Cities and Food Systems: Rethinking the role of markets

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Authors Gaëlle Balineau, Jean-René Cuzon, Alix Françoise, François Giraudy Nicole Madariaga

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Villes et systèmes agro-alimentaires : repenser le rôle des marchés

Gaëlle Balineau, Jean-René Cuzon, Alix Françoise, François Giraudy, Nicole Madariaga

Résumé

Ce rapport technique s'est inspiré d'un programme de recherche appliquée mené par l'AFD depuis 2014 pour revisiter le rôle des marchés alimentaires dans les villes africaines et les concevoir du point de vue plus holistique des systèmes agro-alimentaires, à la croisée de plusieurs Objectifs de développement durable (ODD). En s'appuyant notamment sur les cas pratiques de Rabat-Salé au Maroc, Niamey au Niger et Abidjan en Côte d'Ivoire, l'AFD propose huit principes d'intervention pour une nouvelle approche autour de trois thématiques : le positionnement géographique et fonctionnel des infrastructures d'approvisionnement et de distribution alimentaires ; le développement économique et la durabilité des systèmes agro-alimentaires et leur gouvernance.

Mots-clés : lien urbain-rural, systèmes agroalimentaires, marchés

Pays : Côte d'Ivoire, Maroc, Niger

Cities and Food Systems: Rethinking the role of markets

Abstract

This note is based on a research program carried out by AFD since 2014 to assess the role of food markets in African cities and to shift to a more holistic approach of "food systems", considering many Sustainable Development Goals (SDGs). Based on case studies led in Rabat-Salé in Morocco, Niamey in Niger and Abidjan in Côte d'Ivoire, AFD makes eight proposals for a new approach, concentrated on three major questions: geographical and functional positioning within a distribution network, local economic development and sustainability, and governance of food systems.

Keywords: urban-rural linkages, agri-food systems, markets

Countries: Ivory Coast, Morocco, Niger

1. Sustainable food systems and food for cities: background and issues

1.1. Concepts that build rural and urban connections

A food system refers to all the activities related to agricultural production and food or agri-business processing, and to the distribution of food products. It includes consumption and the recycling of waste produced throughout the value chain[1].

Figure 1.
The components of a food system

Source : AFD.

These systems have to work well in order to ensure the four aspects of **food and nutritional security**—availability, access, use, and stability—and to achieve SDGs 2 and 3 ("Zero Hunger" and "Good Health and Well-Being").

Food and nutritional insecurity, which concerns poor populations above all, is always more noticeable in rural areas. But due to the combined effect of the very rapid demographic and urban growth, **food and nutritional insecurity is growing in urban areas**. Currently, the percentages of poor people living in cities are 40% in Africa, 47% in Asia, and 85% in Latin America[2]. Furthermore, urbanization is increasing, essentially in Africa and Asia[3]. Ninety percent of urban growth between now and 2050, representing 2.5 billion additional people, will be concentrated on these two continents.

[1] Source: definition adopted by the Committee on World Food Security, and international and intergovernmental platform dedicated to joint work for ensuring food security and nutrition.

[2] Ravallion et al., 2007.

[3] According to the UNDP (World Population Prospects 2015), half of population growth by 2050 will take place in Africa, where the urban population is expected to reach 56% (compared to 40% currently). This will lead to megapolises and also, and above all, to an increase in medium-sized cities (of 1 million inhabitants) that will grow and change rapidly.

Eleven percent of the world's population suffered from undernutrition in 2016. This represents 8 percentage points less than in 1990[4] but corresponds to only one aspect of food and nutritional insecurity. The number of children suffering from stunted growth also decreased, but especially in rural areas, whereas the proportion in cities increased (1 child out of 3 suffering from stunted growth now lives in a city[5]). Furthermore, overweight and obesity, whose prevalence is growing rapidly, are mainly urban phenomena. The final declaration of the Habitat III conference of 2016 recognized that food and nutritional safety was one of the essential needs now to be included in urban strategies[6].

Food security is thus as much an urban subject as a rural one. This is emphasized by the fact that, with at least two-thirds of food being supplied through the market (versus the subsistence economy), "the problems of food security of urban and rural residents are becoming more similar along with the growing role of the market and of prices[7]." Representing the actors and places involved in food systems (as in Figure 1); illustrates their resolutely urban-rural character (see Figure 1).

Box 1 - Definitions

Food system: refers to all activities related to food: production, harvest, processing, packaging, marketing and sales, storage, transport and distribution, consumption, recycling, and waste treatment.

☞ This term is adopted in this memorandum as the one that encompasses most. However, the following terms are also often used:

Food value chain: refers to all activities, from production (including financing) to distribution. The term "food value chain" appeared in the middle of the 1990s, along with work that highlighted globalization and its impact on the distribution of added value among the various activities and various stakeholders. It is very close to the notion of filière agricole (agricultural sector) developed since the 1960s in France in particular.

Food supply and distribution chain are also frequently used terms to designate all the food production and distribution activities. They do not involve the aspects of remuneration and regulation as much as the term "food value chain" does.

Moreover, the way in which urban food systems are organized has an effect on producers' conditions of access to the market and thus on the development of production areas[8]. Beyond the **amplification of the phenomena of food and nutritional insecurity in cities generated by demographic growth and urbanization**, this urbanization is **deeply modifying the entire food economy**. The recent or future transformations in this sector are creating many challenges but also providing many opportunities.

[4] Source: IFPRI (2017).
[5] Source: IFPRI (2017).
[6] The New Urban Agenda, United Nations Conference on Housing and Sustainable Urban Development (Habitat III), 2016.
[7] Bricas and Tchamda, 2015.
[8] Calmette (2019).

