L'AFD &

N° 4 - September 2017

FOOD FOR CITIES

What roles for local governments in the Global South?

AFD
AGENCE FRANÇAISE
DE DÉVELOPPEMENT

Authors

Roxane Fages
Montpellier SupAgro, UNESCO Chair in World Food Systems

Nicolas Bricas
Cirad, UMR Moisa and UNESCO Chair in World Food Systems

Proofreading and technical advice within AFD:

Gaëlle Balineau, Research and Development Division
Jean-René Cuzon, Agricultural and Rural Development Division
Alix Françoise, Urban Development Division
Nicole Madariaga, Urban Development Division
Florence Mouton, Climate Change Division
Anne Odic, Urban Development Division

The authors would like to thank:

Laure di Biasi and **Corinne Ropital**
from the Institut d'Aménagement et d'Urbanisme of the Ile-de-France Region for their proofreading, and
Marie-Flore Doyen
master's student in the *Innovations et politiques pour une alimentation durable* ® specialized program, for the summaries of the Belo Horizonte and Medellín food policies.

Originally published in French.
Translation/revision team: Eric Alsruhe, Charles La Via, Jennifer Gay

Design: www.lendroit.com
Cover illustration: © N. Le Gall/Cirad

CONTENT

Cities mentioned as examples in this report:

City	Country	Chapter(s)	Page(s)
Abidjan	Côte d'Ivoire	3	38, 50
Accra	Ghana	1	10, 13, 14
Antananarivo	Madagascar	1*,3	11, 12, 13, 14, 16, 37, 44
Balangoda	Sri Lanka	4*	45
Bangkok	Thailand	1	14
Beijing	China	1	14, 16
Belo Horizonte	Brazil	3, Conclusion*	35, 26, 54
Bissau	Guinea-Bissau	1	10
Bobo-Dioulasso	Burkina Faso	1	13
Bogor	Indonesia	2	26
Bouaké	Côte d'Ivoire	2	22
Brazzaville	Congo	1	10
Bulawayo	Zimbabwe	1	14
Bursa	Turkey	5	50
Cagayan de Oro	Philippines	1	14
Cape Town	South Africa	1	14
Cebu City	Philippines	2	27
Cienfuegos	Cuba	1	14
Colombo	Sri Lanka	1, 3*	14, 31, 34
Cotonou	Benin	1, 2	10, 22
Curitiba	Brazil	1, 2, 3, 4	16, 25, 33, 34, 37, 47
Dakar	Senegal	1, 3, 4	12, 14, 37, 41
Dar es Salaam	Tanzania	1	13, 14
Dschang	Cameroon	4	43
Douala	Cameroon	4	41
Governador Valadares	Brazil	1	14
Hanoi	Vietnam	2	25
Havana	Cuba	1, 3, 4	14, 36
Ibadan	Nigeria	2	26
Kampala	Uganda	1	14
Kathmandu	Nepal	1	14
Kigali	Rwanda	1	14
Kitwe	Zambia	2	23, 27
Lilongwe	Malawi	1	10
Lima	Peru	1	14
Lomé	Togo	4*	43, 44
Lusaka	Zambia	2*	22, 42
Mahajanga	Madagascar	2*, 4	18, 23, 24, 40, 43, 44,45
Maputo	Mozambique	1, 2	14, 22, 27, 28
Marilao	Philippines	1, 4	14, 42
Medellín	Colombia	3, 4, Conclusion*	33, 35, 36, 37, 47, 54
Mexico City	Mexico	1, 3	14, 16, 35
Montevideo	Uruguay	2	26
Nairobi	Kenya	1	10, 14
Papeete	French Polynesia	5	49
Phuket	Thailand	5	50
Piura	Peru	1	14
Quito	Ecuador	1, 2	13, 15, 26
Rio de Janeiro	Brazil	4	43
Rosario	Argentina	1*, 2, 5	15, 16, 26, 49
São Paulo	Brazil	3*	33, 34, 36
Shaoyang	China	4	42
Shanghai	China	1, 2	13, 25, 26, 41
Tacna	Peru	1	16
Tarija	Bolivia	3	36
Yaoundé	Cameroon	1	10, 41

* Cities featured in a box in the chapter indicated

FOREWORD

In a constantly urbanizing world, city governments have come to play a crucial role in urban food policies. From among the challenges facing cities, ensuring food security for their residents is vital, and this must be achieved keeping in mind both the balance to be found between urban and rural areas and the sustainability of food systems. Public commitments to this challenge have been made any number of times since the 1990s, but it was at the end of 2016 that access to "safe, sufficient, and adequate food" became part of the new urban agenda adopted in Quito, Ecuador, during the Habitat III Conference.

