Title: Food sustainability of gigantic cities.

Author: Luca Lezzerini

ISBN (e): 978-9928-347-14-5

DOI: 10.37199/c41000712

Published by: Polis Press

Food sustainability of gigantic cities.

Luca Lezzerini
Polis University, Albania
DOI: 10.37199/c41000712

Abstract
Due to strong urbanism flow, many cities are continuously growing trending to become gigantic cities. Gigantic means that either the city has a huge number of inhabitants and commuters, or it contains a large part of the whole population of the country and the rest of the territory is moving towards a low-density population. In both cases, food sustainability is one of the most concerning challenges that must be addressed. After a deep literature review, the paper analyses the main elements in food supply to gigantic cities. These elements are the huge volume of food to be procured and the impact of the Urban Food Movement. Then, the issue of whether the feeding of the city is an urban planning issue or not. Concluding that it is an urban planning objective, it is analysed considering solutions based on urban and territorial planning, including the selection of a socio-economical model to be used as a reference and tools to ensure food supply. In the paper, different possible planning strategies derived from African case studies are proposed and evaluated in a way they could be both applicable to Tiranë (a city containing a large portion of the whole population) and to other gigantic (in the sense of a very large number of inhabitants and commuters) cities in the world. Results demonstrate that specific planning strategies should be activated at both urban and regional levels to provide local food autonomy, including production, processing, storage and transportation. The research is a portion of wider research about smart cities' urban planning strategies and although it is limited to regions with good climate and fertile neighbouring, its principles can be also extended to more challenging cases from both climate and land quality. The research is also a starting point to define a resilient planning strategy to support, in the long period, the management of the impact of climate change on the food provisioning for very big cities. The paper also proposes a form of cooperative bond (the rural socio-economic model) in the countryside to increase productivity and avoid excessive urbanism, easing the presence of workers in the farms that are supposed to supply the city. The paper considers only normal operational conditions and does not keep into account special conditions like famine, flooding, war and similar. Although these conditions are not considered, the proposed methodology is still applicable to these cases and will be developed in further research.
Keywords: *distributism / food supply / gigantic city / rural planning / urban planning*

Introduction:

Food provisioning is a critical issue in very big cities and should be considered during both strategic regional planning and strategic urban planning to satisfy specific requirements.
This research aims to define these requirements and to provide guidelines to be used for both kinds of planning. All these elements are considered in normal contexts and extraordinary situations (natural disasters, terroristic attacks, ...) have not been considered.
1.1 Research questions and objectives
The research questions are:
1. What are the main requirements for food provisioning planning in gigantic cities?

2. Which could be a strategic approach to regional planning to provide an effective and efficient food supply chain to megacities?
3. Which could be a strategic approach to urban planning to provide an effective and efficient food supply chain to megacities?
The objectives of the research are:
1. Identify the main requirements for a food supply chain for very large cities
2. Identify a strategic approach to regional planning to ensure a reliable, effective and efficient food supply chain for megacities
3. Identify a strategic approach to urban planning to support a reliable, effective and efficient food supply chain for gigantic cities

1.2 Methodology

After a deep literature review, a qualification of the main requirements areas has been done then, for each area, the main requirements have been defined.
Given these requirements, a strategic regional planning approach has been drafted using the SWOT methodology for strategic planning as a guideline.
These guidelines have then been further detailed at both the urban level and the rural level. From this deeper analysis, guidelines for urban strategic planning and rural strategic planning have been defined.

Gigantic cities

2.1 Definition

According to the Cambridge Dictionary, a megacity is "a very large city, especially one with more than 10 million people living in it". Above the megacity, there is the metacity that, as defined by UN-Habitat (United Nations, 2007) is "massive sprawling conurbations of more than 20 million people".
In this research, the term gigantic city has to be intended as both for megacity and for metacity. Due to the partially chaotic structure of a typical metacity, some differences will be highlighted where needed but, as a main understanding, a gigantic city can be considered a "city" with a range of inhabitants between ten million and up, even beyond the twenty million threshold.
A food supply chain can be defined starting from the fact that the food industry has the scope of providing food to the human population (Zhong, Xu et al., 2017). This means that it needs a process that connects farmers, processors, distributors and retailers to achieve this target. This is the scope of a food supply chain (FSC) according to Sekuloska and Erceg (2022) and is the definition that will be considered in this study.