1.2. Nutritional, economic and environmental challenges

1.2.1. The nutritional challenge: growing and diversifying demand

Demographic trends (in terms of population and urbanization) and economic and social changes (in terms of inequalities, poverty and trade) are influencing food demand.

Demand is stronger in volume and between two thirds and 90% of the supply—depending on the country and region—are exchanges and not self-consumption. Vulnerability to price shocks is high, especially among the poorer populations. In cities, they can devote up to 50% of their budget to food consumption expenditures, excluding transport costs to access markets. To this social challenge is added a security and political challenge: around 10 years ago, it was in the cities of 38 countries in Africa, Latin America and Asia that "food riots" were triggered following a surge in agricultural prices.[9]

Next, diets are changing and diversifying in both Africa and Asia. In West Africa, Cameroon and Chad, cereals represent less than half of food consumption in value;[10] they represent less than 34% in Ethiopia, Mozambique, Tanzania and Uganda and 26% in Bangladesh, Nepal, Indonesia and Vietnam.[11] Demand now includes more fruit, vegetables and other very perishable products, dairy products, meat, as well as processed foods and/or high value-added foods.[12]

Higher-income populations also increasingly value the quality of food (freshness and taste, but also origin and source). Aware of health issues linked in particular to excessive use of plant-protection products, they are revising their purchase practices.[13] This is especially the case in middle-income countries, in North Africa and in Asia, where middle classes are emerging and where farmers also use more chemical inputs.

1.2.2. The socio-economic issue: the agri-food sector, cornerstone of structural transformation?

This growth in demand, as much in volume as in diversity and quality, could represent opportunities for growth in income and in development for producers from the agricultural sector and for non-agricultural rural workers involved upstream and downstream from production, especially in agri-food industries. The domestic market remains much larger in value than agricultural exports, and changes in preferences do not always benefit only imported products.[14] In West Africa, imports represent only 8% on average of total food expenditures: local production covers most food consumption.[15] For example, in Abidjan, despite a significant resort to imports for four groups of products (cereals including rice and wheat; fish; milk; giblets and offal), the rapid rise in food demand of cities has strongly mobilized the surrounding countryside.[16]

[9] Source: CCFD – Terre Solidaire: https://ccfd-terresolidaire.org/infos/souverainete/10-ans-apres-les-5938
[10] Bricas, 2017.
[11] Reardon, 2016.
[12] Allen *et al.*, 2018.
[13] Lançon and Boyer, 2019.
[14] Bricas, 2017.
[15] Allen and Heinrigs, 2016.
[16] Lançon and Boyer, 2019.

These opportunities seem especially important to seize upon in Africa. In West Africa, **the food economy is the leading provider of jobs, accounting for 66% of all jobs, and will remain so in the coming years**.[17] Non-agricultural jobs—in other words, manufacturing and services in processing, transport and trade—represent 22% of jobs in the food sector (and 68% of women's jobs). This transfer of labor from the primary agricultural sector to the manufacturing food sector should continue to intensify and grow along with the modification and growth of domestic demand. For example, in Niger and Nigeria, food processing activities represent half of jobs in the manufacturing sector.[18] In sub-Saharan Africa, where it is estimated that 60% of the self-employed population is between 15 and 24 years old, the food industry could thus become the cornerstone of a "structural transformation" that is established as a political and economic imperative.[19]

However, seizing these opportunities requires strong and multisectoral policies and involves taking up many challenges. It involves satisfying growing demand at affordable prices. It is also essential for producers to mitigate the risks related to the development of supermarkets and imports to meet this demand. Supermarkets can provide an important opportunity to producers if they source local products. On the contrary, the "supermarket revolution"[20] can lead to the exclusion of producers who would no longer be capable of satisfying the constraints of quality, regularity of supply, quantity and standards imposed by mass marketers. This involves ensuring that the urban organization of food systems encourages access to all producers, including smallholders and local ones, while allowing urban consumers to have access to varied and good-quality food at affordable prices.

1.2.3. The environmental challenge: from the impact of agricultural practices to reduction of food waste

Just as production can be directly affected by the climate, many other risks can come about throughout the food value chain. **All the vulnerabilities related to the effects of climate change must be considered**[21]: degradation of nutritional quality, soil erosion, air pollution, water salinization and pollution, etc. All these problems require changes in practices in not only agriculture but also in modes of consumption.

Throughout the food value chain, food is lost, thrown away or wasted for reasons that are as much technological and economic as societal. **Food waste** (food produced but not eaten) represents 3.3 Gt of CO_2 per year, including an average 210 kg CO_2 per capita per year in sub-Saharan Africa (the lowest footprint).[22] This is the **equivalent of 87% of worldwide emissions related to road transport**. It is thus crucial to **limit the effect of growth of demand on the production of waste**, be it organic or inorganic, especially by developing and improving storage and processing practices. This requires policies not only to reduce but also to upcycle organic waste—and typically a large proportion of food waste is organic—in order to limit its environmental impact, especially for the most toxic waste.[23]

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[17] The World Bank estimates that food systems covered 50% of African economic activity in 2013 and could generate a food economy market of 1 trillion dollars—and even more jobs—by 2030.
http://www.worldbank.org/en/topic/food-system-jobs

[18] Unless otherwise stated, the figures of this paragraph come from Allen *et al.*, 2018.

[19] As the World Bank suggests on its website: http://www.worldbank.org/en/topic/food-system-jobs

[20] Reardon *et al.*, 2009.

[21] Paloviita and Jarvela, 2015.

[22] Source: FAO, 2013, 2014.

[23] See Galannakis (2018) regarding this subject.

