aggregation of supplies through farmer cooperatives (see Rotterdam case study) or middle-men (see Quito). Consumer power and demand for local food will become an increasing driver in the future (see also further below).

Opportunities for engaging non-food private players: Particularly the Rotterdam study but also some of the other case studies (see Chapter 4 and 5) show the potential of engaging non-traditional food players in building more sustainable and resilient CRFS. These include social housing companies, real estate developers, utility companies, ICT and many others. Given that urban food has become a topic of increasing interest over recent years, new opportunities may arise for private capital investments or Corporate Social Responsibility that seek new investments and aims.

8.2 Elements that are limited or missing from the CRFS discussion

Sustainability and resilience of a city region food system: While the local food movement has spent a lot of effort in defining what a sustainable localised food system might look like, we find that still none of the (limited) CRFS literature is discussing sustainability and resilience very clearly. There is also very little attention given in current literature to what degree higher self-sufficiency in a city region food system is both desirable and achievable. However there are some important areas relating to (required) business behaviour.

Questions like 'What type of production, processing and distribution we want to see – for example should indoor intensive pig & poultry units be part of a sustainable and resilient CRFS?' can only be answered if there is a shared understanding on what such sustainable and resilient CRFS entails.

Similarly: 'What angle should be taken with regard to provenance of food and the types of private sector logistical behaviour in CRFS that we might want?' For example is a CRFS supplier that buys from local farms but supplies nationally and internationally desirable or not; or a food supplier based in the city region that supplies the city region, but not with products that originate within the city region? Is the same product delivered both via national supply and also through short supply chains part of a sustainable and resilient CRFS? Does provenance matter more than logistics/food miles? Are we aiming for short food miles or reduced emissions in more efficient national chains? Willem & Drees for example believe it is more efficient (reduced emissions) for a local product to be sold in the local store but delivered through their more efficient national distribution logistics rather than via a direct/short supply chain.

Of course and in reality all these various scenarios exist side by side. The authors feel that polarisation of this debate should also be avoided (similarly to avoiding 'the local trap' debate around local food systems). According to Jennings, S. et al. (2015): 'The city region food system concept poses the challenge of moving towards new food systems that exemplify the best characteristics of both food System 1.0 and food System 2.0. In other words: food system 3.0. This is not a singular model for food system functions and processes, but an approach to change. It does not imply 'creating' a new food system from the ground up, but rather working with the multiple and highly context-dependent food systems that currently exist in different settings in order to purposefully and democratically engage with them and shift them towards better outcomes. The city region food system approach suggests

conscious and knowledge-based policy to foster a resilient balance of food supply from global and local sources, which is based on an awareness of the multiple food system outcomes for health, economic development and environmental sustainability.'

Practical analysis from a business perspective: The reviewed literature and cases do only to a limited extent cover more practical CRFS supply chain challenges and issues, such as processing, volume, price, distribution. Nor do they cover issues of power and control (or indeed corruption) within the markets, which will determine effective contributions by private players to sustainable and resilient CRFS, regardless of any other support programmes or mechanisms.

8.3 Recommendations

Future focus for the private sector

Private sector players themselves can also take various steps to increase their engagement in sustainable and resilient CRFS. These include:

Applying local/regional procurement and sourcing criteria (retail and catering business):

Examples include city region institutional buyers such as Catering Mark award holding caterers (Bristol) or international chains such as Autogrill and Accor Hotels increasing their procurement of locally sourced products.

Targeting city region markets: by establishing direct relations with retail and consumers in the city region, providing new product concepts and innovations and specific urban services (see the various short supply chain initiatives described)

Orienting corporate social responsibility strategies and resources towards sustainable and resilient CRFS: by promoting or directly engaging in localised sourcing, own production, food waste reduction and management (see Autogrill, Accord and Rosario case studies) or prioritising relations with small-scale producers, SMEs and social enterprises (see the Quito and Bristol case study)

Pooling production, sharing infrastructure and resources and grouping consumer demand: the Quito and Rotterdam examples illustrate producer and SME cooperative strategies to aggregate supply and increase efficiency by sharing infrastructure and resources. The Food Assembly and Jinghe farm pool producer groups and consumer groups and link them through Internet platforms.

