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How can urban food policies contribute to a sustainable city economy? The case of London

Hélène Gourichon

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How can urban food policies contribute to a sustainable city economy? The case of London

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Urban Economic Development 2017-18

Abstract. How can urban food policies contribute to a sustainable economy? There is a lack of evidence to answer this question. This might be due to the inappropriateness of mainstream economic methods to capture key aspects of urban food policies in particular non-monetary value such as the environmental and social ones. Therefore, in an attempt to answer the question, a two-step approach is proposed: first, to develop an alternative theoretical framework and second, to study the London food policy. The following alternative economic models and concepts are adopted and adapted: the systemic perspective, doughnuts economics, circular economy, management of the commons, wellbeing based economy. Economic performance is thus assessed against two criteria: the capacity of the economic system to generate wellbeing and to sustain itself. Theoretical linkages between London's policy measure on urban agriculture and certain economic priorities of the city are explored (health, social connections and natural resources) and this is supported with empirical

evidence available from secondary sources. The case study shows that urban agriculture has a strong potential to increase wellbeing of people directly or indirectly involved in food growing. It impacts specific dimensions of wellbeing: food, health, income, social connections, participation, preservation of the environment and security from nature. In addition, urban agriculture supports the sustainability of the system as it contributes to the protection of the environment through ecosystem services and higher willingness of people involved in food growing to protect the environment. The case study reveals that, in urban food policy-making and evaluation, there is a need to better take into account the creation of non-monetized value, in particular environmental and societal. The role of civil society and city governments in creating value and preserving natural resources should also be more emphasized. Finally, the adoption of a more systemic perspective, when designing urban food policies, would foster better integration of policy sectors.

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1. Introduction

The implementation of comprehensive urban food policies is a recent trend. Around 100 urban food policies have been designed in cities in both developed and developing countries during the last two decades (IPES-Food, 2017). A good illustration of this tendency is the elaboration, in 2015, of the Milan Urban Food Policy Pact. The Pact advocates for the development of sustainable and just food systems in cities and has been signed by 167 mayors from all over the world.

The proliferation of urban food policies echoes the increasing awareness that conventional food systems are reaching their limits and demonstrate the willingness to embark on a process of transition towards more sustainable food systems. This policy trend raises food issues to a new level of importance (Cretella, 2016) and is encouraged by the growing participation of civil society in urban political fora as well as the mounting political power of cities. Until the beginning of the century, food was considered as “a stranger to the planning field” (Pothukuchi & Kaufman, 2000 in p1, Morgan, 2013) even if urban agriculture has always been under the radar of urban planners in particular with the British allotment movements in the early 20th century. The involvement of cities in food policy, beyond food growing, constitutes a major shift, mirroring a change of perspective: essentially state-led food policies focused food production in rural areas. Urban food policies problematize food in its social, environmental and economic dimensions (Cretella, 2016). They also deal with challenges such as food access, food safety, food security, public health, climate change, food waste and the contribution to the local economic development (IPES-Food, 2017).

In that regard, urban food policies have a considerable potential to drive the transition towards sustainable food systems (Biel, 2016) and cities. As such, they are under increasing scrutiny. A diversity of stakeholders, especially academics and civil society, are sharing experiences on the successes and failures of their implementation. Several city case-studies have been published (GIZ, 2016; RUAF, 2018; Urban Food Policy Institute, 2018). Attempts to develop frameworks and guidelines to monitor and evaluate the impacts of urban food policies have been made (Moragues-Faus, Marceau, & Andrews, 2016; Muller & Sukhdev, 2018; Pinchot, 2014; Prospero, Moragues-Faus, Sonnino, & Devereux, 2015). Yet, there remains a lack of empirical evidence on their economic benefits and limitations (Bedore, 2014; Scherb et al, 2012 in Moragues-Faus & Morgan, 2015),

although it is sought for by policy makers and crucial to inform policies that drive the transition towards sustainable and livable cities (IPES-Food, 2017). The importance of a strong evidence base on the economic contribution of these policies is especially stark in a context where economics have authority over other disciplines for policy-making (Raworth, 2017).

The evidence gap can be explained by the limited hindsight on urban food policies, given their recent emergence. However, our central argument is that paradigmatic economic theories and methodologies are coming short when it comes to grasping the complex dynamics brought to light by urban food policies. More specifically, the mainstream economic model, inspired by the Neoclassical School, shows limitations due to the disconnect between its theoretical tenets and the reality. It tends to fail when capturing the role of society and the environment in economic processes as well as the complex and dynamic interactions between all components of food systems. Moreover, it is not fully appropriate to take into account non-monetised value, such as that created by the commons or inside the households. Finally, urban food policies pursue economic objectives that are more extensive than the ones proposed by the mainstream economics: well-being and sustainability in particular. Therefore, more pluralistic approaches need to be researched and tested to understand the contribution of these policies to the city economy.

The objective of this paper is to answer the following question: “how can urban food policies contribute to a sustainable economy?” by taking the case of London. A secondary contribution of this paper is to propose and test an alternative model to answer the question. For this purpose, key shortcomings of mainstream economics for the analysis of urban food policies are identified and more suitable alternative models from pluralistic economics are researched (section 2). Then, these models are adopted and adapted to propose a new framework of analysis (section 3). The latter is used to examine a specific urban policy measure: the promotion of urban agriculture in London. While doing so, I attempt to understand, with a pluralistic approach, the mechanisms by which an urban food policy may contribute to a sustainable London economy. This is supported by a review of secondary evidence. Before concluding (section 5), key reflections to better grasp the economic contribution of urban food policies are drawn (section 4).

2. Analysing the economic contribution of urban food policies

To elaborate an adequate economic framework to analyse urban food policies, an overview of the policy issues they typically address is proposed, as well as insight about their objectives and components (2.1). Then, the mainstream economic model is examined to understand why it is not fully suitable to grasp urban food policies' economic contribution (2.2). Finally, alternative economic theories, concepts and models that are useful to understand how urban food policies contribute to city economy are discussed (2.3).

2.1. Characteristics of urban food policies

An urban food policy is defined as “a concerted action on the part of city government to address food related challenges” (IPES-Food, 2017, p.9). It usually refers to a set of integrated actions addressing multiple challenges belonging to different sectors (Bricas, 2017 in IPES-Food, 2017). Urban food policies all seek to address a common set of issues caused by the conventional *food system*¹, and as such aim at transitioning towards more sustainable systems. The conventional system is embedded in global neoliberal dynamics (Cretella, 2016) led by national and international processes (Moragues-Faus & Morgan, 2015), in which the agro-industry plays a key role in food production and distribution. Such system may be qualified as broken (Muller & Sukhdev, 2018, p.13). Indeed, it faces numerous and severe challenges: a significant part of the global population suffers from health problems (food insecurity, food safety, malnutrition and obesity); the food system is characterized by strong economic inequalities (low agricultural wages and unequal repartition of the value-added across value chains); and environmental issues have become more pressing (climate change, loss of biodiversity, soil depletion, air and water pollution).

City authorities are more willing to tackle these issues and do away with the conventional system than governments, as illustrated by their bolder and more innovative food strategies. Indeed, national governments have been weakened in the context of globalisation, deregulation and privatisation (Sassen, 2001). Moreover, cities have started to be perceived as more “effective political agents” compared to the State (Moragues-Faus & Morgan, 2015, p.1560). City branding and the increasing competition between global cities, leading to a race for innovative and attractive policy environments, might have

also played a role in the emergence of this trend. Civil society organizations have also spearheaded the recognition of food issues in the urban policy arena, helped by the growing role given to civil society in local policy debates (IPES-Food, 2017). This takes place through the establishment of food partnerships, food policy councils or food boards (Moragues-Faus & Morgan, 2015). Thus, the development of urban food policies marks the appropriation by the local level of food policy making, in stark contrast with the conventional system. Indeed, cities are perceived as places of empowerment and opposition as well as “privileged spaces for policy experiment” (Brenner 2002 in p309, Cretella, 2016). This explains the innovative character of urban food policies and its broad range of policy measures.

Urban food policy measures include: the promotion of urban agriculture; promotion of local production and consumption; better food waste management; higher access to safe, healthy and environmentally friendly food; reduction of food insecurity and poverty; development of alternative food suppliers for food diversification and better share of benefits; promotion of change of diets to reduce food animal production; promotion of creative food economy, food technology and innovation; development of food procurement encouraging local, healthy or environmentally food. Thus, urban food policies are multi-sectorial and connect various policy domains.

2.2. Limits of mainstream economics to grasp the contribution of urban food policy to city economies

Mainstream economics based on neoclassical economics tenets is the most common model taught and used (Lee, 2007). While economics is the “social science that studies individual and group decisions on how to use scarce resources to satisfy their wants and needs” (Black, Hashimzade, & Myles, 2013), much attention has been paid to the decision-making part - its most important domain of reflection being exchange and consumption (Chang, 2014) - and little to other aspects namely resources, wants and needs. More in particular, it does not fully allow for a diversified and renewed understanding of, on one hand, the very meaning and diversity of resources or means, in particular natural resources; on the other hand, purpose of economic processes, that is human

needs and satisfaction (Göpel, 2016). Such aspects appear to be in the blind spots of mainstream economics because they are not assigned a monetary value. However, they are key for food related economic processes.

The locus of urban food policies is on more sustainable food systems, which imply a great deal of understanding of their environmental implications. Yet, mainstream economics display a reductive consideration of the environment, in part due to their disconnection with natural sciences (Raworth, 2017). They tend to envisage economic growth process in isolation from the physical world (De Rosnay, 1975). Natural resources are only considered insofar as they can be monetized and only land is taken into account as a productive factor, as part of capital available for economic processes, along with manufactured capital and labour. Even so, during the 20th century, mainstream economics have tended to accentuate the focus on labour and capital, minimizing the role of land (Raworth, 2017). Moreover, air, water, life and earth are usually omitted from capital assets (Figure 2.1). Attempts to take into account some of the natural resources such as forest and soil in the estimation of wealth of nations by using market prices (World Bank, 2006) have shown limitations as the value of the role they play in ecosystem could not be captured. For instance, natural resources play a role of sink that can absorb waste generated by economic processes. They also provide resources that condition all economic activities, such as freshwater and breathable air (Figure 2.2). Ecosystems also play a role of regulation, for example green spaces help regulate air quality and climate (Göpel, 2016; Silvis & Van der Heide, 2013). Furthermore, they directly impact utility and wellbeing by providing recreational and leisure sites. All these can hardly be captured in standard economic models, if only by “externalities”. However, externalities of economic processes are not systematically estimated because of a lack of willingness to do so or/and due to the complexity of their measurement (Mazzucato, 2018). Mainstream economics also shows limitations regarding the role of waste, which are an inevitable output of consumption and production and have considerable economic implications.