The challenges linked to sustainable food systems are thus simultaneously nutritional, socio-economic, environmental, urban and rural in nature. For food systems to contribute to food and nutritional security (SDGs 2 and 3), to the creation of jobs for young people and to economic development (SDG 8) in cities that are not saturated (SDG 11) and so that they enable sustainable modes of consumption and production (SDG 12), they require multi-sectoral interventions and public policies in which cities must be stakeholders[24] as much as rural zones are. The signing of the Milan Urban Food Policy Pact by 163 cities around the world bears witness to the fact that cities are becoming aware of these issues. The signatory cities have undertaken to support sustainable territorial food systems.[25]

[24] See "AFD & Food for Cities. What roles for local governments in the Global South?", 2017.

[25] For more information, consult the Milan Pact website: https://www.milanurbanfoodpolicypact.org/

2. Assessment of AFD's experience and its limits

In this context, AFD should adopt a global approach for its new projects in order to reorient them as much as possible towards a systemic approach of urban food supply.. The projects in urban development and in agricultural and rural development financed by AFD have an impact on the conditions of production and exchange of food products, and they structure food systems. The construction of a new wholesale market on the outskirts of a city is an obvious example. Creating rural roads to improve access to an agricultural production zone is another.

2.1. The requests to AFD partially target the issues

In urban areas, requests to AFD regarding food for cities have above all been focused on restructuring (renovating/extending) or on building new commercial facilities, which usually consist mainly in markets (central, retail, or semi-wholesale), but also in slaughterhouses and bus stations.

AFD has capitalized its long-standing experience in building and renovating markets in a report on 30 years of commercial facility projects.[26] Requests from partner cities for such projects are recurrent. This is the particularly the case in Africa (Niger, Côte d'Ivoire, Madagascar and others), but also in the Middle East (Lebanon and Jordan) and in Asia (Vietnam and Cambodia). These requests are based on the following principles:

i) Markets are an economic driver of cities, they generate local jobs and business activity;

ii) They are sources of local tax income;

iii) They structure urban space (centers for business and exchange, with the potential congestion associated with them;

iv) Issues of hygiene and safety are highly relevant.

Despite varying levels of decentralization, local governments are usually in charge of these markets. Wholesale-only markets are generally under central government responsibility (often the Ministry of Agriculture or of Commerce). However, markets legally defined as "wholesale" remain rare in the countries where AFD operates. Consequently, wholesale activity is often carried out in markets that are under municipal authority.

The broader challenges associated with food systems and mentioned in Part 1 (food and nutritional security of consumers, distribution of added value throughout the value chains in particular) are often not part of cities' requests, even though in middle income countries questions of traceability and health security are growing in importance.

It is thus necessary to start up dialogs with the cities and to rethink the designs of commercial facility projects to improve the way food systems work, while taking into account the big changes in modes of distribution, i.e. from "traditional" markets towards supermarkets. This seems even more necessary given the trends mentioned above, but also

[26] Click here to download the document: http://www.upfi-med.com/wp-content/uploads/2016/09/AFD-equipements-urbains-marchands-VF.pdf

because the local governments and municipalities with which AFD works are called on to have more and more responsibility with regard to the supply system and must therefore deal with new economic, social, logistical and territorial development challenges.

2.2. AFD promotes an integrated approach for food systems

AFD finances many projects to support food systems, covering a wide diversity of themes tackling different specific goals.

2.2.1. Urban projects

Integrating city commercial infrastructure into AFD financing can be done in two ways:

- A dedicated project can be devoted to the commercial facilities (Côte d'Ivoire, Kenya).
- Commercial facilities can be part of an integrated urban project in a capital city (case of Ouagadougou) or in secondary cities or regional capitals (i.e. in Madagascar, Cameroon, Lebanon). In this case, they represent one of the components of the project.

Most of the time, the financed operations deal with renovating existing infrastructures (with possible extension). More rarely, they deal with the construction of new facilities, which generate increased governance problems. Such operations generally involve related infrastructure (roads, drainage, development of public spaces) and facilities/equipment (toilets, lighting, fencing, etc.).

The infrastructure programs are generally accompanied by a capacity building component. This can have two main types of targets:

- The local government, with emphasis on facility management and tax collection;
- The actors and beneficiaries of the project (often with regard to organization, hygiene and safety).

In terms of approach and operating procedure, once the perimeter of the project is identified, its preparation involves i) one or more socio-economic studies of the urban commercial framework, ii) planning, iii) consultation with stakeholders in setting up the project (local government, vendors, end users—with a gender-sensitive approach, as retail sellers are often women), and iv) technical studies providing for work involving the local populations as much as possible (LIPW[27] approach). The way these facilities will be managed, a key factor for success and sustainability, must be dealt with at this preparation phase: beyond infrastructure, how they will be used is the ultimate issue.

2.2.2. Rural projects

AFD support for agriculture often targets the development of sustainable local/national value chains that help ensure people's food security, supply swiftly growing urban markets, reduce the dependence of beneficiary countries on global food markets in which prices are increasingly unstable, but also and above all create jobs and incomes for the people in rural areas (especially youth and women).

[27] Labor-intensive public works

The sustainable local/national value chain approach is one of AFD's renowned areas of expertise. However, the support provided focuses more on agricultural production than on the downstream side of value chains, despite the fact that the strengthening of very small enterprises and SMEs upstream and downstream of the food value chains in the financing of marketing infrastructure is part of AFD's strategy.

Hence, different types of rural and agricultural development projects work directly on strengthening food systems. Among these:

- "Local development" projects and support to territorial development, which nearly systematically include the renovation or construction of markets or of storage facilities;
- Rural roads projects which aim at connecting agricultural production zones with markets (especially urban);
- Support for peri-urban agricultural production or for the development of dairy production on the outskirts of cities via the setting up of collection centers or mini-dairies;
- Setup of slaughterhouses or of agri-food processing factories;
- And support for SMEs in the agri-food sector, via the setup of finance mechanisms, professional training or support for upgrading to meet standards

2.3. Strategies of peers and partners

After 2008, the strategies and recommendations of AFD's partners and its peers were strongly influenced by the food crisis. Discussions focused on questions of price instability and regulation, prevention of food crises, and systems of early warning and protection of the poorest—both consumers and producers—against price shocks.

