FOOD IN AN URBANISED WORLD

THE ROLE OF CITY REGION FOOD SYSTEMS IN RESILIENCE AND SUSTAINABLE DEVELOPMENT

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Contents

The ISU and its work on Food Systems

HRH The Prince of Wales established the International Sustainability Unit (ISU) in 2010 to facilitate consensus on how to resolve some of the key environmental challenges facing the world. These include food security, ecosystem resilience and the depletion of natural capital. The ISU works with governments, the private sector and non-governmental organisations, helping to strengthen partnerships between these sectors.

The ISU has worked on sustainable agriculture and food systems since its inception. The chief focus of this work has been to clarify the economic arguments for a transformation in the status quo towards more sustainable, resilient and healthy food systems that contribute to human wellbeing. This has included the publication of a key paper in 2011 *"What Price Resilience? Towards Sustainable and Secure food Systems"* and work with Governments in Kenya and Colombia to help catalyse better economic understanding of the inter-relationships between food, water and energy security. The ISU has also conducted global analysis into the opportunities to scale up the application of ICTs and Mobile technology for Sustainable Agriculture.

The ISU's recent work focusses on the opportunity to improve food systems outcomes by improving policy and planning for food at a city region level. The ISU has sought to increase the co-ordination between international organisations working in this field in the lead up to the Habitat III meetings in 2016. This work has included supporting the launch of a *Global Call for Action on City Region Food Systems* at the 7th World Urban Forum in 2014, and convening the *Global Collaborative for City Region Food Systems* alongside FAO, IFAD, ICLEI, HIC, RUAF and IUFN.

Objectives of Report

This report seeks to provide a synthesis of the current state of knowledge on City Region Food Systems. Its primary objective is to explore the concepts and evidence behind city region food systems and analyse the proposed benefits of pursuing a city regional approach to food policy and planning. The paper also seeks to provide a limited number of recommended actions that would help stakeholders ensure improvements to food systems outcomes at a city-region level and that would help advance food policy and planning at this level as a means of implementing a more integrated approach to rural urban development.

This draft for consultation has been prepared by 3Keel for the ISU's meeting on Food Systems and Urbanisation, convened in London on Wednesday 4th February. A final version, following feedback from the meeting, will be released in April 2015.

Executive Summary

Sustainable urbanisation and the food system

The challenge of food security is often framed as being one of feeding the growing human population of the world. But it is much more than just an issue of scale; the nature of the challenge is changing, as well as the scale. Population has not just been increasing; it has shifted in character from being predominantly rural to becoming urban. In the latter half of the 20th century the world's urban population trebled in size and for the first time in human history, more people now live in urban areas than in rural ones. By 2050, two thirds of the world's population are expected to be living in urban areas.

Urbanisation has brought with it tremendous shifts in economic activity. It is also one of the predominant forces shaping food systems, which are becoming more globalised; with increasingly centralized networks involving fewer individual actors and supplying an increasing proportion of meat, dairy products and processed food.

In many countries, and for many people, the availability and choice of food is greater than ever before, and significant progress has been made on reducing hunger worldwide. Yet one in nine people still suffer from chronic under-nourishment, half a billion people are obese, and one third of all the food produced is lost or wasted. In addition, the ecosystem services upon which our food systems depend are being degraded; not least by the way we produce food now, undermining our ability to feed ourselves in the future.

Recognising that urbanisation increasingly shapes the challenge to food security suggests that the challenge is not a single global issue, but is instead an outcome of the myriad of food supply chains that take food from (mostly) rural areas to (mostly) urban ones. The challenges that are often framed as global issues are also bound to specific places, both in causes and impacts, and in our ability to effect change.

Linking cities and regions

Underlying the challenges of food security and a more sustainable, equitable food system is a profound disjunction between rural and urban development pathways, even though urban and rural areas remain linked by numerous ecological, social and economic processes. For example, rural areas provide food, water, energy, raw materials, and labour to urban areas both local and further afield. Meanwhile, the concentration of people, capital and power in urban centres means that decisions and actions taken there affect rural people and places. Arguably, however, this interdependence has expressed itself in an ongoing reorganization of rural spaces to serve the requirements of urban food consumption, at the expense of equitable and sustainable development – ultimately to the disbenefit of urban, as much as rural communities.

At its root, the concept of city region food systems is about making the linkages between urban centres and their surrounding rural areas more effective at delivering sustainable socio-economic returns and a range of critical public goods. The rural-urban linkages that need attention span three dimensions: ecological, socio-economic, and governance linkages. In practice this might mean, for example, land use planning that fosters more effective provision of ecosystem services, promoting shorter food supply chains, encouraging regional food enterprises, and creating participatory governance structures that include stakeholders from

multiple sectors and both urban and rural areas. It is not a case of unquestioning localism. Rather, it is about creating a framework for conscious food governance that fosters improved balance between global and local food supply by taking local circumstances into account. It recognises the central role of the private sector in the food system, but is based on the understanding that public goods will not be delivered by market forces alone. Greater democratic participation in the food system and in decisions about food holds the possibility of profound socio-economic benefits across both urban and rural spaces.

The benefits of city region food systems

The city region food system concept is already gaining traction as a framework for action, but it is also a relatively young idea. Many and varied claims have been made for the beneficial impacts of adopting policies structured around city region food systems, including benefits to food security, economic development, environment, health and governance. One of the core aims of this paper is to attempt an initial categorisation and evaluation of evidence for these benefits in order to help focus attention on those that are most likely to be delivered with significant impact, and to help guide future policy and research. Through a preliminary but structured process, each potential benefit identified in relevant literature is evaluated by analysing the feasibility of the proposed mechanisms, the potential scale and scope of impact, and the strength of relevant empirical evidence.

This evaluation suggests that seeking to improve the effectiveness of city region food systems would indeed carry potential for broad and inclusive benefits, especially concerning regional economic development, health, and better governance. It also finds some evidence for benefits in other categories including environment and food security, but finds that substantial further research would be needed in order to base the policy and practice of city region food systems on categorical evidence.

Making city region food systems a reality

Realising the potential benefits of city region food systems means changing the way that food systems operate and changing modes of thinking and action to create more harmonious links between rural and urban areas. The challenges of improving connectivity of this type should not be underestimated, but there are nonetheless promising examples of initiatives and programmes that have done just that. These include:

- putting in place more integrated and inclusive governance frameworks;
- planning for long-term value, including through the provision of appropriate infrastructure and spatial planning;
- stimulating the demand for sustainable regional food through public procurement policy;
- leveraging enterprise, innovation and business as a way of delivering the benefits of city region food systems; and
- increasing the availability and transparency of information, including through the use of information communications technology.

Reviewing a range of initiatives that already exist shows that many have been driven or supported by public institutions (often working in alliance across jurisdictions), and depending on the initiative frequently also involve civil society, entrepreneurs, farmers, and businesses. Scaling up such approaches will require more multi-stakeholder alliances of this nature –

participatory approaches are of key importance in reducing the risk of conflict around complex and sometimes politically sensitive local issues.

Conclusions and recommendations

The range of negative impacts from current food systems is symptomatic of a wider imbalance between urban and rural development. Improving the effectiveness of city region food systems offers the potential to shift towards a more harmonious and equitable development trajectory, based on participatory governance that involves a range of city region stakeholders.

There is now an opportunity for change, with the confluence of an emerging body of thought and practice regarding city region food systems; the increasing commitment to end hunger; and the culmination of key international processes that will have a significant bearing, both on food systems and on the future of urbanisation. Now part of a global initiative, the '*Call for Global Action*' launched at the World Urban Forum in Medellín, Colombia in 2014 brings together a range of organisations across public, private and civil society sectors to jointly articulate the importance of city regions in the context of achieving lasting food security and sustainable agriculture. Increasing the effectiveness of city region food systems will not in itself be a sufficient answer to the problematic outcomes of our current ways of feeding the world, but it does perhaps play an important part in a future vision for healthier, fairer and more sustainable food systems.

The report recommends ten actions that will help improve the effectiveness of city region food systems, and which will start to generate the positive outcomes that a more focussed approach can bring:

1. **Recognising the ability to act:** City and rural authorities should explicitly recognise the links between food systems and a wide set of public goods, and assert their ability to facilitate positive change.
2. **Convening stakeholders:** Local authorities and civil society organisations can play a pivotal role in bringing together wide coalitions of interests to create the basis for stakeholder engagement and support in future food policies and programmes.
3. **Understanding local food systems**: City region food policies must come from a position of knowledge concerning the local food system context, including where food comes from ('foodprinting') and what the outcomes of the food system are for both urban and rural populations. CSOs, local authorities and the research community have a role in generating this knowledge and making it publicly accessible.
4. **City region policy:** Policy and research communities, and development agencies, should actively support the creation of city region food policies, including land use and planning frameworks that enable multi-sector, territory-based approaches.
5. **Enabling policy:** National governments, international institutions and donor organisations all have a role in ensuring that their policies promote city region food systems and remove blockages.
6. **Academic research:** The research community should coordinate in order to more effectively contribute to knowledge resources in support of city region food systems, including: organised and high level knowledge exchange, case studies, developing metrics and rigorous testing of outcomes.

7. **Procurement:** City and rural authorities can catalyse city region food system value chains through public procurement policies: e.g., incentives for meals for schools, prisons and hospitals to come from sustainable producers in the city region.
8. **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.
9. **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.
10. **Financing:** Development agencies, governments and the investment and philanthropic communities should develop financing mechanisms that can leverage improvements in public goods and long term value to provide immediate support for city region food systems. Examples might include municipal bonds, mechanisms for social investment and the capacity to implement these.

1 Sustainable urbanisation and the food system

Our shift to becoming a predominantly urban species has been accompanied by a reorganisation of the way that we provision ourselves with food. Food systems are changing from relatively regional food supply chains with multiple different actors, towards more globalised supply chains with centralised networks involving fewer individual actors and supplying a rising proportion of meat, dairy products and processed food. A large and rapidly increasing proportion of people consume food without direct engagement in its production or, to a large extent, with its producers.

In many countries there is a greater availability and choice of food than ever before, and significant progress has been made on reducing hunger worldwide. Yet one in nine people still suffer from chronic under-nourishment, half a billion people are obese, and one third of all the food produced is lost or wasted. In addition, the ecosystem services on which our food systems depend are being degraded, not least by the way we produce food now, which is undermining our ability to feed ourselves in the future.

Urbanisation increasingly shapes the challenge to food security, while evolving food systems in turn affect rural-urban dynamics. This suggests that that the food security challenge is not a single global issue, but is better seen as to do with a complex web of food systems, each interacting with environmental, economic and social systems that are outside of what is normally considered as the food system per se. Challenges such as food security and food sustainability, although operating within a global context, are also fundamentally bound to specific places, in terms of causes, impacts, and in our ability to effect change.

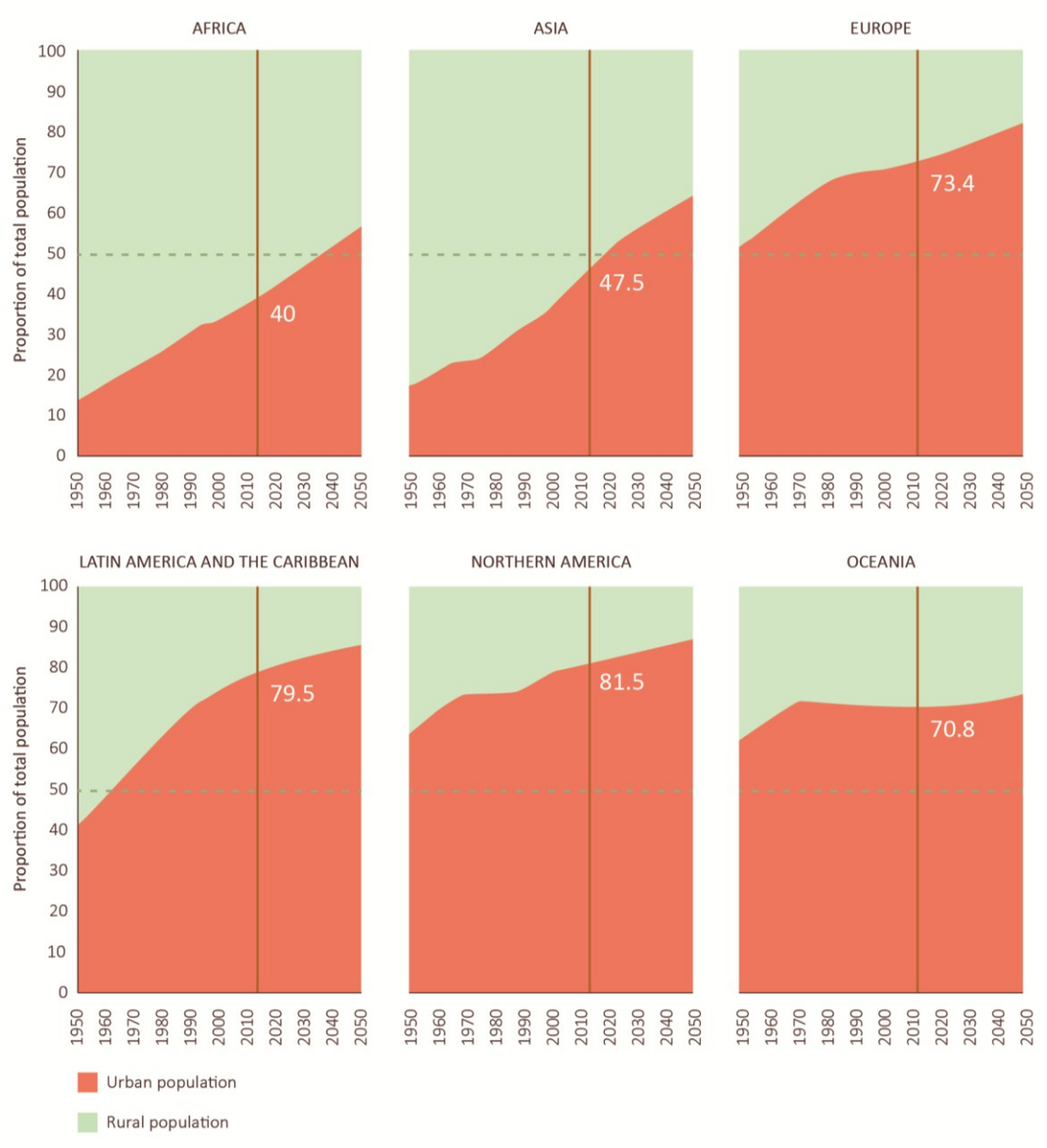
1.1 An urbanising world

At some point at the end of the first decade of the 21st century, and for the first time in human history, more people lived in urban areas than in rural ones. By 2050, the world's urban population will increase by another 2.5 billion, reaching two thirds of the total population on the planet. The world's rural population is expected to fall not just in percentage terms but also in absolute numbers.[1]

These changes have been both fundamental and rapid: only 2% of the world's population lived in urban areas at the beginning of the 19th Century. They are also occurring at very different rates in different parts of the world. In regions like North America, over 80% of people already live in urban areas, whereas Africa and Asia, where urbanization is developing at the fastest pace, still have majority rural populations. Urbanisation is not simply a case of a rush to the world's megacities[2] - it is also occurring in smaller cities and towns. Around a half of the world's urban population lives in settlements of fewer than 500,000 inhabitants, and future growth will be concentrated in small and medium-sized cities.[3] The growth in urban populations will come from both migration and from increases in the existing urban populations.

[1] United Nations, Department of Economic and Social Affairs. Population Division (2014). *World Urbanization Prospects: The 2014 Revision, Highlights (ST/ESA/SER.A/352).*
[2] Cities with a population of over 10 million people
[3] United Nations, Department of Economic and Social Affairs. Population Division (2014). *World Urbanization Prospects: The 2014 Revision, Highlights (ST/ESA/SER.A/352).*

Figure 1.1. Urban and rural population as proportion of total population, by major areas, 1950–2050. United Nations, Department of Economic and Social Affairs. Population Division (2014). World Urbanization Prospects: The 2014 Revision, Highlights (ST/ESA/SER.A/352).



This transformation is one of the most rapid and profound shifts in human history, involving not only where people live, but how they live. Ultimately, it reflects very rapid shifts in economic organization – and particularly the tremendous increases in productivity and output of the 20th Century. The modern rise of the city can be seen as the demographic and spatial expression of new underlying systems of production and exchange. As such it expresses their strengths and weaknesses. The tremendous rise in human productivity in these urban spaces has driven extraordinary increases in global income – and in the private and public ability to satisfy and elaborate human needs. It has also brought new economic, social, political and environmental challenges and tensions, some of which threaten the sustainability of the transformation: economic and employment instability; extreme income inequality; massive human migration; environmental pressure and degradation; systematic health issues (including the effects of malnutrition); and imbalances and tensions between private and public interests.

Diversity in urbanisation

Urban economic systems are highly internally differentiated. They are also deeply socially differentiated: ostensibly high urban incomes mask tremendous inequalities of personal wealth and income. In a situation in which personal incomes shape access to the necessities of life, this translates into huge differences in how urban opportunities and challenges are experienced by different groups of the population. Different income groups have different and linked challenges in employment, housing, education, health and food – and very different personal resources to respond to them.

If diversity and differentiation is deep within urban spaces, it is also profoundly present between them. Most urbanization today is taking place in developing countries, particularly in Africa and Asia, and it is happening very rapidly. In some areas this is driven by developments in the economic system, notably large-scale capitalized production. In these areas, cities are taking forms – and acquiring issues – similar to those in many cities in developed countries. In other areas, cities are taking different form, driven by profound problems in their rural hinterlands, precipitating major migration flows. The result is often the emergence of issues of sustainable and adequate economic inclusion, poverty, and the broad range of problems associated with a combination of very low individual incomes and very limited public resources.

Global and local solutions

While many of the issues facing cities are linked to (and give rise to) global challenges, the differentiation of situations and problems both within and among cities suggests that they will be met not on the basis of global frameworks alone, but through a combination of better global and national frameworks, and local action specifically attuned to local configurations of issues. Globalization does not signify the elimination of local autonomy: the necessary and systemic diversity within globalization demands local initiatives and solutions – linked to, and nested within, both national and global developments. City authorities have a key role in addressing their own issues (and contributing to global solutions) – and can be highly effective if they have adequate resources, a means of identifying and formulating responses to problems and opportunities, and the capacity to implement these responses. There is therefore a need for policy and advocacy at global level to empower multi-level governance, especially within the policies of influential development agencies and funders. At the same time, the city does not exist in isolation from its context. Its sustainability and success depend upon its relations with non-urban factors and forces. Key issues in urban areas can only be addressed by developing solutions with non-urban players, solutions which simultaneously address both urban and non-urban challenges. Nowhere is this more evident than in the development of food systems.

The phenomenon of urbanisation marks a profound change in the human relationship to food. For the first time in history, the majority of people consume food without direct engagement in its production or, to a large extent, with its producers. In addition, the rise of urban-based interests has had consequences outside of the city, frequently giving rise to the reorganisation of rural economies and livelihoods to serve the interests of access to cheap food for urban consumers. The rising demand for food from growing urban populations, their changing diets, and the changing manner in which city food supply chains operate all have ramifications far beyond the city footprint, into rural areas both near and far. The concentration of population in urban areas is also a concentration of political power and economic power, and the multitude of decisions made in urban areas have ramifications for everything from agricultural land use and rural development to biodiversity conservation and global greenhouse gas emissions. Yet despite this power imbalance, urban areas are dependent upon the rural for the provision of food, water, energy, raw

materials, and, in many cases, labour. The linkages and relationships between urban and rural spaces, peoples and environments are more vital than ever. The following sections explore these linkages, and how their intersection with the food system offers opportunities for new, more balanced forms of development.

1.2 Understanding food systems

The function of food systems

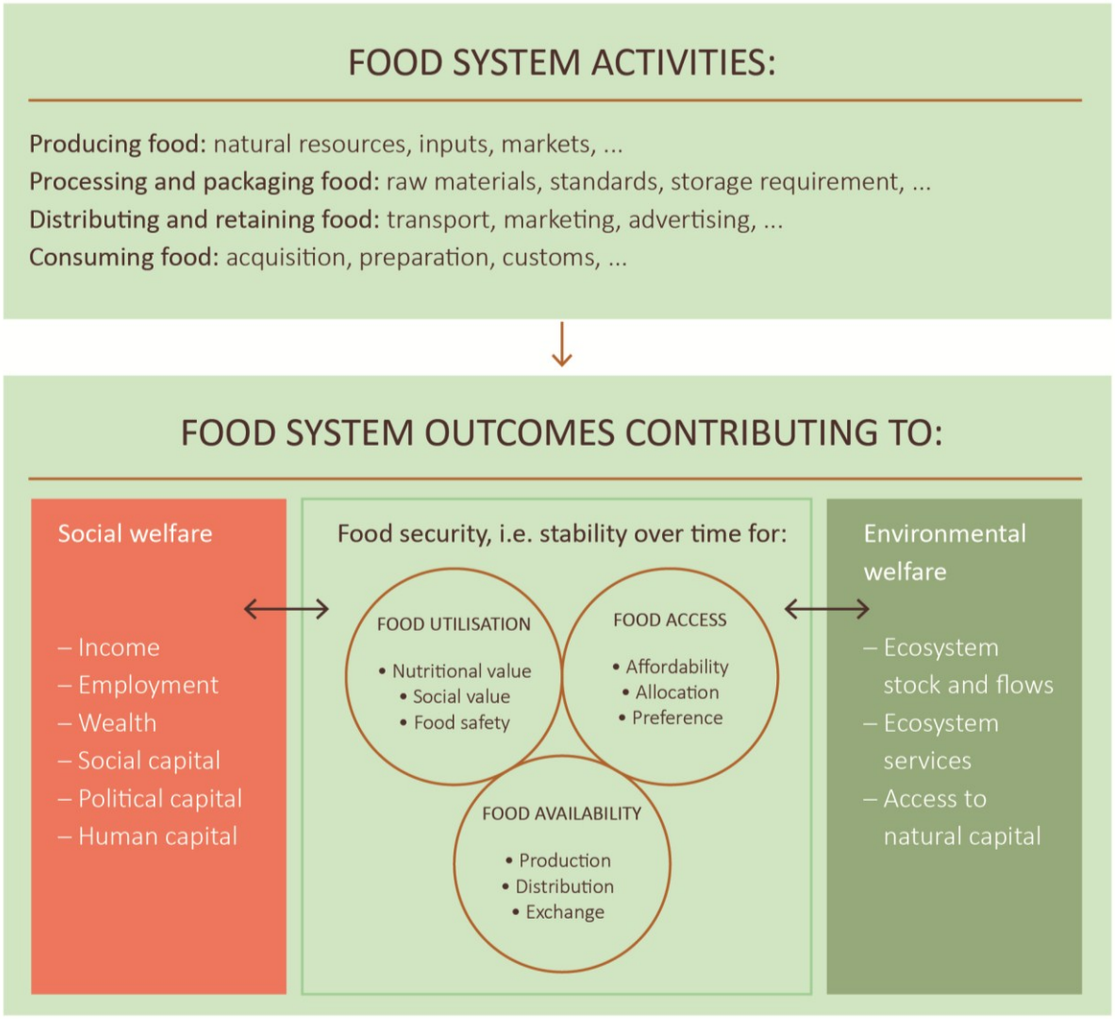
The 'food system' can seem like an abstract concept, but really it just refers to the suite of activities by which food is produced, processed, distributed and consumed, and the influences on, and outcomes of those actions. Particular food systems emerge and change as a result of an extraordinarily complex set of private and public interests, actions and conflicts. For example, , city food systems reflect, amongst other things, the fact that urban people do not and cannot produce the majority of the food they consume, the time and resources they have available for processing and storing food, the level of the urban infrastructure, and the level (and distribution) of wealth. The emergent outcomes of these systems can be to a greater or lesser degree sustainable and functional, and for different groups.

Despite this complexity, intentional policies and actions can and do influence food system processes and outcomes, and in global and national policy frameworks these are increasingly aligned towards the core public good of providing food security (Figure 1.2): "when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life".[4] In order to achieve food security, food must be *available* through a chain of production, distribution and exchange. It must also be *accessible*, that is, people have the purchasing power to be able to afford it. People must be able to *utilise* this food, in that it must have sufficient nutritional quality, be socially appropriate, and people must have the skills to be able to prepare it for consumption.