2.2 The literature review

As a starting point for the FSC analysis, research about existing literature reviews has been considered to develop the requirements that have to be defined for food provisioning.
A first starting point is the already cited Zhong, Xu et al. (2017) which is a good analysis of FSC management from the perspective of the development of an IT system. This study has been considered because it details which are the elements of the management system, elements that have been used to define the most important areas of the requirements for the FSC.
A second important literature review is Haessner and Haessner et al. (2024) where trends and challenges in FSC have been considered.
Other two important literature reviews that have been considered were the Rejeb, Keogh et al. (2022) about the use of BigData in FSC and the Palazzo and Vollero (2021) about sustainable FSC.

2.3 Food provisioning impact

Place	Yearly kg per capita
Europe	780.6
North America	861.8
Asia	679.7
South America	668.3
Africa	540.8
Oceania	769.1
World	675.2

Table 1 - Per capita yearly food consumption

2.3.1 Traffic and pollution

Looking at the data of the FAO Food and Agriculture Organisation for the year 2018, as an example, per capita consumption is shown in the table below:
Although the table does not distinguish by type of food, it does give an idea of the quantities of food that are needed in a city. In the table below, this value is converted into the number of tonnes needed each day in a giant city, considering the world average of 675.2 kg per capita per year:
Considering that a heavy truck can carry up to about 40 t, but with great difficulty manoeuvring within a city such as the ones we are considering, while a light truck can carry about 5 t, the enormous truck traffic that would occur is evident.

Population	kg/year	kg/day	t/day
10,000,000	6,752,000,000	18,498,630	18,499
20,000,000	13,504,000,000	36,997,260	36,997
30,000,000	20,256,000,000	55,495,890	55,496
40,000,000	27,008,000,000	73,994,521	73,995
50,000,000	33,760,000,000	92,493,151	92,493

Table 2 - Daily food input related to population

Population	t/day	40t trucks/day	5t trucks/day
10,000,000	18,499	462	3,700
20,000,000	36,997	925	7,399
30,000,000	55,496	1,387	11,099
40,000,000	73,995	1,850	14,799
50,000,000	92,493	2,312	18,499

Table 3 - Traffic generated to feed the city

These volumes of heavy and light vehicles are a very conservative estimate as they do not take into account the need to transport packaging, which is not considered in FAO's calculations, nor do they take into account the presence of an additional level of sorting often carried out by vans or cars for freight. Finally, they do not consider waste disposal traffic.
A first problem is therefore related to the difficulty of managing such heavy freight traffic, as well as to spatial planning and the management of intermediate goods sorting nodes.
A second problem is related to the environmental impact of such a quantity of transport vehicles for goods alone, which produce noise, thermal pollution and various emissions (particulate matter, unburned hydrocarbons, ...).
A third problem arises from the need to load sufficient food at the origin, which, the further away it is, the greater the impact of food transport.

2.3.2 The Urban Food Movement
Today, food supply systems in developed economies have become very complex. They can be thought of as a continuous flow of goods, supported by specific skills and a set of rules, ranging from the symbols used to the cultural aspects, governing the movement of food through all the stages of the supply chain, from production, through processing, delivery, consumption and on to the treatment of waste at the end of consumption.
This complexity has led to a strong disconnect between food production and food consumption systems in recent decades (Sgroi et Musso, 2022).
This disconnection can be thought of as having developed on several levels: geographical, given the distances involved; economic, given the number of intermediaries; cognitive, as the understanding of the origin of food tends to fade as one moves further away from production; political, as it is difficult for consumers to control that the food chain respects their values and principles; and governance, as it is increasingly in the hands of multinationals according to an oligopoly concept. (Sgroi et Musso, 2022).
In response to these challenges, the action of groups belonging to the more general category of the 'Urban Food Movement' has been ongoing for decades. These groups consist of activists who aim, by acting locally, to solve the disconnections just described, finding solutions and fighting for them to be implemented (Manganelli, 2022).

2.4 The three challenges
Due to massive urbanisation, we are now witnessing rapid urbanisation leading, as already mentioned, to the emergence of large urban settlements in terms of population, and this poses food challenges, both in the minimal sense of food supply and in the sense of going beyond mere survival to obtain quality food, at reasonable prices, with low environmental impact, reducing waste

to the minimum possible. Achieving this requires the definition of Food Urban Policies.
In defining these policies, the Urban Food Movement must overcome three challenges (Fichler, 1990).
The first challenge is that of 'multifunctionality', i.e. understanding that food is not a commodity like any other but has several additional aspects and therefore performs several functions at once, which must be taken into account.
The second challenge is that of 'co-governance', in the sense that urban food policies must not only be designed together with civil society but above all for civil society.
The third challenge is 'city-regionalism', which aims to reconnect cities with their surrounding areas in the region.