Ten years on, the impact of the above-mentioned evolutions on the strategy choices of influential actors in food and agriculture matters is significant. The initiatives listed as examples in the table below thus put the following objectives at the heart of their strategy:

- Feed cities within a context of urbanization and diversification of issues: quality, security, health, obesity and urban poverty.
- Create jobs upstream and downstream from production and improve producers' incomes.
- Improve food systems in order to increase their resilience and deal with the challenges linked to climate change (mitigation and adaptation, biodiversity, waste, etc.).

Table 1.
Strategy of AFD's main partners involved in the "cities and food systems" subjects

Bi- and multilateral donors	
World Bank	Food Systems for an Urbanizing World 2017
Extracts: "Positioning food systems to address the future challenges and opportunities will require a transformation in how we think about future goals and interventions to improve their performance. First, there is need for a transformation in the food system focus from one that has been traditionally centered on producing a sufficient quantity of food to one that strives to achieve the four interlinked outcomes: (i) Remunerative jobs and better agribusinesses; (ii) Affordability and accessibility for food security; (iii) Nutritious, diverse, quality and safe food; (iv) Sustainable, resilient agriculture and food systems. Achieving these interlinked outcomes would represent a quadruple win for the food system, which is in line with a vision of a food-smart city. Second, there is need to place more focus on the evolving institutional, policy and governance dimensions related to the growing role of municipal and metropolitan district governments and of private and civil society stakeholders engaged in urban food issues. This focus on the urban or downstream dimension of food systems should be viewed as an important complement to the agricultural and rural aspects in the ongoing rural-urban transformation. Finally, urban food issues and dimensions are inherently multisectoral, thus requiring greater attention to diverse, but often complementary, inputs from multiple sectors and actors, ensuring they are properly prioritized, planned, financed and implemented. Together, these elements underscore the important transformation that needs to take place in food systems.	
IFAD	https://www.ifad.org/web/knowledge/publication/asset/40256615
Other international institutions	
FAO	Food for Cities Initiative
The Food for Cities initiative seeks to develop urban food systems that are sustainable, resilient, and dynamic, by strengthening the relationships between rural and urban areas. The program helps local governments identify and understand the shortcomings, bottlenecks and opportunities for sustainable planning, knowledgeable decision-making, prioritization of investments, design of sustainable food policies and improvement of local food systems. The program focuses on: • Capacity building for local stakeholders within a local food system; • Strengthening the relationships between rural and urban areas, for more inclusive, effective and resilient smallholder agriculture activities; • Promoting a participative and multiparty dialog to reinforce ownership by stakeholders; • Upscaling practices.	

The food demand of urban areas can strengthen rural areas according to FAO: "The millions of young people living in developing countries who are destined to enter the job market in the coming decades will not need to flee rural areas to escape from poverty" indicates *The State of Food in Agriculture* published by FAO on October 9, 2017. According to this document, "rural areas have huge potential for stimulating the economic growth needed to maintain a certain agricultural production and to the swift growth of related sectors." For FAO, we must "rely on the growing demand of food products in urban areas." This will help "diversify the food systems and generate new economic opportunities in agricultural and non-agricultural activities." Infrastructures must nevertheless be strengthened in order to "connect rural areas to urban markets." http://www.fao.org/state-of-food-agriculture/en/	
Think tanks and analysis and research centers	
OECD – Sahel and West Africa Club	http://www.oecd.org/swac/topics/
Food issues remain the linchpin of the work program of the Sahel club in 2017-18. They include crisis prevention and management, resilience, and capacity for the region to feed a strongly growing population that will soon be mostly urban.	
International Food Policy Research Institute (IFPRI)	2017 Global Food Policy Report
Report dedicated to questions of nutritional and food security in an urbanizing world.	
CIRAD	Construire des politiques alimentaires urbaines
Publication dedicated to developing urban food policies in a context in which feeding cities is recognized as an urban development issue.	

Given the in-depth modification of food systems and their issues (Part 1) and the past and present interventions (Part 2), AFD carried out a cycle of reflection on the subject between 2014 and 2018 (see box 2).

This led AFD to adopt an approach that encompasses the entire food value chain, from farm to fork. This approach therefore includes the relationship between the rural world—generally approached by most donors positioned on food systems—and the urban world. It is thus important to comprehend the entire value chain by considering the prospects and the distribution in addition to the phase of production and supply to cities.

Part 3 introduces the new approach to shift from a "markets" action to real "cities and sustainable food systems," which include SDGs 2, 3, 8, 11 and 12.

3. Our approach: 8 proposals to renew dialog with our partners

This part proposes key principles that should guide the analysis and development of "sustainable cities and food systems" projects.[28] **By proposing a new way to cover these issues, the objective is to stimulate dialog in order to shift from a "market" outlook to a more systemic and territorial "sustainable food systems" vision**.

Table 2.
The 8-point approach for supplying cities with food

INFRASTRUCTURE POSITIONING	
1. **Geographical positioning**:	*Market location* is the result of a systemic analysis taking into account transport, urban policies, social inequalities, consumers' expectations and development of alternative modes of distribution
2. **Functional positioning**:	*Functional positioning must reflect needs and build on current situation.* The roles of platforms, hubs and markets needs to be hierarchized and articulated.
ECONOMIC DEVELOPMENT AND SUSTAINABILITY	
3. **Resilience**:	Vulnerable populations' activities upstream and downstream of the market must be preserved (informal distribution systems, peri-urban agriculture).
4. **Waste**:	Waste must be reduced, reused and recycled as much as possible.
5. **Employment**:	Job creation must be considered at the scale of the whole food distribution system, not just at market level
FOOD SYSTEMS	
6. **Management models**:	Market management must be considered at the scale of the supply basin and seen as a public service. It must include all parties.
7. **Regulation**:	Authorities' role in price information, quality and security (fire, health, safety and crime) regulation is essential.
8. **Inclusive approach**:	The implementation of a food distribution project must include all parties.