As well as food security outcomes, however, food systems also produce outcomes relating to income, employment, wealth, social and political interactions, and culture. These outcomes are not confined to urban spaces: how urban-oriented food systems are organized has a deep impact on the rural social reality, on rural incomes and on the drivers of the migration. In addition, producing, processing, distributing and consuming food is one of humanity's most significant impacts on the biosphere, so how the food system operates is of critical importance for water quality and availability, climate, soils, biodiversity, nutrient cycles and other ecosystem stocks, flows, and services. Food systems cannot therefore be understood in isolation from the other systems and processes that they intersect with; and nor can the impacts of the food system on other socio-ecological systems be ignored.

[4] World Food Summit (1996)

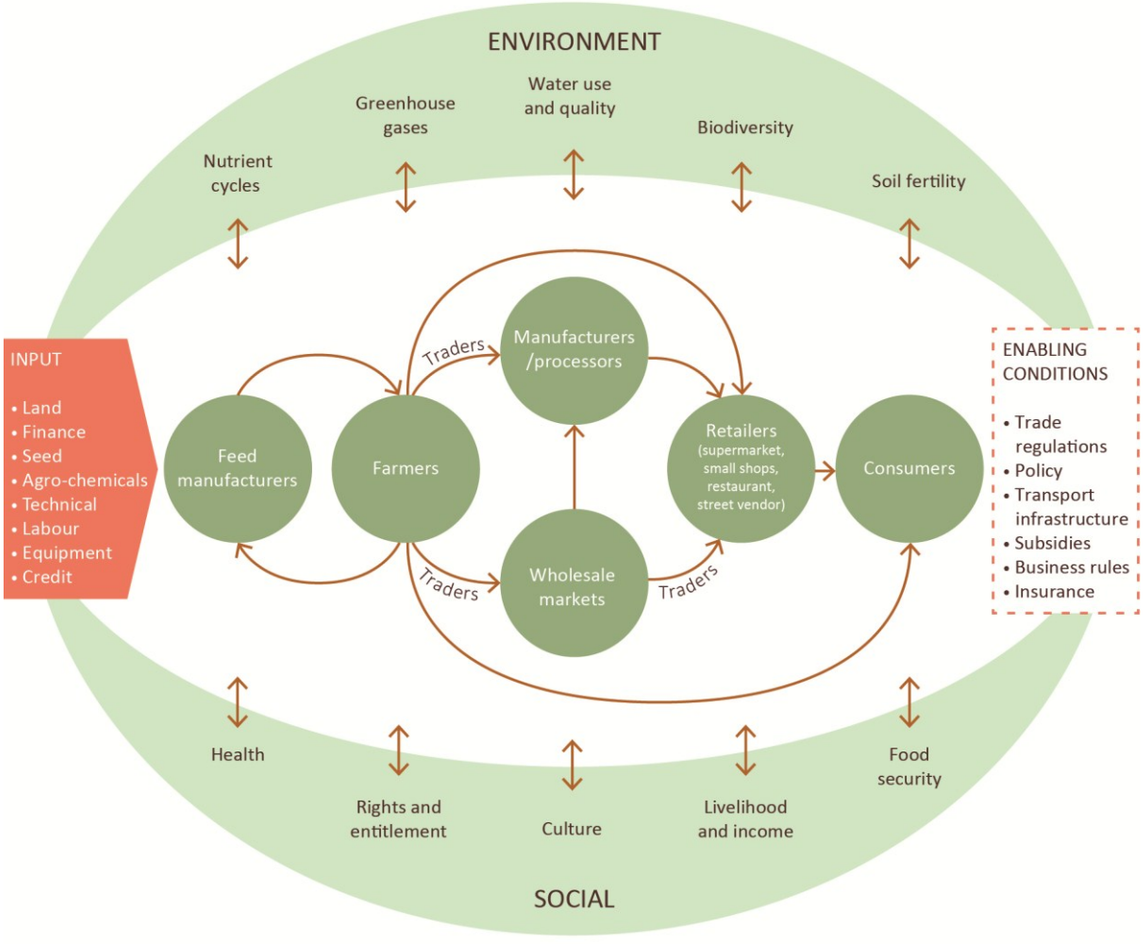
Figure 1.2: 'Components of food systems'. From, Ericksen, P.J. (2008) Conceptualizing food systems for global environmental change research. Global Environmental Change, Vol 18, Issue 1. Pp 234-245



How food systems are structured

At the core of understanding variation in food systems and their impacts is the idea of the food supply chain. This describes the mechanisms by which food gets from field to fork, including who is involved, and how these processes are structured. Figure 1.3 shows a simplified generic food supply chain, starting with the inputs to production including land, labour, finance, seed, feed, pesticide, fertiliser, and machinery. These are transformed by primary producers into basic foodstuffs. Commonly, intermediaries then transfer products to either retailers or processors, before reaching consumers. Various stages in this chain may be omitted or added depending on context. For instance, primary producers may sell directly to retailers, or consumers; traders may sell to wholesale markets that then sell on to processors. Value accrues at different stages along the chain, partly determined by the way that the enabling conditions such as subsidies, trade rules, transport infrastructure and the norms of business are organised. Power likewise circulates through the system in different ways depending on the context. The supply chain has numerous environmental and social impacts and is in turn affected by them, and together all of these elements comprise a food system. The 'global food system' is in effect a collection of such systems working simultaneously and interrelating to various degrees – sometimes harmoniously and sometimes in conflict.

Figure 1.3: A stylised food system



Variation and change in food systems

These are simplified conceptualisations of the food system. A comprehensive food systems diagram showing all variables, outcomes and feedbacks would be almost too complex to understand. Yet it is nonetheless possible to extract a series of important trends in food systems that are occurring globally and which help to explain the dynamics of changing impacts. Although in reality a complex continuum of context-dependent scenarios exist, for ease of identification, we refer here to Food System 1.0 – the system that has been historically prevalent prior to widespread industrialisation – and Food System 2.0 – the system that is now starting to dominate across much of the globe. These are outlined below.

Food System 1.0

This system is characterised by a greater number of actors at all stages of the supply chain, a greater degree of local and regional production, greater prevalence of small-scale producers and informal actors, more subsistence food production (in both urban and rural areas), and consumption of a smaller variety of relatively unprocessed foods, dominated by a few staples with a relatively small percentage of meat and dairy products.

This is a food system that is still recognisably in operation in parts of the developing world where there is still a large rural population, and many people are involved with small-scale farming on plots of between one and two hectares, or less, cultivated with limited technology and inputs. Many of these producers also grow food for subsistence consumption by their households, though most are still net buyers of staples. Produce that is taken to market normally goes via a trader or broker who transports it to nearby urban centres – not only cities but also small towns and other settlements that may act as intermediate stopping off points as well as being loci for local retail. Food may be sorted and packed, or transported simply as truckloads of 'farm gate' produce. Perishable goods such as vegetables, fruit and fresh meat tend to be produced within short travel times of urban areas. Less perishable food, including cereals, can be transported from greater distances. A significant proportion of food tends to be wasted during the early and middle parts of the supply chain, with less wasted by consumers.

In urban areas, produce is frequently sold by traders at a limited number of wholesale or retail wet markets. Numerous grocery shops and specialists such as butchers purchase food wholesale to supply their small shops. The informal sector is also important, with vendors purchasing wholesale, or sometimes direct from farmers. The informal sector is a critical source not only of food (including processed and cooked food) but also of income in urban areas. For example, street vendors have been estimated to constitute 15% of all urban employment in South Africa, of which 67% sell food.[5] Many cities operate predominantly in this manner, with the majority of food sourced locally and nationally, though they are also connected to regional neighbours and global commodity markets that are vital for ensuring constant supplies of staple food when national harvests are poor.

Food System 2.0

This system is characterised by a more global and national production profile with a smaller number of actors at all stages in the supply chain, a formalised and consolidated retail sector, less reliance on urban and peri-urban production, and a greater consumption of processed foods - with a relatively high proportion of meat and dairy products.

This is a food system recognisable in most of the industrialised world, where farms have become consolidated (the average farm size in Western Europe is 40 hectares)[6]. A large labour force is not required, as production tends to be capital- rather than labour-intensive. It is common for farm produce to be sold direct on contract to large retailers, aggregators or processing companies. Refrigerated supply chains mean that cities are less reliant on production from their hinterland, even for fresh food. For many fresh products, year round availability is maintained by sourcing from different countries as they successively come into season. In the UK, this results in around half of all food being imported from overseas.[7]

The retail market is dominated by a small number of actors. Supermarkets are the most common form of food retail, tending to be organised around national and international chains offering food to consumers at low prices due to efficiencies, economies of scale, and powerful bargaining position. Small food shops are still present but account for a small percentage of sales, and tend to be more expensive. Highly processed and packaged food have emerged as a major part of what customers expect and what the food system

[5] International Labour Office (2013). Women and Men in the Informal Economy: A Statistical Picture. Second Edition.
[6] UNCTAD (2013) Wake up before it is too late: Trade and environment review 2013. United Nations Conference on Trade and Development.
[7] Defra (2014) Food statistics pocketbook 2013. London: UK Department for Environment, Food and Rural Affairs

supplies. A significant proportion of food is wasted at the consumption stage, being discarded even if it is still suitable for human consumption.[8]

Rate and scale of transition

These sketches of Food System 1.0 and 2.0 are generalisations, yet they do provide the outlines of an undeniable transition in the way in which much of the world is feeding itself as it urbanises. At a global level, the transition to a Food System 2.0 scenario is far from complete: 75% of global production is still sold in domestic markets close to the area of production.[9] In any one place, both systems coexist to one degree or another, and it would be dangerous to assume that change is inevitable. Nonetheless there is a discernable shift occurring, from decentralised systems with multiple actors, towards consolidated, centralised supply chains.[10] One consistent marker of this phenomenon is the growth of supermarkets, which is occurring so rapidly in some parts of the world – growing from 10-20% of market share in 1990 to 50-60% in the early 2000s in countries such as Argentina, Brazil, Chile, Korea and Taiwan – that it could rightly be called a revolution.[11,12] Yet 'supermarketisation' is only one aspect of a broader transition that affects a wide range of social, economic and environmental factors.

1.3 A broken system?

The outcomes of the contemporary food system are complex and often contradictory. In some countries where the food system revolution has advanced the furthest, the availability and choice of food for many, if not all, is greater than at any other time in history. Significant progress has been made on reducing hunger worldwide. The proportion of undernourished people in developing regions has decreased from 24% (1990–1992) to 14% (2011–2013), and the proportion of children under five years old who are stunted has fallen dramatically, from 40% in 1990 to one quarter now.[13]

Food security and social impacts

Despite these significant achievements, when the food system is seen as a whole, serious problems become evident. While globally there are more calories available than ever before, 805 million people worldwide remain chronically undernourished,[14] 162 million children under the age of five are stunted due to malnutrition,[15] and two billion people suffer from a shortage of micronutrients (the so called 'hidden

[8] FAO (2011) 'Global Food Losses and Food Waste: Extent, Causes and Prevention', Rome: Food and Agriculture Organisation of the United Nations
[9] FAO (2013) Territorial Approach to Food Security and Nutrition Policies: Empirical Evidence and Good Practices: Final Report. Rome: Food and Agriculture Organisation of the United Nations
[10] FAO (2004) Globalisation of food systems in developing countries: impact on food security and nutrition. FAO Food and Nutrition Paper 83. Rome: Food and Agriculture Organisation of the United Nations
[11] Reardon, T. & Timmer, C.P. (2012) The economics of the food system revolution. Annual Review of Resource Economics, 4:225-125; Reardon, T., Berdegué, J. & Timmer, C.P. (2005) Supermarketization of the "Emerging Markets" of the Pacifi c Rim: Development and Trade Implications. Journal of Food Distribution Research 36(1)
[12] FAO (2004) Globalisation of food systems in developing countries: impact on food security and nutrition. FAO Food and Nutrition Paper 83. Rome: Food and Agriculture Organisation of the United Nations
[13] United Nations (2014). The Millennium Development Goals Report
[14] Chronic undernourishment is the state, lasting for at least one year, of inability to acquire enough food to meet dietary energy requirements: FAO, IFAD and WFP (2014). The State of Food Insecurity in the World 2014. Strengthening the enabling environment for food security and nutrition. Rome, FAO
[15] United Nations (2014). The Millennium Development Goals Report

hunger').[16] Nor is hunger confined to developing countries: in 2013, 14% of households in the USA were food insecure.[17] Paradoxically perhaps, and particularly in developing countries, the problem of under-nutrition is greatest in rural areas, where food is produced. This reflects a deepening dynamic of rural underdevelopment and low rural incomes.

The persistence of under-nutrition and malnutrition into the current century is not fundamentally a result of there not being enough food in the world. The world already produces enough food for all - but we are failing to distribute it equitably.[18] Redistributing just 1% of global food production would be enough to feed all the hungry people on the planet.[19] Approximately one third of food is wasted without being consumed,[20] and the number of overweight and obese people is high and rising in both developed and developing countries. There are now half a billion obese adults worldwide,[21] resulting in costs estimated to be as high as US$2 trillion every year.[22] This trend is connected to the growth of industrialised food systems, which are highly efficient at providing cheap but nutritionally deficient calories in the form of ultra-processed foods, while healthier foods remain relatively more expensive.[23]

Environmental impacts

While the food system can be shown to be having poor health and social outcomes, its environmental impacts are equally troubling. The way today's population is fed is culpable for a catastrophic loss of biodiversity, habitat destruction, over-abstraction of water for irrigation, freshwater pollution, widespread soil erosion, and widespread over-fishing.[24] The food system as a whole is responsible for 19-29% of total global anthropogenic greenhouse gas (GHG) emissions,[25] with just under half of this from agricultural practices and the remainder from other supply chain processes including packaging, processing, transport, storage, retail and waste disposal. Standing out from this picture is the impact of the livestock sector, which represents 14.5% of all human induced GHG emissions.[26] While grass-fed livestock production holds promise as a sustainable form of protein capture on existing agricultural or range land otherwise

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[16] von Grebmer, K., Saltzman, A. Birol, E. Wiesmann, D., Prasai, N., Yin, S. Yohannes, Y., Menon, P., Thompson, J., & Sonntag, A. (2014). 2014 Global Hunger Index: The Challenge of Hidden Hunger. Bonn, Washington, D.C., and Dublin: Welthungerhilfe, International Food Policy Research Institute, and Concern Worldwide

[17] Food insecurity is defined by the USDA as when "consistent access to adequate food is limited by a lack of money and other resources at times during the year"; Coleman-Jensen, A., Gregory, C., & Singh, A. (2014). Household Food Security in the United States in 2013. USDA ERS.

[18] Sen, A. (1981) Poverty and Famines: An Essay on Entitlement and Deprivation. Oxford, Clarendon Press

[19] Raworth, K. (2012). A safe and Just space for Humanity: Can We Live Within the Doughnut? Oxfam.

[20] FAO (2011) 'Global Food Losses and Food Waste: Extent, Causes and Prevention', Rome: FAO

[21] World Health Organisation. Obesity. http://www.who.int/gho/ncd/risk_factors/obesity_text/en/ Accessed 21st November 2014

[22] Dobbs, R., Sawers, C., Thompson, F., Manyika, J., Woetzel, J., Child, P., McKenna, S., & Spathrou, A. (2014). Overcoming Obesity: an Initial Economic Analysis. McKinsey Global Institute Discussion Paper.

[23] Monsivais, P. et al (2011) Following federal guidelines to increase nutrient consumption may lead to higher food costs for consumers. Health Affairs, vol. 30, No. 8 (2011), pp. 1471-1477; Rehm, C. et al (2011) The quality and monetary value of diets consumed by adults in the United States. American Journal of Clinical Nutrition, vol. 94, No. 5 (2011), pp. 1333-1339.

[24] De Schutter, O. (2014) Report of the Special Rapporteur on the right to food, Olivier de Schutter. Final Report: The transformative potential of the right to food. United Nations General Assembly, Human Rights Council.

[25] Vermeulen, S.J., Campbell, Bruce M. & Ingram, J.S.I. (2012) Climate change and food systems. Annual Review of Environment and Resources. 37: 195-222

[26] Gerber, P.J., Steinfeld, H., Henderson, B., Mottet, A., Opio, C., Dijkman, J., Falcucci, A. & Tempio, G. (2013) Tackling climate change through livestock – A global assessment of emissions and mitigation opportunities. Food and Agriculture Organization of the United Nations (FAO), Rome.

unsuitable for arable crops, the continued conversion of natural habitats to grazing land, and the one third of global arable land used for the production of feedcrops both represent significant environmental challenges.[27] Increased meat consumption is a notable part of the transition to Food System 2.0, with consequences not only for the environment, but also for human health,[28] animal welfare, and equity - a large proportion of the world's cereals are already being used to feed livestock, rather than people.

The interaction between food and agriculture and global greenhouse gas levels illustrates one of the numerous feedback loops through which the food system interacts with other systems. Even as the food system is becoming recognised as a major source of GHG emissions, climate change is already having negative impacts on crop productivity, reducing global maize and wheat production by 3.8% and 5.5% respectively.[29] In the longer term under a business as usual scenario we can expect an average 2% decline in productivity over each of the coming decades.[30] This adds an extra pressure into the challenge of providing food for an additional three billion people by 2050 as the world's population grows, especially as negative climate change impacts on production are predicted to be significant in some areas also likely to experience high population growth.[31]

In sum, our food systems affect, and are in turn affected by, the life support systems on which they depend – and the way we produce food now is undermining our ability to continue to feed ourselves into the future. We have already overstepped 'planetary boundaries' for biodiversity loss, nitrogen use and climate change, and are nearing the limits for others, beyond which we risk "irreversible and abrupt environmental change."[32] These issues are closely tied to the trajectory of urbanisation because urban areas are the major drivers of demand for goods and services, and have a major influence on the ways in which the food system meets these demands. While these issues are often framed as global challenges, they are also deeply local in character, both in causes and impacts, and in our ability to effect change. The importance of understanding food systems at a scale more granular than the global and national levels at which they are often discussed - the scale of the city region – is explored in the following chapter. Subsequent chapters go on to assess the potential of interventions at the level of the city region to contribute towards the challenges outlined above.

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[27] FAO (2006) Livestock's Long Shadow: Environmental Issues and Options. Food and Agriculture Organization of the United Nations (FAO), Rome

[28] Tukker, A., Goldbohm, R.A., de Koning, A., Verheijden, M., Kleijnb, R., Wolf, O., Pérez-Domínguez, I. & Rueda-Cantuchec J.M. (2011). Environmental impacts of changes to healthier diets in Europe. Ecological Economics, vol. 70 (10): 1776-1788

[29] Lobell, D., Schlenker, W & Costa-Roberts, J. (2011) Climate Trends and Global Crop Production Since 1980. Science., Vol. 333, no. 6042, pp. 616-620

[30] Nelson, G.C., Rosegrant, M.W., Koo, J., Robertson, R., Sulser, T., Zhu, T., Ringler, C., Msangi, S., Palazzo, A., Batka, M., Magalhaes, M., Valmonte-Santos, R., Ewing, M., & Lee, D. (2009) Climate Change: Impact on Agriculture and Costs of Adaptation. International Food Policy Research Institute, Washington D.C.

[31] Leclere D, Havlik P, Fuss S, Schmid E, Mosnier A, Walsh B, Valin H, Herrero M, Khabarov N, and Obersteiner M. (2014) Climate change induced transformations of agricultural systems: insights from a global model. *Environmental Research Letters*, 9 (124018)

[32] Rockström, J., W. Steffen, K. Noone, Å. Persson, F. S. Chapin, III, E. Lambin, T. M. Lenton, M. Scheffer, C. Folke, H. Schellnhuber, B. Nykvist, C. A. De Wit, T. Hughes, S. van der Leeuw, H. Rodhe, S. Sörlin, P. K. Snyder, R. Costanza, U. Svedin, M. Falkenmark, L. Karlberg, R. W. Corell, V. J. Fabry, J. Hansen, B. Walker, D. Liverman, K. Richardson, P. Crutzen, and J. Foley. (2009) Planetary boundaries: exploring the safe operating space for humanity. *Ecology and Society* 14(2): 32.

2 Linking cities and regions

The linkages between cities and their regions are critical for numerous ecological, social and economic reasons. Rural areas provide food, water, energy, raw materials, and labour to urban areas, both local and further afield. Meanwhile, the concentration of people, capital and power in urban centres means that decisions and actions taken there affect rural people and places. Food is a central dimension of these rural-urban linkages, interacting with multiple other systems and public goods. The effective governance of these linked systems is likely to be most effective when democratic and policy structures operate across rural and urban geographies.

Three case studies, (Lusaka, Greater Manchester, and Bogotá), are examined to provide an empirical starting point for discussing how food systems work in practice, and to illustrate the degrees of linkage between cities and their contiguous hinterlands. These case studies illustrate the variation in the food systems that provision cities, in terms of where the food comes from and how that food is accessed. For example, almost all of the food consumed in Greater Manchester is purchased from supermarkets and derives from national and global supply chains. By contrast, more of the food consumed in Lusaka is from local sources, and is bought from a diverse range of businesses. In part through deliberate policy, Bogotá maintains a diverse retail sector, including supermarkets, and a range of regional, national and global supply.

Understanding this variation in current food provisioning allows city region food system approaches to be further elucidated and their potential role in different contexts better understood. At its root, city region food system approaches are about identifying those parts of the food system where integrated rural-urban governance and deliberate food policy at regional level can yield more inclusive and sustainable benefits, and harmonising these with more global elements. It is not a case of unquestioning localism. Rather, it is about creating a framework for conscious food governance that takes local circumstances into account, recognising that cities exist within a geography and that decisions about food operate across the urban-rural continuum. It recognises the central role of the private sector in the food system, but is based on the understanding that public goods will not be delivered by market forces alone, without greater democratic participation in the food system.

2.1 Rural-urban linkages

Flows of people, money and goods between rural and urban areas are a vital factor in understanding urbanisation. For example, there has been a massive growth in urban-rural remittance flows, as well as migration from rural to urban areas within many developing countries over recent decades.[33].

With the growth of Food System 2.0, it can seem that the connections between urban and rural people are weakening, in the sense that more people consume food without direct engagement in its production or, to a large extent, with its producers. In western countries in particular, the food system has low visibility for many urban dwellers[34].

In fact, however, the spread of urbanisation and the dominance of megacities do not make rural-urban linkages less important. Urban areas remain dependent upon rural ones (both local and global) for the provision of food, water, energy, raw materials, and labour. Conversely, the concentration of people, power and capital in urban areas makes them key drivers of change in rural areas. Modern food systems are increasingly oriented to urban consumption requirements, which are themselves shaped by income, patterns of employment and activity, and infrastructure, amongst other factors. Arguably, however, this interdependence between rural and urban areas has expressed itself in ongoing reorganization of rural spaces to serve the requirements of urban food consumption, at the expense of balanced and sustainable global development, and with perils for the urban food system itself.

Some of the dependencies between urban and rural areas are not contingent on the physical distance between the urban and the rural areas. A growing forest anywhere on the globe can absorb the greenhouse gases emitted by an urban settlement. For climatic reasons, some foods cannot be grown commercially near where they will be consumed. For example, the nutmeg consumed in Europe or Australia will have probably been grown in Grenada, Indonesia, Malaysia, India or Zanzibar. The economics of food systems means that some crops can be treated in effect as commodities and sourced from wherever the quantity, quality and price are best.

However, some functions are specific to a particular location. An urban water supply is likely to rely on specific rivers, reservoirs or aquifers. Maintaining the quality and quantity of that water supply therefore means managing those specific water resources. Similarly, a city may be protected from river flooding by a combination of infrastructure - such as raised banks - and ecosystem management, such as trees or buffer strips planted to increase rainwater infiltration in the watershed. Again, the function of protecting the city against flooding is tied to a specific watershed. The same holds for some social and cultural issues too. The rural hinterland of a city may be the area of production of a particular type of food that is part of the cultural identity of the city, and is almost certain to have important places for recreation.

The power of cities, if unbalanced, can result in the marginalisation of rural interests, which become subservient to urban demand. However, if channelled positively and democratically, city region food system governance can be a stimulus and guide for development that is sustainable, integrated and inclusive, for both urban and rural places and people. The city region approach thus recognises that as

[33] IFAD (2014) Leveraging the rural-urban nexus for development. IFAD post-2015 policy brief 1. Rome: International Fund for Agricultural Development.
[34] Pothukuchi, K. & Kaufman, J.L. (1999). Placing the food system on the urban agenda: the role of municipal institutions in food systems planning. Agriculture and Human Values, 16: 213-224.

much as urban areas are loci of power, they are also tied to rural areas for their well-being and survival. Many of the biggest issues facing cities do not stop at municipal boundaries but extend into rural landscapes both proximal and distant. For example, the lack of viable rural livelihoods is one of the drivers of high net migration into cities, frequently resulting in stresses on urban services and infrastructure. The challenge of the rural-urban nexus is to produce a harmonious framework for the integration of city, region and wider world.