2.4.1Multifunctionality
Food cannot be considered a normal commodity as it plays a vital role in the health and well-being of the population, and this happens everywhere on the planet. (Fischler, 1990)
Food not only has a nutritional function, it also has a social function. It enables the creation and development of social interactions along two lines. The first direction is that of conviviality, i.e. the social function of interaction when people sit down at the same table to enjoy a meal together. The second function is that of buying and selling food, including all the intermediate logistical aspects, which involve social as well as economic interactions.
Another function of food is an artistic one in that through gastronomy, individuals develop a particular art form that is then enjoyed by others going beyond the convivial aspect to an aspect of 'pleasure tasting' (Poulain & Corbeau, 2002).
Food also has a cultural function, and although this function may vary in intensity depending on the society in which one finds oneself, there is no doubt that it is part of the cultural heritage of a people (Poulain & Corbeau, 2002).
Therefore, in addition to the biological function of survival, which today no longer seems threatened, other requirements emerge and become predominant (precisely because of the absence of this threat of hunger) that make food multifunctional (Fischler, 1990).

2.4.2 Co-governance
Civil society, which can be considered a constellation of organisations, demands that its principles and values be respected when defining and then implementing food policies at the urban level (Lang et al., 2009).
In addition to aspects of multifunctionality, civil society demands foods that improve public health, that are affordable even for the poorest for the sake of greater social justice, that are environmentally friendly at all stages of production, that are part of local culture(s), and other requirements. Those enumerated here are only a sample of such requirements, e.g. social justice can also be translated into forms of production that do not exploit workers.
For these policies to be drafted correctly, but then, above all, to be implemented punctually and diligently, co-governance is required, involving both civil society and the political bodies managing the urban context.
Given the current situation of frequent oligopoly in the food sector and the distances created between the various levels as mentioned above, this challenge also requires the use of innovative but, above all, effective tools.
It is therefore obvious that to implement governance, food policies must be produced in collaboration with civil society (Guthman, 2008), and civil society must be fully involved so that these policies work for civil society and not for the benefit of other actors unrelated to it or even in conflict with it (e.g. multinationals, local powers, crime, etc.).

2.4.3 City-Regionalism

The third challenge stems from the fact that the production of food in remote locations is raising numerous objections among people as this mode of production is seen to violate a whole series of values and principles that have become fundamental for conscious consumers.

Production in remote locations entails numerous problems, the most obvious of which is the impact of long-distance transport. But this is not the only issue. Different cultivation techniques and different regulations on product quality and the quality of treatments used during production can also lead to serious questions on the quality level of the product. For example, in the Mediterranean basin, it is now common practice to have citrus fruits, especially lemons, imported from South Africa point to point, but this not only has a considerable environmental impact but also causes damage to local crops that could easily support national needs, but also necessitates the use of anti-mould treatments that can be harmful to human health (in fact, such lemons are sold with the label of non-edible peel).

The proposal of the Urban Food Movement is therefore to reconnect cities with their surrounding areas, thus extending the concept of the city to the geographical region around it and considering it as a single element by the food function that these neighbouring areas have for the survival, in a general sense, of the city (Jennings et al., 2015).

2.5 Is feeding the city an urban planning issue?

At the time of urban planning, the issue of food is often forgotten, as it is nowadays possible, at least in most developed countries, to take it for granted.

In developed countries, food supply systems are considered to be already well-functioning without the need to address their management and, consequently, this issue is not dealt with at the urban planning stage.

Moreover, in the traditional domain of urban planning, supply systems have never actually been formally considered and, therefore, continue to be ignored.

Unlike the actual urbanisation aspects, food supply systems do not involve large investments and have no financial needs at the urban level. They are therefore not considered in this respect either.

Finally, the food supply system is considered a rural non-urban issue and therefore excluded from the planning flow at the urban level.

For these four reasons, there is almost always a serious lack of planning for the food supply system.

In practice, until now, it has been left to the normal evolution of things to meet a city's food supply.

But now two very important change factors have been introduced.

The first change factor is the size of the city in terms of population, which poses non-negligible challenges as mentioned above.

The second factor is the constraints introduced by the Urban Food Movement, which make integrated rural-urban planning necessary, especially because of the need to satisfy simultaneously the aspects of regionalism, co-governance and multifunctionality of food.

As we move from the practical possibility of drawing food from anywhere on the planet to the need to operate, instead, at the local level, with a great increase in the average quality of food and the focus on sustainability and other aspects, the need arises for integrated planning capable of satisfying all these aspects.

After all these considerations, it is possible to conclude that Food should be integrated into Urban Planning (FAO, 2018).