[28] The examples come from case studies on Rabat, Niamey and Abidjan; see Lemeilleur *et al.* (2019a, 2019b), Lançon and Boyer (2019), d'Angelo & Brisson (2019) and "AFD & Food for Cities. What roles for local governments in the Global South?", 2017.

3.1. Geographical localization and positioning within a distribution network

3.1.1. Principal 1 – Geographical positioning: building & transport

The location of food supply and distribution infrastructures must take a number of factors into account: transport and access to market, urban policies, social inequalities, consumer expectations and the development of alternative modes of distribution.

Understanding the spatial dynamics that determine where to locate productive activities and exchange infrastructures requires consideration of those factors generally influenced by public policies, whether implemented at the national or local level.

- **Transport and access to markets:**
  - **Issues:** on the supply side, the cost of transporting goods, which depends on distance and time, the degree to which the products are perishable, and the capacities of the logistics chain all determine the extent to which local producers can supply markets and at what price. On the demand side, the time and money (transport costs) it takes for consumers to reach the place of purchase affect the choice of this place and the frequency of purchasing.
  - **Recommandation: moving or renovating a market requires considering transport efficiency to supply the city**, analyzing the flows of goods and people, and being aware of the public policy on urban as well as regional and national transport. It is also necessary to **include consumers' expectations and decisions regarding the place of purchase**..

☞ *For example,* in Abidjan, consumers choose the closest place of purchase because of urban sprawl aggravated by the shape of the lagoon, which causes major traffic difficulties. In Niamey, the prices lead people to the place of purchase, even if they have to travel farther. Household income and the **urban shape** are key trade-off factors for the inhabitants of Abidjan and Niamey.

↗ Consumers' purchasing criteria can change after an urban transport improvement program or a policy to subsidize transportation. In this case, an analysis of the impact of these changes can be called for.

- **Perishability of goods and modernization of circuits:**

The perishability of products and transport constraints strongly influence the management and organization of the flow of goods to cities. For example, the closest areas usually provide the most perishable products.[29] Even with the development of forms of transport to and from rural areas and the strong land constraints in peri-urban areas, the peri-urban production areas remain important for feeding cities with perishable goods.

[29] Calmette (2019), Lemeilleur *et al.* (2019b).

☞ *In Rabat, Abidjan, and Niamey,* the most perishable goods such as leafy vegetables are provided by short circuits, whereas the least perishable products such as frozen chicken come from areas farther away. For tomatoes, which are very popular in Niamey, the two circuits compete. For this highly perishable product, local production areas are expanding farther from the city due to land pressure, and storage and transport infrastructure in Niger are inadequate for transporting tomatoes from far away. Local tomatoes are thus in competition with imported ones. This situation does not satisfy the expectations of consumers and is also harmful for local producers.

Several operational responses can be provided to deal with the constraints of the perishability of products consumed in cities:

- ***By "modernizing" the circuit* with adapted logistic infrastructures,** the importance of proximity decreases, even for perishable products, thanks to the logistics that are used and to specific quality requirements as well as continuity in supply. Modernizing the distribution chain nevertheless requires taking numerous factors into account that come both i) from upstream in the value chain (costs of refrigerated storage infrastructure, efficiency of electricity supply) and ii) downstream (household equipment and consumption habits). These attempts can end up as failures, as in the case of Niger, because of their cost and because they do not match the habits of consumers (who do not own refrigerators).
- *By encouraging the maintenance of peri-urban market-gardening areas, with the possibility of developing short circuits:* especially for very perishable products, such as leafy vegetables (lettuce, spinach, etc.) and aromatic plants (mint, coriander, parsley) (cf. Principal 3 as well).

- **Social inequalities, development of mass merchandisers and urban sprawl:**

A phenomenon that had until recently been highlighted mainly in OECD countries[30] is that social inequalities in cities, fragmentation of housing and consumption spaces, and urban sprawl can lead to the emergence of food deserts. It is thus essential to carefully **analyze and map urban inequalities and areas where housing is isolated, to ensure distribution of goods that is the least inegalitarian possible** so that the food insecurity of the poor does not grow.

[30] Calmette (2019).

☞ *In Rabat-Salé,* the richest neighborhoods are supplied not only by supermarkets but also by the dynamic offer of working-class neighborhoods. On the other hand, the poorest neighborhoods and peripheral neighborhoods converted from slums following urban sprawl are characterized by a form of food insecurity, which is mitigated to some extent by informal trade. Thus, while some working-class neighborhoods play a role of interface between the rural world and the urban world, other neighborhoods are destitute or see their commercial trade work destabilized by the establishment of supermarkets, raising the question of the future emergence of food deserts in Morocco.

3.1.2. Principle 2 – Functional positioning of commercial facilities

The functional positioning of a commercial facility must be designed by prioritizing and linking the role of platforms and hubs with that of the markets (wholesale, semi-wholesale and retail).

- Organization of wholesale activities:

The establishment of a wholesale market is generally intended to decongest the city center, against the backdrop of an increase of flows of various origins (peri-urban/ national/ regional/ international). Wholesale markets in this case help structure these flows, on the condition that they are linked in with an effective transportation network, and with other links in the agri-food and agri-logistics chain.