2.2 What are city region food systems?

The term city region food system has been defined 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."

www.cityregionfoodsystems.org

The basic premise of the city region food system is that by enhancing the interconnectedness and complementary development of urban and rural areas – and in particular those nearby rural areas that sit within the regional hinterland of a city – we can provide a framework to start tackling some of the global food system and nutritional challenges as outlined in Chapter 1, above.

At the simplest operational level, however, a city region approach argues that we should work to strengthen food value chains that link urban centres and consumers to farmers and food producers in their rural hinterlands. This idea is at odds with current food system development pathways, which tend towards consolidated, national and global supply chains. Proponents of city region food systems by contrast advocate for a framework in which some supply chains have fewer intermediary links, relationships between consumers and producers are stronger, and where food system planning is explicitly territorial, taking into account socio-economic and environmental outcomes in both urban and rural areas. Perhaps more than anything, however, the city region food system approach is about conscious and deliberate governance of food at city region level, taking into account the multidimensional and far-reaching nature of food systems. It recognises the central role of the private sector in the food system, but is based on the understanding that public goods will not be delivered by market forces alone, without greater democratic participation in the food system.

In coming up with a working definition of city region food system it is useful to have a measure of clarity on what is meant by the specific terms included within the concept, as hinted at in the boxed text above. **Food systems** are discussed in detail in Chapter 1, as encompassing the full suite of food supply chain activities from field to fork to food waste, the environmental and human contexts that determine these activities, and their outcomes.[35] **Cities** in turn are mentioned above as referring to urban areas of any size. What is important here is that there is some degree of concentration of population, and thus concentration of supply chain demand and political and economic agency. The **region** can take on various conceptions. These include the region as a political unit: an area larger than a city but smaller than a nation state that has its own governance structure, which could be for example a state, like Rajasthan in India, but equally a sub-division of that state, e.g. Jaipur, or even a district within that sub-division. Just as relevant within the

[35] Ericksen, P.J. (2008) Conceptualizing food systems for global environmental change research. Global Environmental Change, Vol 18, Issue 1. Pp 234-245

context of the food systems discussion, however, might be physical and ecosystem characteristics like climate, soils, terrain, watershed boundaries and biodiversity. In agricultural terms, the appropriate city region definition based around the city of Jaipur (Rajasthan's largest city and State capital) - might be the hot semi-arid ecoregion within which it sits, or the intersection of millet-based and oil-seed based production zones. For our purposes here, however, it is sufficient to note that the region is a flexible space constructed from meaningful linkages, whether they be political, economic, cultural, physical or ecological (see Figure 2.1b, below). In this conception, the city region (and hence a city region food system) is an example of a territorial approach to governance.

2.3 Where do cities get their food from?

The way in which cities are currently provided with food varies considerably depending on the size of urban centre, history, culture, politics, regional context and nature of ties with surrounding countryside and rural populations. At a basic level it is evident that regional geography will have a considerable influence on how much and what type of food is provisioned from the nearby hinterland. Beijing, for instance, is surrounded by an extensive geographically contiguous region - the province of Hebei - which is well suited to growing a variety of cereal crops including wheat, maize, millet and sorghum. By contrast, La Paz in Bolivia sits at 3,600m in the high mountains of the Andean altiplano, where average daily temperatures do not rise above 10°C, constraining the type and extent of agricultural production that can occur.

In order to more fully explore some of these aspects of city food provisioning, the next section presents three case studies that together illustrate some key points about city food supply. Prior to this, however, it is useful to have in mind a simple structure for conceptualising food provenance. Figure 2.1a shows a basic zoning model by which it is possible to categorise where food comes from, be it urban (within the city limits), peri-urban (at the interface between rural and urban), regional (a territorial unit larger than a city but smaller than a country), national, continental and global.[36] As is immediately obvious, these zones will be of different sizes in different places. Nevertheless, the food zones model does provide a framework to which locally appropriate data can be added, allowing an individual city region to characterise the provenance of its food (Figure 2.1c).

[36] This model is adapted from Growing Communities' Food Zones concept www.growingcommunities.org

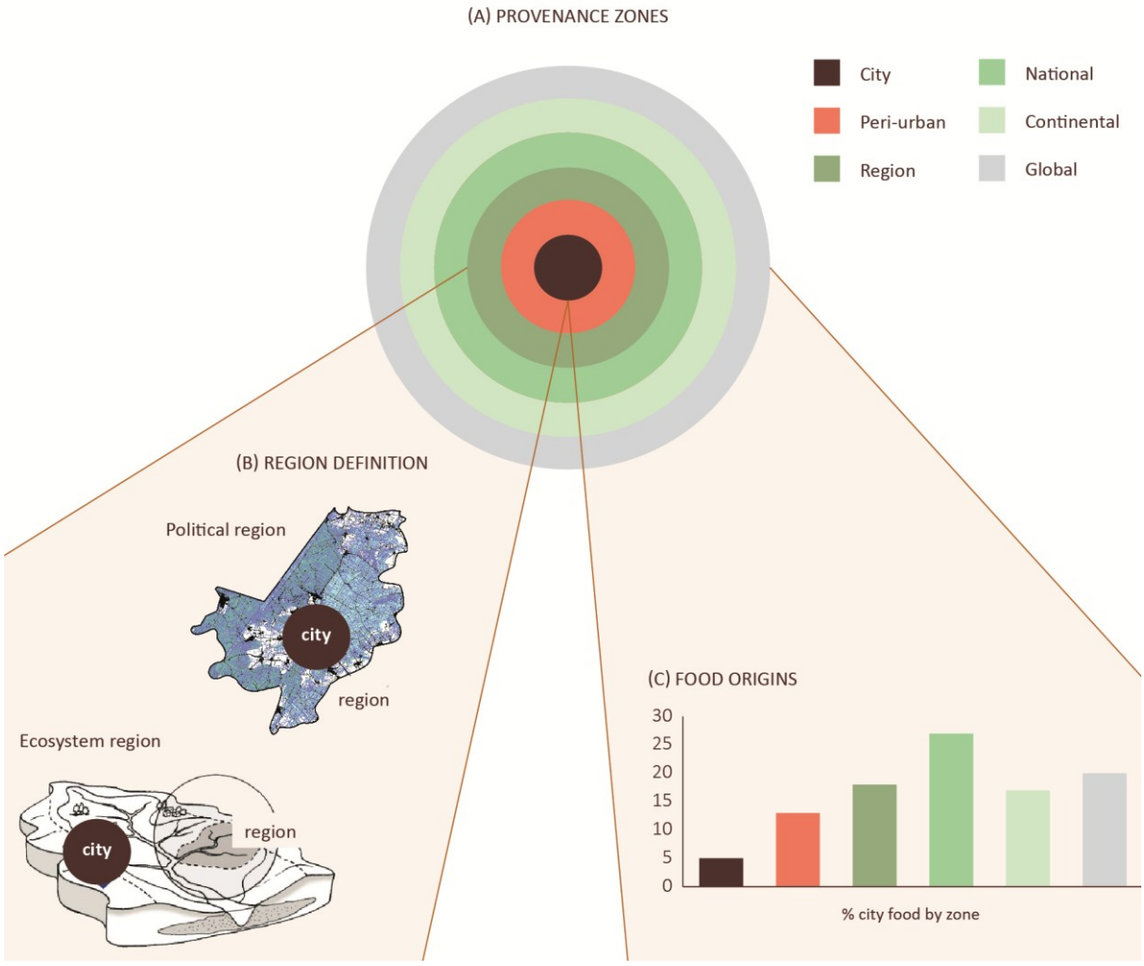


Figure 2.1: Understanding city food provenance. A) A city's food can be thought of as coming from concentric zones running from urban through to rural areas regionally to globally. B) Region may be defined differently depending on the topic of interest, e.g. political region, or ecosystem region. C) Different food zones provide different proportions of food to the city (the proportions shown are for illustration only)

2.4 How cities feed themselves: three case studies

The three case studies that follow have been selected to illustrate the great diversity that exists globally in the kinds of food supply chain connections that link urban centres to rural areas, both close by and more distant. Loosely speaking, they represent a range of situations that run from a more traditional Food System 1.0 type arrangement in which a large number of small-scale actors are closely connected between the rural and urban areas (Lusaka); towards an example of Food System 2.0, in which food supply is mostly based around consolidated national and global supply chains (Greater Manchester). Intermediate between these ends of the spectrum is an example in which a degree of supply chain consolidation and supermarketisation has occurred, but which nonetheless preserves strong rural-urban links between markets and a larger number of relatively small-scale producers within the region (Bogotá). In each case study, a portrait is built up by first sketching out some of the basic characteristics of the city, its population and their consumption patterns, followed by describing the relative prominence of different modes of retail, and finally, the geographical source of food for each city.

Case Study 1: Lusaka, Zambia

Population: 1.7 million
Metropolitan area: 360km² (36,000 ha)

(Map, right): Location of Lusaka Province, Zambia

Lusaka, the capital city of Zambia, is one of the fastest growing cities in southern Africa, with an annual growth rate of 4.9%.[37] The city suffers from high levels of poverty and food insecurity. In the poorest neighbourhoods, only 4% of households are classified as having total food security, with 69% severely food insecure.[38] Households in Lusaka spend an average of 46% of their total expenditure on food, with this share rising to 61% in the lowest consumption quintile.[39] Dietary composition and quality varies across socio-economic groupings: while wealthier groups have a relatively diverse diet, in the poorest segments as much as half of all calories come from staples (especially maize and wheat), supplemented with a few basic vegetables, condiments, oils and sugar.

How do people access food? The majority of the city's food is purchased on frequent visits to small shops, markets and informal vendors. This reflects the income insecurity of much of the population, making it difficult for many to purchase significant quantities of food at one time. Where food is purchased from varies by food type. For example, 64% of households buy meat from small shops. Most eggs are bought from informal sector street sellers trading from makeshift stalls ('ka shops'),[40] with 19% bought from small shops. The informal sector is also important for milk and fresh vegetable purchases. Zambia is one of the countries with lowest market share for supermarkets in southern Africa (10% for staples). Supermarket customers tend to be from wealthier households: whereas only 1% of households in lowest income quintile bought staples at supermarkets, this compares with 28% in the upper income quintile.[41] Own production of staples represents only a small percentage of food (1.2% of staples)[42] but can - like gifts from family and neighbours - be an important bulwark against household food insecurity.

Where does food come from? Lusaka province, the immediate area around the city, is within a productive ecoregion suited to grain production and livestock rearing. The province and the wider southern central part of Zambia provide much of the staple food consumed by Lusaka. The northern regions of the country have higher rainfall and more acidic soils, and account for less cereal production but more cassava. Zambia is largely self-sufficient for staple crops - particularly maize - produced by a mix of small-scale and more commercial farmers. Vegetables are commonly produced close to the city by small-scale growers, and transported via short supply chains, with less than 40% of tomatoes and 35% of rape passing through

[37] Central Statistics Office, (2011) 2010 Census of Population and Housing: Preliminary Report
[38] Mulenga, C. (2013) The state of food insecurity in Lusaka, Zambia. African Food Security Urban Network (AFSUN) Urban Food Security Series No.19
[39] Mason, N. and Jayne, T. (2009) "Staple Food Consumption Patterns in Urban Zambia: Results from the 2007/2008 Urban Consumption Survey" Working Paper No. 36, Food Security Research Project, Michigan State University
[40] Hichaambwa, M. (2012) "Urban Consumption Patterns of Livestock Products in Zambia and Implications for Policy", IAPRI Working Paper No. 65. pp. 13-16. Food Security Research Project, Michigan State University
[41] Mason, N. and Jayne, T. (2009) "Staple Food Consumption Patterns in Urban Zambia: Results from the 2007/2008 Urban Consumption Survey" Working Paper No.36, Food Security Research Project, Michigan State University
[42] Own production is considerably more important in smaller cities in Zambia, contributing 15-20% of consumption.

traders before reaching market.[43] Livestock products, by contrast, largely derive from the commercial sector.

Urban and peri-urban production is common, with 41% of households growing either field or horticultural crops and 20% keeping livestock of some kind, mostly chickens.[44] However, this production accounts for a relatively small proportion of all food consumed, and is least common amongst the poorest households, who frequently do not have land or resources for food growing, with 97% in this group reporting they produce no food through urban agriculture.[45] Finally, southern African and global markets are important for food security, bolstering supplies of staple commodities when national harvests are insufficient.[46] Imports are also common, with 80% of onions imported from other southern African countries (often via informal trade channels),[47] and 80% of all processed foods imported from South Africa.

[43] Tschirley, D. and Hichaambwa, M. (2010) How are vegetables marketed into Lusaka?, Policy Synthesis No. 40. Food Security Research Project – Zambia. Michigan State University.

[44] Hichaambwa, M., Beaver, M., Chapoto, A. & Weber, M. (2009) Patterns Of Urban Food Consumption And Expenditure In Zambia, FSRP Working Paper No. 43 - Dec '09 Lusaka, Zambia

[45] Mulenga, C. (2013) The state of food insecurity in Lusaka, Zambia. African Food Security Urban Network (AFSUN) Urban Food Security Series No.19

[46] Dorosh, P., Dradri, S., Haggblade, S. (2009) Regional trade, government policy and food security: Recent evidence from Zambia, Food Policy, Volume 34, Issue 4, Aug '09, pp350-366

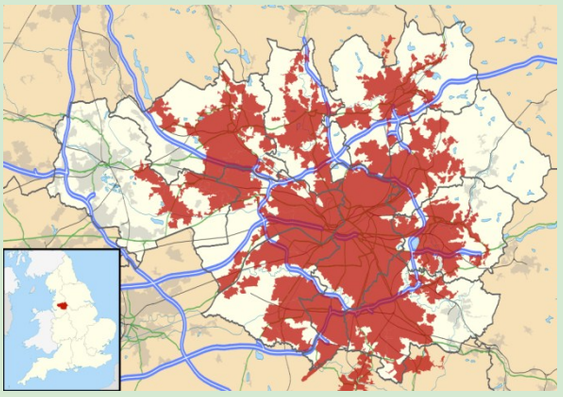
[47] Tschirley, D. and Hichaambwa, M. (2010) How are vegetables marketed into Lusaka?, Policy Synthesis No. 40. Food Security Research Project – Zambia. Michigan State University.

Case Study 2: Greater Manchester, United Kingdom

Population: 2.7 million
Metropolitan area: 1,277km² (128,000 ha)

(Map, right): Greater Manchester metropolitan area (urban areas shown in red)

Greater Manchester is a large metropolitan county with 10 distinct urban centres - the second most populous built-up area in the UK after London. Greater Manchester is one of only two pilot areas in England designated as 'City Regions' since 2009 (the other being Leeds City Region), and includes 30% of land classed as rural. By and large, the components of Greater Manchester's aggregate diet are similar to the UK average, with a level of internal diversity reflecting the county's ethnic mix (7.2% of the population are foreign born and 10% identify as Asian or British Asian)[48]. Dietary intake is in general varied and calorically sufficient and satisfies most recommended levels for micronutrients. However many households (especially amongst the poorest) consume less than the recommended intake of fruit and vegetables, and more fats and sugar. The average diet of people in Greater Manchester is shown in Figure 2.2. Obesity and other diet related ill-health is a major problem. Over all socioeconomic groups an average of 11.6% of household expenditure is spent on food, rising to 16.6% for the lowest income households.[49]



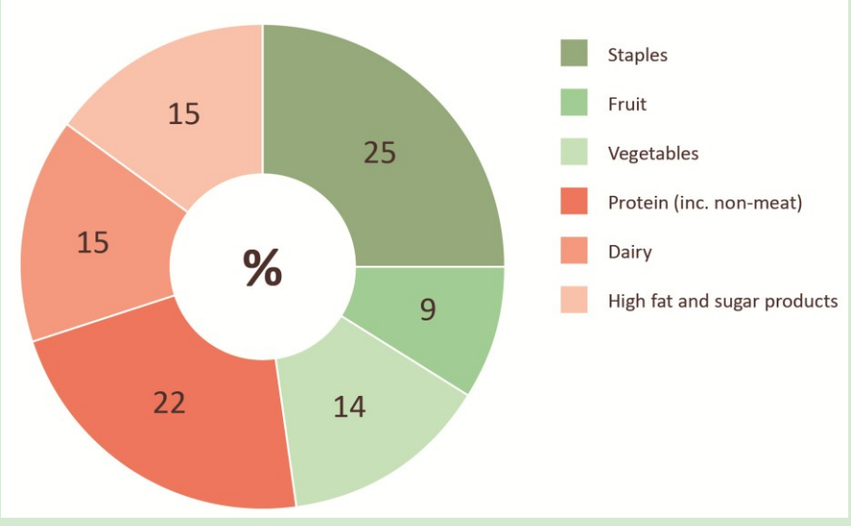


Figure 2.2. Average consumption per food type in Greater Manchester, measured by kg. Based on data from Curtis, T., Cottee, J. & Holloway, L. (2014) FoodPrinting: Low Carbon Food Report - Greater Manchester. ESTA (Environmental Sustainability Technical Assistance) project series. Manchester: ENWORKS.

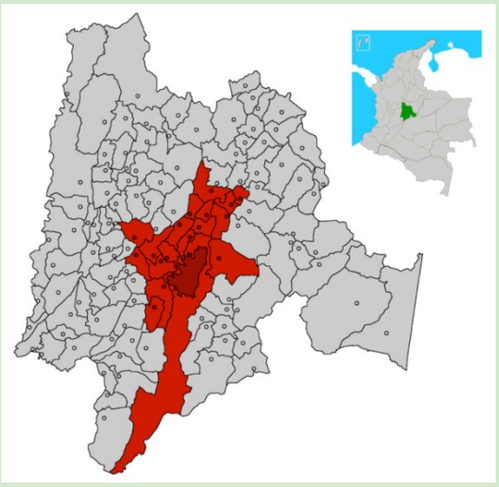
[48] Office for National Statistics, 2011 Census for England and Wales. http://www.ons.gov.uk/ons/datasets-and-tables/index.html
[49] Defra (2014) Food statistics pocketbook 2013. London: UK Department for Environment, Food and Rural Affairs

How do people access food? No specific data for Greater Manchester are available, but in common with the rest of the UK, retail food sales take place largely through supermarkets, which control 95% of the grocery sector.[50] This includes both large out of town stores and inner city retail formats. There is a high degree of concentration in the sector, with four supermarket chains accounting for 75% of total food market share.[51] Meanwhile, the number of traditional greengroceries has fallen to almost a quarter of the figure in the 1950s.[52] The remainder of the sector consists of small shops and independent retailers, with markets and direct sales formats such as farm shops representing around 1%.

Where does food come from? The Greater Manchester area and Northwest England as a whole is specialised in meat and dairy production, with some poultry and a smaller area of cereals and arable cropping. However, very little of this is traded directly within the region for local consumption. The vast majority of food produced in Greater Manchester is purchased through centralised supply chains and distributed nationally. In total around 50% of food consumed in Greater Manchester is sourced from within the UK, mostly through centralised supply chains. The proportion of UK produce is higher within some categories: 82% of dairy products and eggs, and 56% of vegetables are sourced from the UK, but only 10% of fruit.[53] One third of food is imported from Europe, with the remaining 20% from the rest of the world.[54] Back at the local level, food production within the urban area constitutes only a very small contribution to the overall supply of food to the city region, though allotment and back garden production plays a valuable role in providing nutritional richness and diversity for some groups.[55]

[50] Kantar WorldPanel grocery market figures, published 21 March 2011.
[51] Kantar WorldPanel grocery market figures, published 21 March 2011.
[52] The Competition Commission (2008) "The supply of groceries in the UK market investigation"
[53] Defra (2014) Food statistics pocketbook 2013. London: UK Department for Environment, Food and Rural Affairs
[54] Defra (2014) Food statistics pocketbook 2013. London: UK Department for Environment, Food and Rural Affairs
[55] Urban production is mostly limited to fruit and vegetables, contributing up to 3% of consumption in these categories - allotments cover some 600 ha of land in Greater Manchester: Ravetz, J. (2000) City-region 2020**:** integrated planning for a sustainable environment. Earthscan

Case Study 3: Bogotá, Colombia



Population: 7.6 million (2012)
Metropolitan area: 1,780km²
(178,000 ha)

(Map, right): Bogotá City (dark red); Bogotá Metropolitan Area (lighter red); Cundinamarca Department (grey).

The capital city of Colombia, Bogotá has a fast growing population, having increased by 1 million between 2002 and 2012. This increase has in the past been fuelled by conflict and poverty elsewhere in the country. 28.4% of inhabitants live below the poverty line and 4.5 % below the extreme poverty line.[56] Overall, 33.1% of households in Bogotá face food insecurity, rising to above 50% in the lowest socioeconomic groups.[57] Bogotá is unusual in having developed a sophisticated territorial vision for how the city interacts with its hinterland,[58] and has established a food masterplan that sets out steps towards food security for both urban and rural populations.[59]

How do people access food? Amongst other industrialising economies globally, Bogotá is interesting in having preserved a strong traditional food supply chain, even alongside the growth of the supermarket sector. Supermarkets represent 25% of grocery sales in Bogotá,[60] compared to 38% in the country as a whole.[61] The remainder of food purchased in Bogotá comes through around 135,000 – 140,000 small and specialist shops,[62] markets (plazas de mercado), and the informal sector. Markets are of particular importance in low-income neighbourhoods.[63] The large publicly owned wholesale distribution centre, Corabastos, is an important element in facilitating this diverse supply chain, managing 61% of Bogotá's incoming food supply, especially for small and medium sized retailers and processors.[64]

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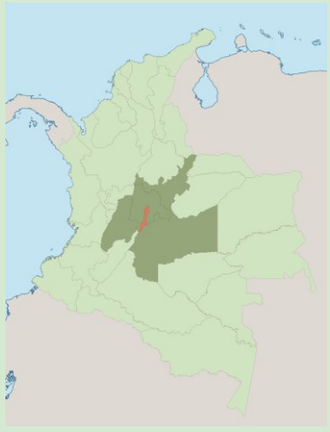
[56] Sanchez, C.M. & Forero, Y. (2010) Effects of the global financial crisis on the food security of poor urban households: Case Study Bogotá, Colombia. IPES-Colombia, Bogotá / RUAF Foundation, Leusden
[57] ICBF (2006) National Survey of the Nutritional Situation in Colombia, 2005. Bogotá
[58] Alcaldía Mayor de Bogotá (2011) Equidad, productividad y sostenibilidad: Documento Técnico de Soporte Modificación al Plan de Ordenamiento Territorial de Bogotá, Alcaldía Mayor, Bogotá.
[59] Alcaldía Mayor de Bogotá (2004) Plan Maestro de Abastecimiento de Alimentos para el Distrito Capital y la Región Definida PMAAB, Alcaldía Mayor, Bogotá.
[60] Alcaldía Mayor de Bogotá (2004) Plan Maestro de Abastecimiento de Alimentos para el Distrito Capital y la Región Definida PMAAB, Alcaldía Mayor, Bogotá.
[61] Reardon, T., and J. Berdegue. (2002) The Rapid Rise of Supermarkets in Latin America: Challenges and Opportunities for Development. Development Policy Review, 20:371-388.
[62] Alcaldía Mayor de Bogotá (2004) Plan Maestro de Abastecimiento de Alimentos para el Distrito Capital y la Región Definida PMAAB, Alcaldía Mayor, Bogotá.
[63] Alcaldía Mayor de Bogotá (2011) Equidad, productividad y sostenibilidad: Documento Técnico de Soporte Modificación al Plan de Ordenamiento Territorial de Bogotá, Alcaldía Mayor, Bogotá.
[64] Alcaldía Mayor de Bogotá (2011) Equidad, productividad y sostenibilidad: Documento Técnico de Soporte Modificación al Plan de Ordenamiento Territorial de Bogotá, Alcaldía Mayor, Bogotá.