2.5.1 SWOT Analysis for Urban Food Local Production

Cities can be considered as organisms having their metabolism. This metabolism must be first computed and then supported. Feeding the city with local production means improving food qual-

ity, environmental impact, and costs but it exposes to risks (Guibrunet, 2023). So, switching to urban food local production must be first analyzed and, for this reason, a SWOT analysis has been conducted.
This section presents the final results of a SWOT analysis aimed at understanding the various aspects of local food production for urban consumption.

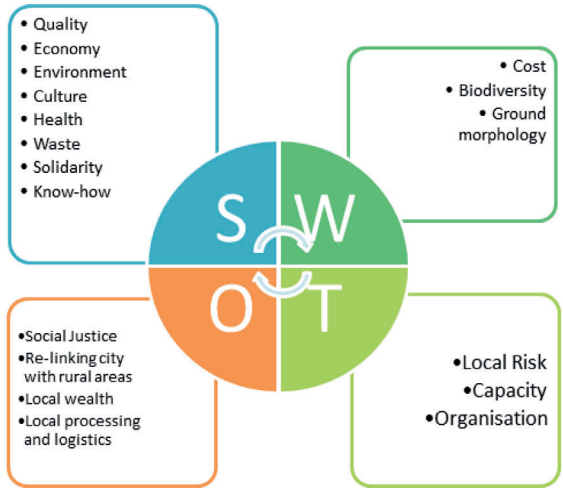

Fig.1/ SWOT analysis of Local Food Systems

2.5.1.1 Strengths

• Quality: local production allows greater product quality control and compliance with local standards
• Economy: producing locally means stimulating a local and circular economy that leads to an increase in local welfare
• Environment: a short supply chain brings countless advantages in environmental terms
• Culture: producing locally generally respects cultural traditions
• Health: producing food locally means being able to ensure that local protocols and regulations in terms of food safety and quality are respected
• Waste: acting locally also means reducing waste by both circular economies and greater coordination between production and consumption
• Solidarity: local production makes it possible to create socially useful jobs for the most disadvantaged and in any case to allocate a part of the resources to those who lack the bare minimum
• Know-how: localisation of production implies the preservation and improvement of know-how that, also through specific brands, allows the creation of a real industry with all the advantages in terms of quantity, quality and efficiency of production

2.5.1.2 Weaknesses

• Cost: when production is local, it generally cannot take advantage of very low production costs and this generally leads to higher prices compared to globalised production but, on the other hand, generally results in higher product quality and faster circulation of wealth at a local level, without its dispersion to remote places controlled, very often, under an oligopoly regime
• Biodiversity: local biodiversity could be insufficient, even thinking on a national scale, and could

entail the need to import from remote territories, so the advantages of local production could be lost
• Ground morphology: the conformation of the land may not allow for adequate agricultural development to support the needs of the city with which one wants to integrate and this means having to define cultivation strategies that allow for maximum efficiency, implying more and better coordinated and integrated planning between the rural world surrounding the urban settlement and the urban settlement itself

2.5.1.3 Opportunities

• Social Justice: local food production generally leads to an improvement in social justice as working conditions are more controlled, jobs are created locally and local wealth is increased, levelling out inequalities between different social groups
• Re-linking city with rural areas: re-linking the city with rural areas is perhaps the first effect of an integrated planning strategy between the city and surrounding areas and allows both to benefit from the rural point of view the presence of a large city means the existence of a client capable of absorbing even massive production without problems and at the same time, for the city, this means a reconnection of traditions with the surrounding area, as well as a very high quality of food supply
• Local wealth: if properly managed, the localised economy can become a source of local wealth that counteracts the oligopolistic tendencies that exist today
• Local processing and logistics: the presence of local production greatly favours the development of a system of local processors and local logistics that, in addition to having a more circumscribed environmental impact, allow growth from the primary sector to the secondary sector that then generally leads to development in the tertiary sector.

2.5.1.4 Threats
• Local Risk: However, the localisation of production brings with it risks related to local conditions. For example, prolonged local bad weather could destroy the food supply chain and force one to fall back on other solutions. This means very effective local risk management
• Capacity: the production capacity of the area could prove to be insufficient, both at the beginning and during the development of the city. This is a very important aspect to consider at the planning stage but also the risk management stage
• Organisation: a local food production strategy must necessarily entail a very efficient organisation not only in terms of production, processing and logistics but above all in terms of integrated governance.