The functional organization of wholesale activities for food products in the big cities of sub-Saharan Africa has two main characteristics[31]:

- The absence of equipment and specialized installations that could be qualified as wholesale markets. Wholesalers carry out their activities in places that are not especially fitted out for them.
- The absence of a center where wholesalers are concentrated, as in the cases of the Rungis market and central buying offices surrounding Paris, redistribution centers for all the products and for the entire city. On the contrary, several wholesaler groupings relatively dispersed in the urban fabric are common. They generally operate in synergy with the major consumption markets (either at the actual location of these markets, in adjacent streets or in the immediate vicinity, or in "specialized" wholesaler neighborhoods).

- The other possible functions

For example, some "markets" are in reality locations where production is grouped together before redirection of goods, others are storage infrastructures, and others used for products for which they were not originally designed (daily consumer goods instead of fresh vegetables).

When the territorial organization in terms of transport, storage and conservation infrastructures do not provide the conditions for the wholesale markets to be set up in a single center outside the city (and to become a systematic point of passage), **platforms**

[31] Paulais and Wilhelm, 2000.

where goods are gathered together in several locations of the city before being redirected may be more suitable despite the problems of fitting out the location, of congestion and of the associated health risks[32], and this in particular when:

- multiple actors and intermediaries are involved in supplying products, and these same actors carry out wholesale, semi-wholesale, storage-zone, reshipment, and retail activities;
- supplying is carried out in small quantities for fresh and very perishable products;
- optimization of redistribution costs is sought, given the high price of urban transport;
- Access by smallholders to the city's markets is promoted, giving the action a real means to reduce poverty in rural areas.[33]

Recommendation: with regard to the redistribution of products, it is nonetheless important to properly prioritize these platforms or main markets and the secondary markets. These platforms must be simultaneously linked with storage areas suitable for less perishable products (cereals, etc.) and be accessible to large-scale traders dispatching imported products, not to mention general goods.

Recommandation : une bonne hiérarchisation entre ces plateformes ou marchés principaux et les marchés secondaires est cependant nécessaire pour la redistribution des produits. Ces plateformes doivent aussi s'articuler avec des aires de stockage adaptées aux produits moins périssables (céréales, etc.) et être accessibles aux grands commerçants acheminant notamment des produits d'importation et les marchandises non alimentaires.

☞ *In Abidjan,* a city which is already sprawling and divided by a lagoon, traffic and transport costs are constraints often mentioned by retailers. Moreover, the main criterion for consumers is how close the place of purchase is. In this case, it may be justified, in logistical effectiveness terms, to maintain a decentralized and multi-center wholesale distribution flow, generally when there is little traffic. (Excerpts from Lançon and Boyer, 2019)

[32] Balineau and Madariaga, 2019.

[33] Reardon, 2016.

3.2. Challenges of local economic development and sustainability

3.2.1. Principle 3 – Resilience for those who are the most vulnerable

In order to preserve the most vulnerable populations, the roles of urban and peri-urban agriculture and so-called informal distribution systems need to be questioned.

Gaining a good understanding of urban and peri-urban agriculture and informal distribution systems

Here we will indicate under what circumstances and conditions they can play a role to ensure food security for the poorest (Lemeilleur *et al.*, 2019a; Smit, 2016).

- **Urban and peri-urban agriculture**

Urban and peri-urban agriculture do not clash with other means of agricultural production to address food security issues; rather, they can be considered as ways to support the most vulnerable urban populations and to diversify supply in fresh produce. According to FAO, 22 million people in Africa consume food which is produced in cities.[34] Urban agriculture enables the disadvantaged populations of the city to produce some of their food (or even sell the surplus produced).[35] For the most vulnerable populations to benefit from this, a certain number of conditions are necessary, such as access to production factors (land, water, inputs, etc.) and to credit, and access to professional training and agricultural extension.[36] When urban and peri-urban agricultural products are produced in sufficient quantity to enable some of it to be sold by producer households, it can be a way to generate income.[37] They also make it possible to maintain highly perishable fresh produce in particular in the food diet of city dwellers in the case of deficient transport infrastructure and conservation (See Principal 1). In this case, it responds to an urban food security challenge.

Finally, peri-urban agriculture helps limit building on land and reduces the risks of erosion, flooding and loss of biodiversity. Certain techniques can help it facilitate adaptation to the effects of climate change.[38] The will of local authorities plays a crucial role in maintaining peri-urban agriculture in a context of growing pressure on urban land.

- **Informal distribution systems**

Formal distribution in Africa is dominated by a limited number of large-scale actors (wholesaler importers and mass merchandisers), whereas informal trade[39] is characterized by a larger number of smaller actors: collectors, wholesalers (based in villages and cities), and urban retailers. The informal systems of distribution are often judged poorly effective in

[34] Taken up in Reardon (2016).

[35] "AFD &Food for Cities. What roles for local governments in the Global South?", 2017.

[36] Frayne *et al.*, 2014.

[37] de Zeeuw and Drechsel, 2015.

[38] Soilless production, for example, of the AULNA program in the city of Antanarivo. More information on the website of IMV, which is in charge of the AULNA program: http://www.imvtana.org/agriculture-urbaine

[39] The term "informal" can be defined simply as not being covered by State registration and regulation. It should nevertheless be pointed out that many so-called informal actors do in reality contribute to the public treasury, for example by paying taxes associated with markets.

meeting the growth in food demand[40]. However, the low margins accepted by these vendors enable even people in the most insecure economic conditions to feed themselves at low cost. Their availability to disadvantaged consumers and their resilience helps them to cope with the instability in supply and demand and explains their importance in feeding city dwellers.[41] This added value must thus be taken into account in the "modernization" of supply chains and in social stability.