Pioneering innovations with social inclusion criteria: Many innovative schemes with potential to support sustainable and resilient CRFS (from vertical farming to kitchen gardens on hotel rooftops) do not necessarily meet social inclusion criteria. This involves both the lack of benefits for low income consumers as well as exclusion of vulnerable and smaller producers and enterprises. Government regulations or support can address this issue (see Quito and PROVE case study). Social inclusion could become a specific procurement or Corporate Social Responsibility criteria and innovative schemes that combine social aims with profit-orientation could be better exemplified. However private sector also has an own responsibility in this regard.

Developing business relations and networks with both mainstream and other CRFS business partners, customers and public sector stakeholders: As yet there is not much connection between existing mainstream and new alternative business models, an opportunity that could be further explored. Examples include Willem & Drees who are attempting to bring their local food concept to mainstream distribution channels, such as supermarkets (see the case study).

Future focus for development and up-scaling of experiences by CRFS facilitators and the private sector

Whole supply chain approach: Developments towards a more sustainable and resilient CRFS will require more than just supporting individual businesses. ‘Innovation is a risky business and benefits from the exchange of ideas, learning and innovation networks have proven to be an adequate vehicle for empowering groups of farmers to investigate new options to make their business more viable or sustainable (EU SCAR, 2012).’

In many successful collaborative approaches, it is important to acknowledge the role of an independent facilitator and the importance of creating conditions within which to build good dialogue and seek mutually beneficial solutions. Hochberg et al. (2009) recommend providing an independent service for the private sector to:

- Act as a facilitator to assist with trading links between producers, processors, distributors and buyers. The Bristol experience shows that larger buyers need to be engaged in his discussion by promoting best practice, study tours, examples of case studies, media work, and specific information and dissemination materials aimed at the private sector to stimulate discussion. The Quito case also recommends a role for independent support organisations to link larger retail to small-scale farmers and SMEs
- Help to establish sub-groups, based on commodity or by geography, to develop modest-scale collaboration on production, processing, marketing and distribution and information exchange. Such cooperation is evidenced by the Rotterdam examples, as well as in Belo Horizonte
- Act as a local ‘champion’ for local food sales and help raise awareness of the reasons to buy local produce. The importance of consumer awareness and consumer demand has been commented in Chapter 5 and 7 of this report
- Promote good practice in sustainable management such as waste reduction
- Promote and support food-related diversification activities that will enable urban and peri-urban and rural food businesses to remain viable.

Facilitation of learning: This is needed in order to increase/widen/upscale CRFS work, and it needs to be done by an independent body without an economic agenda. The Bristol and Quito case study highlights the need for independent brokerage and the sharing of market intelligence at the city region level, to identify specific requirements as well as specific needs right across the supply chain. At international level, city networks and support organisations are already play this role. This support also aims to provide further input into this exchange.

Business support: The various case studies, when discussing the role of SMEs and city region suppliers in the processing and retail sector, highlight a number of recommended support initiatives:

- Smallholders need to organise themselves better, so that they can improve their negotiation position and demand more transparent and inclusive relationships with all the players in the food supply chain
- Direct support mechanisms to support small producers and their organisations, including technical and financial support to address issues in the supply chain, e.g. storage centres or food hubs, irrigation channels, ICT services, commercial and logistics training, knowledge exchange

- Training and assistance (see for specific examples the Rosario and Belo Horizonte cases)
- The creation of platforms for dialogue across the supply chain, from state institutions, supermarkets, processing companies, small and medium enterprises, producer organisations and consumers
- Requirement for up-to-date information on the food system (where does the food come from; who processes it, retail market and consumption trends)
- Transparent communication to business on food policies and consumers awareness and education.

Focus on smart mechanisms that drive systemic change: The UK Catering Mark is an example of a mechanism that facilitates and supports new private sector trade deals. This approach may also be applicable to social housing and urban food initiatives and this proposal would benefit from mentoring and peer support amongst private sector players. Information on the practical obstacles and opportunities that buyers and suppliers face is often lacking. A learning and planning workshop and a peer mentoring system involving key private sector players from the three case study cities (Bristol, Rotterdam, Quito) and other city regions could provide much inspiration. For example, social housing corporations from other city regions could benefit from the Rotterdam experience, whilst key players from the Rotterdam and Quito public and private procurement sector could benefit from the Bristol experiences, etc. Private sector players with more resources could agree to support less well-off businesses in other city regions to provide longer term support and coaching as part of their corporate social responsibility strategies.