2.6 The African Experience
Food systems are changing dramatically in African cities due to various factors (Riley & Crush, 2023). The first of these factors is rapid urbanisation, which is creating urban agglomerations that are growing unevenly, creating vast areas with great disparities according to various points of view. A second factor is the widespread lack of food security that affects large areas of African cities (Riley & Crush, 2023).
A third factor is that the environmental and economic sustainability of Food Systems serving cities requires an intimate understanding of them, to reduce their impact on the environment and, at the same time, improve their economics (Riley & Crush, 2023).
A final factor is that the governance of food systems is proving to be much more complex than is currently manageable in the African context, either due to a lack of specific knowledge in management, a lack of communication, or cultural aspects that do not envisage such mechanisms (Riley

& Crush, 2023).
It is therefore necessary to establish which priority actions need to be resolved to create adequate food policies.

2.6.1 Defining a Food Policy
In the context of the African experience, it is necessary to initiate and complete a series of activities that enable food policy to solve the problems outlined in the first part of this paper.
After careful analysis, also considering the existing literature, the following aspects emerged as priorities in terms of activities to be undertaken. These aspects can be considered common, albeit with different intensities, even for developed countries, since not all African nations are underdeveloped.

2.6.1.1 Formalize informal LFS
The African approach consists of the transformation of food production systems into subsidiary cities that are distinct elements of a single Local Food System (LFS) serving the main city (Haysom, 2023). Thus, the African strategy is delineated as the creation of local productive rural systems linked to subsidiary cities (i.e. becoming subsidiary cities in fact), all serving the main city.
Local Food Systems (LFS) seem to be the solution, based also on the SWOT analysis conducted above at a general level, perfectly applicable to the African case, to ensure food security both in terms of supply capacity and health, as well as to guarantee the various aspects that emerge from the involvement of civil society in the definition of a food policy.
In the African context, LFSs are largely informal. To summarise the differences between a formal and an informal LFS, consider the table below (White, 2023).

Formal FS	**Informal FS**
Mostly global, can be local	Mostly local
Modern	Traditional but can be modern
Legal but can be unethical	Unlawful, can be legal and ethical
Dynamic	Static
Innovative	Innovation is not widespread
Technology-based	Low level of technology
Growth-oriented, large-scale	Small-scale, family-run
Progressively developed	Static or slowly changing
Trends to monopoly	Trends to fragmentation
Capital concentration	Pre-capitalist, subsistence and survival
Workforce exploitation	Limited workforce
Financially strong	Financially weak
Easy to coordinate	Hard to coordinate
Threats private property	Owners left alone and weak

Table 4 - Formal and Informal Local Food Systems comparison (White, 2023)

As can easily be guessed, even the formalisation of LFS does not solve all problems (e.g. the tendency towards monopoly, concentration of capital and threats to private property are all negative aspects of formal LFS). We will discuss this aspect later, but we can anticipate right now that the formalisation of LFS does not solve the issue.

2.6.1.2 Manage LFS Risk
Local risk management of the LFS is a very important aspect that must be managed appropriately. Without local risk management, the occurrence of adverse conditions paralyses or disintegrates the LFS. Local risk management must be designed with solidarity and the common good in mind to provide the right degree of resilience and sustainability, both economic, social and environmental (Resnick et al., 2023).

2.6.1.3 Increase LFS capacity
The increase in the productive capacity of the LFS must not take place through latifundium or the creation of large companies, because this leads to one of the defects of formal local food systems, namely oligopoly or monopoly. The increase must therefore take place with a view to subsidiarity, i.e. allowing the individual his freedom of action without subordinating himself to the controlling capital, protecting private property but at the same time confederating the various producers so that they can produce with greater capacity and also with greater quality.

2.6.1.4 Involve community
The creation and management of Local Food Systems must necessarily involve the entire community, primarily understood as the subsidiary city community. However, this involvement must be designed to ensure both freedom and speedy decision-making.

2.6.1.5 Ease Social Justice
The African experience, especially when considering developing areas, has shown both the existence and persistence of vast areas of social injustice. This mechanism occurs in both informal and formal LFS contexts. It is therefore crucial to intervene with a different approach that facilitates social justice, which is generally greatly facilitated by the application of the principles of solidarity and subsidiarity (White, 2023; Brown, 2023).

2.6.1.6 Integration with global
Overcoming local limits, both structural and transitory, in terms of capacity, biodiversity, and risk management, implies a capacity to integrate local production with global supply. All this must be built with ad hoc mechanisms that still protect the local from the threats of the global.

2.6.1.7 Solve gender issues
In the African experience, strong gender issues emerge related to the different social roles of the two sexes, where, very often, the female sex often experiences a situation of injustice when not outright exploitation. A similar situation exists with minors. To overcome these issues, it is necessary both to train people so that they acquire more advanced skills and capacities, enabling them to free themselves from the jobs most at risk of exploitation, and to create instruments that protect their freedom and dignity.