3.2.2. Principle 4 – Treatment and management of waste

Waste must be managed and reused in the best possible way, while its quantity should be reduced as much as possible.

The importance of waste management for the proper functioning of markets is well known by the local authorities who request help from AFD: it responds to both sanitation and safety issues. Municipal technicians always have it in mind when describing an "ideal" food system for their city.[42] On the other hand, going beyond just waste removal and having a more holistic approach to the production of this waste and its recycling in all the stages of the food value chain is complicated and costly. But it can enable local governments to also respond to environmental and economic challenges for the city.

- **Recommendations related to environmental issues:**
  - Valorizing organic waste through compost, which can be reused for urban, peri-urban and even regional agriculture, instead of chemical fertilizers.
  - Through methanization, waste can be used for energy and can produce electricity, heat or biogas, as is the case in a project supported by AFD in the city of Shaoyang (in the province of Hunan in China), where the valorization of food waste should contribute to reducing greenhouse gas emissions (by 70,000 tCO_2/year).[43]
  - Valorization of waste should include reflection on how to reduce the waste of food products by improving the methods of harvest, storage and distribution (See Principal 2). Furthermore, awareness-raising campaigns on sorting and against waste by consumers (including by improved conservation of food) can (and must) be carried out.
  - Recommendations related to economic issues: Valorization creates both informal jobs (in the pre-collection or the recycling phase) and formal jobs (for the rest of the waste management value chain), and increases the incomes of urban and peri-urban market gardeners. This is the case in Dakar, where compost has helped increase the incomes of urban market gardeners by 60% thanks to the savings made by not purchasing chemical inputs[44].

[40] Lemeilleur et al., 2019a.
[41] Vorley, 2013.
[42] Taken from testimony and exchanges with participants during a special workshop as part of a training program organized by Sustainable Development Campus (VAL/CAM), March 23, 2018.
[43] "AFD & Food for Cities. What roles for local governments in the Global South?", 2017.
[44] Source: FAO, 2012.

3.2.3. Principle 5 – Jobs and economic activities

Job creation must be considered at the level of the whole agri-food system, not just the market. Elected officials often perceive markets as centers for the creation of wealth and for supporting economic activities. Renovating or building markets does help improve the working conditions of the vendors initially there (be they in a pre-existing market or simply street vendors), or strengthen their business income. However, nothing guarantees a net creation of jobs there.

- **Consider markets as infrastructure for exchanges:**

They can improve the attractiveness of territories and generate leverage effects on the local economy if they are integrated upstream and downstream into the food value chains. The food economy as a whole could represent $1 trillion in Africa by 2030 (see 1.2 above). Reaching this potential does not depend only on markets.

Food value chains include many actors who offer services (storage operators, carriers, porters, crate renters, crate carriers, transport and sales agents, etc.). These represent many jobs in the downstream part of the value chain.[45]

It is therefore not the market or any other commercial facility in itself that can create many jobs directly, but rather it has a leverage effect when it facilitates food system activities in exchange and production as a whole. Moreover, the increase in the number of jobs and the improvement of working conditions come as much from the renovation of infrastructures as from the services rendered in the direct environment of the business zones.

- **The primary processing activities for raw products and related services:**

They are complementary to sales activities and are generally underexploited, even though they have a high potential for job creation. A World Bank study on six African countries points out that the potential for job creation in the food value chain takes form mainly in the processing activities and their associated services (food marketing, transport and food preparation). It is estimated that these activities will grow from 8% to 12% of total jobs in these countries between 2010 and 2025.[46]

[45] See Lemeilleur *et al.*, 2019a.

[46] Townsend *et al.*, 2017; the 6 countries are Ethiopia, Malawi, Mozambique, Tanzania, Uganda, and Zambia.

Processing of food products also helps to:

- Respond to food security challenges by improving food conservation and by stabilizing prices (for example, transforming fresh tomatoes into dried tomatoes or sauces, etc.);
- Diversify the activities in and around the markets (sales of canned food, street food, etc.);
- Promote local products in a more profitable way than by selling unprocessed products;
- Limit waste and trash in unprocessed products.

Recommendation: Officials can organize these processing activities by creating food clusters or dedicated business zones. These zones can be fitted out and integrated into a group of nearby services that create jobs in services that are eagerly expected by market users[47]: hotels for producers, carriers and other intermediaries; caretaker and security services; cleaning services; and finally, management of waste generated by the market.

3.3. Governance of food systems

3.3.1. Principle 6 – Market management models

Sustainable market management must be integrated at the scale of the supply basin and seen as a public service. It must involve all parties.

- **Equilibrium of the financial model**

Municipalities perceive markets as a source for their own budget revenue, through the collection of fees for occupancy rights or operating licenses. However, this regular contribution to the city's treasury represents only a limited portion of municipal budgets: between 8% and 28% of overall municipal resources in several cities of West Africa.[48] This can be explained notably by the significant difficulties in collection. In Senegal, for example, the market taxes should represent FCFA 430 million but in reality amount to only 104 million on average, just one quarter.[49]

Depending on the form of management chosen, the income collected must help finance basic operating costs (cleaning, caretaking, management team) as well as repair or major maintenance costs. To this should also be added fire insurance premiums and depreciation costs of investments.[50]

- **Elements for an adapted and acceptable taxation:**

It is thus important to set occupancy fees that are:

[47] Taken from testimony and exchanges with participants during a special workshop as part of a training program organized by Sustainable Development Campus (VAL/CAM), March 23 2018.

[48] Michelon, 2012. Recent studies have confirmed this estimation in secondary cities in Madagascar.

[49] Rouhana *et al.*, 2014.

[50] This is only rarely the case.

- realistic and reasonable (that take the costs of services and maintenance into account and that correspond to vendors' ability to pay);
- established on a logical basis such as total surface area or sales surface;
- modifiable, in order to take price increases into account.