Where does food come from? The land and climate around Bogotá is varied and well suited to the production of a large variety of food. The 19 municipalities around the city are specialised in the production of milk, vegetables, fruits and potatoes. In total, one third of Bogotá's food supply comes from this metropolitan area (shown in dark green on map, right), of which 75% is classed as rural land. Very little of this production is urban agriculture, though there are more than 300ha of open air and greenhouse vegetable gardens close to the city. The broader central Colombia region[65] (shown in pale green, right) supplies a further 44% of Bogotá's food, and production includes principally potatoes, rice, beef, chicken, eggs, bananas, yucca, citrus fruits, papaya, vegetables and sugarcane. In total, 80% of staple food for Bogotá is produced within a 300km radius, and over 60% is produced by small-scale farmers.[66] Only 10% of Colombia's food is imported, including wheat, and corn for cattle feed.



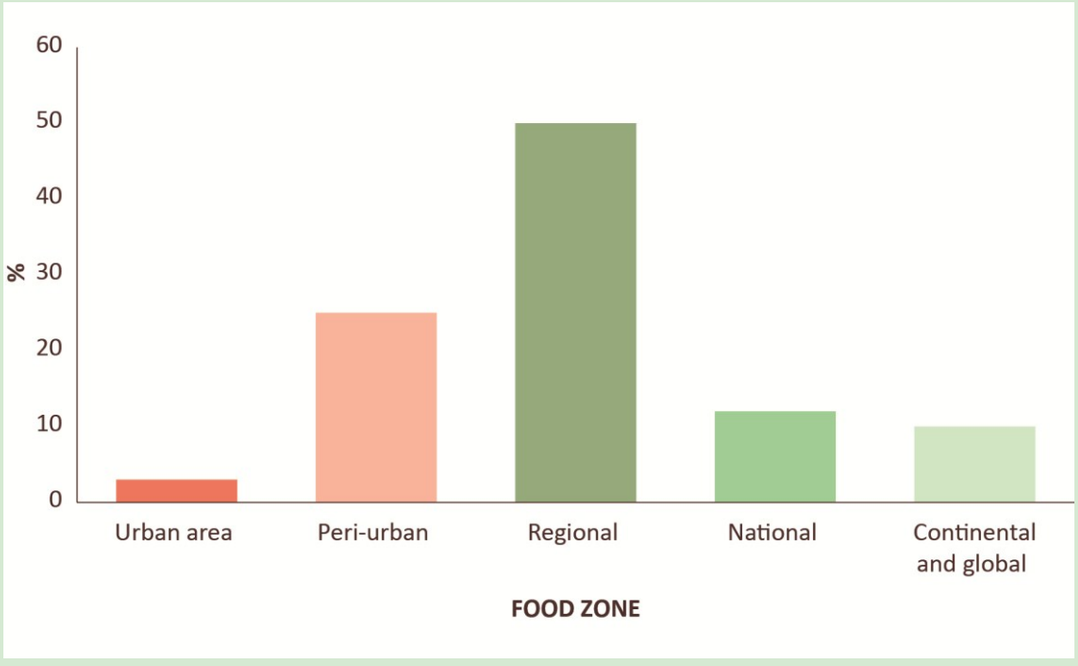


Figure 2.3. Provenance of Bogotá's food as a percentage of the total tonnage of food coming into the city from different places.[67]

[65] Comprising Cundinamarca, Boyacá, Tolima y Meta
[66] Forero, J. (2002) La economía campesina Colombiana, 1990-2001. Bogotá: Instituto Latinoamericano de Servicios Legales Alternativos (ILSA)
[67] Alcaldía Mayor de Bogotá (2004) Plan Maestro de Abastecimiento de Alimentos para el Distrito Capital y la Región Definida PMAAB, Alcaldía Mayor, Bogotá.

What do these case studies tell us?

These three case studies reveal the diversity globally in the food that cities consume, how people access this food, and where it comes from. Figure 2.4 allows the relative importance of different ways of accessing food to be compared between the three cities.

Fig 2.4: How do people access food? The market share by value of different retail types in Lusaka, Greater Manchester and Bogotá.[68] Note that there is no data for street sellers in Bogota, and so direct comparisons between the cities should be made with caution.

Greater Manchester exemplifies Food System 2.0, with supermarkets the dominant source of food purchase, and the majority of food coming from centralised national, continental and global supply chains. At the

[68] Data for Lusaka is from Mason, N. and Jayne, T. (2009) "Staple Food Consumption Patterns in Urban Zambia: Results from the 2007/2008 Urban Consumption Survey" Working Paper No.36, Food Security Research Project, Michigan State University; for Greater Manchester from Kantar WorldPanel grocery market figures, published 21 March 2011; and for Bogotá from Alcaldía Mayor de Bogotá (2004) *Plan Maestro de Abastecimiento de Alimentos para el Distrito Capital y la Región Definida PMAAB*, Alcaldía Mayor, Bogotá.

other end of the spectrum, the residents of Lusaka buy most of their food from small shops, markets and the informal sector. While the number and diversity of food sellers provides many livelihood opportunities, there are consequences for efficiency - many vendors mark up fresh produce by several hundred per cent in order to compensate for the small volumes they sell.[69] Lusaka receives a relatively high proportion of its food from its surrounding region, but studies of the city show that quantities of local food arriving on the market are highly unstable – in addition to seasonal variations and pests and diseases, crop production in Zambia is largely rain-fed and therefore subject to inconsistent yields. As a result, price instability is a major problem, affecting the food security of urban households.[70] Only 20% of households in poor areas of Lusaka report having enough food to eat during the low season of April to July each year.[71] It is essential for the resilience of supply that additional food can be purchased from further afield, including global commodity markets. It is germane therefore to acknowledge the important role of trade in Lusaka's food security.

This links to the general point that different food 'zones' (Fig 2.1) tend to provide different types of food products to cities, and serve different kinds of needs. Agriculture close to cities is best suited to growing nutrition-rich, perishable crops (e.g. leafy greens and salad vegetables), which can then be transported quickly to market. It is also especially important in countries like Zambia where refrigerated supply chains are less common. The global potential of agriculture near cities can be illustrated by the recent finding that globally, 60% of irrigated croplands and 35% of rainfed croplands fall within 20 km distance of urban limits.[72] This agricultural land near to urban centres can be used to provision the nearby city, or ones further afield, or to generate export revenue. Within urban areas themselves, the importance of agriculture varies greatly: for example, very poor families in cities such as Dar es Salaam, Kampala and Harare may produce 20-60% of the food they consume,[73] with starchy crops, such as cassava and yams, fruits, vegetables, and poultry being produced from tiny plots or backyards. The figure falls to less than 10% in Accra,[74] and the residents of Oxford produce less than half of one per cent of the food they eat.[75]

Regional landscape also matters in how much food comes from the nearby region. The fact that Bogotá is located in a varied and fertile landscape capable of producing a large range of food products means that the region has the potential to contribute significantly to food supplies. This contrasts with Greater Manchester, for example, where the surrounding region of north west England is dominated by permanent grazing land and is specialised in meat and milk production. It would require a dramatic shift in agriculture for the city region to supply a significant portion of the range of products demanded by Greater Manchester.

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[69] Tschirley, D. & Hichaambwa, M. (2010) The structure and behavior of vegetable markets serving Lusaka: main report. Food Security Research Project Working Paper No 46.
[70] Tschirley, D. and Hichaambwa, M. (2010) The structure and behaviour of vegetable markets serving Lusaka: Main report., Working paper No. 46. Food Security Research Project – Zambia. Michigan State University.
[71] Mulenga, C. (2013) The state of food insecurity in Lusaka, Zambia. African Food Security Urban Network (AFSUN) Urban Food Security Series No.19
[72] Thebo, A., Drechsel, P, and Lambin, E. (2014) Global assessment of urban and peri-urban agriculture: irrigated and rainfed croplands. Environmental Research Letters, Vol 9.
[73] Armar-Klemesu, M. (2000). "Urban Agriculture and food security, nutrition and health". In: Bakker, N., Dubbeling, M., Gündel, S.,Sabel-Koschella, U., de Zeeuw, H. Growing cities, growing food: urban agriculture on the policy agenda. A reader on urban agriculture. DSE/ETC, Feldafing, Germany
[74] Ruel, M.T. (2003) Ghana, Accra: Women and children getting by in urban Accra, Food Consumption and Nutrition Division City Profiles, International Food Policy Research Institute, Washington, DC
[75] Curtis, T. (2013) FoodPrinting Oxford. Landshare. Oxford City Council and Low Carbon Oxford. Available from http://www.landshare.org/uploads/7/5/4/1/7541639/food_printing_web.pdf

Finally, despite the extreme extent of Greater Manchester's supermarketisation, the case studies from both Lusaka and Bogotá tell us that there is nothing inevitable about the onward consolidation of the retail sector in cities. Lusaka shows that large-scale private sector actors will only become dominant where the conditions are right: despite earlier predictions of rapid supermarket growth in Zambia and the rest of southern Africa, there is now broad consensus that they are likely to grow much more slowly than once thought.[76] Bogotá, again, tells a rather different story, that partly as a result of deliberate policy – ensuring the right governance structures, planning frameworks and logistical infrastructure – a diverse retail sector and supply chain can flourish alongside supermarket growth.

2.5 Understanding the city region food system approach: a more complete vision

The discussion and exemplification of city food systems in the preceding sections illustrates the range of different situations with regard to where cities' food comes from and how that food is accessed. It also points to the relevance of city-specific context as an influence on how linked the city's food supply is to its region - such as the development of a dominant type of production for historical, climatic or agronomic reasons. It demonstrates the diversity of food systems (and their issues), and it shows that policy matters: in effect, there is a space for action in shaping food systems for better outcomes. Understanding these dynamics serves as a basis for revisiting the notion of city region food systems.

In sum, the city region food system approach is about shaping food system linkages at a territorial level, to promote beneficial social, environmental and economic outcomes. The idea of territoriality is key to understanding city region food system: it is simply a recognition that cities exist within a geography, and that rural and urban areas need to be considered together in order to produce outcomes that are equitable, integrated, and long-term. It is possible to identify three particular types of linkage that need to be considered: **ecological linkages** in the form of ecosystem services and appropriate land-use planning; **socio-economic linkages**, including shorter, more direct supply chains; and **governance linkages**, bringing together urban and rural governance structures in a democratic and participatory way. Each one of these dimensions is explored briefly below:

- **Ecological linkages:** A city region food system approach starts from an explicit acknowledgement of the city existing within a region that has physical, geographical and ecological characteristics that are relevant to its governance. This landscape approach is based on the premise that urban areas are not independent of the landscape that feeds them, provides them with water, treats their waste, protects them from flooding, and provides recreational space. Planning is required in order to ensure the harmonious balance of rural and urban development and environmental conservation, including decisions about city expansion, new housing and city amenities.[77]

  This re-framing of urban areas in the context of city-regions draws out the possibilities for policies and interventions that benefit both rural and urban populations at the same time. The true importance of landscape approaches – such as city region food systems – is that they begin to integrate across multiple systems, taking into account watershed protection, food production and biodiversity at the same time.

[76] Tschirley, D. and Hichaambwa, M. (2010) How are vegetables marketed into Lusaka?, Policy Synthesis No. 40. Food Security Research Project – Zambia. Michigan State University.
[77] Forster, T. & Getz Escudero, A. (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.

- **Socio-economic linkages:** Critically, city region or territorial thinking brings to the fore very human rural-urban connectivities in the form of migration, flows of money, and the exchange of goods and services. In the particular context of city region food systems this brings to light the idea of the short food supply chain: the proposal that there are benefits to be gained from shortening the distance, both geographic and socio-economic, between producers and consumers of food and drink. Short supply chains promise the potential not only for greater conscious planning of the relationship between supply and demand than is offered by the opaque 'global value chains' of the industrialised food system; but also for reorganising the value chain so that value distribution becomes more equal, with higher incomes for small-scale producers, for example.

  Examples of short food supply chains include support for urban dwellers to grow some of their own food; 'face-to-face' purchases directly from food producers (e.g., farmers' markets and farm shops); and 'alternative' value chains often now facilitated by advances in ICT such as consumer cooperatives, community supported agriculture schemes, and local independent retail outlets and wholesale markets.[78,79]. But shorter supply chains could also include those where social contact is not direct, but rather embedded in products and mechanisms of trade, for example enabled through greater transparency and traceability between consumer and producer, where again ICT is providing huge impetus for change.[80] An example of this latter model might be Fairtrade certification, which carries with it additional information about the circumstances of production.[81]

- **Governance linkages:** Cities are characterised as loci of power, and indeed where cities are able to act, their influence can be significant. This is increasingly being recognised with city networks such as ICLEI and C40 taking a lead in action on climate change. Cities in these networks are effective not only within their own jurisdictions but also as a highly influential group able to influence businesses, national governments and international processes (e.g., the 'Compact of Mayors' at the UN Climate Summit of September 2014).[82]

  However, operating explicitly as a joined-up city region, and not just a city, means urban and rural institutions and people working together. There may be a need therefore, for new governance structures, and new powers to be devolved from national level institutions in order to realise this vision. The need for institutional structures working at specific sub-national scales is becoming increasingly recognised, as witnessed by the growth of territorial approaches to governance, of which city region food systems is one. Such governance will, by definition, be complex, involving multiple actors and interests, and involve trade-offs. However, the potential benefits are huge if integrated multi-scale, multi-stakeholder approaches can be realised.

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[78] Renting H, Marsden T K, Banks J, (2003) "Understanding alternative food networks: exploring the role of short food supply chains in rural development" *Environment and Planning A* 35(3) 393 – 411

[79] Ilbery, B. & Maye, D. (2005) Alternative (shorter) food supply chains and specialist livestock products in the Scottish-English borders. Environment and Planning A, 37, pp 823-844.

[80] Galli, F. & G. Brunori (eds.) (2013) Short Food Supply Chains as drivers of sustainable development. Evidence Document. Document developed in the framework of the FP7 project FOODLINKS (GA No. 265287). Laboratorio di studi rurali Sismondi, ISBN 978-88-90896-01-9.

[81] A further example is the Nature & More organic produce supply network, where each product carries with it an identifier that can link to further information, e.g. web pages and video, about the producer. http://www.natureandmore.com/

[82] http://www.un.org/climatechange/summit/wp-content/uploads/sites/2/2014/05/CITIES-PR.pdf

The challenge for the existing food system trajectory is that territorial approaches, such as city region food systems, requires not just a change to the perspective that food supply should be shaped solely by market forces, but also that it requires the creation of integrated and inclusive governance structures that can bridge rural-urban divides.

In conclusion to this chapter, the city region food system concept is not about single actions or initiatives, and is certainly not a case of unquestioning localism. Rather it is about a paradigm shift in thinking that recognises the powerful and democratic role of city regions in creating the 'Future e Want'[83]; advocates for enlightened social relationships and culture to be at the heart of how we think about our food supply; and makes the case that truly sustainable governance can only come from integrating the urban and the rural into a single framework.

If the world seems to be moving further towards a Food System 2.0 scenario, with both the benefits and drawbacks that this brings, the city region food systems approach might represent a step towards creating 'Food System 3.0': where food is recognised as a multifunctional nexus bringing together landscapes and human wellbeing, where enterprise flourishes, and where linkages become critical tools for delivering beneficial outcomes. This will require interventions that enhance ecological linkages (landscape approaches), socio-economic linkages (short supply chains) and governance and policy linkages. The next chapter aims to classify and evaluate the potential benefits of these three types of intervention, in order to assess where they are strongest and where as a result policy efforts to advance city region food systems are best concentrated.

[83] "The Future we Want": Official outcome document from UNCSD Rio+20 meeting, June 2012. Available at: http://www.un.org/en/sustainablefuture/

What might a city region food system approach look like?

Cities contain a concentration of people, power and capital, which can drive change. Just as important, city regions can be a unit of shared identity and culture. The scale of a city region – larger than a city but smaller than a nation state – can also help innovation to happen 'beneath the radar', i.e. without provoking the regulatory interests that protect the status quo.

A 'city region food systems approach' can be imagined as way of using these advantages to enhance the governance, socio-economic and ecosystem linkages between the city and its region, and taking a planned approach to delivering public benefits associated with the food system.

One might imagine, for example, multi-stakeholder food boards having influence on strategic parts of the food system. These could bring together different actors in new combinations: city and rural authorities, citizens and their representatives from different parts of society, farmers, entrepreneurs and larger businesses, and NGOs. An important point is that these actors should have both the interest to change parts of the food system, the ability and legitimacy to do so. The opportunity for these actors would be to decide what aspects of food supply to actively influence: where does it make sense to increase the linkages between the city and its region, and where does it not? For example, it may be that sourcing a greater proportion of fresh fruit and vegetables from the city region gives the most desirable economic, health and nutrition outcomes, whereas staples might be best coming from more national or globalised supply chains.

Stakeholders from multiple sectors would assert the city region's mandate on food policy and create a joined-up, integrated plan; determine planning priorities; influence demand (e.g., through public procurement policy); find ways to create enabling conditions for food-based enterprise; foster a culture of increased awareness and participation in food - from growing to cooking; and develop means for increased transparency and information about food supply. This could result in a broad suite of interventions and activities, such as social supermarkets selling surplus food at discount rates to the poor, food hubs to support the logistics of marketing fresh produce, and land use planning for optimal flood prevention, to name just a few.

3 The benefits of city region food systems

A city region food system approach seeks to enhance socio-economic, ecological, and governance linkages across rural and urban geographies, in order to consciously plan and facilitate the emergence of food systems that avoid adverse consequences and amplify the delivery of public goods. The city region food system approach in its current form is a relatively young one, and as such there is a lack of substantive research on city region food systems as a whole, especially research providing empirical evidence of benefits from particular types of initiatives or programmes. It is vital that more work is done to fill this research gap, in order that effective and grounded policies can be made to increase the effectiveness of city region food systems.

One of the core aims of this paper is to provide an initial categorisation and evaluation of evidence for the benefits that have been put forward as occurring as a result of initiatives congruent with the improvement of city region food systems. These proposed beneficial outcomes are diverse, relating to food security, economic development, the environment, health and good governance. An initial review of literature was conducted in order to identify specific outcomes, which were then individually evaluated according to the feasibility of proposed mechanisms, the scale and scope of potential impact and availability of evidence.

While this exercise must inevitably be regarded as preliminary, and further exposes the requirement for a comprehensive meta-analysis as a basis for future policy-making, some important conclusions may still be drawn. At a fundamental level, it reveals that there is evidence - albeit sometimes relating to specific rather than generalisable circumstances - that supports the proposition of beneficial outcomes from the advancement of city region food systems. Benefits were found to occur in both developing and developed country contexts, and some are likely to have the potential to achieve significant scale of impact. On the basis of the criteria used, the analysis further suggests that benefits may accrue to a greater extent in some thematic-areas than others, with particular emphasis on economic development, health and governance. Finally, it suggests that evidence for some potential benefits is still relatively weak and will require further substantiation.

3.1 Why do we need to understand the benefits of city region food systems?

Concerns over the resilience and sustainability of food supply are not new. However, events in recent years have resulted in renewed interest at world level. The global food price spike of 2007-2008 led to social and political unrest – and economic disruption – in many countries, with particularly deep-felt effects in parts of Asia and Africa. In the context of increased world population projections for 2050, this demonstration of the vulnerability of current food systems has seen greater policy attention paid to the idea of 'Zero Hunger,' with the UN Secretary General launching the 'Zero Hunger Challenge' at Rio+20 in 2012. Given improved understandings of the complex nature of food systems, it is now clear that eliminating hunger in the long term is about far more than increasing food production. It will require investments in sustainable agriculture and supply chains, altered regulatory and policy frameworks, conscious shifts towards more sustainable consumption, and alternative ways of organising food-based economies. In addition it will require investment in numerous areas that are not directly related to food and agriculture, notably economic development, provision of jobs, social protection and equality of opportunity.[84]

City region food systems are amongst the approaches that have been developed as a way of increasing the resilience and sustainability of food supply. However, providing evidence for their benefits of city region food systems is not straightforward. Firstly, there is no single set of defined interventions linked to the city region food system approach that, when implemented in the same way in some city regions, could be compared with other city regions that have taken different approaches. Instead there are isolated examples of each of the elements of city region food system – improved linkages across ecosystems, socioeconomic systems and governance systems – that exist or have been implemented to a greater or lesser extent in different places and using diverse mechanisms. Secondly, the diversity of mechanisms that exists for each area of the food system means that few 'like for like' comparisons are available. For example, there are many different types of shortened food supply chain, such as urban agriculture, farmers' markets and consumer cooperatives, taking different forms in different contexts, and which may or may not be accompanied by other features of a city region food system approach such as stronger governance or ecological linkages. Thirdly, even where specific sets of interventions have been identified, comprehensive environmental, economic and social data relating to benefits is often lacking.

Yet without strong evidence it will be hard to know what works, and even harder to advocate for policy changes to promote city region food system initiatives. Numerous claims have been made for the potential benefits that might accrue from adopting various interventions and initiatives that are coherent with a wider city region food system approach. The proposed benefits cover a wide range of environmental, social, and economic spheres (from food security to greenhouse gas emissions), are suggested to accrue to different sectors of society (e.g., the urban poor, or farmers), and are often associated with very specific contexts (e.g., a supply chain in a particular city). Ideally, a comprehensive analysis of the benefits of city region food systems would include a mechanism for a standard socio-economic metric to be applied to different types of intervention. For example, if a monetary equivalent of the social and environmental value of different interventions could be calculated, then competing policy options could be compared. This is particularly important given the scale and economic significance of some of the current negative outcomes

[84] United Nations Zero Hunger Challenge http://www.un.org/en/zerohunger/challenge.shtml

of the food system.[85] However, it is manifest that the evidence required to begin this type of analysis is still some way off.

3.2 Overview of methodology

In light of the current dearth of evidence for the proposed benefits of city region food systems, and in light of the diverse nature of these benefits, the aims of the analysis presented in this chapter are as follows:

- Firstly, to provide an initial review and classification of existing evidence for the proposed beneficial outcomes of city region food systems.
- Secondly, to provide a first order assessment of whether some of these benefits are likely to be more robust than others in terms of the theory that underpins them, the scale and scope of the impacts they might provide, and the strength of evidence.
- Thirdly, to identify gaps in evidence where further research may be required.

The methodology used is described in more detail in Annex 1, but is outlined briefly here. Firstly, the analysis was restricted to specific interventions that pertain to the elements of city region food systems described earlier: ecological, socioeconomic and governance linkages within city regions. These interventions are therefore taken to be some of the likely components of a city region food system approach. Secondly, proposed benefits of were identified through published literature and in consultation with a range of experts, and categorised for ease of understanding. They were then systematically tested against three 'filters', using evidence from published research. The filters were (a) an assessment of the proposed **mechanism** by which the benefit would accrue, (b) an assessment the **scale and scope** at which the proposed benefit could occur, and (c) the **evidence** of impact in practice. The strength of each filter was then scored on a three-point scale, and the results summed to produce a basic ranking, allowing a first-order comparison of varied and fragmentary information. This process necessarily involved a degree of subjectivity by the authors, but nonetheless provides a transparent basis for stakeholders to begin to make an evidence-based assessment of what the greatest benefits of CRFS may be, where more research is needed, and where policy efforts might be concentrated.

Unless otherwise stated, the full results of the analysis of benefits are shown in Table 1 in Annex 1.

3.3 Overview of the proposed benefits

Diverse benefits have been proposed to arise from strengthening city region food system linkages. A preliminary literature review identified a total of 15 types of benefit, ranging from benefits obviously associated with food, such as food security, to those that reflect how food interacts with multiple other systems: health, greenhouse gas emissions, and rural incomes, for example. For subsequent discussion, these proposed benefits are grouped under five thematic areas: food security; economic development; environment; health; and governance and culture, as summarised in Table 3.1.

[85] For example, the global cost of obesity has been estimated to be as high as US$2 trillion every year: Dobbs, R., Sawers, C., Thompson, F., Manyika, J., Woetzel, J., Child, P., McKenna, S., & Spathrou, A. (2014). Overcoming Obesity: an Initial Economic Analysis. McKinsey Global Institute Discussion Paper.