With regards to utility, defined as “a person’s satisfaction or happiness gained from consuming a particular bundle of goods” (Lipsey, 1989 in p35, Raworth, 2017), it represents the end of economic processes and transactions. Utility is a cornerstone concept of mainstream economics and is almost always measured in monetary terms. Mainstream economics thus quantifies human happiness with market values. Humans are perceived as self-interested and rational: they know all possible strategies, including strategies of others, and are able to rank them according to their preference to maximise their utility (Basu, 2017). In this framework, relationship with others are governed by the market and exist through transaction of goods and services. Following this logic, more income means better lives. On the productive side, humans are equated to

labour, reduced to their capacity of producing monetary value (Figure 2.1). This vision of utility-maximizing and monetary value producing humans neglects their physical, psychological, emotional and social needs as well as non-monetary contributions to society (Göpel, 2016). Moreover, social relations are not considered as social capital itself but taken into account if and when they contribute to an individual’s productive capacity in the market economy. However, the way production is organized between individuals and their relationships can have significant impact on non-market outcomes: wellbeing, sustainability or resilience, for instance. In summary, utility is pursued through consumption in mainstream economics but human satisfaction can also be the result of sustainable ecosystem services and social interactions (Figure 2.2).

Finally, by capturing exclusively monetized activities, the mainstream model excludes non-commercial relationships, in particular those which are not embedded in the private or public sector. For instance, intra-household work, volunteer work or exchange of open source information cannot be seized while they contribute to increase economic performance. The world, in mainstream economics, is also perceived as certain with calculable risks (Chang, 2014). Nonetheless, such rationale is incompatible with food systems (Biel, 2016) characterised by unpredictability and complexity.

2.3. Alternative economic theories to grasp the contribution of urban food policy to city economy

Given the limitation of the mainstream economics, alternative models to grasp urban food policies’ contribution to the economy are considered. As a starting point, the characteristics presented in section 2.1 are used (Table 2.1).

Alternative economic theories and models to capture the role of natural resources in economic processes

The concept of *Doughnut Economics* combines environmental and social challenges and allows for a comprehensive perspective of sustainable development (Figure 2.3). It defines a safe and just operating economic space in which outer boundaries are the environmental ceiling and inner boundaries the social foundation or minimum human needs (Raworth, 2012)². Thus, satisfying human needs is perceived as the goal of economic processes. The operating space has to be understood as a complex system with interactions between actions to build social foundation and actions to remain under the ceiling since boundaries are interdependent. For instance, increasing food production to ensure food security will impact climate and change land use. Such framework is useful to guide economic activities and policy decisions and provides an interesting benchmark to assess them.

Figure 2.1. Mainstream economic model of wealth and utility production

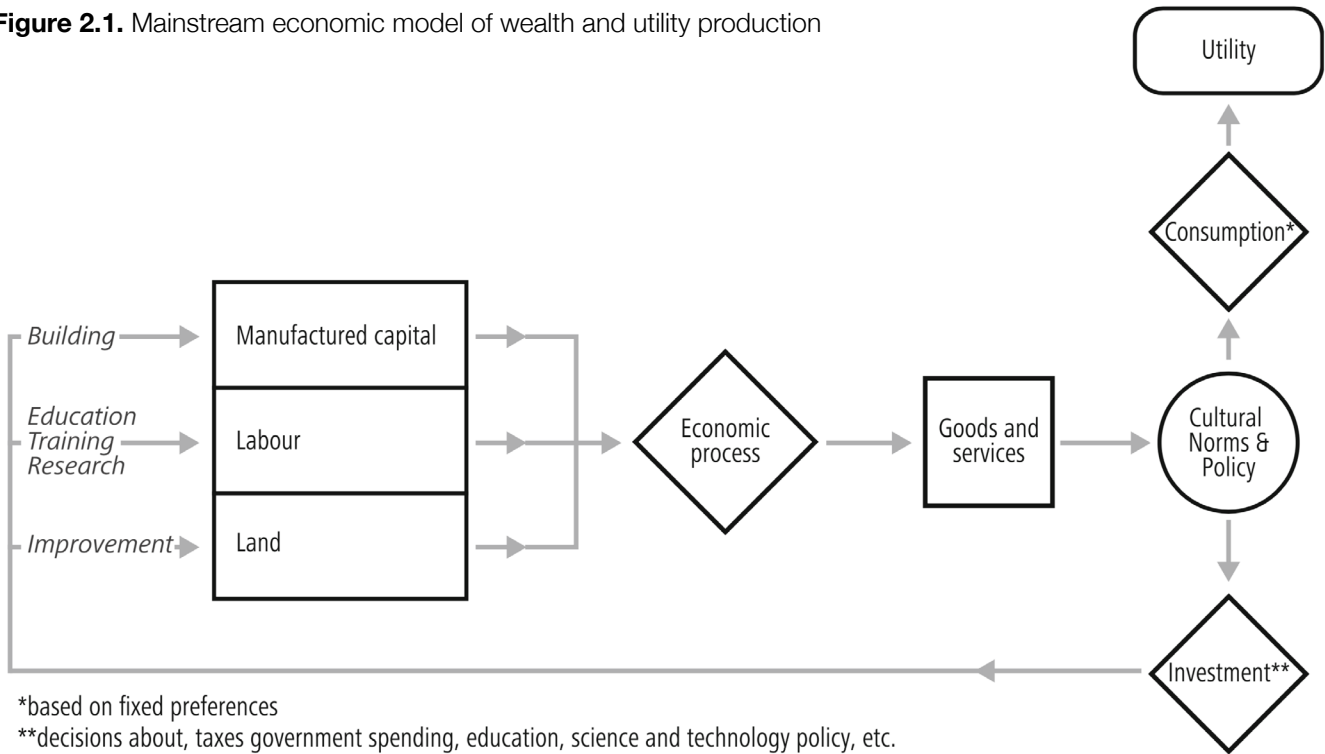


Figure 2.2. A differential model of wealth and utility production

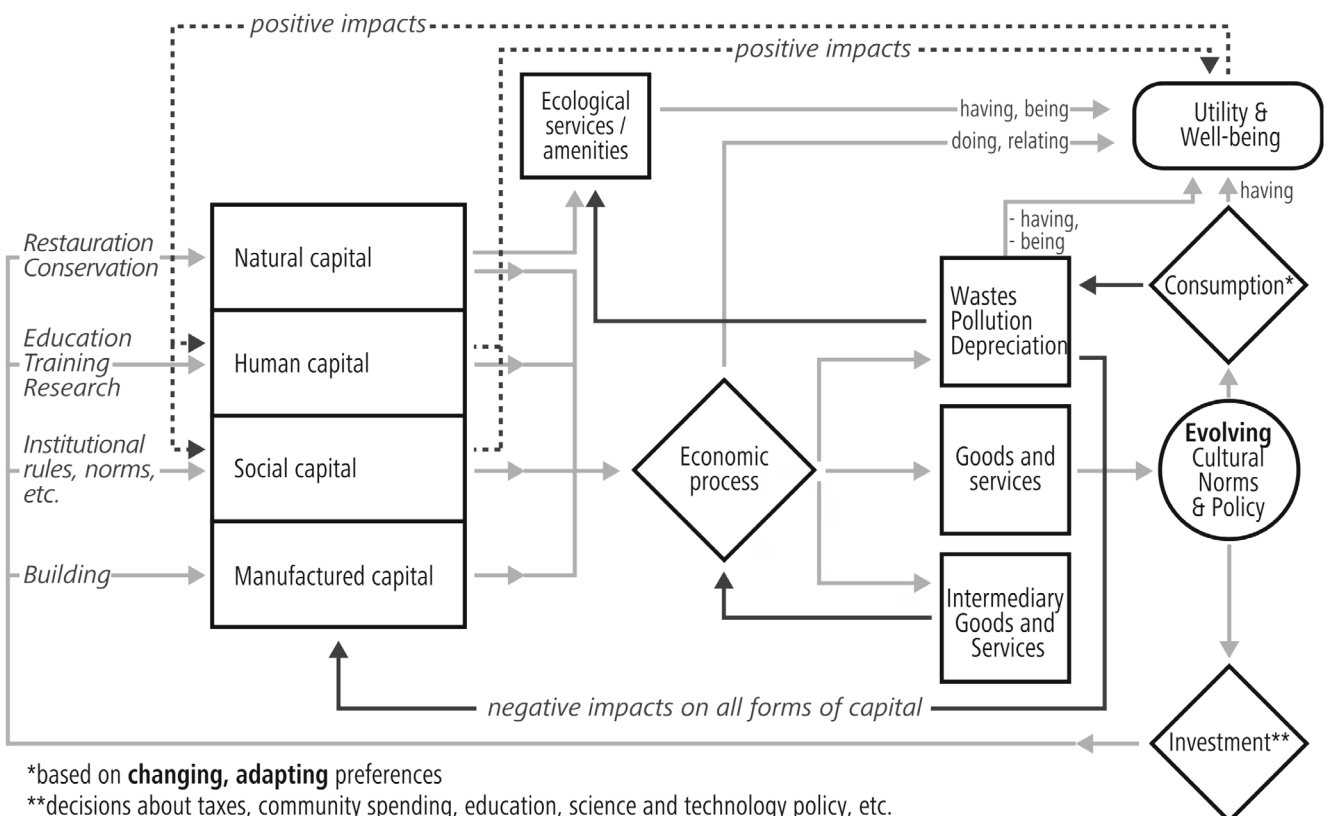


Table 2.1. Identification of alternative economic models to grasp the economic contribution of urban food policies based on their characteristics. Source: author.