Future focus for the public sector

Harness the positive impact potential of the public sector: It is very clear from the Brazilian examples and from Rosario, Toronto/Ontario, Quito, Bristol and other case studies that the public sector can have a significant positive impact on changing the business environment by making certain choices. Supportive policies are required on a local, regional and national level and they need to be aligned. The Rotterdam case study illustrates this point: 'At the provincial level, short food supply chains are one of the priorities in the Provincial Rural Development Programme (the other priorities being closing resource loops and biodiversity). These are priorities favouring the further development of a sustainable and resilient CRFS. Such priorities however also have to be supported by the national programme, in order to benefit from European funding. Making rural funds available for sustainable and resilient CRFS development (as a kind of re-ruralisation of the city) could offer new possibilities for financing food-related initiatives in the Rotterdam region.'

Public and institutional procurement seems to play a key role in supporting sustainable and resilient CRFS. If, for example, the North Bristol Health Trust (see Chapter 3.1) can spend a quarter of its annual food budget on products sourced and purchased from the city region so can others. Driving cultural change with the use of policy instruments from within the 'industry' is clearly effective in this regard. As illustrated, the Food for Life Catering Mark in the UK is a voluntary scheme that has been promoted to great effect, in line with public opinion and national campaigns.

Infrastructure support: As discussed in Chapter 7, one of the critical factors in enabling a food business to supply markets within its surrounding hinterland is its ability to process and distribute, whether by its own means or through other local businesses. Existing processing facilities and businesses should be supported and gaps in provisions of services may need to be established. Wholesalers and distributors are often overlooked in discussions about the food system but they are key players in the case of supply to the public sector and

potentially offer a scale of operation where impacts can be felt at a city region level. In many cases there is a requirement for grant support and other finance to support investment for cutting and packing facilities; also for training to address skill shortages.

Information for public sector buyers: There is an ongoing need to enable buyers to understand the options available around contract specification and contract management, the availability of products, the businesses that can help them with sourcing and supporting the case for doing it. This is highlighted in both the Bristol and Quito case studies.

Private-public sector collaboration: Governments (local and national) should also take into account that provision of and access to basic needs, such as food, should not be left to the private sector alone. The case study of Belo Horizonte and also Toronto and Ontario illustrate the importance of inclusion of the 'Right to Food' into (sub)national legislation and acknowledge the need to guarantee both urban and rural food and nutrition security.

Increase private sector participation in food systems planning: Food Policy Councils could help improve private sector participation and develop this area of work (e.g. establish private sector bodies or sub-working groups; make benefits for private sector involvement in food system planning clearer; fund the time of business people, especially SME workers.) Opportunities could also be created for private sector players to be involved with wider food system processes, e.g. hire them for events; organise events in their premises.

Image 26: The Toronto Food Policy Council recognises the role of a wide variety of stakeholders and government departments, including private sector



Source: Toronto Food Policy Council

Future focus for citizen campaigns

Harnessing the power of consumer behaviour and demand in shaping the food system: Often it is the context of public opinion that determines when and how change occurs. This is illustrated by the Quito (a movement to get citizens to call for local food) case study and by the way in which Jinghe Farm and the Food Assembly respond to consumer demand for more transparency. There is a need to recognise this as a crucial driver of change and to consider how it can be harnessed through public awareness campaigns. The success of the Catering Mark is a result of intense public debate. 'It is customers who really drive the change and we have seen a huge change over the last three decades in people's awareness and interest as to where the food is coming from.' (Bristol supplier). Demand, combined with availability is key to increasing local supply.

Image 27: Ecuadorian families expressing their commitment to a more responsible food movement that provides opportunities for sourcing in the city region



Source: Steven Sherwood

Future focus for research

Fiscal policy: In the Global South reliable tax returns can lead to supporting large formal food supply chains (del Pozo-Vergnes, E. and Vorley, B., 2015). There are likely to be many examples globally where fiscal policy either hinders or supports city region food system development. This is an area that would benefit from further investigation.

Further assessment of (private sector engagement in) city region food systems in specific city regions: As stated in the Quito study: city regions often do not know where their food comes from, who distributes the food, who processes it, who sells it and to what type of consumer. Methodological frameworks are being developed to guide cities to address these questions³⁰ and a limited number of reports have been developed for specific cities³¹. Questions that can be asked include:

³⁰ See the work done by RUA Foundation and d FAO on City regional food system assessment: <http://www.ruaf.org/projects/developing-tools-mapping-and-assessing-sustainable-city-region-food-systems-cityfoodtools>; <http://www.fao.org/in-action/food-for-cities-programme/activities/en/>; see this current study.