Table 3.1. Summary of the proposed benefits of city region food systems

Theme	Proposed benefits
Food security	Increased livelihood resilience for small-scale producers
	Reduced food prices for urban consumers
	Increased resilience of urban food supply against shocks
Economic development	Regional economic growth
	Increased rural incomes and jobs
	Economic vitality, entrepreneurship and innovation
Environment	Opportunities for 'circular economies', including reduced food waste and loss
	Increased local agroecological diversity
	Increased recognition and valuing of ecosystem services
	Lower greenhouse gas emissions
Health	Increased knowledge about food and nutrition amongst urban dwellers, resulting in more healthy diets
	Increased availability of, and access to, nutritious food
Governance and culture	Promoting a food culture
	Integrated ('joined-up') policy and action
	Greater participation in and transparency of the food system

3.4 Food security

The specific benefits to food security that have been proposed from increasing connectivity between urban centres and producers in their rural hinterland are: increased livelihood resilience for small-scale rural producers; reduced food prices for urban consumers; and increased resilience of urban food supply and prices against shocks such as natural disasters, climatic factors, financial speculation, or changing oil prices. Evidence for significant benefit was not found to be particularly strong in any of these areas, reflecting a lack of research, but also drawing attention to some of the downsides of localised supply chains. Considering each benefit in turn:

Increased livelihood resilience for small-scale producers. By livelihood resilience we mean the ability of people and households to maintain their wellbeing in the face of disruptive events. There is evidence that urban agriculture specifically can reduce food insecurity in times of stress and provide a diversified income stream. For example, urban and peri-urban farmers in Nairobi were found to be less dependent on gifts and food transfers than non-farmers in similar income groups.[86] It is important to note, however, that many food-producing households (even in rural areas) are net food buyers, increasing the importance of income in addition to subsistence production. Local and regional short supply chains can be subject to considerable volatility - meaning producers receive inconsistent prices for their goods (see examples from both Colombia and Vietnam)[87,88] - and they also exhibit increased potential for market inefficiencies,

[86] Mwangi (1995) cited in Armar-Klemesu, M. ,2000. "Urban Agriculture and food security, nutrition and health". In: Bakker, N., Dubbeling, M., Gündel, S.,Sabel-Koschella, U., de Zeeuw, H. Growing cities, growing food: urban agriculture on the policy agenda. A reader on urban agriculture. DSE/ETC, Feldafing, Germany

[87] Cadilhon, Jean-Joseph and Moustier, Paule and Poole, Nigel D. and Tam, Phan Thi Giac and Fearne, Andrew P., (2006) Traditional vs. Modern Food Systems? Insights from Vegetable Supply Chains to Ho Chi Minh City (Vietnam). Development Policy Review, Vol. 24, No. 1, pp. 31-49, January 2006.

[88] Guarín, Alejandro, (2013) The Value of Domestic Supply Chains in an Age of Global Food Production: Producers, Wholesalers, and Urban Consumers in Colombia (January 14, 2013). German Development Institute Working Paper

monopolies and corruption. Integration with global value chains can in fact provide small-scale farmers with a buffer against local volatilities, although this is dependent on precise contractual arrangements. Note that the closely related benefit of rural income and employment is treated in the next section.

Reduced food prices for urban consumers. The rationale behind this proposed benefit is that reducing the number of intermediaries in a supply chain can mean that less value is abstracted and so producers can offer better prices to consumers. There is some evidence that this can occur. For example, a new farmers market established in an underserved urban neighbourhood in Ontario, Canada, reduced food prices by 12% in three years.[89] Policy to give small producers market access in Bogotá resulted in prices averaging 34% lower than in large chain supermarkets.[90] In practice, the scope of this benefit may be more limited than these figures imply. In many places, regional produce markets are likely to focus particularly on fresh fruit and vegetables, which although nutritionally important, do not account for a major part of the food expenditure or consumption of poor and food insecure households. Modern globalised food supply chains are driven by competitiveness and cost efficiency and there is evidence that supermarkets can therefore often provide better prices to consumers over a wide range of fresh, staple, and processed foods,[91,92] although other evidence shows that this is not always the case.[93,94]

Increased resilience of urban food supply against shocks. The rationale behind this claim is that a more equal spread of supply from the different geographical production zones, including the urban hinterland, can spread risk better than being over-reliant on global markets. However, while there is a common-sense logic to this idea, no compelling evidence was identified during this review. Indeed, it must be taken into account that in urban areas that are provisioned from both near and distant markets, local prices will tend to track global prices to some degree, so the capacity of localised supply chains to compensate for global price rises may be limited. Local supply chains are also subject to their own risks and volatilities, including climate-related risk, natural disasters, corruption, and logistical issues, which global supply chains can buffer (as above, and see also Lusaka case study in Chapter 2). More research is therefore needed to evaluate the appropriate balance of provenance in different contexts, as well as the role of flexibility and responsive change to ensure resilient food security in the face of price shocks or natural disasters.

3.5 Economic development

The US Secretary of State for Agriculture Tom Vilsack's recent statement that "local and regional food systems are one of the pillars of our efforts to revitalize rural economies,"[95] suggests the pivotal role that food systems can play in regional economic development. In terms of evidence, the impacts of improved

[89] Larsen. K. & Gilliland, J. (2009) A farmers' market in a food desert: evaluating impacts on the price and availability of healthy food. Health & Place, Vol 15:4, pp 1158-1162
[90] Pesquera, A. (2011). Leading by Example, Chapter 3 of Small Farmers, Big Change: Achieving scale in the development of smallholder agriculture. Programme Insights, Oxfam GB.
[91] D'Haese, M., Van Huylenbroeck, G. (2005) The rise of supermarkets and changing expenditure patterns of poor rural households case study in the Transkei area, South Africa, Food Policy, Volume 30, Issue 1, February 2005, Pages 97-113
[92] Farina, E. M.M.Q., Nunes, R. and Monteiro, G. F. d. A. (2005), Supermarkets and their impacts on the agrifood system of Brazil: The competition among retailers. Agribusiness, 21: 133–147.
[93] Tschirley, David L., Ayieko, Miltone W., Mathenge, Mary K., Weber, Michael T. (2004) Where Do Consumers in Nairobi Purchase their Food and Why Does this Matter? The Need for Investment to Improve Kenya's "Traditional" Food Marketing System. Food Security Collaborative Policy Briefs, No. 3
[94] Minten, B. (2008) The food retail revolution in poor countries: is it coming or is it over? Economic development and cultural change. Vol. 56, No. 4
[95] See http://www.usda.gov/wps/portal/usda/usdahome?contentidonly=true&contentid=2014/09/0216.xml

city region food systems on regional economic growth were amongst the most consistently high scoring of all the proposed benefits. The specific benefits assessed were regional economic growth; rural income and jobs; and economic vitality, 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. Considering each proposed benefit in turn:

Regional economic growth. The central mechanism behind the potential of city region food systems to stimulate regional economic growth concerns the multiplier effect and reduced leakage[96]. When consumers purchase food that has been grown and processed regionally, more of the value of that spending is retained within a specific geography. Keeping more of the food chain – including processing and manufacturing – within the region thus also has the potential to generate greater employment in both urban and rural areas. A UK study showed that for every £1 from a local authority school meal budget that was spent in the local area, an additional 85 pence of local economic activity was generated.[97] When the same study measured social return on investment as well as direct economic return, it was estimated that for every £1 spent, an additional £3.04 of value was generated. This mechanism is likely to hold across geographies, although the strongest evidence was from the northern hemisphere. Short food supply chains were estimated to add an additional 7-10% to the total agricultural NVA[98] in Germany, Italy and France, 2-4% in The Netherlands, Spain and UK, 1% in Ireland,[99] and create additional employment in the USA.[100,101,102]

Increased rural incomes and jobs. There is some evidence of impressive increases in the price farmers receive for their produce when they can begin to sell directly to customers. This could be potentially extremely important, because farmers and fishers in many countries struggle to be economically viable[103], a situation that is particularly acute for the majority of smallholders in developing countries. In Bogotá, the development of farmers' markets raised farmers' average income by 64%,[104] and farmers selling direct to consumers in the US received per unit revenues that were 50-649% higher relative to mainstream supply chains, even when the additional marketing costs incurred had been taken into account.[105] Other factors that determine income (not just price), such as sale volumes and decreased losses of produce, are less reported. Crop type can also be important - high value and labour intensive horticultural crops such as

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[96] The 'multiplier effect' in economics is when an increase in spending produces an increase in income and consumption within an economy greater than the amount that was spent initially. Economic 'leakage' is when capital or income exits an economy rather than remaining within it.
[97] Kersley, H. & Knuutila, A. (2011) The benefits of procuring school meals through the Food for Life partnership: An economic analysis. London: New Economics Foundation
[98] NVA (Net Value Added) is a financial measure of the goods and services produced by economic activity. It is defined as the value of output less the values of both intermediate consumption and consumption of fixed capital.
[99] Renting H, Marsden TK, Banks J (2003). Understanding alternative food networks: exploring the role of short food supply chains in rural development. Environment and Planning, 35(3): 393- 411
[100] Otto, D. & Varner, T. (2005) Consumers, Vendors, and the Economic Importance of Iowa Farmers Markets: An Economic Impact Survey Analysis. Iowa: Iowa State University.
[101] Henneberry, S.R., Whitacre, B., & Agustini, H.N. (2009). An evaluation of the economic impacts of Oklahoma farmers markets. Journal of Food Distribution Research 40(3): 64–78.
[102] Hughes, D.W., Brown, C., Miller, S. & McConnell, T. (2008). Evaluating the economic impact of farmers markets using an opportunity cost framework. Journal of Agricultural and Applied Economics 40(1): 253–265
[103] International Sustainability Unit (2011) What Price Resilience? Towards Sustainable and Secure Food Systems.
[104] Pesquera, A. (2011). Leading by Example, Chapter 3 of Small Farmers, Big Change: Achieving scale in the development of smallholder agriculture. Programme Insights, Oxfam GB.
[105] King, R.P., Hand, M.S., G. Di Giacomo, Clancy, K., Gomez, M.I., Hardesty, S.D., Lev, L. & McLaughlin, E.W. (2010). Comparing the structure, size, and performance of local and mainstream food supply chains. ERR 99. Washington, DC: USDA Economic Research Service

leafy greens are well-suited to production near cities, and this type of production sustains a higher number of jobs compared to other crop types. Additional evidence of job creation – albeit at a modest scale – is reported from city region food system type initiatives in countries such as Brazil and the USA.[106] Finally, it was notable that increased rural incomes and jobs can be delivered by a wide range of different mechanisms: for example, establishing short food supply chains;[107] programmes that improved the packaging of produce and brokered marketing agreements between retailers and producers;[108] and development of appropriate infrastructure.[109]

Economic vitality, entrepreneurship and innovation. There is something intrinsically attractive about living somewhere that has 'economic vitality': where innovation, creativity and entrepreneurship are a vibrant part of the city region and there is a balance between larger business and smaller independently-owned enterprise. In the context of city region food systems, policy interventions to encourage short food supply chains and enterprise can help generate networks of economically empowered actors and relationships which lead to new business opportunities,[110,111] where numerous people are employed in the farming, marketing and processing of the food produced, as well as in small service industries developed around city region agriculture. This impact is perhaps more likely to emerge where the conditions for successful entrepreneurship are in place, including non-marginal market opportunities, governance and support systems that favour entrepreneurs, and the free flow of information through ICT.

3.6 Environment

The food system and the natural environment have numerous interdependencies, including climate, water, soils and biodiversity. Changes to the way that food systems operate therefore have critical environmental implications. The specific benefits assessed were, creating opportunities for 'circular economies', including reducing food waste and loss; greater agroecological diversity; increased recognition and valuing of ecosystem services; and reduced greenhouse gas emissions. In general, more evidence is needed in order to clearly demonstrate the environmental benefits arising city region food system type approaches. The greatest potential in this area is likely to arise from increased awareness and understanding of land use in the rural hinterland leading to better ability to encourage or regulate for improved environmental practices, for example through city procurement policies, improved spatial planning, and land rights policy. Improved consumer knowledge may also result in more sustainable consumption choices.

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[106] Oudewater, N., de Vries, M., Renting, H. & Dubbelin, M. (2013). Innovative experiences with short food supply chains in (peri-) urban agriculture in the global South. SUPURB FOOD, Work package 3, Deliverable 3.3 Thematic paper 2. RUAF Foundation and ETC Foundation.

[107] King, R.P., Hand, M.S., G. DiGiacomo, Clancy, K., Gomez, M.I., Hardesty, S.D., Lev, L. & McLaughlin, E.W. (2010). Comparing the structure, size, and performance of local and mainstream food supply chains. ERR 99. Washington, DC: USDA Economic Research Service

[108] Oudewater, N., de Vries, M., Renting, H. & Dubbelin, M. (2013). Innovative experiences with short food supply chains in (peri-) urban agriculture in the global South. SUPURB FOOD, Work package 3, Deliverable 3.3 Thematic paper 2. RUAF Foundation and ETC Foundation.

[109] Dercon, S., Gilligan, D.O., Hoddinott, J. & Woldehanna, T. (2008) The impact of agricultural extension and roads on poverty and consumption growth in fifteen Ethiopian villages. IFPRI Discussion paper 00840. International Food Policy Research Institute

[110] O'Hara, J. (2011). Market Forces: creating jobs through public investment in local and regional food systems. Union of Concerned Scientists.

[111] Cavallo A, Giaré F, Mastronardi L, Marino D (2013). Exploring the role of innovation in short food supply chain's experiences: the case of Italy. In: Arnal C, Perrin C. 5th Conference on Sustainable Food Planning, Book of abstracts-Les innovations dans les systemes alimentaires des villes. p. 36-37, Montpellier, France.

Opportunities for 'circular economies,' including reduced food waste and loss. In theory, physical proximity of a diversity of food-based enterprises, and linkages between sites of consumption and production could create new opportunities for 'closed loop' resource and nutrient cycling. In addition, short food supply chains with increased consumer engagement may be less likely to have strict grading criteria resulting in reduced waste and loss of food. There is potential for large-scale impact in developed countries where up to two-thirds of food loss is due to supermarket standardisation.[112] However, actual reductions in loss from short supply chains do not seem to have been quantified. In the UK in 2012, around 7% of household food waste (half a million tonnes) was collected by local authorities for processing to generate energy, digestate or compost, much of it used agriculturally.[113] The use of wastewater in urban agriculture has been reported from countries as diverse as Jordan, Ghana, India,[114] and holds some potential for recycling both water and the nutrients contained therein. Barriers to wider adoption include food safety, infrastructure and knowledge.

Agroecological diversity. The reasoning behind this claim is that producing crops for local markets encourages a greater diversity of horticultural production, and closer relationships between consumers and producers can lead to more ecologically sound agricultural practices. Indeed, recent evidence suggests that agricultural land within 20 km of cities is less dominated by staple crops globally,[115] and that some farmers in Maine, USA[116] and in Italy[117] might adopt more sustainable practices as a result of direct interaction with customers. Concerns over the environmental impact of large-scale confined animal feeding operations, including groundwater pollution, reduced amenities, and reduced land values,[118] have led to their closure in the USA. While proximity has no direct link to responsible farming practices, and the ability of food purchasers to engage with producers will be limited by available time and motivation, a resurgent interest in food, health and environmental issues, combined with greater attention to food culture and education at a policy level could make this a powerful driver of good practice. Transparency of information is a key facilitating factor in allowing such relationship-based influencing to occur.

Increased recognition and valuing of ecosystem services. More than simply food production, the rural hinterland provides a wide range of ecosystem services on which both the food system and urban areas rely, but these are not typically considered on economic balance sheets. These services include maintaining water quality, flood protection, maintaining populations of pollinating insects, recreation and amenity values, and air quality, amongst many others. City region food systems can provide a vehicle for landscape approaches that recognise and value these services, as exemplified by Bogotá's planning framework and food policy,[119] which explicitly acknowledge that the city exists within the context of its city-region. It is worth bearing in mind that many of these services are best provided from land that is not under agriculture and that conflict over land use may occur – for example when former agricultural is planted

[112] Gustavson J., Cederberg Ch.Sonesson U.van Ottendijk R. Meybeck A. (2011) Global Food Losses and Food Waste. FAO, Rome
[113] Quested, T., Ingle, R. & Parry, A. (2013) Household food and drink waste in the United Kingdom 2012: Final report. Waste & Resources Action Programme (WRAP)
[114] RUAF Foundation (2002). Urban Agriculture Magazine, 8.
[115] Thebo, A.L., Drechsel, P. & Lambin, E.F. (2014). Global assessment of urban and peri-urban agriculture: irrigated and rainfed croplands. Environmental Research Letters, 9.
[116] Hunt, A.R. (2007). Consumer interactions and influences on farmers market vendors. Renewable Agriculture and Food Systems 22(1): 54–66
[117] Brunori G, Rossi A, Guidi F (2012) On the New Social Relations around and beyond Food. Analysing Consumers' Role and Action in Gruppi di Acquisto Solidale (Solidarity Purchasing Groups). Sociologia Ruralis, 52 (1): 1–30
[118] Gurian-Sherman, D. (2008). CAFOs uncovered: The untold costs of confined animal feeding operations. Union of Concerned Scientists.
[119] Plan de Ordenamiento Territorial and Plan Maestro de Abastecimiento de Alimentos, respectively

with trees to protect a watershed.[120,121] There is nonetheless increasing attention to agroecological approaches that deliver food production and other ecosystem services simultaneously, as when trees are incorporated on farms to reduce soil erosion or buffer strips are planted to reduce runoff, also boosting biodiversity.[122] Given the extent of agricultural land near cities,[123] even small changes to the governance and management of land for ecosystem services could have a large impact on ecosystem services.

Lower greenhouse gas emissions. The mechanism often proposed for reduced greenhouse gas emissions is that food grown and eaten locally has less distance to be transported to consumers (fewer food miles) and therefore will result in lower emissions. However, this would appear to be an example of 'the local trap' (the assumption that local food is automatically more sustainable),[124] in that factors such as farming methods and cold storage are found to be much more important than transport in determining total food system emissions. Local food transportation is also normally less fuel-efficient than large-scale global logistics on a per kilometre basis. As a result, locally produced food can sometimes result in higher greenhouse gas emissions than food from greater distances.[125] Nonetheless there are a limited number of cases where local production does consistently result in reduced emissions, for example when compared to air freight of fresh fruit and vegetables, and it should be noted that there are other ways in which a city region food system approach could lead to reduced emissions. These include encouraging changes to diets so that they include lower quantities of meat and dairy products, and there is an emerging body of research in this area linking in to health, the topic of the next section.[126]

3.7 Health

The specific health benefits that have been proposed for city region food systems include increased knowledge about food and nutrition amongst urban dwellers resulting in more healthy diets; and greater availability of and access to nutritious food. The evidence for both of these was relatively robust, and it appears that health benefits are amongst the most likely to accrue from city region food systems. Municipal governments can play a key role here, for example in providing a regulatory framework that promotes healthy (and sustainable) diets, as in the case of Mayor Bloomberg's introduction of calorie counts on menus at restaurants in New York City.

Increased knowledge about food and nutrition amongst urban dwellers, resulting in more healthy diets. There is strong evidence that greater interaction between producers and consumers results in an improved understanding of food and nutrition. This in turn can result in an increased consumption of fresh fruit and vegetables. In the USA, situating farmers markets in poorer neighbourhoods resulted in favourable changes to food intake and exercise regimes amongst poorer consumers,[127] and poor urban

[120] Heal, G. (2000) Nature and the marketplace. Washington DC: Island Press
[121] Power, A.G. (2010) Ecosystem services and agriculture: tradeoffs and synergies. Philosophical transactions of the Royal Society B. Vol. 365 (1554)
[122] McNeely, J.A. and S.J. Scherr, 2003. Ecoagriculture: Strategies to Feed the World and Save Wild Biodiversity. Washington, DC: Island Press
[123] Thebo, A.L., Drechsel, P. & Lambin, E.F. (2014). Global assessment of urban and peri-urban agriculture: irrigated and rainfed croplands. Environmental Research Letters, 9.
[124] Born, B., & Purcell, M. (2007). Avoiding the Local Trap: Scale and Food Systems in Planning Research. Journal of Planning Education and Research 26:195-207
[125] Edwards-Jones, G. (2010). Does eating local food reduce the environmental impact of food production and enhance consumer health? Proceedings of the Nutrition Society (2010), 69, 582–591
[126] Garnett, T. (2014) What is a sustainable healthy diet? A discussion paper. Food Climate Research Network
[127] Ruelsas, V., Iverson, E., Kiekel, P. & Peters, A. (2011). The role of farmers' markets in two low income, urban communities. Journal of Community Health, 37(3), 554-562.

women using subsidized farmers markets often continued to do so after the subsidy was removed.[128] Seventeen per cent of customers in Italian food markets claimed to have changed their eating habits - particularly towards eating more vegetables - as a result of using the markets.[129] Children in school garden nutrition programmes in the USA often show increased fruit and vegetable intake but less often change preference towards fruit and vegetables.[130,131,132] Urban food growers in Toronto (Canada) cite mental and physical benefits[133,134] and UK allotment users reported significantly lower stress levels than similar people who did indoor exercise.[135] Note, though, there is insufficient evidence to conclude that food from short supply chains differs nutritionally from food from elsewhere.[136,137]

Increased availability of, and access to, nutritious food. The rationale for this benefit is that city region food systems promotes joined-up city level food policy that can help ensure that all people have access to healthy nutritious food. The example of 'food deserts' illuminates the point that market forces alone are often inadequate to address public health concerns over access to fresh food, and national level policy is not granular enough to regulate appropriately for the local context. In the USA, where local food markets have been consciously sited in poorer neighbourhoods where access to nutritious fresh food was otherwise limited, an increase in knowledge about fresh foods has been reported, as well as changed eating habits.[138]In some cases home production or urban farming is also cited as a significant contributor to better nutrition. There is evidence that urban farmers in Cagayan de Oro (Philippines) eat more fruit and vegetables,[139] and the children of urban farmers in Kampala (Uganda) have higher nutritional status than counterparts in non-farming households. [140] This may be an important factor in places which have high

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[128] Racine, E.F., Vaughn, A.S. & Laditka, S.B. (2010). Farmers market use among African-American women participating in the special supplemental nutrition program for women, infants, and children. Journal of the American Dietetic Association 110(3): 441–446.

[129] Pascucci a, S., Cicatiellob, C., Francoc S., Pancinod, B., & Marinoe, D. (2011). Back to the Future? Understanding Change in Food Habits of Farmers' Market customers. International Food and Agribusiness Management Review Volume 14, Issue 4.

[130] McAleese JD, Rankin LL. (2007). Garden-based nutrition education affectsfruit and vegetable consumption in sixth-grade adolescents. Journal of the American Dietetic Association 2007; 107: 662-665

[131] Robinson-O'Brien R, & Heim S, M. (2009) Impact of garden-based youth nutrition intervention programs: a review. Journal of the American Dietetic Association, 109(2): 273-280

[132] McCosker, C., & Humphreys, D.K. (in prep.). The Effects of Garden-Based Nutritional Interventions on Fruit and Vegetable Intake in Children: A Systematic Review and Meta-Analysis.

[133] Wakefield S, Yeudall F, Taron C, Reynolds J, Skinner A (2007) Growing urban health: community gardening in South-East Toronto. Health Promotion International, 22(2), 92-10

[134] Kortright, R. & Wakefield, S. (2010). Edible backyards: a qualitative study of household food growing and its contributions to food security. Agriculture and Human Values, 28: 39-53.

[135] Hawkins JL, Thirlaway, K.J., Back, K., Clayton, D.A. (2011) Allotment gardening and other leisure activities for stress reduction and healthy ageing. HortTechnology, 21(5), 577-585

[136] Edwards-Jones, G., Mila i Canals, L., Hounsome, N., Truninger, M., Koerber G., Hounsome, B., Cross, P., York, E.H., Hospido, A., Plassmann, K., Harris, I.M., Edwards, R.T., Day, G.A.S., Tomos, A.D., Cowell, S.J., Jones, D.L. (2008) Testing the assertion that 'local food is best': the challenges of an evidence-based approach. Trends in Food Science & Technology, 19(5): 265-274

[137] Galli, F., Brunori, G. (eds.) (2013) Short Food Supply Chains as drivers of sustainable development. Evidence Document. Document developed in the framework of the FP7 project FOODLINKS (GA No. 265287). Laboratorio di studi rurali Sismondi.

[138] Freedman, D.A., Bell, B.A., & Collins, L. (2011). The Veggie Project: a case study of a multi-component framer's market intervention. Journal of Primary Prevention (2011) 32:213–224

[139] Potutan, G. et al, (2000) Urban Agriculture in Cagayan de Oro: A Favourable Response of City Government and NGOs. In: Bakker, N. et al. (eds.) Growing cities, growing food. DSE, Feldafing, Pp: 413-428

[140] Maxwell, D., Levin, C., Csete, J., (1998). Does urban agriculture prevent malnutrition? Evidence from Kampala. FCND Discussion Paper 45. International Food Policy Research Institute, Washington, DC.

rates of food grown in urban areas (e.g., 20-60% of poor families in Dar es Salaam, Kampala and Harare[141] grow some food) but this is not universal (e.g., less than half of one per cent of the food consumed in Oxford, UK[142] comes from within the city).