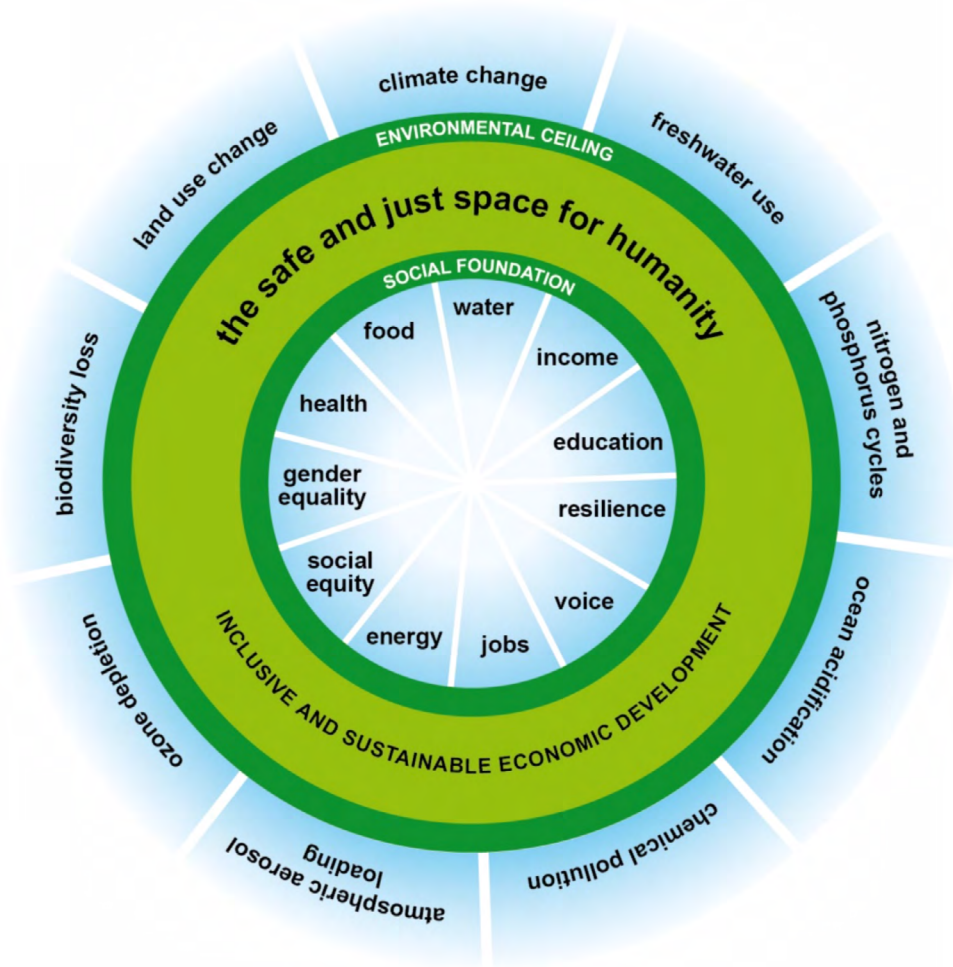
Characteristics of urban food policies	Alternatives models, theories or schools of thought to grasp the economic contribution of urban food policies
Target multiple dimensions of food and relate to several policy domains	<ul style="list-style-type: none"> • Systemic approach (connects several disciplines)
Target a specific territory	<ul style="list-style-type: none"> • Systemic approach (captures all interactions within boundaries including their relations with external environment)
Address the environmental unsustainability of the conventional food system	<ul style="list-style-type: none"> • Doughnut economics (embeds economic system in the Earth boundaries) • Systemic approach (captures the role of natural resources and waste) • Circular economy (proposes regenerative economy focusing on use of natural resources and waste)
Address social unsustainability of the conventional food system	<ul style="list-style-type: none"> • Doughnut economics (redefines economic goals namely building social foundations of human wellbeing) • Economics based on human needs and wellbeing
Grounded in civil society participation in political processes	<ul style="list-style-type: none"> • Management of the commons (commons can be effectively managed by community)

To understand the functioning of the so-called operating spaces of the doughnut economics, the *systemic approach* is useful. A system is “a set of elements in dynamic interaction, organized for a goal” (De Rosnay, 1975, p.58). It is a manner to organize knowledge and concepts from several disciplines and in particular ecology, economics and biology (De Rosnay, 1975). The primary goal of a system is to “maintain its structure and replicate itself” (De Rosnay, 1975, p.59) and thus become more resilient. A system is open to the environment as it is in permanent relation with nature: natural resources and energy are inputs and waste from production and consumption are outputs dumped in the environment. The systemic perspective is useful to understand the complex relationships, interactions and combinations between the different elements of a food system. In particular, it allows to identify and understand: the non-linear relationships between actions and dimensions within the system,

and the feedback loops (Muller & Sukhdev, 2018). A feedback loop is “a system component [which] can itself be influenced indirectly by the changes it has induced” (Sundkvist, Milestad & Jansson, 2005, p.225). There are two types of feedback loops: the reinforcing or positive feedback loop amplifies what is happening, while the balancing or negative feedback loop counters it (Raworth, 2017). The systemic approach can also capture delayed responses as well as cumulative effects.

It is also appropriate to capture the multiple networks within a city and their relationship with natural resources and energy (Figure 2.4). In particular, system dynamics approaches seize the feedback loops between the city and natural resources: the city has indirect impacts on the environment which modifies the city in return (De Rosnay, 1975). A good example of this is the role of the city in climate change and, in turn, its impact on the city. System thinking also offers a suitable lens to analyse the

Figure 2.3. Model of Doughnut economics. Source: Raworth, 2012.



food and agricultural sector, as it encompasses the unpredictability of nature (Figure 2.5). Indeed, there is a risk of not embracing the food system complexity when designing policy responses to food issues. If they are conceived based on a simplified understanding of food system mechanisms, envisaging only short-term effects and dealing away with feedback loops, they may have adverse effects. Moreover, a simplistic perception of food production and respective agricultural policies can result in higher vulnerability of the system (Biel, 2016). For instance, tackling soil fertility issues by subsidizing Nitrogen-Phosphorous-Potassium (NPK) fertilizers will fail to embrace soil complexity and its needs for long-term regeneration. Moreover, climate change, in part fuelled by the conventional food system operations, has undoubtedly fostered uncertainty regarding the sustainability of food production. As a consequence, the ability to seize, frame and nest multiple and complex dimensions of economic processes associated with complexity of nature is key to understand the contribution of food policies to the economy.

Grounded in the systemic perspective, the model of *Circular Economy* is also useful to assess urban food systems, it is opposed to the perception that cities are linear metabolic

system (Deelstra & Girardet, 2001). Circular economy focuses on industrial processes and offers an apt framework to analyse food production and transformation, including waste generation. The model distinguishes the *open economy*, with unlimited inputs resources and outputs sinks, and the *closed economy* in which resources and sinks are limited (Allwood, 2014). It is defined as “a regenerative system in which resource input and waste, emission, and energy leakage are minimised by slowing, closing, and narrowing material and energy loops” (Geissdoerfer et al., 2017, p.759). It mimics ecosystem where all output from an organism is also an input that is key to its renewal and sustainability (Deelstra & Girardet, 2001). Circular economy can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling (Geissdoerfer et al., 2017). The model distinguishes the biological and technical. The former refers to food and biologically-based material which can feed back to the system and they regenerate living systems, through composting for instance. The latter includes products that should be restored or recovered (Ellen MacArthur Foundation, 2017).

Figure 2.4. System of city with inputs, outputs and feedback loops. Source: De Rosnay, 1975

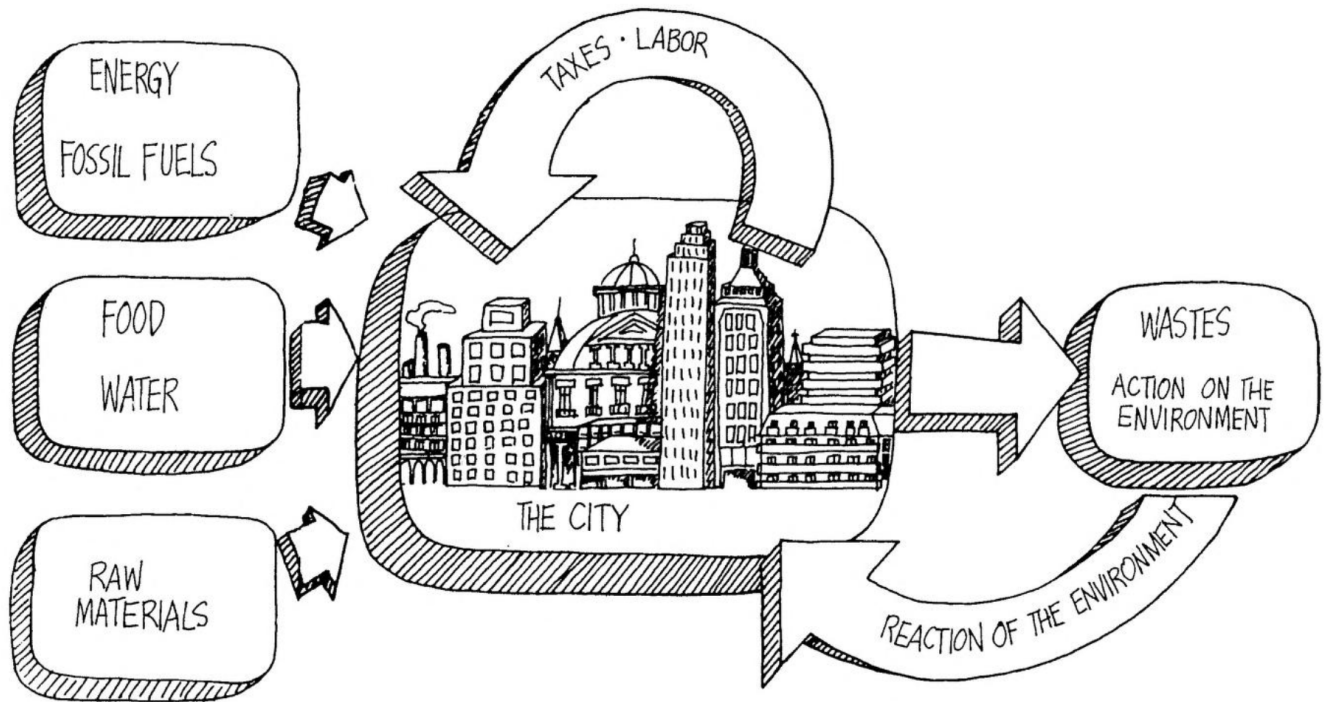
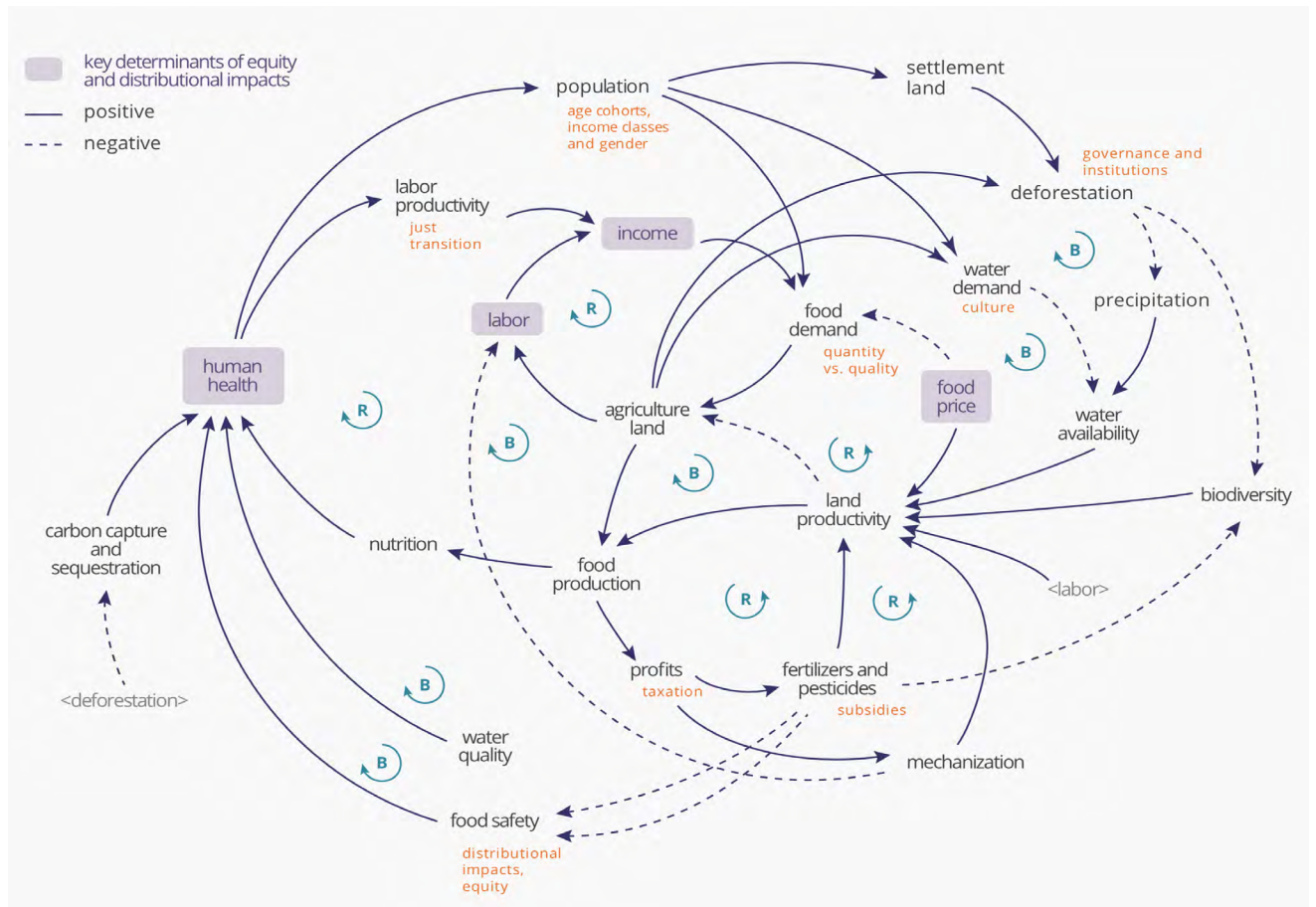