³¹ See Carey, J., (2011): 'Who Feeds Bristol? Towards a resilient food plan', <http://bristolfoodpolicycouncil.org/wp-content/uploads/2012/10/Who-Feeds-Bristol-report.pdf>; see

- A. Who feeds the city region: where does the food come from; what and how much food is produced locally in the city region? Where are inputs and resources sourced from? How does the city' regions food supply system fit into the wider national and global food supply system? How can existing production areas be protected and preserved?
- B. Food processing and manufacturing: which companies prepare/manufacture the food consumed in the city region? What are their characteristics, motivations and support needs? How can local sourcing be increased? How can impacts on the regional economy be strengthened?
- C. Food wholesale and distribution: who supplies the food to businesses/markets that sell food to the consumers? What are their characteristics, motivations and support needs? How can impacts on the regional economy be strengthened?
- D. Food marketing, catering and retail: where do different groups of citizens buy their food? What are the characteristics, motivations and support needs of different types of retail and catering actors? How can local/regional sourcing be increased?
- E. Food consumption: what do people in the city region eat? What is the composition of their actual diet and food basket? What are related food security/nutrition/food related health concerns? Can they access local food and where?
- F. Food and organic waste: where and how much food and organic waste is generated along the food supply chain and how is it managed? How can food waste be prevented and safely re-used?
- G. What are the strengths and vulnerabilities of the current CRFS for different dimension of the food systems and for impacts in the different sustainability areas?
- H. To what extent is the current food system (and different parts of the food system) resilient to shocks and projected circumstances in the longer-term?
- I. Which areas of the city region, what parts of the food supply chain and which groups of residents/involved stakeholders would be most adversely affected by vulnerabilities in the food system? How can the CRFS be made more sustainable and resilient?
- J. How can different categories of (current and future) private sector and their behaviour be harnessed for development of more sustainable and resilient CRFS?
- K. What role and powers do the city's decision-makers and key stakeholders have in shaping a more sustainable/resilient food system that serves the city and the city region? How can participation and transparency be increased?
- L. What are the priority areas that need to be addressed in order to develop a more sustainable and resilient CRFS for the future?

Interested cities and city regions (for example those having signed the Milan Urban Food Policy pact) could look into these questions and specific issues described in this study report to see the extent to which they are present and how to work with them.

In doing so, it will be necessary to not only talk about types of individual businesses but also take into account the types/nature/character of supply chains as a whole system. For example, how businesses relate to each other, transparency, fairness, who is in control, key drivers, etc.

Smart mechanisms that drive systemic change: Research could usefully look at specific drivers of systemic change and why systemic change is not happening as fast as it should. For example, there are still many public sector institutions in the UK that have not adopted the Catering Mark: why is this?

also the three larger case studies developed as part of this study and available from <http://www.ruaf.org/projects/role-private-sector-city-region-food-systems>

As mentioned several times already, public (government, hospital, schools) and retail procurement offers large opportunities to enhance private sector engagement in the food supply chain. This varies from the engagement of larger businesses (who may respond more easily to tendering requirements) to the engagement of small-scale producers and SMEs. The latter may be specifically supported in procurement regulations or support schemes (see Quito, Belo Horizonte) or may get involved in supplying larger suppliers (see Bristol case study, Chapter 3.1).

City regions can start reviewing their procurement schemes and regulations in order to prioritise specific private sector engagement and fostering markets for more locally (and environmentally friendly) produced food. For example, in 2015 the city of Rotterdam, in cooperation with the Province Zuid-Holland, commissioned a study into the potential for growth in short food supply chains (and thus also for the engagement of private sector players in these chains). Catering for institutional buyers (hospitals and homes for the elderly) was identified as a potential growth market in this study.

Procurement reviews are much scarcer for countries and city regions in the Global South. In the specific case of Quito, where private retail supply/ procurement is concerned, negotiations could be held with the entity responsible for 'control of market power' to negotiate inclusion of 'local or city regional' supply criteria in the Good Practices for Commercialisation Manual. Negotiations should also be held with the Ministry of Agriculture, Livestock and Fishery who proposed in 2015 to implement the manual of good commercial practices as an inclusive business strategy. According to the Quito report: 'This plan includes four strategies: 1) Provide up-to-date market intelligence (e.g. produce that is in demand or low in supply) to small producers who are able to supply supermarkets, 2) Develop an inclusive business plan with local operators that design and implement the plan, 3) Supervise the contracts to prevent mistakes and 4) Promote an alliance to support co-responsibility and co-financing for the implementation of the plan (Arrazola, I. et al., 2015).' The implementation and potential benefits of this programme (requiring impact research-see below) have yet to be shown.