3.8 Governance and culture

Food has resonance and social meaning in all cultures. It can also be a vehicle for active participation of citizens in decision-making and policy formulation. The proposed benefits assessed were the potential of city region food systems to promote a food culture; greater participation in and transparency of the food system; and stimulating integrated ('joined-up') policy and action across sectors and geographies. In general, the evidence for these benefits was robust, but there is certainly a need for further research on participatory food systems governance in action, and the links to a strong food culture. In all cases, benefits in this category were seen to have wider significance in facilitating the realisation of other public goods already outlined above.

Promoting a food culture. This benefit relates to placing greater intrinsic value on regional foods, and on food and food systems in general. It implies that people are more knowledgeable about food, and that they derive enjoyment from eating, cooking and sharing food. This can create greater social cohesion: a sense of being part of a geographical and ecological area, and greater solidarity with food producers. It may also provide additional economic value, such as through tourism and export. The evidence that stronger rural-urban linkages promote stronger food culture includes short food supply chains having linked producers and consumers to broader social movements in Mexico,[143] co-creation of value between producers and purchasers in Italy,[144] and interaction between producer and customer being a major motivation for people going to farmers markets in the USA[145] and the UK.[146] A strong food culture is also a key facilitating factor in many of the potential benefits listed in the four previous sections, including health and economic benefits. As such its importance is hard to underestimate.

Integrated ('joined-up') policy and action. Food integrates multiple systems and outcomes. A city region food system approach places a specific imperative on spatially coherent (city and region) and cross-sectoral (e.g., agriculture, health, water, economy, environment) planning and policy. Examples include Belo Horizonte in Brazil, where vertical linkages – between municipal, regional and federal levels – and horizontal linkages – between good nutrition, food quality, poverty and agriculture – have been brought together successfully under a single programme.[147] In the UK, more than 30 cities have been brought together under the Sustainable Food Cities programme promoting the formation of cross-sector food

[141] Armar-Klemesu, M. (2000). "Urban Agriculture and food security, nutrition and health". In: Bakker, N., Dubbeling, M., Gündel, S.,Sabel-Koschella, U., de Zeeuw, H. Growing cities, growing food: urban agriculture on the policy agenda. A reader on urban agriculture. DSE/ETC, Feldafing, Germany

[142] Curtis, T. (2013) FoodPrinting Oxford. Low Carbon Oxford & Oxford City Council. Available from http://www.landshare.org/uploads/7/5/4/1/7541639/food_printing_web.pdf

[143] Baker, L. (2008). Local food networks and maize agrodiversity conservation: two case studies from Mexico. Local Environment, Volume 13, Number 32: 35-251

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

[145] Hunt, A.R. (2007). Consumer interactions and influences on farmers market vendors. Renewable Agriculture and Food Systems 22(1): 54–66

[146] Lyon, P., Collie, V., Kvarnbrink, E.B. & Colquhoun, A. (2009). Shopping at the farmers' market: consumers and their perspectives. Journal of Food service 20: 21–30

[147] Rocha, C. (2001) Urban food security policy: the case of Belo Horizonte, Brazil. Journal for the Study of Food and Society, Vol 5: 1, pp 36-47

partnerships or food policy councils. Bogotá's food masterplan explicitly sits in the context of the wider region and directly addresses issues such as rural livelihoods. There is a risk that the wider application of such integrated governance initiatives is limited where it runs against political economy (e.g., the vested interest of sectoral specialists who seek to maintain the privileged status of their sector, or opposition between elected representatives from different jurisdictions within the city region). It also assumes capacity that doesn't exist in many public administrations.

Greater participation in and transparency of the food system. Finally, and building on the previous point, a city region food system approach can lead to opportunities for greater participation and empowerment in policy making, thus ensuring that food systems better serve people's needs. Examples include Food Policy Councils in the USA, Canada and the UK, which incorporate a democratic and representative element. Another example is the participatory budgeting process through which municipal funding for the urban agriculture programme in Rosario, Argentina, is decided.[148] A trend of increasing participation in alternative food supply chains has been recorded.[149] These benefits are constrained in practice by the existing levels of transparency, accountability, and democratic participation in the political system, as well as by the non-marginal business opportunities available to new businesses within the food system. Attending to governance reforms is one way of tackling these constraints and the rapid spread of ICTs is providing new opportunities to radically improve the transparency of the food system and to encourage more direct participation through both buying and producer cooperatives

3.9 Conclusions

Fifteen benefits that have been proposed for city region food systems were evaluated by reviewing published evidence against three 'filters': (a) an assessment of the proposed mechanism by which the benefit would accrue, (b) an assessment of the scale and scope at which the proposed benefit could occur, and (c) the evidence of impact in practice.

There were significant differences in the way that proposed benefits performed against these filters, summarised in Table 1 in Annex 1.

The most consistent evidence of impact was found within the themes of:

- Health,
- Economic development, and
- Governance and culture.

This should not be taken to imply that potential impacts in other theme areas are necessarily not present, but rather that their impacts are perhaps more contingent on specific cultural, economic or geographic circumstances. Additionally, in some areas, further research is required in order to investigate proposed benefit mechanisms and outcomes.

Three underlying threads can be extracted from an analysis of these results:

[148] Roitman, S. & Bifarello, M. (2007) Urban agriculture and social inclusion in Rosario, Argentina. Inclusive Cities Observatory. UCLG Committee on Social Inclusion, Participatory Democracy and Human Rights.
[149] Renting H, Marsden TK, Banks J (2003). Understanding alternative food networks: exploring the role of short food supply chains in rural development. Environment and Planning, 35(3), 393- 411

Linkages and relationships

The evidence regarding the potential benefits of city region food systems that is summarised above reinforces the critical role of healthy linkages and relationships in creating a more integrated and inclusive food system. Linkages between rural and urban functions and actors are an important feature of these benefits not only in the social and cultural spheres, but also with respect to economic benefits such as increased rural incomes and regional economic growth, and health benefits resulting from increased knowledge and changes in consumption patterns. All of these benefits rely upon increased interaction between consumers and producers, greater collaboration between different 'sectors' (the mayor, civil society, media, farmers, businesses…), and linkages between urban and rural places and functions that work effectively.

Multiple benefits

A second thread is the idea of multiple benefits. For example, whilst the benefits from a physical marketplace are normally seen as economic, they also support the city region's cultural identity (promoting a sense of regional identity and social cohesion), its health policy (increasing access to fresh, nutritious food), and so on. This realisation in turn has implications for how that market is managed – e.g., solely as a commercial enterprise to raise the maximum rent for the city administration, or in a broader way to maximise a range of benefits across a wider geographical area? Local authorities thus have a key role to play in adopting an approach that recognises interconnectedness and leads to policy that promotes increased value across the system rather than policy that is guided by a single-issue, in isolation.

It is also worth noting that some of the proposed benefits might potentially be in in conflict with each other, for example higher rural wages and cheaper urban food prices. This underlines the need for evidence, and for and participation and deliberation in choosing what aspects of a city region food system to prioritise.

Fragmentary evidence

The final overarching finding is that while there are many initiatives on the ground that are congruent with a city region food system approach happening in many different contexts, the actual evidence of impacts is fragmentary and highly variable. Most studies concern a very specific intervention and a limited range of outcomes, such as enumerating who uses farmers' markets in a particular city. There are very few systematic meta-analyses of interventions, and a notable proportion of publications favour stating why a benefit should accrue, over providing robust empirical evidence that it does. There is a need for more research, and ultimately to develop a comprehensive way of comparing the costs and benefits of different social, environmental and economic practices in order to inform policy change. Although this aim would appear to be some way off, it is hoped that this paper provides a further stepping stone towards it.

In conclusion, the analysis of the proposed benefits of city region food systems has shown a suite of benefits that have the potential of accruing across different contexts and with significant impact. Although diverse, they have certain underlying characteristics in common. These include the need to renew and create linkages as a both a driver and an outcome of city region food systems, and the need for cross-sectoral policy and governance to foster and catalyse effective city region food system initiatives. The next chapter explores a number of interventions that are in line with city region food system approaches in order to ground the discussion in real examples and to understand the roles of different stakeholders in bringing these initiatives about.

4 Making city region food systems a reality: some lessons from practice

Realising the potential benefits of city region food systems described in the preceding chapters means changing the way that food systems operate, and changing modes of thinking and action so that the linkages between rural and urban areas are more effective in delivering a broad range of benefits. There are promising examples of initiatives and programmes that have done just that. These include putting in place more integrated and inclusive governance frameworks; planning for long-term value (including infrastructure and spatial planning); stimulating the demand for sustainable regional food through public procurement policy; leveraging enterprise, innovation and business as a way of delivering the benefits of city region food systems; and increasing the availability and transparency of information.

Reviewing a range of initiatives that already exist shows that many have been driven or supported by public institutions (often working in alliance across jurisdictions), and -- depending on the initiative -- frequently also involve civil society, entrepreneurs, farmers, and businesses. Understanding these existing initiatives, and the roles of the actors who were involved, is an important guide to the future evolution of city region food systems.

4.1 Changing the *status quo*

The preceding chapter assessed some of the potential benefits that implementing city region food systems may bring. These benefits will only accrue by changing the *status quo*, and making those changes means consciously influencing the way that food systems operate .

This section deals with some of the key types of intervention that will begin this transition. It is not intended to be a roadmap or set of instructions: that would be inappropriate given the huge diversity of contexts in which city region food systems could be developed. Instead, examples of real initiatives are used to illustrate how these changes have been effected in different contexts, who was involved, and what kinds of outcomes have resulted. The examples are grouped under a number of key areas:

- governance;
- planning;
- demand side interventions;
- enterprise and business; and
- information and transparency.

4.2 Governance: having the right framework for action

Governance arrangements are the key underpinning of a city region food system approach - putting the right structures in place to drive and facilitate the creation of new kinds of rural-urban linkages. A key

challenge is creating more inclusive territorial governance structures in which cities, regions and other levels of government can work constructively together towards complementary, beneficial outcomes.

Cross-sectoral working is also required to manage the complex interactions between the food system and many other systems. Embedding change for the long-term will require building long-term coalitions to work towards positive outcomes, whoever is in political power at the time. A critical part of that will be opening space for democratic participation so that citizens can play a stronger role in policy development process and hold authorities to account.

Integrated food policy in Belo Horizonte, Brazil. Belo Horizonte, the fourth largest city in Brazil, is a leading example of a municipality with a highly comprehensive long-term food security policy. It is considered to have achieved success through a wide portfolio of programmes including distribution of enriched foods, innovative partnerships with enterprises, large subsidised public restaurants, school food programmes and creation of new markets for small-scale regional producers. Governance considerations were key to these successes. First, a new independent administrative structure (SMAB) with its own budget was created to develop and act on integrated food policy, allowing policy to cut across existing and entrenched boundaries. Second, a 20-member advisory council was established to advise on projects and overall direction, with representatives from multiple sectors including local government departments, labour unions, food producers and distributors, consumer groups and NGOs, allowing a variety of views and a range of expertise. Third, the establishment of SMAB was facilitated by the policy environment at national level, coming in 1993 at the same time as the creation of the federal Plan Against Hunger and the National Council for Food Security (CONSEA).[150] Indeed, by 1995, 46% of SMAB's funding was coming from federal government. Underpinning these areas was the guiding principle of the 'right to food', that "all citizens have the right to adequate quantity and quality of food throughout their lives, and that it is the duty of governments to guarantee this right." This rights-based approach is considered to be critical to enabling programmes to take place.

Toronto Food Policy Council (TFPC), Canada.[151] TFPC was established in 1991. It emerged from a convergence of community activism and political concern about hunger, rising rates of diet-related disease, and the environment. It is a citizen body that operates as a subcommittee of the Toronto Board of Health. Its members include a coordinator employed by the Toronto Department of Public Health, city councillors and citizen volunteers drawn from diverse organizational and community backgrounds. Despite having no formal legislative role and a modest budget, TFPC has succeeded in having food issues highlighted in the city of Toronto's official plan, adopted by the City Council in 2002. It has produced the Toronto Food Charter, which is a declaration of citizen rights and government responsibilities that sets the food security standard for municipalities. It supports programs that contribute to equitable access to food, nutrition, community development and environmental health, and acts as a lobbying group on food and related issues. Importantly in the context of city region food systems, TFPC's influence has not been restricted to within urban limits – it contributed to the formation of the provincial sustainable food network Sustain Ontario, and more recently the Golden Horseshoe Food and Farming Alliance, which aims to create a vibrant cluster of interconnected food and farming businesses in the Toronto city region.

What are the key lessons? The two examples are structurally different, in that TFPC is a citizen-led initiative based around lobbying and facilitation, while SMAB is run from within the municipal authority

[150] Rocha, C. (2001) Urban food security policy: the case of Belo Horizonte, Brazil. Journal for the Study of Food and Society, Vol 5: 1, pp 36-47
[151] http://www.cihr-irsc.gc.ca/e/47602.html

and has a large budget to deliver programmes on the ground. TFPC is essentially a local initiative, now collaborating with others to influence regional and national policy, whereas SMAB was created in part to implement national food policy. Nonetheless, the success of both is based on cooperation between municipal (and provincial) governments and civil society, and working across multiple sectors. In the case of SMAB this also involved influencing and working closely with private sector actors to deliver better outcomes from the food system.

4.3 Planning

Planning is one of the key areas by which public bodies at the city region level can use their policy and governance frameworks to influence the positive development of local food systems. The purpose of public sector planning in this context is to pursue the public benefits that a free market alone may not deliver. In practical terms, it may include interventions around:

- Physical infrastructure: providing roads for producers to get goods to market; providing physical market infrastructure (places to do trade, either wholesale or retail); improving the facilities for street traders.
- Land use and land tenure: safeguarding and incentivising land for food production and ecosystem service provision; improving tenure for farmers.
- Equitable access to food: ensuring that people in low-income areas have nearby access to affordable fresh, healthy food.
- Ecosystem services: taking into account all ecosystem services supplied by a hinterland (including food supply) and creating a balanced territorial plan for the region.
- Commissioning, compiling and communicating data and information on the food system and connected issues.[152]

Urban agriculture in Rosario, Argentina.[153] Just over a decade ago, the manufacturing industries that had previously been the basis of Rosario's economy had largely closed down, and unemployment and poverty were rife. The municipal government launched an urban agriculture programme in 2002 in collaboration with two key partners: Pro-Huerta ('Pro-Garden'), and the local NGO 'Centre for Agroecological Production Studies' (CEPAR). The city mayor approved an ordinance that established a process for formalizing grants of vacant urban land to residents for agriculture, so that growers would have secure tenure. This included a double planning benefit in that many of these areas were flood-prone, and designating them as agricultural land helped to prevent informal settlements from becoming established in harm's way. The Secretariat of Municipal Planning worked with international partners on the integration of agriculture into Rosario's urban development plan. More recently, the focus has included developing short marketing chains, establishing agro-industries, using horticulture to rehabilitate brownfield sites, and the creation of flagship 'garden parks' used for agriculture, recreation and sport. The provincial government also supports the municipality by funding infrastructure to support family and community gardening in urban and peri-urban areas. The annual budget for urban agriculture is decided by participatory processes. The initiative has benefited around 10,000 low-income families, for many of whom agricultural sales are their main income and who earn above the poverty line.

[152] Pothukuchi, K. & Kaufman, J.L. (2000). The food system: a stranger to the planning field. Journal of the American Planning Association, Volume 66: 113-124.
[153] http://www.fao.org/ag/agp/greenercities/en/GGCLAC/rosario.html

Baix Llobregat Agricultural Park, Barcelona.[154] Baix Llobregat is an agricultural area around 5 km south of Barcelona, in Spain. Urban and industrial expansion had been placing increasing pressures on land use and agriculture in Barcelona's peri-urban area, and farmers – supported by professional organisations (including the Farmworker's Union of Catalonia) – began to demand a resolution to these issues. The Barcelona City Council and the Council for Commerce of Baix Llobregat led the project to create the Agricultural Park, which was established in 1997 based around a cooperative network. Other municipalities subsequently joined. The three main elements of the Park are a special protection and improvement plan for town planning, a management and development plan, and the establishment of a management body. The Agricultural Park is 2900 hectares in size and focuses on producing high quality fruit and vegetable crops and promoting professional agricultural activities. After signing an agreement, farmers may market their produce into Barcelona under a distinctive quality brand, "FRESH produce from the Agricultural Park".

What are the key lessons? In both Rosario and Baix Llobregat, public bodies used proactive planning instruments to influence sustainable urbanisation, spatial planning, and the structure of the food system. Investment in physical infrastructure and business capacity, and spatial zonation to promote a diversity of actors in food supply chains are key initiatives that could be implemented elsewhere and through a variety of planning instruments. These types of approach allow focus on the relationship between the city and its hinterland, controlling urban sprawl and valuing the characteristics of that hinterland, such as ecosystem services and rural amenities.

4.4 Demand side policy

Cities are loci of demand for food and drink, and what people eat in cities impacts on land use in the regional rural hinterland, as well as further afield. Diets are changing rapidly as countries and cities develop, with far-reaching consequences on health and ecosystems. Understanding these changes, and understanding how choices can be influenced in directions that create a range of positive benefits (e.g., health, economy, environment) is a key challenge. There are multiple areas of intervention including education, regulation, and public procurement (for schools, hospitals, prisons, etc.). Procurement in particular is an area that is under the control of many city/regional authorities, and can make a direct and substantial change to food demand patterns.

The UK's Plan for Public Procurement.[155] Although a national, not city regional example, the UK's public procurement plan provides useful insight into the potential scope for public procurement policy. The public sector in the UK spends about £2.4bn per annum procuring food and catering services for people in schools, hospitals, armed forces, central and local government, government agencies, prisons and courts. Published in 2014, the Plan aims to ensure that public sector procurement of food and catering services maximises health outcomes, supports the UK's food and farming sector, and delivers value for money. The initiative has developed a consistent approach to public procurement of food and catering services, and established an online marketplace focused on allowing small and medium sized enterprises to supply the

[154] Dorda, J. M., & Berenguer, S.C. (2008). The Baix Llobregat Agricultural Park (Barcelona): an instrument for preserving, developing and managing a peri-urban agricultural area. Proceeding of the Conference "Rurality near the city". Leuven, February 7-8th, 2008

[155] DEFRA (2014). A Plan for Public Procurement: Enabling a healthy future for our people, farmers and food producers.

public sector. The plan was commissioned by the UK's government and was developed by experts in collaboration with food assurance bodies, major food sector companies and civil society groups.

New York's school food procurement policy. New York City is the USA's largest school food district, serving over 860,000 meals per day at a cost of US$148 million each year. Of this approximately $25m is now spent regionally.[156] Support for this initiative includes retraining of staff to use local fresh foods in school menus, and to source more fresh, minimally processed and whole foods. The school food program has also encouraged broader changes to NYC's public procurement, with the 'New York State Food Purchasing Guidelines'[157] allowing price preference for food sourced within the state, mandates for particular products to be sourced from the state, and conditions relating to freshness of food being purchased, such as number of days from harvest to delivery. The guidelines apply to all city agencies and any contract above $100,000. The 'farm to school' movement now has national impact with multiple initiatives based around public, private and non-profit collaboration. The organisation School Food FOCUS for example works in over 40 larger school districts – their model, developed with New York's Office of School Food, has now spread to other US cities through a 'school food learning lab' in which NGOs support school food officials, vendors, farm organizations, processors, distributors, state and local agencies on local food procurement. Federal procurement policy has also changed to include "geographic preferences" for local and regional food sourcing of minimally processed foods in all US public schools.

What are the key lessons? These examples illustrate the significant scale at which public procurement of food operates, and the potential to leverage this to deliver greater benefits. Similar initiatives are underway in many different countries.[158] To some degree, these examples show the need for public bodies to engage with companies in the food sector and with civil society in order to work effectively on food issues. They also demonstrate the linkages between local and national or international policy and regulation, which has the potential to either facilitate or block procurement intiatives (e.g., New York had to overcome potential regulatory barriers associated with specifying the geographical origin of food supplies).

4.5 Leveraging enterprise and business

The function and impacts of our food systems are fundamentally driven by the actions of the businesses and enterprises that produce, process, trade, and sell food, as well as by consumer choices. City region authorities and stakeholders have the ability to influence how these businesses and enterprises function, by facilitating, supporting, and regulating different types of activity. This might include creating an environment in which food businesses generating multiple public goods can flourish, by providing the kinds of infrastructure described above, and more generally by taking an approach that supports a diversity of supply chain actors. It might also include promoting innovation and new enterprise in the food

[156] City of New York. (2013) New York City Food Policy: 2013 Food Metrics Report. Available at: http://www.nyc.gov/html/nycfood/downloads/pdf/ll52-food-metrics-report-2013.pdf
[157] New York City Mayor's Office of Contract Services (2012) New York State Food Purchasing Guidelines. Available at: http://www.nyc.gov/html/mocs/downloads/pdf/New%20York%20State%20Food%20Purchasing%20Guidelines.pdf
[158] E.g. Foodlinks (2013) Revaluing Public Sector Food Procurement in Europe: An Action Plan for Sustainability. EU Foodlinks project. Available at: http://www.foodlinkscommunity.net/fileadmin/documents_organicresearch/foodlinks/publications/Foodlinks_report_low.pdf

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. All of these new forms of business can link rural and urban in new ways.

Willem & Drees, The Netherlands.[159] Willem & Drees started in 2009 with the idea of having local food available in supermarkets. They recognised that supermarket chains are set up to sell large quantities of produce on a year round basis in all of their stores. This is a problem for those farmers who can only deliver small quantities of crops in particular seasons, and is also a limitation for many short food supply chain enterprises. Willem & Drees developed a 'distribution hub': they collect seasonal fruit and vegetables from local farms, and sort, label and organise them into batches for different stores. They then deliver them in Willem & Drees crates to the supermarkets. They are a trusted intermediary: consumers know where their food comes from and the farmers know where their produce is going to. The company employs 14 staff and distributes products from almost 100 farmers to the second largest supermarket chain in the Netherlands, which has more than 180 shops.

The Food Assembly. The Food Assembly originated in France (where it is known as La Ruche Qui Dit Oui - "The Hive That Says Yes") in 2010. It is a way of buying and selling local food that combines information technology with face-to-face interactions. Producers advertise their products on a website, and consumers select and pay for the produce they want online. The buyers and producers meet at the weekly 'assembly' where the pre-purchased food is exchanged. For farmers, this means that they don't have to spend long periods at markets, and consumers can not only buy a range of produce (fruit, vegetables, fish, cheese, bread), they can also meet the producers in person. The food sold at an assembly must come within a 150-mile radius. There are now over 450 assemblies in France and Belgium, and the company is launching in Britain, Germany and Spain. In France, there are 2,600 producers listed on the online platform and together they sell around 50,000 orders each month to the members, with an annual turnover of more than €9m in 2013. The company behind the Food Assembly, Equanum SAS, has raised over US$4m in equity investment, debt and seed funding, and takes 16.7% of the pre-tax turnover from each producer that sells at The Food Assembly. Of this, 8.35% goes to pay for using the central IT support and the online platform, and 8.35% goes to the individual assembly organisers.

What are the key lessons? There are numerous recorded examples of novel food enterprises and initiatives to support them, and two examples cannot do justice to the huge variety of innovation that is taking place throughout the world. Nevertheless, these examples were chosen to illustrate two important features of a new crop of food enterprises. The first is that logistics are often an impediment to small-scale food producers, so new distribution models by which they can sell their products are a highly pertinent innovation. The second is the way that the enterprises are leveraging existing retail infrastructure such as supermarkets (in the case of Wilhelm & Drees), and online marketplace technology (Food Assembly) in ways in which they have not been used previously, modifying processes to allow the integration of local suppliers with small volumes of seasonal produce.

[159] Galli, F. & G. Brunori (eds.) (2013) Short Food Supply Chains as drivers of sustainable development. Evidence Document. Document developed in the framework of the FP7 project FOODLINKS (GA No. 265287). Laboratorio di studi rurali Sismondi

4.6 Information and transparency

Information and transparency - facilitated where relevant by emerging technologies - are critical elements in developing more sustainable food systems for several reasons. Firstly, an evidence-based understanding of the food system and its outcomes at a city region level should be the basis for action by city authorities, civil society and other actors. Big data is now offering tools to enable complex local and global systems to be modelled, and potential policy options to be evaluated. Secondly, the use of new information technology can support enterprise by linking farmers to purchasers, and linking farmers to market information. Thirdly, transparency of information can help people engage in food systems in different ways, bringing relationships back into supply chains, and providing a two-way mechanism for aligning the needs and wishes of different actors, raising standards and monitoring. As such, it can contribute to greater democratic participation within the food system, and become a transformational element in creating more equitable and sustainable food systems.