Figure 2.5. Illustrative causal loop diagram of a generic food system. Source: Muller & Sukhdev, 2018.



Alternative economic theories and models to understand the end goal of economic activity

Some economists, using other social sciences such as ethnography or anthropology, have challenged the neoclassical tenets of rational, self-interested, utility-maximizing humans: on one hand, human decisions are influenced by a wide range of factors which are not exclusively rational (Basu, 2017) and on the other hand, increasing income (as a proxy for utility) is not sufficient to achieve wellbeing and achieve fundamental human rights (Raworth, 2017).

Therefore, the need to measure wellbeing to assess economic performance has been increasingly recognized (Raworth, 2017; Stiglitz, Sen, & Fitoussi, 2009). However, this is challenging given its multidimensionality. According to the economist Raworth (2017), wellbeing encompasses the following dimensions: water, food, health, gender equality, social equity, energy, jobs, voice, resilience, education, income. Stiglitz, Sen & Fitoussi (2009) consider that, at least, these dimensions should be included: material living standards (income, consumption and wealth), health, education, personal activities (including work), political voice and governance, social connections and relationships, environment (present and future conditions), insecurity (of economic and physical nature). In comparison, the economist and environmentalist Manfred Max-Neef identifies few, finite and non-hierarchical human needs based on empirical research with poor communities in Latin America. According to him, human needs are the following: protection, affection, understanding, participation, leisure, identity and freedom. Moreover, having is not the only way to pursue creation satisfaction, *being*, *doing* and *interacting* can also increase satisfaction. Moreover, having is not synonymous of market consumption as it can refer to non-monetized or quantified goods (Göpel, 2016).

Measuring wellbeing or people's needs is also difficult: it requires objective and subjective data, the latter being obtained through judgment of value (Stiglitz et al., 2009). Subjective wellbeing includes evaluation of one's life, happiness, satisfaction, positive (e.g. pride and joy) and negative emotions (e.g. anxiety and pain) (Stiglitz et al., 2009).

By distinguishing consumption from wellbeing and thus redefining the benchmarks of economic performance, the benefits of a broader range of policy actions - not only those related to the market - can be identified. Moreover, by identifying the different dimensions of wellbeing, a prominent role can be given to social capital insofar as it helps to meet the need for social relationships, social capital being defined as "the wealth of trust and reciprocity that is created within social groups as a result of their network and relationships" (Putnam, 2000 in Raworth, 2017, p.76).

Alternative economic theories and models to understand non-monetized relationships

Common goods are shared and rivalled public goods. Because of the *tragedy of the commons*, conventional solutions for their management are either the regulation by the government or the privatization of resources. However, Elinor Ostrom, who received in 2009 the Nobel Prize in Economics Sciences, by researching real life examples of management of public goods, demonstrated that there is a third way to manage common goods. Co-operative institutions can govern resources by themselves (Ostrom, 1990 in Buglione & Schlüter, 2010). Thus, commons are defined as "sharable resources of nature or society that people choose to use govern through self-organisation" (Raworth, 2017, p.82). Her research shown that collective efforts can be more successful to use and monitor natural resources than government or private control. It is also a demonstration that value can be created outside the market (Mazzucato, 2018) and that social capital can play a key role in the management of natural resources.

These models allow to re-embed the economy in society and the environment (Raworth, 2017), by opposition to the market economy *dis-embedded* from society as described by Polanyi (Biel, 2016). While the market remains key insofar as it generates incomes and employment, other crucial dimensions need to be considered to fully capture the contribution of urban food policies to the economy.

NOTES TO CHAPTER 2

1. This term would be further defined in section 2.3.
2. The 11 dimensions of the social foundation are based on quantified priorities set up by governments during the Rio+20 Conference for Sustainable Development. The nine dimensions of the environmental ceiling reflect the boundaries defined by Rockström et al. (2009), they are also quantified (Raworth, 2012).

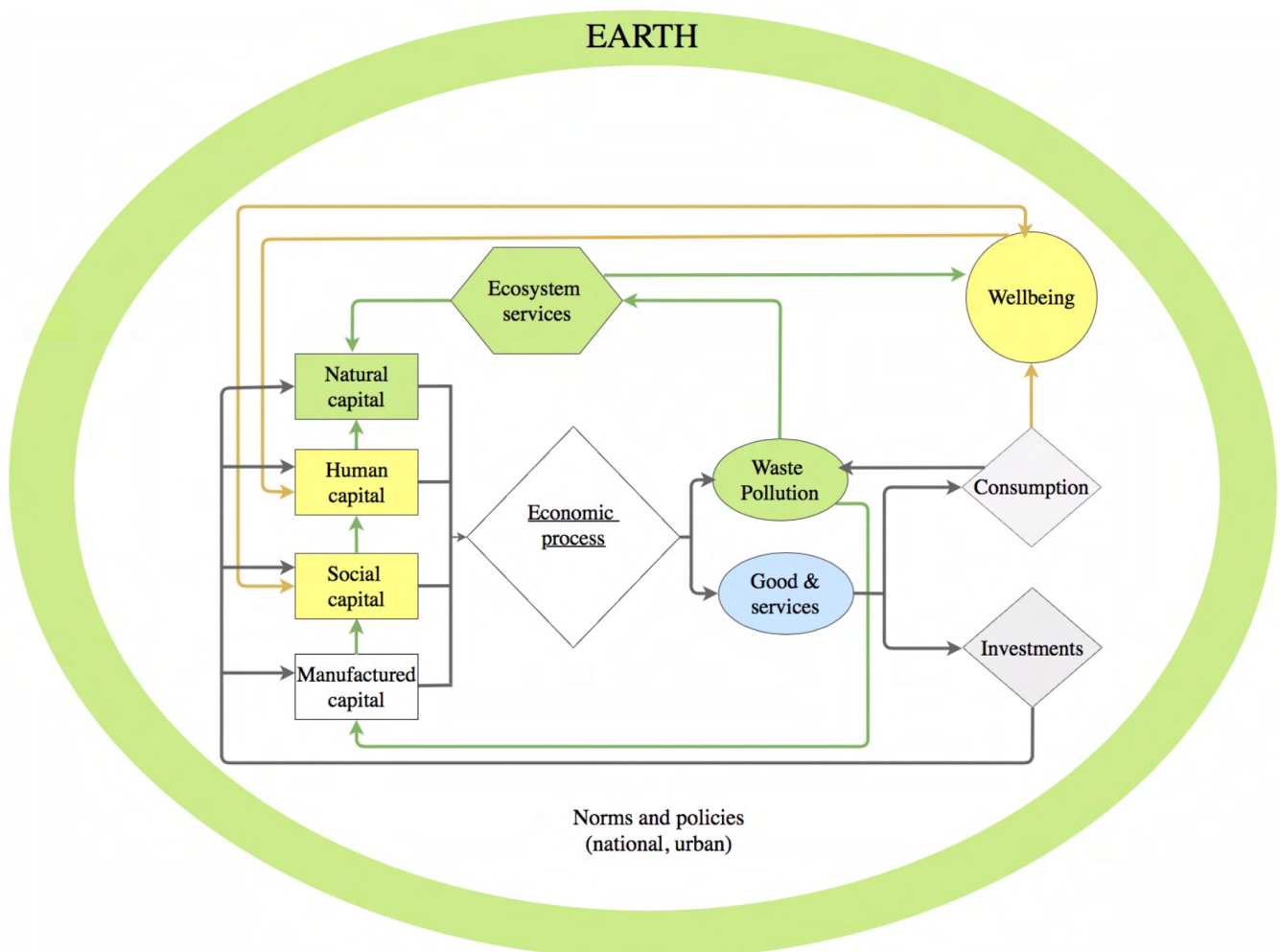
3. Defining a pluralistic framework to analyse the contribution of urban food policy to city economies

An alternative analytical framework based on a pluralistic economic approach is used, considering mainstream and alternative models and it proposes an alternative model of wealth production. The model is represented in Figure 3.1 and is an adaptation from Göpel (2016) and Raworth (2017). It includes the circulation of monetized value as well as the value produced by the commons and inside households. The model allows for a systemic perspective of the economic activity of the city and is embedded in Earth boundaries. Economic processes are thus intrinsically linked to human and social capital and to the environment.