This requires prior consultation with market vendors and users. Otherwise, there may be problems of unoccupied markets and with the collection of occupancy fees[51] or taxes related to trade activities (refusal to pay fees, misappropriation or corruption among collectors, etc.).

Upstream, a market's tax system must be determined by including their public service function, which is essential to feeding the city's inhabitants and which is important to maintain so that the market runs well. In other words, it is clear that **the management and the yield of this type of facility generally do not contribute to the city's capacity for self-financing, because of its public service function** (which is all the more costly because the facilities incorporate aspects of quality, security and compliance with standards).

- **Approaches at the territorial level:**

Consequently, the sustainable management of this type of equipment should be conceived at the territorial level, on a scale that depends on the extent of influence of the market. The State can thus absorb some of the costs by leasing a concession to develop the land, and the municipalities concerned by the flows (and not just the one where the market is located) can join an inter-municipality agreement to operate the infrastructure, etc. This type of system of operation is common for livestock markets, for example.[52] Finally, the revenue from a market may be diversified and include the sales of non-essential services to vendors, or of products derived from waste recycling, for example.

3.3.2. Principle 7 – Régulation

Public authorities' role in price information, quality and security (fire, health, safety and crime) regulation is essential.

The regulatory role of public authorities is important for several aspects: the management of balances of power, diverse or even divergent interests, the organization of the market, circulation of information and setting of prices, and hygiene and security standards, etc.

Consumer demands in terms of health quality are increasing. Actions related to the governance of food systems must thus take questions of hygiene, traceability and control into consideration. These actions have a cost that will necessarily be passed on to consumers. It is thus important to give an order of priority to the actions.

Another crucial aspect regarding markets and in circuits of exchange in general is information flow.[53] Several studies analyze how new information and communication

[51] Rouhana *et al.* (*op. cit.*) thus identifies: the conflict in responsibilities between the city and the surrounding municipalities; the low rates, which is why it is important to expand the tax base; the lack of inventory of stands; the refusal of vendors or canteen owners to pay (insalubrity); degradation of facilities; the problem of defining the physical space of the markets; and insufficient human and material resources.

[52] Touquet, 2016.

[53] See Bignebat *et al.*, 2009, on the case of Turkey, and Bernard *et al.*, 2017, on the case of onions in Senegal.

technologies enable markets to function more effectively: improved information flow enables some players to avoid travel costs and to be better informed of prices.[54]

3.3.3. Principle 8 – Inclusive approach and negotiation with the vendors and other stakeholders

The implementation of a food distribution project must include all parties to ensure good governance thereafter.

In a constantly urbanizing world, the role of local governments in the food policy of cities has become crucial. Among the challenges facing cities, an essential one is to ensure the food security of urban populations all while finding a balance with rural territories. It is now a question of going beyond mere market management and of having a holistic approach to the issue.

For this, officials must include all the food-system stakeholders when designing the commercial framework of cities.

Consulting all actors plays a central role in the good governance of food supply and distribution systems of the city. For example, traditional food distribution systems continue to exist despite the existence of large- and medium-sized retail stores throughout Africa, including among the middle classes (as in Niamey or Rabat, for example).[55] However, **understanding and anticipating the importance of medium- and large-scale retailers in the commercial framework is important** in order to limit the emergence of food deserts.

- **The related stakeholders**

In addition to the consultation among local government, Management Company and vendors, **other stakeholders of the city can and should be consulted**:

- *End consumers* (consumer organizations or consumption surveys). How important do they view: the distance to the market (when there are no efficient means of transport)? …the price? …the type of product (market-garden produce, meat products, cereals, etc.? …their quality? …the knowledge of the vendor? These elements are essential for the commercial framework to correspond to the demand for food products. Hence, in a city such as Abidjan, where the proximity of markets determines place of purchase, maintaining a significant network of secondary and retail markets around the entire city is required.
- *Stakeholders upstream from the value chain*, i.e. the producers, carriers, labor unions and professional organizations.

This overall analysis is also essential for food safety, which is generally outside of the authority of local governance and is a national prerogative. Expectations in the matter differ from one city to another, and it is important to understand them in order to carry out the right level of dialog. In Niamey, quality extends more to the sense of taste, whereas in Rabat it corresponds more to the health characteristics of products.

[54] See Aker, 2008; Jensen, 2007; and a study financed by AFD on several countries of Africa: https://www.afd.fr/fr/les-sim-systemes-dinformation-de-marche-agricoles-en-afrique-subsaharienne-de-la-1ere-la-2eme-generation

[55] Cf. Lemeilleur *et al.*, 2019a.

Conclusion

This technical report identifies five main messages:

1. Developing sustainable food systems is **as much** an **urban as a rural topic** and is part of the **territorial transition**.

2. Sustainable food systems contribute to achieving many SDGs (hunger and food, employment, health, environment) and cover climate issues (mitigation and adaptation).

3. Reaching this objective **requires a multisector approach** (urban planning, transport and logistics, waste management, rural and agri-business development, professional training, access to financing, etc.).

4. To contribute to it, urban and rural communities have a role to play, and in their interactions they must shift from a "markets" approach to an integrated "food systems" approach.

5. However, we can observe that local governments and other AFD counterparties rarely use a comprehensive approach, despite the fact that both parties have many levers to support the development of sustainable food systems.

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List of Acronyms and Abbreviations

AULNA	Agriculture Urbaine / Low Space no Space (Antananarivo)
IMV	Institut des Métiers de la Ville for the City of Antananarivo
SDG	Sustainable Development Goals
SME	Small and Medium enterprise

Agence française
de développement
5, rue Roland Barthes
75012 Paris I France
www.afd.fr

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