São Paulo's ecological footprint (Brazil).[160] São Paulo is the largest city in South America, with a population of 10.8 million, and 42 million people living within São Paulo state. Ecological footprinting calculates the amount of productive land and sea needed to produce and sustain a given style of living, and the research was designed to improve understanding of the environmental impact of the residents of Sao Paulo. The study showed that if everyone on Earth were to consume in the same way as the inhabitants of São Paulo state, two planets would be needed to sustain their lifestyles, and if everyone lived like people in São Paulo city, two and a half planets would be needed. Food consumption was responsible for nearly half the city dwellers' footprint and 38% of that of the state inhabitants. High beef consumption in particular was responsible for boosting the size of the footprint. It also showed that the ecological impact of wealthy households was many times greater than that of the poorer ones. The study was conducted by WWF-Brasil with the collaboration of the governments of the state and the city of São Paulo, and the information was intended to be used to catalyse actions to reduce the impacts of consumption on the environment.

The Jinghe online farm (Beijing, China).[161] The phenomenon of 'online farms' has arisen in China in recent years, partly as a result of a number of reported health issues concerning unsafe food. The Jinghe online farm grew out of a producer cooperative that sold vegetables via telephone orders. It developed an online platform with support from local government in 2013, allowing consumers to place their orders through a website. An online tracking system means that consumers can trace the produce they order back to the field of origin. This enables consumers to feel more confident about the quality of the food they are buying. Jinghe is in effect a distribution hub: packaging and distributing the produce of cooperatives and other producers according to consumer demand. Jinghe now sells other produce in addition to vegetables, including fruit, eggs, and meat.

What are the key lessons? These examples are very different; one concerning an enterprise structuring itself around information technology, the other about creating information and putting it in the public domain. In both, the availability of information to stakeholders is a key component: online tracking and product ordering in the case of Jinghe, and information revealing the impact of food consumption in São Paulo. In both cases local government played a supporting - but not leading - role to an enterprise (Jinghe)

[160] http://www.wwf.org.br/?31642/Ecological-Footprint-study-shows-So-Paulo-state-residents-consume-almost-2-planets-and-those-in-the-capital-almost-25

[161] Oudewater, N., de Vries, M., Renting, H. & Dubbelin, M. (2013). Innovative experiences with short food supply chains in (peri-) urban agriculture in the global South. SUPURB FOOD, Work package 3, Deliverable 3.3 Thematic paper 2. RUAF Foundation and ETC Foundation.

and to an NGO (WWF-Brasil), which illustrates some of the ways in which government authorities can move beyond policy formulation to support implementation.

4.7 Matching stakeholders to actions

The examples begin to articulate some of the specific ways in which elements of city region food system approaches can be implemented, and the roles that different stakeholders can play within this. This section summarises some of the general practical implications of taking on a city region food system approach, and considers which stakeholders are likely to drive some of the changes.

Different stakeholder groups are likely to perceive the proposed benefits of city region food systems differently. For example, increased rural incomes might be very important to a rural government authority and a small scale farmer, whereas a city government might be interested in it only in so far as it reduced in-migration or benefitted the city economy, and it might be of little direct consequence to a food manufacturing company or supermarket. By contrast, a large retailer might see an opportunity to increase their market share from an initiative to make short supply chains work more effectively, and small and medium sized enterprises, including farmers, might also see an opportunity to expand their businesses.

Some of the practical implications of these different interests and opportunities are laid out in Table 4.1. This focuses on the type of actions the different actors can take to push forward city region food system approaches. The table presents a general portrait only: the interests and motivations of a food consumer in a wealthy suburb of an American city will of course be different to that of a consumer living in poverty in a city slum in a developing country, and an artisanal food manufacturer is likely to see different opportunities and risks than those perceived by a large food processing company. The table is also not exhaustive – there are other important stakeholder groups not listed below, for example the philanthropic community, investors, and overseas development agencies, to name a few. However, this approach does point to some of the general practical implications that people and organisations will have to deal with, and this list can be expanded upon in future work.

The potential interests and barriers of these different stakeholder groups are further described in Annex 2.

Table 4.1. Some of the practical implications of a city region food system approach for different stakeholders in the food system.

Stakeholder	What would be needed to make city region food systems happen?
The city leader	Requirement for the development and administration of a representative food governance structure and a city region food strategy. Cross-departmental working within the municipal authority may be challenging.
	Limitations in municipal jurisdiction would need to be addressed: • Geographical scope would require cooperation and partnership with rural authorities • Policy instruments (e.g. procurement policies, planning, licences to trade) may need new powers, or existing powers to be applied in novel ways.

Stakeholder	What would be needed to make city region food systems happen?
	May need to create 'quick wins' to maintain confidence of electorate and form alliances across political divides to ensure long-term success.
The rural Governor	Would need to secure resources (financial and technical) to support changes to food production and logistics and to support new food-related enterprises.
	Would need to invest time and political capital in new alliances, including with urban areas.
	May need to challenge vested interests in existing food system organisation, but rural population should be in favour of policies that boost rural economic development.
National government	National policies can enable or inhibit appropriate food system governance at regional level – new policies may be needed to support local action, or powers may need to be devolved.
	Investment in appropriate infrastructure
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 or diversify the type of food product being produced, and the agricultural practices used.
	May see new corporate social responsibility angles in leading on sustainability initiatives that focus on generating local value
The small 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 though more structured collaborations with farmer organisations.
Food retailers	Would need clear and supportive policy instruments (grants, regulations, infrastructure investments) to ensure SMEs 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

Stakeholder	What would be needed to make city region food systems happen?
The consumer	May require investment in infrastructure to increase access to nutritious food (e.g., market places, fresh food retail in food deserts).
	Would require new modes of democratic participation in food system policies and activities.
	Would need greater awareness of food and nutrition and increased access to information including regarding provenance in order to make healthy and sustainable choices.
The civil society organisation	May need capacity building to fully understand potential to convene stakeholders and sectors in early stages of building linkages and identifying policy changes needed to strengthen city region food systems. Organisations may find it difficult initially to work across sectors.
	In some cases, would need funds to be available to drive engagement and implementation activities at city region level.

4.8 Collaboration and partnerships

A final consideration arising from the examples is an understanding of what combinations of people and organisations are likely to work together on different aspects of city region food systems. Many of the examples in sections 4.2 to 4.6 above were driven by strong alliances of interest between governments and civil society or NGOs. This is perhaps unsurprising given that much of the focus of city region food systems is on delivering public goods or satisfying national policy objectives on eliminating hunger, and it is these stakeholders that we would envisage as the drivers of city region food systems in most circumstances. For example, government authorities and NGOs were instrumental in developing the Toronto Food Policy Council, and in implementing the initiatives in Rosario and New York.

In addition, many entrepreneurs would see opportunities within city region food systems, and a number of the benefits are likely to be of direct interest to business, both small and large. For example, food manufacturers and retailers would have some interest in regional economic development, seeing it as a growth opportunity. Smart retailers would see the advantage of stocking local produce as a means to engage with their customers and to build market share. Public sector authorities have a role to play in enabling the private sector to adopt city region food system type practices: farmers (and farmers organisations) and local authorities were key drivers in the establishment of the Baix Llobregat Agricultural Park, and the Jinghe enterprise was given financial support by local government.

It is these types of initiatives – where there is the possibility of a broad supportive alliance and an absence of opposition – which might be the most promising areas of city region food systems to promote.

5 Conclusions and recommendations

The need to change the way that the growing world population is provisioned with food is clear from the levels of malnutrition, the high rates of food waste and loss, price volatility, and environmental degradation associated with current food systems. Tackling these failures and inefficiencies will become ever more urgent in the context of population growth, economic inequality and climate change. City region food systems offer a vision that bridges the widening gap between urban and rural with the hope of improving a wide range of social, economic and environmental outcomes for both urban and rural dwellers. A City region food systems approach is not a 'silver bullet' solution, it is an approach that grows out of strengthened relationships and democratic empowerment at local and regional level. The creation of participatory governance structures involving a wide range of city region stakeholders is an important first step.

There is now an opportunity for change, with the confluence of an emerging body of thought and practice regarding city region food systems; the broadening out of the food security discourse to incorporate nutrition, resilience and rights-based narratives; and the culmination of key international processes that will have a significant bearing on food systems and sustainable urbanisation. The 'Call for Global Action' launched at the World Urban Forum in Medellín, Colombia in April 2014 brings together a range of organisations across public, private and civil society sectors to jointly articulate the importance of city regions in the context of achieving lasting food security and sustainable agriculture. The 'Call for Global Action' is now part of a global initiative to promote the importance of city region food systems, which was launched at a side event at the Committee on Food Security in October 2014. The lead up the Habitat III meetings in October 2016 offers a distinct window of opportunity to demonstrate the relevance and importance of city region food systems to balanced and integrated development. This report recommends ten actions that will help improve the effectiveness of city region food systems, and which will start to generate the positive outcomes that the approach can bring.

5.1 The need for change

The dynamics of urbanisation and food system change are deeply interconnected: the imbalance between rural and urban development both drives and is driven by changes in food value chains. Growing urban populations are demanding greater quantities and different types of food – at low cost – which has seen subsequent reorganisation of rural based economies to serve these needs. This paper has characterised this trend as a shift towards 'Food System 2.0,' in which a relatively smaller number of producers, processors and retailers operate predominantly through national and global supply chains to derive corporate profit and to provide populations with food - of which a greater proportion consists of meat, dairy and processed products. Food System 1.0 by contrast is characterised as involving multiple actors at all parts of the supply chain (farmers through to retailers), more of whom are small-scale and informal; a tendency towards a higher proportion of fresh produce from local sources; and consumption of a greater variety of relatively unprocessed foods. Food System 1.0 is still recognisably in operation in many developing countries, whereas Food System 2.0 is associated with the economic reorganisation characteristic of industrialised and service sector economies.

There is of course great diversity within food systems, and these archetypes are an aid to thinking rather than a representation of any real food system. This is demonstrated by case studies of Lusaka, Greater Manchester and Bogota in Chapter 2, which show that as well as diversity between city food systems, there is also great diversity within cities - with income a key differentiator, especially in the developing world. Well-off residents of Lusaka are likely to procure their food through value chains not dissimilar to those engaged in by the residents of Greater Manchester. Nonetheless, local authorities in each of these city regions are likely to have some very different sets of issues to deal with when thinking about how to increase the public goods delivered by their food systems. While authorities in relatively high income countries might concentrate on knowledge and education to shift towards healthier and more sustainable diets, for example, those in low income countries might instead focus on tackling irregular incomes, lack of food storage and preparation space, lack of time, and so on, in order to improve food security. It is also important not to lose sight of the fact that rural as well as urban areas are sites of food consumption (many rural dwellers are net food buyers) – while many urban areas remain important sites of production in the form of urban agriculture. And not all urban areas are the same – they vary from mega-cities of 10 million people or more, to small towns and suburban sprawl. These urban spaces will have very different characteristics.

Despite these caveats, however, it remains clear that the general direction of travel for food systems globally raises critical concerns, and that these changes are closely tied to the process of urbanisation. Although the shift towards Food System 2.0 has delivered – for some – a greater range of foods at better prices than ever before, under-nutrition and micronutrient deficiency are still widespread, and obesity has reached epidemic scale in some places. Up to one third of the food produced in the world is lost or wasted. Food skills and cultures are disappearing. At the same time, the interlinked ecological systems and processes that support food production and human wellbeing are being eroded – the water cycle, soils, biodiversity, climate and atmospheric regulation. The ecological flows between urban and rural areas risk becoming unbalanced. Critical to the argument of this paper is that food systems are also intimately involved in a growing disjunction between rural and urban economic and development trajectories, and a loss of social cohesion across these spheres. At a time when the rural and urban have more need for co-dependency than ever there is increasing disharmony in the system and indications that our ways of producing and consuming food are not only environmentally unsustainable, but undermine health, well-being, income, employment and social cohesion for many groups. The extent of these negative trends and

impacts is so great that our very ability to produce sufficient food on a sustainable basis is now subject to challenge. Seen in the context of growing populations - especially growing urban populations and linked dietary transitions - these challenges spell the need for a paradigmatic change in the way that food systems will function in the future.

This is no small task: there is no one solution that will 'fix' the food system. However, an understanding of the complex and systemic linkages between food systems and urbanisation offers key insights that form the basis of a city region food system approach. This approach seeks to strengthen the functionality of ecological, socio-economic and governance linkages across the rural urban divide in a given geographical region, in order to consciously plan and facilitate the emergence of food systems that avoid many of the adverse consequences described above, and maximise the delivery of public goods on a more egalitarian basis: across rural-urban boundaries and income divisions. This is a concept starting to gain traction, but it is also a relatively young concept. As such, many and varied claims have been made for the beneficial impacts of adopting policies structured around city region food systems. One of the core aims of this paper has been to attempt an initial categorisation and evaluation of evidence for these benefits in order to help focus attention on those that are most likely to be delivered with significant impact, and to help guide policy and research going forward. When considering the feasibility of mechanisms, the potential scale and scope of impact, and the evidence for benefit, it was found that there is indeed potential for broad and inclusive benefits, especially concerning regional economic development, health, and better governance. The analysis also suggests potentially significant benefits in other categories including environment and food security, but finds that further research may be needed in order to categorically base policy development around the mechanisms evaluated. The analysis also highlights a need for the future development of a methodology that might allow a comprehensive meta-analysis of purported benefits across multiple categories, in order to develop a firm basis for operationalizing city region food systems.

Ultimately, however, well functioning city region food systems offer a compelling vision for inclusive, equitable and environmentally sound development. 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 suggests conscious and knowledge-based policy to foster a resilient balance of food supply from global and local sources. It recognises that food has environmental, economic and cultural meanings, and outcomes should be thought about and integrated across sectors and geographical scales. It is driven by new relationships, with greater transparency and democratic participation in decision-making, for both rural and urban dwellers. Finally, a city region food system approach consciously aims to deliver a range of benefits which our current food systems do not fully realise, including the potential for better farming livelihoods, improved health and nutrition, regional economic development and environmental protection. City region food systems are not the only answer to the problematic outcomes of our current ways of feeding the world, but they are perhaps an important part of a future vision for healthier, fairer and more sustainable food systems.

5.2 Towards better food system governance

Amongst the range of individual interventions and initiatives explored in this paper, it is clear that effective governance structures are a key factor in unlocking the potential benefits of a city region food systems

approach. Governance comes up time and again in examples, from Rosario's participatory budgeting system to Toronto's Food Policy Council and the Golden Horseshoe Food and Farming Alliance. It is pertinent to observe, however, that generally there exists a food policy 'governance gap.' With notable exceptions. appropriate structures most often do not exist – globally, nationally, regionally or locally – that allow for multidimensional food systems planning and facilitate the realisation of policies that promote the diverse and interlocking public goods explored here. In most cases, food policy, if it does exist, is segmented by particular areas of interest, for example public health, or farming, and does not have a strong cross-sectoral mandate. Equally, governance may not be devolved to a useful level for delivering many of the benefits discussed in this paper, and will not often deal with rural and urban areas simultaneously. Governance considerations therefore represent an important area of focus for the future development of city region food systems.

What are the characteristics of a governance system with the capacity to promote city region food systems? First, whilst there are examples of cities taking the lead and influencing local food systems, a more comprehensive territorial governance system would preferably exist at the level of the city region. This would complement more local elements and national and international elements. This is not without challenges, but there are now multiple successful examples of the city region scale in practice that can serve as models and learning opportunities. Second, it must be able to cut across sectoral considerations so that, for example, economic and environmental issues can be considered as part of the same system, and policymakers can therefore weigh up the costs and benefits of actions to different stakeholders. Trade-offs will inevitably result – and this will necessitate a robust and democratically accountable system of participation so that stakeholder groups are adequately represented in decision-making and policy processes. Thirdly, increasing democratic participation in food systems will help to ensure that food systems better serve people's needs.

In practice, food policy councils such as that in Toronto (see Section 4.2) might provide a useful blueprint for operationalizing city region food system governance structures in the early stages. Later on this may become more formalised through local authority policies and programmes, as in Belo Horizonte. In a similar manner to Belo Horizonte, the case of school food in New York City also demonstrates that support at national level including enabling policy, or the removal of blockages, can be critical to the success of local and regional initiatives.

5.3 A moment for change

Although perhaps implicit in long-standing civil society movements such as Food Sovereignty and Slow Food, international policy support for city region food governance began in the UN Commission on Sustainable Development in 2009 and in the 2012 outcome of the Rio+20 UN Conference on Sustainable Development, titled "The Future We Want". In 2014, integrated urban, peri-urban and rural planning was also included as a target in the UN's Sustainable Development Goal (SDG) for cities. As yet the language does not explicitly include reference to food systems.

For much of 2014 a number of organizations across public, private and civil society sectors worked to articulate the importance of city regions in the context of achieving lasting food security and sustainable agriculture. At the UN-Habitat seventh World Urban Forum (WUF7), held in Medellín, Colombia in April 2014, FAO, ISU, Habitat International Coalition, Communitas Coalition, the urban working group of the Global Food Security Cluster, ICLEI, RUAF, IUFN, UCLG, ILO, IFAD, UNCDF, and Olivier de Schutter, the UN

Special Rapporteur on the Right to Food, helped to launch a 'Call for Global Action' for city region food systems.

In doing so, the group highlighted the importance of linking food systems challenges to the implementation of more integrated and inclusive approaches to rural and urban development and called for cities and international organisations to exchange information on the benefits of city region approaches and on the ways in which such approaches can be undertaken. This 'Call for Global Action' is now part of a global initiative to promote the importance of city region food systems, which was launched at a side event of the Committee on Food Security in October 2014.[162]

The need for a more integrated, holistic approach to rural and urban development will also be a significant theme in the "new urban agenda" that will be articulated at the Habitat III meetings in Quito in October 2016. In addition to being included in the Sustainable Development Goals and Habitat III, it can also be embedded in climate change, biodiversity, nutrition and disaster risk reduction agendas, which also conclude framework agreements in 2015.

Indeed, the next two years appear to be a distinct window of opportunity to demonstrate the relevance and importance of city region food systems to this more balanced and integrated approach - including the 2015 Global Expo which will focus on new ways to approach food security, and the Committee on Food Security which will convene a High Level Forum on Linking Smallholders to Markets in June 2015.

Thus, as the collaborators on the 'Call for Global Action' emphasised, we are at a moment of confluence between emerging thought and practice on city region food systems, the broadening of the food security discourse to include rights-based narratives, the increasing national and local commitment to the right to food and the culmination of international processes that relate to food systems. The question now is how to seize this moment of confluence and potential change.

5.4 Ten actions for city region food systems

This paper has proposed that by improving the way that governance, socio-economic and ecosystem linkages between urban areas and their hinterlands function, and taking a pro-active and integrated approach to food policy at regional level, a range of public goods may be delivered. The paper has identified specific mechanisms congruent with a city region food systems approach that potentially offer strong beneficial outcomes across a number of benefit categories. It has also highlighted a number of examples of practical interventions that are changing the way food systems operate. Replicating or scaling up these approaches should be based on learning from what has already been done, as well as through developing new tools and approaches. These examples also highlight some of the actions that public bodies, NGOs, civil society organisations, farmers, entrepreneurs, larger businesses and consumers, amongst others, can take.

[162] See www.cityregionfoodssytems.org

The report recommends ten actions that will help make city region food systems a reality, and which will start to generate the positive outcomes that the approach can bring:

1. **Recognising the ability to act:** City and rural authorities should explicitly recognise the links between food systems and a wide set of public goods, and assert their ability to facilitate positive change.
2. **Convening stakeholders:** Local authorities and civil society organisations can play a pivotal role in bringing together wide coalitions of interests to create the basis for stakeholder engagement and support in future food policies and programmes.
3. **Understanding local food systems**: City region food policies must come from a position of knowledge concerning the local food system context, including where food comes from ('foodprinting') and what the outcomes of the food system are for both urban and rural populations. CSOs, local authorities and the research community have a role in generating this knowledge and making it publicly accessible.
4. **City region policy:** Policy and research communities, and development agencies, should actively support the creation of city region food policies, including land use and planning frameworks that enable multi-sector, territory-based approaches.
5. **Enabling policy:** National governments, international institutions and donor organisations all have a role in ensuring that their policies promote city region food systems and remove blockages.
6. **Academic research:** The research community should coordinate in order to more effectively contribute to knowledge resources in support of city region food systems, including: organised and high level knowledge exchange, case studies, developing metrics and rigorous testing of outcomes.
7. **Procurement:** City and rural authorities can catalyse city region food system value chains through public procurement policies: e.g., incentives for meals for schools, prisons and hospitals to come from sustainable producers in the city region.
8. **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.
9. **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.
10. **Financing:** Development agencies, governments and the investment and philanthropic communities should develop financing mechanisms that can leverage improvements in public goods and long term value to provide immediate support for city region food systems. Examples might include municipal bonds, mechanisms for social investment and the capacity to implement these.

Annex 1: Analysis of the potential benefits of city region food systems

Introduction

This annex summarises the review of the benefits that have been proposed for city region food system approaches.

As discussed in Chapter 3, the aims of the analysis presented in this chapter are:

- to provide an initial review and classification of existing evidence for the proposed beneficial outcomes of city region food systems;
- to provide a first order assessment of whether some of these benefits are likely to be more robust than others; and
- to identify gaps in evidence where further research may be required.

Approach to assessing the benefits

Evaluating the evidence for the benefits of city region food systems is far from straightforward. There is no single set of defined interventions linked to the city region food system approach that, when implemented in the same way in some city regions, could be compared with other city regions that have taken different approaches. Instead, examples of each of the elements of city region food system approaches – improved linkages across ecosystems, socioeconomic systems and governance systems – exist or have been implemented to a greater or lesser extent in different places and using diverse mechanisms. For example, there are many different types of shortened food supply chain, such as urban agriculture, farmers' markets, farmer groups, and consumer groups, not all of which will exist in any given city region. The comprehensive environmental, economic and social data to compare these with other approaches is lacking. This means that a systematic and integrative approach is required to assess the different types of information available.

The proposed benefits are assessed in a systematic, four step process:

Step 1: Elements of city region food systems. As discussed in Section 2, there is no single template for what a city region food system is. We identify three approaches that are core to city region food systems, namely: city-region policy, short food supply chains and landscape approaches. These three elements were used to identify the numerous specific interventions that could be expected to form part of a city region food system.

Step 2: Identify proposed benefits of city region food systems. The proposed benefits of city region food systems were identified through consultation with a range of experts, from different disciplines, and through the published literature.

Step 3: Testing the performance of benefits. The potential benefits of city region food systems were then systematically tested against three different types of filter, using published research:

- Filter 1: What is the proposed **mechanism**? Some studies assume benefits of city region food systems without really articulating how the benefit would arise. This filter analyses proposed benefits in terms of whether a clear and logical mechanism has been articulated.
- Filter 2: Does the **scale and scope** of the proposed benefit match the scale of the issue? This filter assesses what proportion of city food supply would need to come from the city region in order to generate substantial benefit, whether the benefit could accrue globally, to urban or rural populations, or in developed or developing countries.
- Filter 3: Is there **evidence of impact** in practice? Studies that measure the benefit (or lack thereof) of short supply chains, city policy or landscape approaches are collated and summarised. Note that an absence of evidence can simply mean that the benefit has not been researched.

Step 4: Scoring the benefits. A score was applied to each proposed benefit for each filter, all relative to counter evidence and arguments. A score of zero (marked as red, following traffic light colours) is applied where the proposed mechanism was unclear or less compelling than the counter argument, when the benefit could only apply in specific circumstances, was insufficient to match the scale of the problem, or where there was no evidence in support of the benefit (or where there was compelling evidence against it). A score of one (orange) was applied for intermediate situations, and a score of two (green) to where the mechanism was clear and plausible, where the benefit could in practice accrue very widely, and where the evidence was both broad-based and rigorous. This scoring system is subjective but consistent, and allows a first-order comparison of information that is fragmentary and which relates to hugely varied types of benefits.

Analysis of benefits

The results of the analysis of benefits are shown in Table 1.

Table A1. Assessment of the potential benefits of City Regional Food Systems

Key to colour coding:

Strong	
Medium	
Weak	

Note: the literature cited is listed below the table.