Economic performance, in this framework, is evaluated against two objectives:

1. The ability of the economic system to be resilient, to sustain and replicate itself (De Rosnay, 1975);
2. The ability of the economic system to lead to wellbeing and satisfy human needs.

Figure 3.1. Framework of analysis.
Source: author based on Göpel, 2016; Raworth, 2017



Aside from its reproducibility, the ends of the economic process, in this framework, are the satisfaction of human needs and wellbeing according to the definitions proposed by Max-Neef (Göpel, 2016); several governments during the Rio +20 Conference on Sustainable Development, as used in Doughnut Economics; and Stiglitz, Sen & Fitoussi (2009). Human needs and factors to reach wellbeing are classified into four categories (Table 3.1) (Pittman & Zeigler, 2007).

The framework also considers the role of ecosystems:

- provide resources for economic process;
- are altered by waste & pollution;
- directly affect wellbeing and human needs;
- impact the resilience of the system;
- and, waste & pollution impacts all sources of capital.

It also includes the role of social capital, understood as civil society, community and commons, which:

- is part of capital for economic process;
- directly impacts wellbeing and human needs;
- is, in turn, influenced by wellbeing.

For social capital, the following definition of Putnam is used (2000, p.76, Raworth, 2017): “the wealth of trust and reciprocity that is created within social groups as a result of their network and relationships”. Human capital is also directly impacted by wellbeing. Finally, it is considered that norms and policies can influence specific dimensions of the framework, several or all at the same time.

Table 3.1. Human needs and factors to reach wellbeing Source: authors based Pittman & Zeigler, 2007; Göpel, 2016; Stiglitz, Sen & Fitoussi, 2009; Raworth, 2017.

Basic	Individual	Societal (in relation to others)	Environmental (in relation with the environment)
<ul style="list-style-type: none"> • Water • Food • Energy • Health • Education/ Understanding • Income 	<ul style="list-style-type: none"> • Voice/Freedom • Jobs (personal activities) • Leisure (personal activities) • Resilience / Security (economic) 	<ul style="list-style-type: none"> • Gender equality • Social equity • Protection • Affection • Participation • Identity • Social connections and relationship 	<ul style="list-style-type: none"> • Preservation of the environment (present and future) • Resilience / Security (from physical nature)

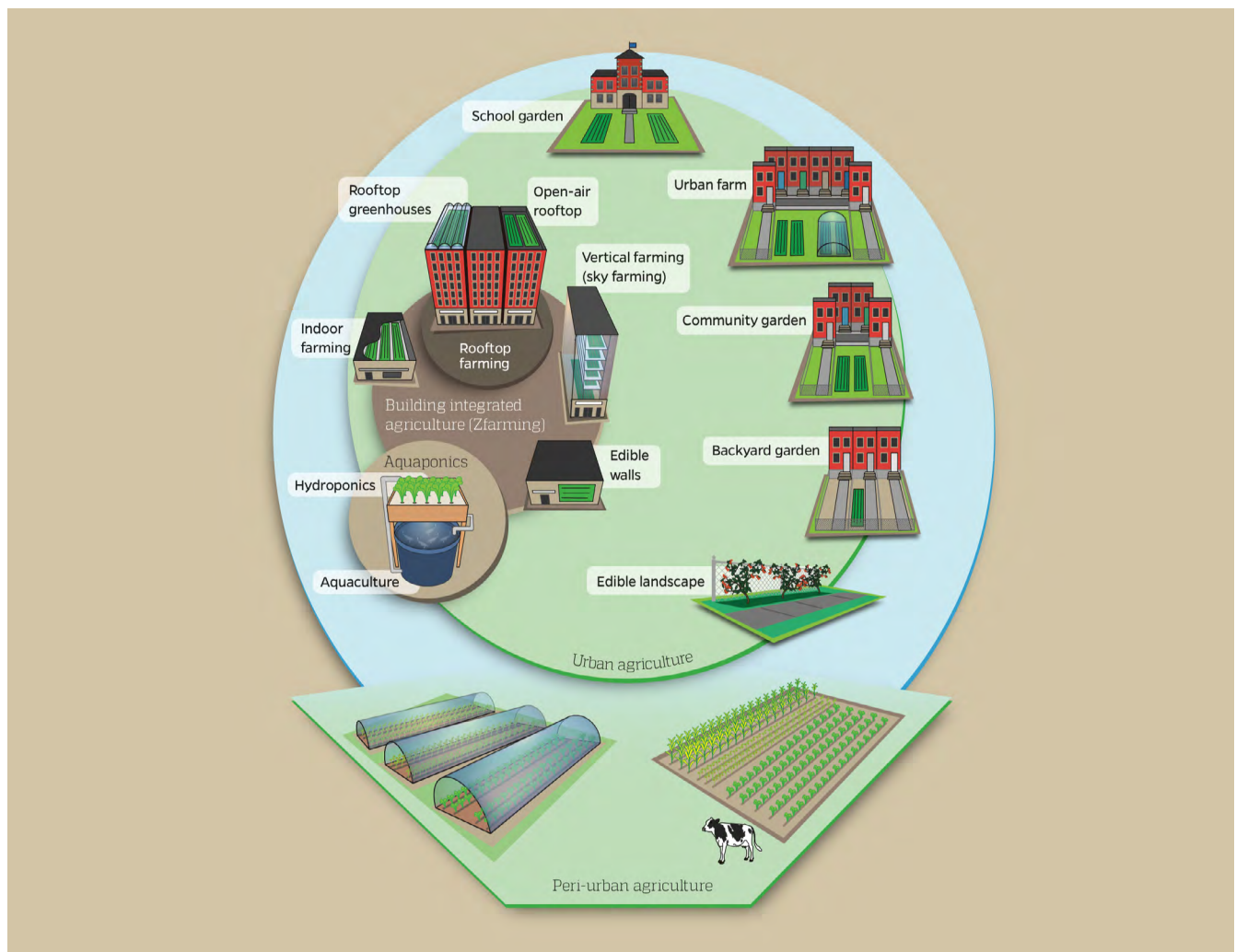
4. Case Study: How can urban food policies contribute to a sustainable London economy?

The objective of the case study is twofold: (1) understand, with a pluralistic approach, how the urban food policy of London may contribute to a sustainable London economy. The case study focuses on a specific policy measure: the promotion of urban agriculture in London. The objective is to understand the intended mechanisms by which the policy may affect the economy, using the framework outlined above. This is supported by a review of the secondary evidence available for London and for other large cities. Then, based on the findings, (2) key reflections from the case study are proposed to better grasp the economic contribution of urban food policies.

4.1. How can urban agriculture policy contribute to London's economy?

Since the early 20th century, allotments have been part of the landscape in London. However, the city's first comprehensive food strategy, *Healthy and Sustainable Food for London* was published only in 2006. In 2018, a new strategy was prepared and includes the promotion of *Food growing, community gardens, and urban farming* (Mayor of London, 2018b). The policy aims at: protecting food growing spaces; encouraging the provision of new ones; investing in green infrastructure; supporting Capital Growth¹ as

Figure 4.1. Typology of urban agriculture. Source: Santo, Palmer & Kim, 2016.



well as other food networks; ensuring the development of social enterprises and job creation associated to food production (Mayor of London, 2018b). Urban agriculture covers a wide range of practices (Figure 4.1). In London, this includes: commercial farms and community supported agriculture, allotments, community gardens, school gardens and household farming in private gardens (Mok et al., 2014). It involves the private, public and commercial sectors. Horticulture is the most common production and practiced in most sites by most food growers. However, grazing, farm woodland and non-horticultural crops are the most significant in terms of area, while commercial farms are the major food producers in the city (Mok et al., 2014). Despite several initiatives of vertical, underground, rooftop and indoor farming as well as edible green walls in London, there is little information on the number of facilities and quantities of food they produce. The locus of the case study is on community gardens, allotments and school and city farms as these sites are the most representative in terms of persons involved in London and are also the most studied.

The case study focuses on three challenges that hamper the economy of London and that are related to its food system, as identified in the report *Economic Evidence Base for London 2016*: (1) health, and more specifically obesity and overweight; (2) low level of wellbeing and human satisfaction; and (3) depletion of natural capital (Mayor of London, 2016). In a final section, the potential of the commons in sustaining the economic system is assessed.

Urban agriculture and obesity

Policy issue

Overweight and obesity increase the risk of health issues and in particular of cancer, type 2 diabetes and heart disease (UK Government, 2017). This undermines the economy by directly hampering the capacity of human capital: obesity reduces life expectancy by 9 years (UK Government, 2017). It also weakens the social capital due to the discrimination associated with obesity (Jackson, 2016). Overweight issues have thus been the major drivers of the first food strategy of London in 2006 (Reynolds, 2009). Indeed, 58.4 percent of adults are classified as overweight, among them, 20 percent are obese (Active People Survey, Sport England, 2015 in Mayor of London, 2016). In comparison with ten other global cities, London shows the second highest level of overweight, after Johannesburg. With regards to childhood, the prevalence of overweight is 37.2 percent among the 10-11 year olds (Health and Social Care Information Centre, NA in Mayor of London, 2016). According to the National Health Service (NHS), overweight and obesity are the result of poor diet, food poverty, physical inactivity and obesogenic environment

(NHS, 2016 in Mayor of London, 2016).

Policy response and theoretical linkages between urban agriculture and obesity

To tackle obesity, planning policies usually rely on market mechanisms such as incentives to healthy food suppliers and limitation of over-concentration of takeaways, especially close to schools (UK Government, 2017). The framework described above is applied to assess the theoretical contribution of urban agriculture as another measure to reduce obesity. Three mechanisms are at play: urban agriculture can change consumption patterns by (1) encouraging the consumption of healthier food and (2) reducing food poverty. It can also directly affect health with (3) more physical activities for food growers. The relation between health and wellbeing consists in a feedback loop which can be either reinforcing or balancing: health influences wellbeing and wellbeing influences health (Department of Health, 2014). Two categories of individuals can benefit from urban farming: those directly involved in food growing and those participating or visiting community gardens, urban farms or school gardens. The latter can modify their diet through higher awareness of the benefits of healthy food. In this case, they modify their preferences and consumption through market mechanisms. These causal pathways are illustrated in Figure 4.2.