2.6.1.8 Include migrants
The African experience, although very fragmented given the enormous variety of socio-political situations on the African continent, has taught us the opportunity to create pathways for the in-

clusion and integration of migrants, which move away from the dynamics of exploitation and xenophobic racism, and towards virtuous cycles of social, cultural and labour integration (Brown, 2023).

2.6.1.9 Support common good
Supporting the common good appears to be the last of the tasks to be implemented, but not the least important, as it is the one that in the long run provides the best opportunities for regional stabilisation and growth.

2.6.2 African Lessons Learned about LFS
Analysing various case studies where formalised local food systems were implemented in the African context, the following lessons learned emerged.
The first lesson learned is that food insecurity remains high even in secondary cities. Despite various attempts to increase food security, secondary cities have unfortunately failed to fulfil their role as reliable and secure providers (Haysom, 2023).
The second lesson learned is that informal local food systems are not able to ensure food security either. This may seem obvious but has been widely confirmed in practice (White, 2023).
Even if formal (supermarket) systems can ensure food security but do not guarantee health, prosperity and social justice. This aspect evident in the possible risks associated with formal FS and with the formalisation of Local Food Systems has also been proven in practice (White, 2023).
Last, but not least, a flexible and powerful tool is needed to design an effective planning tool for the LFS, able to be used in any condition. This last aspect is of utmost importance since, as this integrated planning technique is new, there is a lack of operational tools to enable adequate planning.

A possible solution: distributism

3.1 What Distributism is
Distributism is an economic and social system that originated in the 20th century as a critical response to both capitalism and socialism. Its theoretical foundations were mainly elaborated by two key figures, G.K. Chesterton and Hilaire Belloc, in the late 19th and early 20th century. The main objective of distributism is the equitable distribution of productive property, seeking to avoid the excessive concentrations of wealth and power that often characterise capitalism. In practice, distributism protects private property and is based on the principles of solidarity, subsidiarity and the common good (Belloc, 1938).
Unlike capitalism, which favours the concentration of the means of production in the hands of a few, distributism supports widespread ownership and economic decentralisation. This model promotes small businesses, cooperatives and family ownership as preferred ways of organising production. Proponents of Distributism believe that this decentralisation leads to greater social equity and a fairer distribution of economic benefits (Chesterton, 1926).
Distributism also criticises socialism for its emphasis on state ownership of the means of production, arguing that this can lead to excessive bureaucracy and limit individual freedom. Instead, it proposes a small-scale form of socialism, where ownership is spread among the population, thus reducing dependence on the state (Belloc, 1938).
One of the distinctive aspects of distributism is its emphasis on human dignity and the local community. In other words, it is believed that economic decentralisation not only promotes a fairer distribution of wealth but also strengthens community ties and reduces the alienation often associated with large capitalist systems (Chesterton, 1926; Stine, 2016).
Distributism remains, however, according to some, a theoretical model that has not been widely

implemented in practice on a global scale. Some elements of its thought have influenced local policies and movements, but it has not been widely adopted. Many argue that the contemporary world presents challenges and complexities that make the practical implementation of a distributist (i.e. based on Distributism) model on a global scale difficult (Block et al., 2007).
In the context of this paper, however, as the scale is local (in the sense of regional), it can be successfully implemented, as numerous success stories have amply demonstrated such as:
• Sierra Leone (Sierra Leone Chesterton's Center)
• LaZooz (block-chain managed ridesharing app)
• Mondragon, Spain (Mondragon Corporation)
• Emilia-Romagna, Italy, the "Cooperative Economy"
• Taiwan, "Land to the Tiller"
• Alphonse Desjardins, Canada, "Caisses Populaires Desjardins"
• United States, some farming communities and cooperatives in the United States have also embraced distributist ideas, seeking to retain ownership and control of resources locally rather than concentrating them in large corporations.

3.2 Distributism advantages
Distributism enables urban planning to include food systems progressively, with the ability to govern their evolution and enables both a smooth transition from informal to formal and direct formal startup.
Distributism enables the execution of all Food Policy Tasks.
Distributism is a model that has the strength of simplicity but requires a strong people awareness. It perfectly suits medium-term or long-term planning and allows strong involvement of the local communities.
It strongly supports local food systems but can integrate them with global food systems.

3.3 Distributism comparison matrix
Distributism is proposed as a middle way between formal and informal Local Food Systems and allows for the resolution of the various problems that have emerged from the African experience. The following table shows the three systems, formal local food system, distributism and informal local food system, according to the schematisation made earlier.