Work by Agence Française de Développement (AFD) to promote urban food security currently takes on several forms. For nearly 30 years, AFD has been working alongside emerging and developing cities, particularly in Africa, to develop and upgrade their commercial facilities[1]. Among the cities that have benefited from the support are Mahajanga in Madagascar, Ouagadougou in Burkina Faso, and Cotonou in Benin.

At the same time, the urban development projects financed by AFD have been gradually integrating urban agriculture. These often have multiple objectives that are economic, social, and environmental in nature. In Porto Novo, Benin, for example, urban agriculture acts both as an income-generating activity for the poorest and as a means for sustainably developing its lagoon area.

To optimize the cycle of materials, AFD is also paying special attention to the reduction–and where applicable upcycling–of waste, be it organic matter (which can be reused as fertilizer) or energy. For example, this year AFD started up an energy-upcycling project in the sector of restaurant food waste in the city of Shaoyang, China. This project will help to produce 17,220 MWh/year of energy and reduce greenhouse gas emissions (70,000 tCO_2/year).

For several years, in order to better guide its partners in defining and implementing this new aspect of local public policy, AFD has been thinking more specifically about food for cities. This has taken on concrete form through a research program on urban supply systems and through the present publication, which stems from deliberations following the Urban Food Policies symposium organized by the UNESCO Chair in World Food Systems and the French Agricultural Research Centre for International Development (Cirad) in late 2015, with the support of AFD and other organizations. This international meeting helped stimulate thinking about the definition, design, and concrete implementation of urban food policies, thanks to a sharing of knowledge and of practices among local governments from Africa, Asia, and Latin America, and among researchers and actors of development.

Three topics for exchange were highlighted in the symposium: the role of markets and logistics, food service, and urban/rural connections. The lessons from the symposium are unique and act as a benchmark on the subject because, currently, feedback on experiences has come chiefly from the countries of the North. In particular, the symposium showed the importance of combining food-security actions for citizens with actions that target improved access to markets for smallholder producers in order to help regulate agricultural production. This approach requires local, regional, national, and even international policies to be linked very coherently.

This report provides a summary of the symposium and analyzes the aspects of its urban food policies by looking at real-life cases. It focuses on four themes: land management and the maintenance of urban agriculture; supply infrastructure and food distribution; food service and street food; and, finally, waste recycling. It also opens up new fields for analysis: food as a vehicle not just for living together harmoniously, but also as a creative source of activity to enhance the appeal of local areas.

In this way, the report contributes to AFD's work on the role of local communities in food security and on the construction of territorial public policies in the broader sense. From an operational angle, it seeks above all to reach readers who are elected officials and technicians from local communities of the South, as well as the community of donors supporting actions related to food security and nutrition.

Anne Odic
Head of the Local Government and Urban Development Division
Agence Française de Développement

1. AFD, 2015. *L'AFD & les équipements urbains marchands : 30 ans de projets de réhabilitation de marchés en Afrique*. Paris, Coll. AFD &, 40 p

INTRODUCTION

This publication is intended for political leaders; technical managers working in local governments; and international development cooperation actors working in the fields of urban development, agricultural development, and food security. Its aim is to show, through numerous examples, what cities–as new actors in food policies–have been undertaking in recent years to secure food for their populations and to make the urban food situation more sustainable. The publication focuses particularly on the food policies of cities in Africa, Asia, and Latin America.

Urban policies with an impact on food are not new. Municipal authorities have always been concerned with guaranteeing their population both a regular food supply and food of good sanitary quality. Their actions have taken on very varied forms over the centuries, up to the time when central governments gradually took control of food policies (Daviron et al. 2017).

But urban policies also have an influence on agriculture and food, even if they are carried out with other objectives. For example, they can seek to reduce city congestion (by relocating wholesale markets to areas outside the city), attract children to school (by offering them lunch), collect tax revenue (by developing markets), or clean up neighborhoods (by recycling excreta), etc.

In recent years, local urban governments and an increasing number of urban planners[2] have again taken up the issue of food. A growing number of cities are starting to build real policies to secure and improve food, and food has become an essential component of the well-being of city dwellers and one of their main concerns. Surges in prices and health crises can cause social crises. So, to develop these policies, cities are either mobilizing existing levers by giving the policies new objectives or they are innovating.

According to the United Nations, cities are currently home to slightly more than half of the world's population but consume two-thirds of its energy and emit 70% of its greenhouse gases. Globally, the food system contributes between 19 and 29% of this environmental impact (Vermeulen et al. 2012).

Against this backdrop, international networks of local governments are mobilizing to assert the desire of cities and regions to contribute, alongside States, to the building of more sustainable food systems[3]. This trend for networking by cities can be found on all continents, as much in agriculturally-oriented countries as in industrialized countries.