Evidence on urban agriculture's impact on obesity

A UK national survey showed that food growers believe that gardening improve their health (Saunders, 1993 in Garnett, 2000). More concretely, a study carried out in the USA and comparing the weight of 500 food gardeners with the rest of the population in the same city, found that both women and men gardeners have significantly lower Body Mass Index (Zick, Smith, Kowaleski-Jones, Uno, & Merrill, 2013). This can be explained by an improved diet: they consume more fresh foods and in particular fruits and vegetables compared to those who do not produce food (Anon, 1991 in Garnett, 2000 and Golden, 2013). Indeed, they are 3.5 time more likely to eat five portions of fruits and vegetable per day (Alaimo et al. 2008 in Schmutz et al., 2014). Moreover, out of 87 papers on the impacts of community gardens, 37 reported an increase of consumption of fresh food among food gardeners (Guitart, Pickering, & Byrne, 2012). Accessing fresh foods is part of the key motivations of urban growers (Armstrong, 2000). Higher consumption of fruits and vegetables reduces heart disease by 30 percent (British Heart Foundation, 1999 in Garnett, 2000). Moreover, a review of literature conducted by the University of California, including 78 analyses on the impacts of urban agriculture, also showed that urban agriculture enhances the access to food in insecure areas and represents an affordable way to access fresh food (Armstrong, 2000; Balmer et al., 2005; Corrigan, 2011; Larsen & Gilliland, 2009; Patel, 1991; Teig et al., 2009 in Golden, 2013). Finally, urban gardening is also a source of physical activities of moderate intensity. For instance, digging or pulling weeds is the equivalent to swimming in terms of calorie

Table 4.1. Overview of data available on urban agriculture in London. Source: authors based on London Assembly, 2006; Garnett, 2000 and School Farms Network, 2018

	Number of sites	Total area allocated to agriculture	Number of individuals involved
Commercial farms	Not available	11,760 ha (Mok et al., 2014)	2,000 employees (Garnett, 2000)
City farms	8 (Garnett, 2000)	13 ha (Garnett, 2000)	650,000 visitors between city farms and community gardens (Garnett, 2000)
School farms	116 in UK (School Farms Network, 2018)	Not available	Not available
Community gardens	77 (Garnett, 2000)	5 ha (Garnett, 2000)	650,000 visitors between city farms and community gardens (Garnett, 2000)
Allotments	36,000 (London Assembly, 2006)	900 ha (London Assembly, 2006)	Direct participation: < 36,000 Indirect participation: < 90,000 (average size of a household in London being 2,5)
Private gardens	Not available	Not available	Not available

expenditure (McArdle, Katch, & Katch, 2010). Individuals indirectly involved in food growing, by volunteering or visiting gardens and farms, show a higher awareness about the benefit of healthy food. According to the Soil Association “the more people who understand about food production, the healthier [the] communities will be” (London Assembly, 2006, p.10). Furthermore, several communities and city farms have programmes on nutrition awareness and healthy cooking and practices which result in change of preferences and consumption. For instance, a study carried out in the USA showed that 8-11 year old students involved in farming activities have a more positive attitude towards vegetables (Lineberger and Zajicek, 2000 in Schmutz, Lennartsson, Williams, Devereaux, & Davies, 2014) and the consumption of vegetables further increase if parents are involved in the school programme (Ransley et al., 2010 in Schmutz et al., 2014).

Nonetheless, it is difficult to estimate the share of the London population who is currently benefiting from urban farming. The main reason is the lack of information regarding the number of individuals directly or indirectly involved. The information publicly available is summarized in Table 4.1. Capital Growth reports that 200,000 Londoners are part of its network, that is to say 2.2 percent of the population of London (Mayor of London, 2018b), and 36,000 are allotment gardeners. Moreover, around 650,000 Londoners visit city farms and community gardens each year (Mok et al., 2014).

To conclude, urban farming, through different mechanisms, shows a significant potential to tackle the issue of obesity. However, only a specific and maybe restricted fringe of the population can benefit from this policy measure. It also

seems that the number of people involved in urban farming could be higher, given the willingness of Londoners to practice farming as illustrated by the rising and unsatisfied demand for allotments (London Assembly, 2006).

Urban agriculture and social capital

Policy issue

People living in big cities are less happy than those living in small cities, suburbs or rural areas: this not only the result of urban problems, such as crime or poverty, but because of the core characteristics of urban life including the size, density and heterogeneity (Okulicz-Kozaryn & Mazelis, 2018). According to the *Economic Evidence Base* report, Londoners show the lowest level of happiness, satisfaction and feeling that the thing they do in life are worthwhile compared to other regions in UK (Mayor of London, 2016). Only 54 percent of Londoners expressed satisfaction with regards to London as a place to live (GLA Intelligence Unit, 2015 in Mayor of London, 2016). Anxiety is also higher in London than other cities (Mayor of London, 2016). Urban farming can contribute to strengthen wellbeing by improving health (as mentioned above), increasing income (Golden, 2013) or by being a source of leisure (London Assembly, 2006). Here, we seek to identify the role of urban agriculture on another dimension of wellbeing: the social connections and relationship (Stiglitz et al., 2009), as well as networks (Raworth, 2017); the effects of social relationships on wellbeing being recognized (WHO, 2016). This a feedback loop mechanism, as higher wellbeing also results

in higher contribution to community and society (Department of health, 2010 in Schmutz, Lennartsson, Williams, Devereaux, & Davies, 2014).

Policy response and theoretical linkages between urban agriculture and social connections

Improving wellbeing is a rising concern in public policies (Stiglitz et al., 2009), but such objective is complex given its multidimensionality (section 2.3). To tackle this issue, the *London Plan* proposes to “Build [ing] strong and inclusive communities” as its first policy (Policy GG1) (Mayor of London, 2017). To achieve this objective, the policy aims at increasing economic opportunities for all. It also supports the provision of services and amenities to “encourage and strengthen communities, increasing active participation and social integration, and addressing social isolation” (Mayor of London, 2017, p.13). By creating spaces for socialization and gathering for people sharing common goals, urban agriculture encourages social interactions which can, in return, enhance their wellbeing (Figure 4.2).

Evidence on urban agriculture's impact on social connections

Food growers in the London borough of Barnet testified that “a site provides an additional circle of friends and a support network for those who need them” and in an allotment association in Greenwich they indicate that “many firm friendship have originated [there]” (London Assembly, 2006, p.8). This is particularly true for community gardens (Patel, 1991; Saldivar-Tana-Ka & Krasny, 2004; Teig et al., 2009 in Golden, 2013) where one of the key motivations for food growers is to foster social development and cohesion (Guitart et al., 2012). Among 87 papers examining community gardens, 33 highlight their social benefits such as community building and resilience (Guitart et al., 2012). Indeed, sites for urban farming and more in general green spaces encourage social interactions and promote a sense of a community (WHO, 2016). Development of relationships is not only the results of increased social interactions but it can also be encouraged by the pursuit of common goals in community gardens for instance (Colding et al., 2013). Urban farming positively impacts social interactions between growers but also among their relatives. For instance, in an allotment society in Croydon, it is estimated that one third of the members are not growers but neighbours that use the site as a place for social interactions (London Assembly, 2006). In addition to create links among individuals within neighbourhoods, urban farming shows a potential in the development of cross-generational integration as illustrated by the exchange of practices between youth and seniors (Golden, 2013). Furthermore, there are community gardens in London where the participation of marginalised and disabled people is encouraged (London Assembly, 2006) with the objective to develop skills, confidence as well as friendships (Garnett, 2000).

Multiplication of social connections as well as inclusion of minorities are possible in community gardens, city farms or school gardens but this may be less true in commercial

farms or private gardens. The positive impact of allotments on social connections within small communities have been demonstrated, however impacts on the scale of London are difficult to estimate given the limited aggregate information on persons involved in urban agriculture Table 4.1.

Urban agriculture and depletion of natural resources

Policy issue

Like all large cities, London is unsustainable: the city has an ecological footprint of 5.38 gha per capita, meaning that if everyone on the planet consumed as much as the average London citizen, 3.05 planets would be required to sustain them (Calcott & Bull, 2007). After housing, food is the first source of use of natural resources in the city. The sustainability of the Earth system and particularly the food system in London is threatened. Environmental challenges are related to air quality, green space, biodiversity, greenhouse gas emissions, energy use, waste, flood risk, heat risk, water scarcity, river water quality and ambient noise (Mayor of London, 2018a). Since 2000, air quality is non-compliant with the legal limits (Jacobs, 2017) and this is the most important environmental threat that the city faces (Mayor of London, 2018a). Greenhouse gas (GHGs) emissions have declined by 16.3 percent of the last 25 years but the city remains reliant on fossil fuels, a key contributor of GHGs (Mayor of London, 2016). Climate change is increasing the risk of extreme weather events and in particular heat, drought and flood risks. Nowadays, 16 percent of London is currently situated within a flood plain. London generates around 15 million of tonnes of waste and the recycling rates are low, undermining the city transition towards a circular economy. Water and air pollution also threaten the natural environment resulting in loss of biodiversity: the number of plants and animals within the city is declining (Jacobs, 2017). Moreover, there is a loss of green space across the city (Mayor of London, 2018a). The depletion of natural capital thus reduces the ecological resilience of the city. Because there are areas more vulnerable than others, environmental challenges might certainly further increase inequalities. Ecosystems provide services which are essential for the economy and to sustain the city system. In cities, the most valuable service is the environmental regulation: climate and air quality regulation, carbon sequestration and storage, moderation of extreme events, maintenance of soil fertility and pollination (TEEB, 2010). Ecosystem services also provide habitat for species in cities as well as resources with food production (TEEB, 2010). Finally, they are source of so-called cultural services, they bring recreation, mental and physical health for instance. Through all these services, the natural environment fosters wellbeing (Stiglitz et al., 2009). As an example, a study on life satisfaction and air quality in London, identified that air pollution was negatively correlated with life satisfaction (Mackerron & Mourato, 2009).