Results

To both provide food supply in larger cities and satisfy the requirements of the Urban Food Movement it is necessary that feeding the city becomes one element of both urban and regional planning. Many strategies are possible but, observing the African experience and extending it to gigantic cities, transforming cities surrounding the gigantic one into secondary cities that have the focus to feed (and also provide other goods through local manufacturing) is a strategy that can be easily replicated on any scale and has a good effectiveness. A tool to support this transformation should be founded on transforming informal food systems into formal ones. Unfortunately, formal food systems have some disadvantages that must be overcome. One possible solution, that has the advantage of being progressively applicable, involving a large part of the local community, and with good effectiveness, increasing at the same time the common good and the people's awareness about food quality, is Distributism. Distributism application requires focused education of local communities to apply for solidarity, subsidiarity and common good. Distributism can support both transitions from latifundium and fragmented land property. Distributism, federating small productive entities, will both increase quality and reduces costs (economic, environmental and human). It also fuels, through local credit

Formal FS	Distributism	Informal FS
Mostly global, can be local	Mostly local, can deal with global	Mostly local
Modern	Modern, preserving tradition	Traditional but can be modern
Legal but can be unethical	Legal and ethical	Unlawful, can be legal and ethical
Dynamic	Dynamic	Static
Innovative	Innovative	Innovation is not widespread
Technology-based	Technology-based, preserves workforce	Low level of technology
Growth-oriented, large - scale	Both small and large scale, grows by federation	Small-scale, family-run
Progressively developed	Can be both progressive and static	Static or slowly changing
Trends to monopoly	Avoid both monopoly and fragmentation	Trends to fragmentation
Capital concentration	Avoids capital concentration, shares wealth	Pre-capitalist, subsistence and survival
Workforce exploitation	Owned by workforce	Limited workforce
Financially strong	Financially strong, solidarity	Financially weak
Easy to coordinate	Medium grade of coordination	Hard to coordinate
Threats private property	Protects private property	Owners left alone and weak

Table 5 - Distributism applied to LFS

and autonomous development, the creation of a local processing chain that, together with a local supply chain, will create an integrated logistics system as depicted in the analysis diagram below: To both provide food supply in larger cities and satisfy the requirements of the Urban Food Movement it is necessary that feeding the city becomes one element of both urban and regional planning. Many strategies are possible but, observing the African experience and extending it to gigantic cities, transforming cities surrounding the gigantic one into secondary cities that have the focus to feed (and also provide other goods through local manufacturing) is a strategy that can be easily replicated on any scale and has a good effectiveness. A tool to support this transformation should be founded on transforming informal food systems into formal ones. Unfortunately, formal food systems have some disadvantages that must be overcome. One possible solution, that has the advantage of being progressively applicable, involving a large part of the local community, and with good effectiveness, increasing at the same time the common good and the people's awareness about food quality, is Distributism. Distributism application requires focused education of local communities to apply for solidarity, subsidiarity and common good. Distributism can support both transitions from latifundium and fragmented land property. Distributism, federating small productive entities, will both increase quality and reduces costs (economic, environmental and human). It also fuels, through local credit

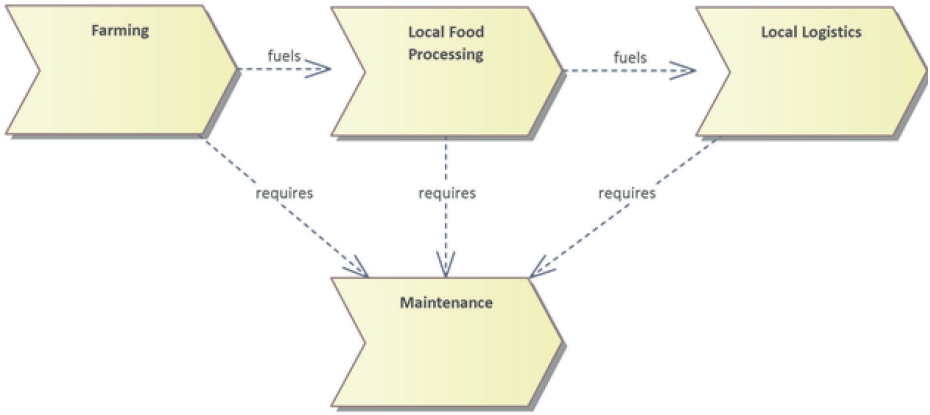

Figure 2 - Local Integrated Logistics System

and autonomous development, the creation of a local processing chain that, together with a local supply chain, will create an integrated logistics system as depicted in the analysis diagram below:

Conclusions

Food Systems to support city metabolism is an urban planning issue and this should be addressed in future city planning. The first step in addressing this issue is to define a methodology that could integrate urban planning.

From African experience emerge some requirements and a sort of initial framework that evidence the need to further analyze the problem of feeding the cities.