Proposed benefit of CRFS	Proposed mechanism	Scale and scope	Evidence	Counter arguments	References
Food Security					
Increased livelihood resilience for small scale rural producers	Agriculture is highly compatible with other livelihoods strategies, thereby diversifying income and spreading risk. In addition, producing crops for local markets might spread risk by encouraging more diverse (horticultural) cropping.	Potentially large scope (e.g., up to 20% of farms in EU may be involved in direct selling[1]), but scale of additional resilience gains unclear	Urban and peri-urban farmers in Nairobi are less dependent on gifts and transfers of food[2]. 46% of livestock raisers in Bangalore earn up to 50 percent of their total annual income from livestock raising[3].	Local supply chains are as subject to global forces as any other, and may be subject to localised issues such as market inefficiencies, corruption, etc., thereby reducing resilience and increasing volatility[4,5]. In addition, diversification can simply perpetuate poverty.	1. Renting et al. (2003); 2. Mwangi (1995) cited in Armar-Klemesu (2000); 3. Prain & Dubbeling (2011); 4. Cadilhon et al (2006); 5. Guarin (2013)
Reduced food prices for urban consumers	Short supply chains reduce the number of intermediaries, and also create greater supply chain transparency, reducing rent-seeking and abstraction of value, meaning that producers can offer better prices to consumers.	Broad scope, but scale of impact more limited as CRFS are likely to focus on particular food groups and probably not the ones accountable for the major food expenditure	Several studies in USA have found farmers market produce to be cheaper than supermarket equivalent.[1] A before and after study in Canada found a new farmers market in an underserved urban neighbourhood reduced food prices by 12% in 3 years.[2] Policy to give small producers market access in Bogota resulted in prices averaging 34% lower than in large chain supermarkets[3]	Modern food supply chains are highly efficient and are therefore likely to offer better prices to consumers than city regional supply chains for a wide range of foods - supported by studies from Brazil and South Africa[4,5].	1. McGuirt et al (2011) 2. Larsen & Gilliland (2009) 3. Pesquera (2011); 4. D'Haese & Van Huylenbroek (2005); 5. Farina et al (2005)
Increased resilience of urban food supply against shocks	A more equal spread of supply from the different production zones of a city, including its hinterland, spreads risk better than being over-reliant on global markets.	Could apply globally, but scale of impact likely to be limited as the effect would apply only to certain types of produce	Urban and peri-urban farmers in Nairobi are less dependent on gifts and transfers of food[1].	Local supply chains are subject to their own risks and volatilities[2], e.g. climate-related risk, local political issues, which global supply chains can help buffer. These context specific shocks are	1. Mwangi (1995) cited in Armar-Klemesu (2000); 2. Tschirley and Hichaambwa (2010)

Proposed benefit of CRFS	Proposed mechanism	Scale and scope	Evidence	Counter arguments	References
				far more common than global shocks. Many cities with significant food supply from their hinterland do not perform well on food security.	
Economic development					
Regional economic growth	Increasing local spend reduces economic leakage and creates local multiplier (income, employment and increasing GVA). Demand for higher value and more labour intensive horticultural crops sustains more rural jobs, reducing rural-urban migration and reducing stresses on urban infrastructure and society.	Even if volume of supply from region to city is limited, the regional economic impact is likely to be higher (because high value and labour creating sector) across both urban and rural, and developed and developing countries	Short food supply chains estimated to add an *additional* 7-10% to the total agricultural NVA in Germany, Italy and France, 2-4% in The Netherlands, Spain and UK, 1% in Ireland[1]. Canadian farmers selling direct to the public believe that they circulate money in the rural economy, use labour-intensive practices, and pay a living wage[2]. Short food supply chains create additional employment in the USA[3,4,5]. Every £1 spent on local produce by schools in Plymouth, UK, generates an additional 85 pence of local spending.[6]	Agricultural production for export is an important source of income, and in most regional growth is highly tied to national economics.	1. Renting et al (2003); 2. Wittman et al. (2012); 3. Otto & Varner (2005); 4. Henneberry et al. (2009); 5. Hughes et al. (2008); 6. Kersley & Knuutila (2011)
Increased rural incomes and jobs	Small-scale producers receive little benefit from centralised supply chains, and increased access to markets (e.g., through short supply chains) allows more value and more diverse opportunities (e.g. value-added processing) to accrue to producers, and demand for higher value and more labour intensive horticultural crops sustains more jobs.	The structure of the agricultural economy means that volume of supply to a city from its region (or from urban agriculture) is likely to be higher in developing and middle income co-untries.	Income increased by 64% to farmers selling direct to consumers in Bogota[1], and prices 50-649% higher than supermarket prices for fruit and vegetables in the USA (accounting for direct marketing costs).[2] Higher local wages cited as a benefit of short food supply chains[3]. Small scale farmers near Nairobi earn above the national minimum wage[4], and between 1995-1998, the PROVE program in Brasilia (Brazil) helped create more then 700 jobs allowing people to earn up to 4 times the minimum wage[5]. Investment in public infrastructure has been shown to decrease poverty e.g., access to all-weather roads in Ethiopian villages decreased poverty 6.9%[6])	Local or regional markets can be less efficient (e.g. in logistics) and are not isolated from price competition from global markets. Selling to global markets provides important export earnings for developing countries. A city region's agricultural land has to compete with other land uses (e.g. housing, industry). For income to increase meaningfully, a combination of higher price, small cost of additional activity and volume of sales must occur and this combination is unlikely to happen for many farmers.	1. Pesquera (2011) 2. King et al (2010), 3. Oglethorpe (2009), 4. RUAF (2001). 5. Oudewater et al (2013), 6. Dercon et al (2008)

Proposed benefit of CRFS	Proposed mechanism	Scale and scope	Evidence	Counter arguments	References
Economic vitality, entrepreneurship and innovation	Encouraging short food supply chains creates a dense web of economically empowered actors and relationships with knock-on effects for new business opportunities: numerous people are employed in the farming, marketing and processing of the food produced, as well as in small service industries developed around city region agriculture (input supply services, training and extension services, etc.).	Could apply in rural and urban areas, and in developed and developing countries	Short food supply chains have been estimated to add an *additional* 7-10% to the total agricultural NVA in Germany, Italy and France, 2-4% in The Netherlands, Spain and UK, 1% Ireland[1]. Short food supply chains creates opportunities for entrepreneurship in the USA[2]. In Lomé, Togo, vegetable growing and associated business increased manifold from the late 1980s to the early 1990s[3]. Short food supply chains in Italy found to promote innovation directed towards sustainability-related goals.[4]	Assumes that the conditions for successful entrepreneurship are in place, including non-marginal market opportunities, governance and support systems that favour entrepreneurs.	1. Renting et al (2003); 2. O'Hara (2011); 3. Mougeot (2005). 4. Cavallo et al (2013)
Environment					
Opportunities for 'circular economy' including reducing food waste and loss	Physical proximities and diverse food-based enterprises create opportunities for recycling, and food supply chains with increased transparency and consumer engagement are less likely to insist on excessive standardisation (i.e. will define 'quality' differently).	Some potential for scale in developed countries where up to 2/3rds of food loss is due to supermarket standardiation[1].	Short Food Supply Chains have the potential to reduce the food lost due to supermarket standardisation[2], but this has not been quantified.	Agriculture usually looses out to urban areas when competing for water[3], rather than being synergistic, and in general there are few examples of increased efficiency at any scale.	1. Gustavrson et al. (2011); 2. Galli & Brunori (2013); Molle & Berkoff (2009)
Agroecological diversity	Producing crops for local markets encourages a greater diversity of high-value (horticultural) production, and closer relationships between consumers and producers can lead to more wildlife-friendly agricultural practices	The scope is potentially wide, given the significant farmed area around cities globally, but the scale of impact will be severely limited by individual's ability to engage.	Agricultural land within 20 km of cities is less dominated by staple crops[1]. Through direct interaction with customers, farmers in Maine, USA indicated a willingness to reduce chemical inputs to meet the customer demands[2], and there is some evidence from Italy of farmers who are directly connected with consumers changing their practices[3].	Proximity does not necessarily imply that responsible farming practices are used. The ability of food purchasers to meaningfully engage with producers will always be limited by the available time and motivation.	1. Thebo et al. (2014); 2. Hunt (2007); 3. Brunori et al. (2012)
Increased recognition and valuing of	Landscape level governance allows appropriate policy or	Potentially applicable globally, and given	Bogota has a planning framework (POT - Plan de Ordenamiento Territorial) and	This isn't directly to do with food, and in fact use of land to	1. Heal (2000) 2. Almack (2010)

Proposed benefit of CRFS	Proposed mechanism	Scale and scope	Evidence	Counter arguments	References
ecosystem services	incentives to be put in place to protect or enhance ecosystem services, either directly tied to food production or a broader recognition of the services provided to a city by its hinterland	the area of land involved, even small changes could yield significant benefits	food policy (Plan Maestro de Abastecimiento de Alimentos) that explicitly recognises the city within its city-region, incorporating rural areas. Watershed protection upstream from New York City has allowed water to be supplied at a saving of $7.5bn compared to filtration.[1] Swampland outside Kampala has a water treatment function equivalent to $1m a year - alternative methods would cost double this. [2]	provide some ecosystem services might compete with agriculture (e.g. flood protection, recreational space). It also relies on a spatial scale of governance that doesn't exist in many places.	
Lowering greenhouse gas emissions	Transporting food over shorter distances reduces GHG emissions from transport and reduces the need for cold storage and packaging.	Although GHG emissions form agriculture are large globally, significant supply chain reductions are known to be associated with place of production only in specific instances, not generally.	Most likely to be true for fresh vegetables where the alternative involves air transport[1,] but can contribute to reduced GHG emissions when deployed alongside other interventions (e.g. processing and cooling by renewable sources, reduced fossil fuel use in production)[2.]	The distance form producer to consumer is not usually the main determinant of GHG emissions[1], which instead depends on the production system, climate, soil characteristics, etc.	1. Edwards-Jones (2010); Jansma, et al. (2012).
Health					
Increased knowledge about food and nutrition amongst urban dwellers, resulting in more healthy diets	Joined up city level food policy and short supply chains promote more interaction (and a blurring) between producers and consumers, improved understanding of food and nutrition, and can result in an increased consumption of fresh fruit and vegetables (and reduced consumption of processed foods).	Most likely to yield additional benefits in developed countries, where separation between urban consumers and rural producers is often highest	Users of local food markets (including urban poor) in USA reported an increase in knowledge about fresh foods, as well as changed eating habits[1] and some, but not all studies garden nutrition programmes in the USA show changes in knowledge of nutrition[2]. Children in school garden nutrition programmes in the USA often show increased fruit and vegetable intake but less often change preference towards fruit and vegetables[3,4,5]. Urban food growers in Toronto, Canada, cite mental and physical benefits[6,7]	This benefit does not clearly follow from the idea of City Region Food Systems in itself, instead it requires significant investment from (often stretched) city administrations	1. Freedman et al. (2011); 2. Robinson-O'Brien & Heim (2009). 3. McCosker & Humphreys (in prep.); 4. McAleese & Rankin (2007); 5. Robinson-O'Brien & Heim (2009); 6. Wakefield et al. (2007); 7. Kortright & Wakefield (2011);

Proposed benefit of CRFS	Proposed mechanism	Scale and scope	Evidence	Counter arguments	References
Increased availability of and access to nutritious food	Attention to food policy at a city region level can allow gaps in accessibility to be identified and filled by a greater diversity of market and distribution mechanisms. Regional producers can bring fresher food to urban centres, countering tendency towards processed foods.	A significant proportion of agriculture is located close to cites[1], but the ability of the city region to provide fresh, nutritious food year-round is highly dependent on the environment (climate, water availability, soils, altitude, etc.).	In the USA, situating farmers markets in poorer neighbourhoods resulted in poorer consumers changing their food intake and exercise regimes favorably[2], and poor urban women using subsidized farmers markets often continue to do so after the subsidy is removed[3]. 17% of customers in Italian food markets claimed to have changed their eating habits - particularly towards eating more vegetables - as a result of using the markets[4]. A correlation between agrodiversity and reduced nutrition related problems has been postulated[5]. Urban and peri-urban farmers have higher rate of vegetable consumption (Cagayan de Oro, Philippines),[8] and their children have higher nutritional status (Kampala, Uganda)[9] than counterparts in non-farming households.	Cities with significant local produce markets not proven to show any health advantage. Regionally produced food can be of limited variability (often seasonally), some short supply chain foods can be unhealthy: e.g., local food intake can cause reduction of protein and energy whilst increasing cholesterol[6], and there is insufficient evidence to argue that short food supply chains offer food that differs nutritionally from food from elsewhere[7]. Genuinely urban agriculture ranges from a minor[10] to a large part of the diets of urban poor[11] in developing country cities. Engagement is in many circumstances limited by time-poverty and/or by access to land.	1. Thebo et al. (2014); 2. Ruelas et al. (2011); 3. Racine et al. (2011); 4. Pascucciia et al (2011); 5. De Clerck (2011); 6. Rose et al. (2011); 7. Galli & Brunori (2013); 8. Potutan et al. 2000; 9. Maxwell et al. 1998; 10. Ruel (2003); 11. Armar-Klemesu, M. (2000)
Governance, society and culture					
Promoting a food culture	Greater exposure to regional foods and interactions between producers and purchasers creates a sense of being part of a geographical and ecological area, a stronger sense of shared identity with the city region and greater social cohesion.	Potentially applicable anywhere and with significant impact	A major motivation for people going to farmers markets in the US[1] and UK[2] are the social interactions (producer to purchaser). In Italy, Gruppi di Acquisto Solidale (produces and purchasers) co-create value in the food system[3], and short food supply chains have linked producers and consumers to broader social movements in Mexico[4].	Does greater regional identity reduce cosmopolitanism/global identity, or foster exclusionary ways of thinking in multi-cultural urban contexts?	1. Hunt (2007); 2. Lyon et al. (2008); 3. Brunori et al. (2011); 4. Baker (2008)
Integrated ('joined-up') policy and action	Places an imperative on collaboration and on spatially coherent (city and region) and cross sectoral (e.g., agriculture,	Potentially applicable anywhere, but in practice constrained by the political	In Belo Horizonte, policies to promote good nutrition, food quality, rural-urban links and urban agriculture come together under a single programme.[1] In	More joined-up, integrated policy is desirable in theory, but in practice runs against political economy (sectoral specialists	1. Rocha (2001)

Proposed benefit of CRFS	Proposed mechanism	Scale and scope	Evidence	Counter arguments	References
	health, water, economy, environmental) planning and policy	economy, competence and resources of government institutions.	the UK the Sustainable Food Cities network promotes the formation of cross-sector food partnerships or policy councils, of which there are now more than 30. Bogota's food masterplan explicitly sits in the context of the wider region and directly addresses issues such as rural livelihoods.	have a vested interest in the status of their sector, and elected representatives may be in opposition to others in the city region) and assumes capacity that doesn't exist in many public administrations.	
Greater participation in and transparency of the food system	CRFS provide an opportunity for greater citizen participation and empowerment in policy making - for example Food Policy Councils - and short food supply chains allow for and foster greater transparency in the food system because they are built on personal interactions.	Potentially applicable anywhere, but in practice constrained by the levels of transparency, accountability, and democratic participation, and the time and motivation of people to participate.	Trend of increasing democratic participation in alternative and short food supply chains[1]. Direct interaction with customers made farmers in Maine, USA, say that they would be more likely to change farming practices to meet customer demands[2]. Gruppi de Acquisto Solidale in Italy are self organised consumer groups that create partnerships with farmers, by-passing middlemen, and creating alternative logistics based on private/social tools and spaces, avoiding the need for grading, packaging etc., aiming to create a win-win situation for farmers and consumers[3,4]. Municipal funding for Rosario's urban agriculture programme is decided through the city's participatory budgeting process	Greater citizen empowerment is an outcome of a system with good governance, not a specific outcome of food-related policy. Puts a lot of faith in human nature - local business is as much (perhaps more) subject to corruption and poor practice as large business, which is subject to greater legal and regulatory oversight.	1. Renting et al. (2012); 2. Hunt (2007); 3. Brunori et al. (2011); 4. Brunori et al. (2012)

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Annex 2: What might a shift towards a food system organised around city regions mean for me?

The following sketches illustrate some of the main opportunities, problems and practical implications of city region food systems, from the point of view of some of the main stakeholders. This is a 'first order' portrait only: the interests and motivations of a food consumer in a wealthy suburb of American city will of course be different to that of a someone living in poverty in a city slum in a developing country, and an artisanal food manufacturer may see different opportunities and risks than those perceived by a large food processing company. These sketches are intended to show some of the key similarities and differences that will often be present, rather than being an exhaustive description of all possible categories of stakeholders.

They are intended to complement Chapter 4 and indeed the text on 'practical implications' is reproduced in Table 4.1 of that section.

The City Mayor

Opportunities – *why might you be interested?*

- Potential economic benefits to the city of capturing a greater portion of value addition in the food chain and fostering enterprise
- Improvements to sense of cultural identity and cohesion which improves residents' quality of life
- Possible route to a more healthy 'food culture'
- Opportunity to build new alliances (political and business)
- Profile to be gained from being seen to take seriously a central issue in everyone's lives: food

Problems – *what could put you off?*

- Where would the money to implement this come from?
- Risk of private sector players not engaging, and simply operating elsewhere
- Risk that market forces undermine the public intentions
- Risk of regional crop failures resulting in failure and discrediting of system
- May require making alliances with political rivals to implement at the right scale

Practical Implications – *what would need to change to make this happen?*

- Likely to require the development and administration of a city region food strategy
- Limitations in jurisdiction would need to be addressed:
    - Geographical scope would require cooperation and partnership with rural authorities
    - Policy instruments (e.g. procurement policies, planning, licences to trade) may need new powers
- There are likely to be infrastructure requirements to meet the need for changes in food logistics and trading patterns

- May need to address internal organisational issues, such as creating an institutional home for the food mandate, getting departments to work better across sectoral lines, and low staff capacity to work across sectors
- May need to create 'quick wins' to maintain confidence of electorate

The Rural Governor

Opportunities – *why might you be interested?*

- Could secure more reliable and/or high value markets for farmers
- Enhanced local employment and opportunities for enterprise
- Could encourage investment in rural infrastructure

Problems – *what could put you off?*

- Risk of being subsumed as the weaker partner in a wider city-region
- Risk that the rural economy would become too specialised around the needs of the city region, and over-reliant on those markets
- Depending on where you are in the world, the food and farming sector may not be a significant part of your rural economy – it may not be of interest to your constituency.

Practical Implications – *what would need to change to make this happen?*

- Would need to secure resources (financial and technical) to support changes to farming and to support enterprise
- Would need to invest time and political capital in new alliances
- Would need to create 'quick wins' to maintain confidence of electorate

National Government

Opportunities – *why might you be interested?*

- Potential regional economic growth, wellbeing and social cohesion contributing to national picture
- Alignment with national policy commitments (e.g. 'zero hunger'), and further, city region food systems might provide a way of implementing elements of national policy
- Could encourage investment in rural infrastructure

Problems – *what could put you off?*

- Risk of being ceding power to devolved city region institutions
- Risk that city region policies might seem to contradict national policy or international agreements that the country is a signatory to.

- Benefits that accrue might be associated with city regional authorities, rather than national government

Practical Implications – *what would need to change to make this happen?*

- National policies can enable or inhibit appropriate food system governance at regional level – new policies may be needed to support local action.
- Investment in appropriate infrastructure

Large Agricultural Business

Opportunities – *why might you be interested?*

- Opportunities to form longer-term, more reliable contracts – and secure custom with large customers (the city) looking for regional suppliers
- Opportunity to diversify, and perhaps add value
- Creation of additional markets – nothing to stop you continuing also to trade into wider markets
- Potential to attract investment from the local city

Problems – *what could put you off?*

- Requirement to restructure farm systems in order to satisfy more diverse regional markets - requires disruption, investment, and loss of economies of scale
- Risk that a city region system will fail, and any investment will be lost
- Interference of local bureaucratic structures and processes may lead to inefficiencies and restrictions on your ability to operate in wider markets

Practical Implications – *what would need to change to make this happen?*

- May need to change cropping and agricultural techniques in some areas
- Would need to develop contractual agreements with new purchasers

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The Small Scale Producer

Opportunities – *why might you be interested?*

- Creation of new markets and new routes to market, with the possibility of increasing income and spreading risk
- Potential that investment in local processing and logistics infrastructure would improve operating efficiencies, and make it easier to deliver a consistent and competitive product
- Possibility to be part of a better regulated and protected food economy

- Potential to expand your business by working in partnership with larger operators or landowners who are keen to diversify their operation.
- Potential for higher margin products, being sold into the city food system with added value attributed to provenance

Problems – *what could put you off?*

- Risk that your established routes to market are disrupted/lost
- Not having the skills and resources to change cropping or engage with new markets
- Risk that powerful city-region buyers emerge, and abuse their position in the market

Practical Implications – *what would need to change to make this happen?*

- Potentially changing crops and production techniques
- For some, more involvement in direct marketing, and for others, relationships with different purchasers
- Access to capital and skills to change production and marketing

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The Food Retailer

Opportunities – *why might you be interested?*

- Small retailers may be 'pre-positioned' to respond due to their existing relationships with local traders or producers
- The development of a city region food systems will create new product lines based around regional production and manufacturing.
- Securing the 'licence to operate' in lucrative city locations, and the potential to form more credible, culturally resonant relationships with customers, building brand loyalty

Problems – *what could put you off?*

- For large retailers, may require significant restructuring of centralised businesses; including administration, sourcing, marketing, logistics infrastructure
- It is hard to see how development costs, risk, and potential loss of price competitiveness could be met if changes were made unilaterally
- Potentially reduced freedom to operate and adapt to markets

Practical Implications – *what would need to change to make this happen?*

- Clear and supportive policy instruments (grants, regulations, infrastructure investments) to ensure SMEs are not squeezed out of the market
- Proportionality when it comes to city region sourcing targets, and flexibility when it comes to non-indigenous products
- Pre-competitive collaborations and investments to develop city-region scale solutions to logistics and processing

- For large retailers, devolving a degree of authority to regional decision-makers, to link the centralised spine of the operations to regional stores
- A well structured trading forum/brokering service to match sufficient production volumes (producers) to demand

The Food Manufacturer

Opportunities – *why might you be interested?*

- May create opportunities (practical and market-related) for new product development
- Potential to develop regionally-centred operations to serve consistent demand from city regions, drawing raw materials from surrounding producers.
- Develop vertically integrated supply chains, enabling greater innovation in production
- Potential to establish new customer base, beyond small set of major retailers

Problems – *what could put you off?*

- Requires significant restructuring of businesses; including administration, sourcing, marketing, logistics infrastructure
- May be very difficult for large operators to create separate offerings and business structures for individual city regions, because of current scale and location of manufacturing processes, and logistics / procurement arrangements

Practical Implications – *what would need to change to make this happen?*

- Strong and reliable policy instruments, to level the playing field
- Proportionality when it comes to city region sourcing targets, and flexibility when it comes to non-indigenous products
- Pre-competitive collaborations and investments to develop city-region scale solutions to logistics and processing
- A well structured trading forum/brokering service to match sufficient production volumes (producers) to demand

The Consumer

Opportunities – *why might you be interested?*

- Potential increased availability of high quality food.
- Living in a place with a strong food culture and enhanced economic vitality is an attractive proposition
- Opportunities to engage with food in different ways and become empowered within food supply chains

Problems – *what could put you off?*

- On-going food insecurity could make the policy seem irrelevant
- With so many competing demands for time, greater engagement with the food system might not be a priority

Practical Implications – *what would need to change to make this happen?*

- Investment in infrastructure would increase access to nutritious food (e.g., market places, waste disposal and safe water supplies for food vendors).
- Greater awareness of food and nutrition and increased access to information

The Civil Society Organisation

Opportunities – *why might you be interested?*

- Alignment with organisational mandate for CSOs involved with health, poverty reduction, increased social coherence, sustainable agriculture, etc
- The possibility of influencing the functioning of a major economic sector and holding government to account
- Implementing new and innovative programmes around food, health and environment
- Creating new partnerships and alliances, and to mobilise the public

Problems – *what could put you off?*

- The possibility of 'capture' of the city region food system by political or economic elites for their own ends
- Might involve compromise of some organisational 'sacred cows' (e.g., some potential allies might be regarded as unacceptable by certain members or supporters of the CSO)

Practical Implications – *what would need to change to make this happen?*

- In some cases, funds would need to be available for engagement and implementation activities

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