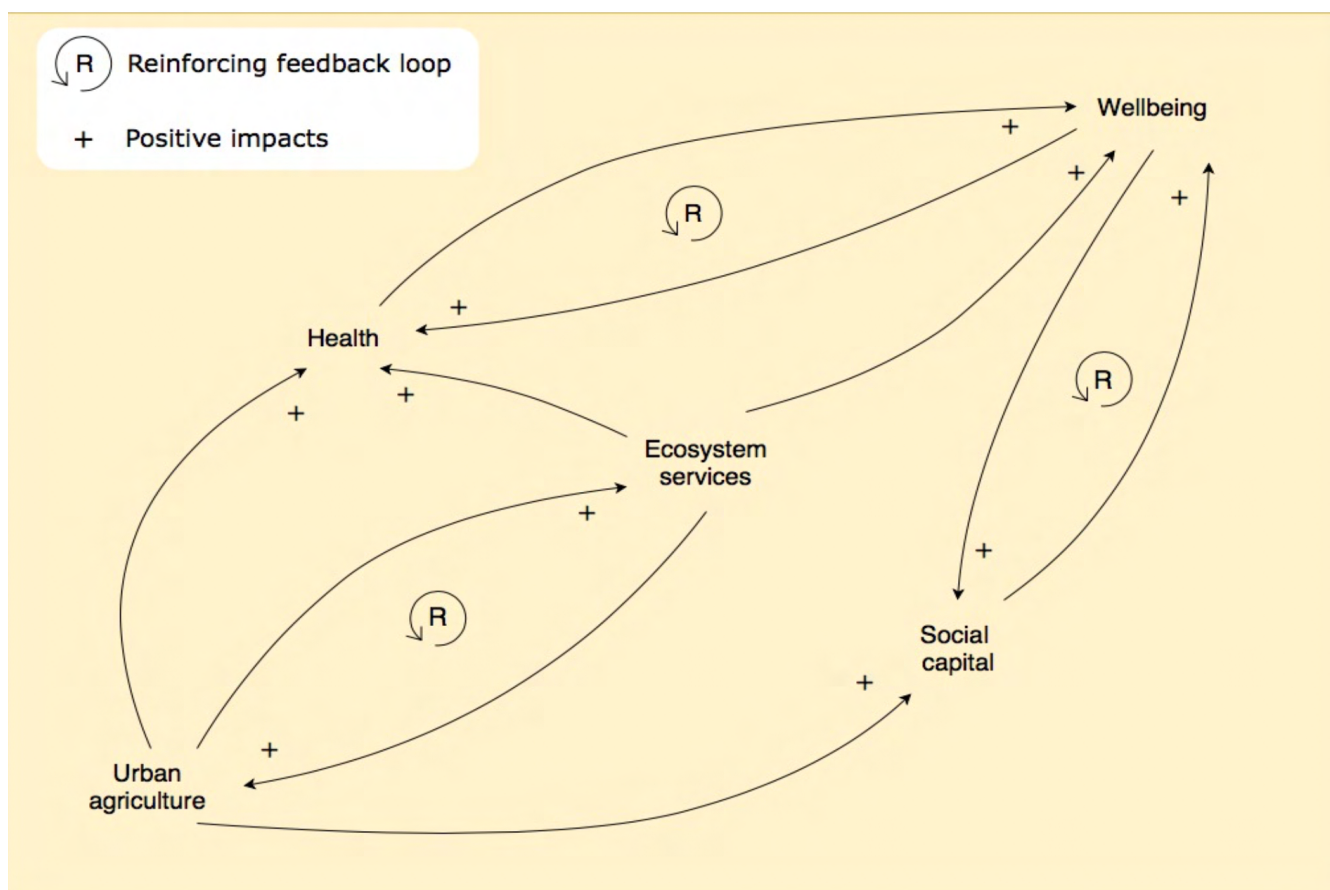
Policy response and theoretical linkages between urban agriculture and depletion of natural resources

To tackle environmental challenges in London, a new *London Environment Strategy* has been published this year. It encompasses the following areas: air quality, green infrastructure, climate change mitigation and energy, waste, adaptation to climate change, ambient noise and low carbon and circular economy. There is no mention of urban agriculture in the London Environment Strategy although it aims at, among other objectives, protecting and increasing green infrastructures and conserving the wildlife and natural habitats (Mayor of London, 2018a). The *London Food Strategy* includes few policies associated with the protection of the environment and targets the reduction of food waste and GHGs, including from food transport and the reduction of plastic packaging. However, urban agriculture shows potential in the preservation of ecosystem services and therefore can contribute to sustain the city system and embed it within the Earth boundaries. There are two mechanisms at play: (1) having green spaces in a city is beneficial for the preservation of the environment, given their impacts on air, temperature, water, GHGs emission and biodiversity. Green spaces also act as a waste sink, which fosters the development of a circular economy. Moreover, (2) by working and being in contact with nature, individuals involved in urban agriculture show a higher willingness to protect the environment.

Evidence on urban agriculture and depletion of natural resources

There is a broad range of evidence with respect to the benefits of urban agriculture on ecosystems and resilience. First of all, vegetation is a passive filter of urban air and thus reduces the level of air pollutants (Deelstra & Girardet, 2001; Santo et al., 2016). Trees and plants also capture and store CO2 (WHO, 2016), mitigating the risk of climate change. Reduction of *food miles* also contributes to the reduction of CO2 emissions even if the research findings are mixed in this regard, stating that transport is not the major contributor of food footprint compared to production for instance. Indeed, food production is responsible of 41 percent of CO2 emissions but transport, including overseas, still accounts for 14 percent (WRAP&WWF, 2011). At the city level, GHGs emissions resulting from food transport represent one fifth of the emission of the sector (Brook Lyndhurst, 2008). However, urban agriculture, by contributing to urban sprawl, can also lead to more use of transport which thus counteracts the benefits in terms of reduction of GHGs. Urban farming also fosters the ecological resilience of the cities by moderating the temperature and increasing humidity since plants and trees enable the reduction of urban heat island effect (Santoyo-Castelazo & Azapagic, 2014; WHO, 2016). For instance, the cooling effect of urban parks is around one degree Celsius and the effects can be felt up

Figure 4.2. Systemic representation of the economic contribution of urban agriculture. Source: author.



to 1 km from the park boundaries (Bowler et al., 2010a in WHO, 2016). In addition, urban agriculture helps the mitigation of flooding risks as green spaces allow water to drain through soil (Deelstra & Girardet, 2001). Gardens also support biodiversity by providing habitats for pollinators (Matteson, Ascher, Langellotto, Matteson, & Ascher, 2008). In addition, interactions with nature stimulate the interest in environmental protection. On one hand, users of local resources usually show a high willingness to ensure their sustainability (Fournier, 2013). For instance, a survey in Tokyo demonstrated that increasing interaction with nature among children encourages a positive opinion and attitude towards wildlife (Hosaka, Sugimoto, & Numata, 2017). Moreover, a study in urban gardens in Barcelona also showed a correlation between childhood experiences and increased recognition of ecosystem services (Langemeyer, Camps-Calvet, Calvet-Mir, Barthel, & Gómez-Baggethun, 2018). School gardens can therefore play an important role in cities. Urban farming also encourages a sustainable management of food waste, as gardens are sites for composting, which is then used as fertilizer. A survey in South London reported that 70 percent of allotment gardeners compost their food waste compared to 30 percent of non-gardener households (Community Recycling in Southwark Project 1999 in (Garnett, 2000). Beyond the improved perception of natural resources, urban gardening can also strengthen knowledge with regards to the food system and therefore create a different connection to food (Santo et al., 2016). Nonetheless, environmental benefits of urban farming vary depending on agricultural practices of the food growers, in particular the use of pesticide or weed-killers which have adverse effects. However, a budding interest for organic gardening is observed and community gardens often have clear environmental goals (Garnett, 2000). Urban agriculture, similarly to parks, can play a key role, through different mechanisms, in the preservation of the environment and mitigation of climate change. Furthermore, through benefits urban agriculture reversion of ecosystem services benefits to urban agriculture (Figure 4.2).

The theoretical and empirical analysis of the contribution of urban farming policy and urban farming on the resilience and sustainability of the city economy shows exclusively positive impacts. Moreover, multiple reinforcing feedback loops are identified. For instance, urban agriculture positively impacts ecosystems by contributing to their preservation, and the preservation of ecosystems encourages urban agriculture production by ensuring soil fertility, pollination or by mitigating climate change. The Figure 4.2 below is an illustration of the links between the elements analysed above. This illustration is schematic and represents only a zoom on a few components of the food system. It is helpful to capture the complexity of economic interactions in the city and to avoid a silo perspective that would distinguish economic, social or environmental dimensions.

Urban agriculture and the commons

Beyond addressing specific economic challenges, urban agriculture can foster the resilience and sustainability of the system and encourage wellbeing thanks to different forms of property and management of the resources: the commons. As mentioned in section 2.3, Ostrom demonstrated that shareable resources of nature or society could be successfully managed by self-organised communities and common property systems, instead of relying on the state or the private sector to do so. In an urban context, commons present different characteristics than those analysed by Ostrom in rural areas. Colding & Barthel (2013, p.159) propose a clarifying definition of what they call *urban green commons*. They are “physical green spaces in urban settings of diverse ownership that depend on collective organization and management and to which individuals and interest groups participating in management hold a rich set of bundles of rights, including rights to craft their own institutions and to decide whom they want to include in management schemes”.

Urban farms, allotments or community gardens can effectively be managed through *commoning*. On one hand, they are appropriate initiatives for this type of management since they encourage the creation of social relationships and networks. On the other hand, they are rooted themselves in a shared objective and common interest: the protection of the land, the preservation of natural resources and consumption of sustainable food. Even if the land is owned by the private or the public sector, the sites can be managed as commons.

Commoning is not only a way of managing, sharing and distributing resources among members but also to collectively use and to (re) produce them (Fournier, 2013), fostering thus sustainable sharing and the replication of the system. This follows the principle of “reciprocity in perpetuity” (Pedersen, 2010 in Fournier, 2013). Through community engagement, food growers act as stewards of natural resources by taking collective care of pieces of land in cities (Colding et al., 2013). They can even have more rights with regards to ecosystems in these sites compared to public land (Colding et al., 2013). Therefore, urban green commons can contribute to foster sustainability of the city food system and to develop a restorative economy. In addition to ecological resources (the land and other available natural capital), commons resources include civic resources (public spaces) as well as knowledge, such as agricultural practices. The value is created by those who co-create it, without going through the market (Raworth, 2017). Moreover, urban green commons are a way to strengthen environmental and ecological knowledge (how to protect the environment) as well as social learning (how to cooperate). Therefore, this represents an alternative form of production that can meet some of the people’s wants and needs (Raworth, 2017) outside the market-based system. Urban green commons also offers potential in the development of civic engagement and democratic values since participants share common interest and believe in the benefits of collective efforts (Colding &

Barthel, 2013). Supporting such form of management can be a tool to favour the transition from the conventional to more sustainable food systems.

4.2. How can urban food policies be rethought to better contribute to a sustainable city economy? Reflections from the London case study

Many elements of a systemic approach to food are already present in London's food policy documents. For instance, promotion of *good food* as defined in the *Good Food for London* report produced by the London Food Link network² is in line with the objective defined in the framework for economic processes: sustaining the system and encouraging wellbeing. The *London Food Strategy* also targets several key dimensions of good food. However, some policy hints, based on the analysis of urban agriculture, are proposed in order to fully mobilise and exploit the potential of urban food policies in the transition towards the promotion of good food and thus for a more sustainable economy. These reflections are derived from the London case study, however it is believed they have relevance for urban food policies in other global cities.