The local communities require new values and must be involved in the food policy definition and its evolution. However, the standard solutions, according to the African experience, seem not effective in supporting these values. Distributism is one possible solution that is suitable on a regional scale.

The results of this article can be applied to both large and medium-sized cities because the need to plan the feeding of the city has resulted being an urban planning matter.

References

- Belloc, H. (1938). The Way Out. Italian edition 2021. Fede & Cultura.
- Block, W. & Epstein, M. & Jr, T.. (2007). Chesterton and Belloc: A Critique. Independent Review. 11.
- Brown, A. M. (2023). Co-productive Urban Planning: Protecting and Expanding Food Security in Uganda's Secondary Cities. Springer
- Chesterton, G. K. (1926). The Outline of Sanity. Italian Edition 2011. Lindau.
- FAO-Food and Agriculture Organization of the UN (2018). Integrating Food into Urban Planning. UCL Press.
- Fischler, C. (1990). L'homnivore. Le goût, la cuisine et le corps. Odile Jacob, Paris.
- Guibrunet, L., & Sánchez Jiménez, A. S. (2023). The current and potential role of urban metabolism studies to analyze the role of food in urban sustainability. Journal of Industrial Ecology, 27, 196–209. https://doi.org/10.1111/jiec.13361
- Guthman, J. (2008). Bringing good food to others: investigating the subjects of alternative food practice. Cultural Geographies 15:431–447
- Haessner, Philipp & Haessner, Julian & Mcmurtrey, Mark. (2024). Trends & Challenges in the Food Supply Chain. Journal of Strategic Innovation and Sustainability. 19. 10.33423/jsis.v19i1.6868.
- Haysom, G. (2023). Understanding Secondary City Typologies: A Food Governance Lens. Springer
- Jennings, S. Cotte, J. Curtis, T. Miller, S. (2015). Food in an Urbanised World – The Role of City Region Food

Systems in Resilience and Sustainable Development. 3Keel
- Lang, T. Barling, D., Caraher, M. (2009). Food policy: integrating health, environment and society. Oxford University Press, Oxford
- Manganelli, A. (2022). Urban Food Movements: At the Outset of a Journey. In: The Hybrid Governance of Urban Food Movements. Urban Agriculture. Springer, Cham. https://doi.org/10.1007/978-3-031-05828-8_1
- Palazzo, M., & Vollero, A. (2021). A systematic literature review of food sustainable supply chain management (FSSCM): building blocks and research trends. The TQM Journal.
- Poulain, J. P. Corbeau, J. P. (2002). Penser l'alimentation. Entre imaginaire et rationalité. Privat, Toulouse
- Rejeb, A., Keogh, J.G., & Rejeb, K. (2022). Big data in the food supply chain: a literature review. Journal of Data, Information and Management, 4, 33 - 47.
- Resnick, D. Sivasubramanian, B. Idiong, I. C. Ojo, M. A. Tanko, L. (2023). The Enabling Environment for Informal Food Traders in Nigeria's Secondary Cities. Springer
- Riley, L. Crush, J. (eds.). (2023) Transforming Urban Food Systems in Secondary Cities in Africa. Springer. https://doi.org/10.1007/978-3-030-93072-1_1
- Sekuloska, J., & Erceg, A. (2022). Blockchain technology toward creating a smart local food supply chain. MDPI. Retrieved August 16, 2022, from http:/www.mdpi.com/2073-431X/11/6/95/html
- Sgroi, F. Musso, D. (2022). Urban food strategies and sustainable agri-food systems: Results of empirical analysis in Palermo. Journal of Agriculture and Food Research,Volume 10,2022,100436,ISSN 2666-1543, https://doi.org/10.1016/j.jafr.2022.100436, (https://www.sciencedirect.com/science/article/pii/S2666154322001697)
- Stine, A. (2016). Book Review: Aleman, R. (Ed). The Hound of Distributism: A Solution for Our Social and Economic Crisis. Hatfield Graduate Journal of Public Affairs. 1. 10.15760/hgjpa.2016-1.4.
- United Nations (2007) Urbanization: mega & metacities, new city states/. UN-HABITAT: State of the world's cities 2006/7
- White, S. A. (2023). Practice Theory and Informal Urban Livelihoods in M'Bour, Senegal: A Case Study of Urban Cultivation. Springer
- Zhong, R., Xu, X., & Wang, L. (2017). Food supply chain management: Systems, implementations, and future research. Industrial Management & Data Systems, 117, 2085–2114. Retrieved August 16, 2022, from https://www.emerald.com/insight/content/doi/10.1108/IMDS-09-2016-0391/full/html