Measuring progress: This point is generally missing in the debate and literature in regards to how to measure the development towards a sustainable and resilient CRFS. Work on developing indicators that help to track change, monitor progress and enable a degree of comparison between one city region and another is just starting³².

A specific next step would be the creation of a coherent monitoring framework to evaluate the effectiveness of private sector engagement in the development of more sustainable and resilient CRFS. The monitoring of specific regulations such as the Ecuadorian Good Practices Manual or voluntary schemes (e.g. Food for Life Catering mark) is required to determine to what extent local, city region and SME enterprises actually benefit or can be further supported. Indicators should not only focus on more conventional measurements like numbers of enterprises, income and rates of growth but also on wider quantitative and qualitative development impacts. Those include improved governance, enhanced access to food, job coaching and skills training, social cohesion, strengthened rural-urban linkages, etc.

Monitoring such impacts in relation to specific private sector engagement (like the retail sector in Ecuador or social entrepreneurs and housing corporations in Rotterdam) would offer these companies information and data to showcase and demonstrate impacts, justify

³² One of the few current projects addressing this issue is run jointly by FAO and RUAFA and results are not complete yet. Other work is also underway in the UK led by the Sustainable Food Cities network.

investments and specific corporate sustainability strategies. The Rotterdam case study suggests that by demonstrating the wider impacts of their work, social entrepreneurs may be better recognised and improve their access to municipal funding for care and reintegration work that focusses on food production, processing and commercialisation activities.

The housing and real estate sector can benefit from (or can be inspired to increase their engagement) by impact studies on how investment in sustainable and resilient CRFS projects can result, for example, in lower transfer rate (of housing tenants), improved community perception of openly accessible green spaces and higher rental or sales income.

To develop such a monitoring framework it will be necessary to reach a wider consensus and agreement on the vision and characteristics of a sustainable and resilient CRFS, required business behaviour and expected food system outcomes.

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9.2 Case study literature

The full case studies from Bristol, Quito and Rotterdam can be accessed from: <http://www.ruaf.org/projects/role-private-sector-city-region-food-systems>

Autogrill

<http://www.autogrill.com/en/stories/trip-vegetable-garden-oasi-bosco-di-vanzago-wwf-site>

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Accord hotels

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<http://www.accorhotels-group.com/en/news/urban-ecotourism-greening-cities.html>

<https://www.youtube.com/watch?v=dArAkUedZNc>

Willem & Drees

<http://www.ruaf.org/innovative-short-chain-netherlands-willemdrees>

Vertical farms

<http://stadslandbouwdenhaag.nl/index.php/de-schilde-verticale-stadslandbouw/>

<http://www.ruaf.org/ua-magazine-no-28-grow-city-innovations-urban-agriculture>

For more examples see: www.vertical-farming.net.

Connecting resource flows

http://growinginclusivemarkets.org/media/cases/Brazil_Sadia_Summary.pdf

<https://www.zerowasteeurope.eu/2014/02/moulinot-closing-the-loop-for-restaurant-food-waste-in-paris/>

Regionalwert AG Freiburg

<http://www.regionalwert-ag.de>

Ontario

http://www.greenbeltfund.ca/100km_foods_going_the_distance

http://www.greenbeltfund.ca/newmarket_meat_packers_still_able_to_change_after_four_decades_in_business

<http://www.ruaf.org/projects/city-region-food-systems-and-food-waste-management-linking-urban-and-rural-areas>

Quito

<http://www.ruaf.org/projects/city-region-food-systems-and-food-waste-management-linking-urban-and-rural-areas>

Belo Horizonte

<http://www.ruaf.org/projects/city-region-food-systems-and-food-waste-management-linking-urban-and-rural-areas>

Linköping

<http://www.ruaf.org/projects/city-region-food-systems-and-food-waste-management-linking-urban-and-rural-areas>

Rosario

<http://www.ruaf.org/projects/city-region-food-systems-and-food-waste-management-linking-urban-and-rural-areas>

Food Assembly

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Jinghe

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PROVE-Brasilia

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Public procurement

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Food and Life catering mark

Soil Association website and case study interviews

For further information see Bristol case study at <http://www.ruaf.org/projects/role-private-sector-city-region-food-systems>

Toronto

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