Exploring the potential of urban commons, beyond the private and public sector

Green urban commons can be part of the answer to the burning and pervasive question “how to move towards more sustainable cities?”, especially in the context of the rapid intensification and densification that London is experiencing. They represent an alternative to protect green spaces from privatisation and development. They are also a way to ensure the accessibility for all to green spaces and agriculture sites, while inequalities are a major and rising problem in London. Furthermore, the development of urban green commons can contribute to “build strong and inclusive communities” - the first policy of the London Plan - since it fosters cooperation based on common goals. This has much value, although created outside the market and incommensurable (Mazzucato, 2018). Urban green commons seem to have a promising future in London, given the already existing communities in urban agriculture and the strong participation of citizens in the formulation of urban food policies.

In particular, this form of property and management of land is suitable for small public parcels or privately owned land, such as university campuses or business sites (Colding et al., 2013). Also, green urban commons do not necessarily compete with the private or public sectors. In contrast, the three spheres can nourish and reinforce themselves (Mazzucato, 2018). For instance, Colding et al., (2013) researched the potential of business sites for the development of green

urban commons. They demonstrated that there are successful examples in Japan and the USA of corporate lands situated in cities' peripheries, which provide habitat that support flora and fauna and are managed by employees as commons. In addition to restore natural resources, it increases relationships between employees and commitment and for the company, it demonstrates its corporate social responsibility (Colding et al., 2013).

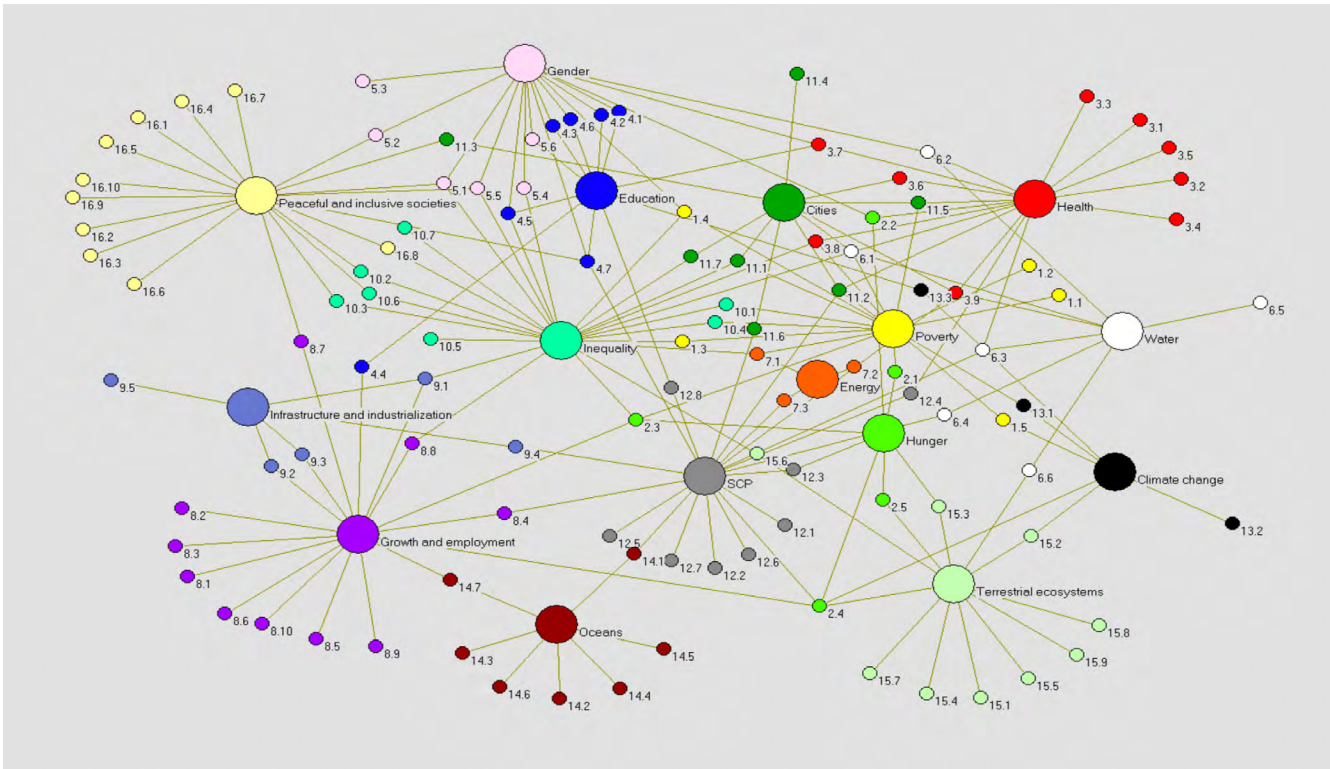
For the city government, urban green commons offer direct benefits: management costs of public land can be reduced as they are self-managed by the participants (Colding et al., 2013). Therefore, it can be a solution for lands which are degraded because of a lack of funding and are, intentionally or non-intentionally, neglected to increase the chance of development (Greater London Authority, 2001). Commons are bottom up driven and emerge by themselves. However, communities can be encouraged by city governments to build their own institutional arrangements (Rydin and Pennington, 2000 in Colding & Barthel, 2013). Moreover, the city government can play a role in developing suitable property right regimes. Urban common property regimes are still experimental despite the enthusiasm they create in UK (The Guardian, 2015) but small scale experiments could be designed with public authorities, analyzed and tailored before being scaled up.

Adopting a systemic perspective in policy making and fostering policy integration

While urban agriculture is part of the London Food Strategy as one of its five pillars, there is no mention of it neither in the comprehensive *London Environment Strategy*, nor in the *London Plan*. However, this analysis of urban agriculture has demonstrated its potential contribution to improve the health, social and environmental domains, which are all at the core of the *London Food Strategy*. This seems to be an illustration of the lack of synergies between policy actions. In recent years, the lack of integration across sectors in policy design and implementation has been perceived as a major challenge for sustainable development (Le Blanc, 2015). Indeed, the silo perspective comes with risk: it misses on trade-offs, synergies, spill-over and ripple effects and it can result in incoherent or inconsistent policies.

For instance, to address this type of issue, the approach adopted to conceive the Sustainable Development Goals (SDG) is interesting. They include 17 goals as well as 169 targets and are conceived as a network (Figure 4.3). Such modelling illustrates the links among the goals and shows that one target can contribute to the achievement of several goals. For instance, the target Sustainable food production system (target 2.4), can serve the following five goals: Sustainable Consumption and Production Patterns, Growth and Employment, Hunger, Terrestrial ecosystems and Climate change.

Figure 4.3. The SDGs as a network of targets (each number refers to a target Source: Le Blanc, 2015).



This type of approach is useful to conceptualise the multiple linkages of a food policy measure – though the method could be improved to better capture complexity - and to better communicate them.

From an institutional perspective, the systemic thinking nurtures cross-fertilisation, sector dialogue, higher policy integration and coherence in the formulation and implementation of the different London strategies. It is particularly relevant for urban food policies given their multiple dimensions. In the UK, the NHS is experimenting more systemic policy design with the NHS Integrated Care Systems that aims at increasing collaboration between social and health services, including charities and communities groups, in order to provide a more tailored and comprehensive care to individuals and reduce costs (Financial Times, 2018; NHS, 2017).

Acting as an economic gardener

To embrace the complexity of systems as well as their uncertainty, Raworth (2017) suggests to act as *economic gardeners* following Ostrom’s observation: “We have never had to deal with problems of the scale facing today’s globally interconnected society. No one knows for

sure what will work, so it is important to build a system that can evolve and adapt rapidly” (Ostrom, 2012 in Raworth, 2017). Economic gardening consists in diversifying policy options to face the complexity and evolution, select the most appropriate, and then amplify them (Raworth, 2017). Thus, it intends to mimic the selection process of nature. Moreover, it mimics the functioning of nature in its ability to self-maintain: in case of deviation, the system will amplify positive fluctuation and stabilize negative ones (De Rosnay, 1975). Such conception of public policy echoes the proposition made by Mazzucato (2018) which is to reconsider the role of the government. Rather than only fixing issues, in particular market failures, government can have a more active role with ambitious public funding and innovation. However, to do so, there is a need to move from the cost-benefit analysis to justify public policies, in particular food policies, as it shows difficulty in capturing the social and environmental benefits as well as the spill overs or ripple effects. By tackling food challenges and designing urban food policies, London do have started to demonstrate its capacities to innovate and to have an active role in the transition of food systems. However, to be implemented in London, the trend has to be combined with adequate frameworks of analysis and tools, as discussed by this analysis.

NOTES TO CHAPTER 4

1. Capital Growth is the largest food growing network in the city.
2. The London Food Link is a charity part of the Sustain network and is a member of the London Food Board.

5. Conclusion

Urban food policies, by encouraging the transition towards sustainable food systems, offer a strong potential contribution to a sustainable city economy. To fully capture their economic benefits, one needs to adopt an alternative economic framework, grounded in pluralistic economics and moving away from the mainstream models. Indeed, it is important to use a framework that allows for a systemic approach that captures all dimensions of the economy, including non-monetary ones, including the social world and the environment. In that light, economic performance, when evaluating urban food policies' contribution to the economy, can be evaluated against two criteria: the ability of the economic system to sustain itself and being resilient as well as to generate wellbeing.

The case study on London, focusing on urban agriculture, demonstrates that urban food policies have a strong potential to increase wellbeing. Particularly, the case reveals the effect of urban agriculture on specific dimensions of wellbeing: food, health and income, with the reduction of food poverty, consumption of healthy food and physical activities; social connections and participations; and the preservation of the environment and improved security from nature. In addition, urban agriculture nudges the system towards sustainability insofar as it contributes to the preservation of the environment through ecosystem services and the higher willingness of food growers to protect the environment. Urban agriculture can also foster the sustainability of the city's economic system through the management of the commons.

Therefore, urban food policies contribute to value generation, including social and environmental. However, it is difficult to monetise and thus falls somehow outside the radar of mainstream economic models, which may be the reason why there is little evidence on the contribution of urban food policies to the city economy. For this reason, there is a need to identify new policy tools to design and evaluate urban food policies and move away from over-reliance on cost-benefit analyses.

The case study also highlights the strong and complex interconnection of most of the dimensions of economic systems, in particular through feedback loops. This reveals the importance of fostering policy integration and adopting a more systemic policy approach to encourage

sectoral dialogue but also identify synergies and spill-over effects resulting from policies.

Finally, the analysis shows the active role that citizens, civil society and city governments can play in managing and preserving environmental resources and in shaping the economic system respectively. However, this requires a change in judgment and appreciation of the city or territory. In this sense, Alberto Magnaghi, leader of the Territorialist School, gives an interesting definition of a territory as a "living environment, which is not subject to human domination, but rather to be seen as a fertile co-evolutionary relationship with human activities [...], a dynamic ecosystem which can be understood and manufactured in the long run, a collective product derived from complex social relationships" (own translation, Fiori & Magnaghi, 2018).

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