Cities' priority food concerns tend to converge on issues of sustainability, but they differ according to the contexts. In the formally industrialized countries–and since recently in countries in transition–city

2. Since 2009, the Association of European Schools of Planning (AESOP) has held an international symposium each year on sustainable food planning.
3. In October 2015, about 100 cities from around the world signed the Milan Food Policy Pact for working out urban food policies. The networks United Cities and Local Governments (UCLG), Local Governments for Sustainability (ICLEI), and C40 Cities have, since 2016, formed working groups on food systems. The Habitat III Conference of 2016 covered food issues for the first time.

dwellers are seeking more direct ties with their food, as they wish to opt for healthier and more responsible eating habits. In the countries of the South, the main objectives are to i) ensure the food security of urban populations that still run the risk of social and political crises; ii) "modernize" the supply, logistics, and distribution channels; and iii) better connect national production with urban markets, for countries that are greatly dependent on food imports.

SOCIOECONOMIC ISSUES

The cities of Africa, Asia, and Latin America, whose food policies are studied in this publication, are characterized by a particularly rapid pace of urbanization, be it past (Latin America) or future (Africa and Asia). This has produced specific issues for food systems (Bricas 2017a).

The demographic growth of these cities is often faster than the creation of jobs in the formal sector. As a result, a significant proportion of the population engages in numerous self-employed informal activities, especially in the food sector (in processing, sales, and food services). In poor neighborhoods, these people work in often insalubrious environments, with few resources. For this reason, control and improvement of sanitary quality represent a major challenge for food security for city dwellers, and for public safety and nutrition.

With regard to employment issues, the agricultural and agri-food sectors are strategic because they are significant suppliers of jobs. Cities can promote methods of agricultural production that are more or less favorable to the maintenance of family farming and to smallholder farms. They can also opt for supply-chain, processing, and distribution models in the agri-food sector that are more or less labor-intensive.

Many cities have long been supplied from far, and some rely largely on food imports from international markets. But the world food price surges of 2007-2008 and 2010-2011 revealed the vulnerability of cities that are too dependent on such imports.

Urban markets are nonetheless important outlets for national agricultural production, and many commercial value chains for food have been established to capture them. But rural suppliers come up against urban shopkeepers who often exert pressure by imposing quality criteria that are difficult to satisfy and prices that are not very lucrative.

As a result, the farmers who feed cities do not necessarily manage to feed themselves properly. One challenge is thus to reconnect cities with their hinterland, but by seeking to build fairer relationships with farmers. Here as well, cities can promote such a reconnection, via public procurement or supply-chain methods for example.

Cities are home to people whose living standards and powers are increasingly unequal. This generates social tensions that can lead to violence and insecurity. To limit these risks, food appears to be a means for social and cultural interactions and for building ties. "Eating" is not just ingesting nutrients. Taking into account social inequalities and cultural differences in actions having to do with food is a major challenge for encouraging a society in which people live together in harmony.

CLIMATE ISSUES AND URBAN DEVELOPMENT

Supplying cities with food requires organizing the circulation of significant flows of provisions to a densely concentrated population. The final kilometer of that flow has a big impact on traffic and pollution in the city, and on the energy cost of transport. Cities can help shape the way the supply chain and distribution are organized, and thereby have a broad impact on the costs of food, its quality, and its availability in terms of where and when.

Providing cities with food also implies generating agricultural surpluses to feed a population that no longer produces its own food. This has been possible up to now thanks to the industrialization of agriculture and the use of non-renewable resources (fossil energy and extractive phosphate and potassium) that produced considerable leaps in productivity. But this production model exhausts resources, erodes biodiversity, and saturates environments.

These days, cities concentrate enormous amounts of material (nitrogen and phosphorus in particular) that come from regions that are farther and farther away, and then are rejected to the outskirts of the city or into the sea. Yet, these resources could be upcycled either into agricultural fertilizers to restore the material cycles or into energy.

City dwellers are not only wealthier than rural inhabitants on average: they consume and waste more (Bricas 2017b). And such overconsumption by city dwellers of animal products and of refrigerated and processed products, as well as their food waste, etc., exerts strong pressure on resources and environments. But cities have the possibility of modifying food behavior and directing it towards more sustainable models via the commercial framework and food environment that they shape and through the lessons they can teach us, through school meals, for example.

WHAT LEVERS CAN CITIES MOBILIZE?

Cities of course do not possess all the needed powers to confront these issues. They must coordinate their actions with those of other political levels, such as regions, the central government, or even international bodies. But they do have levers they can mobilize.

The purpose of this publication is to present examples of how these levers are used by cities of developing countries as part of food policies. These examples are largely drawn from experiences presented during a symposium co-organized by the French Agricultural Research Centre for International Development (Cirad), Agence Française de Développement (AFD), and the UNESCO Chair in World Food Systems, with the support of various partners[4]. The symposium, held in November 2015, dealt with urban food policies in Asia, Africa, and Latin America[5]. Several examples also come from AFD's experiences in this field.

This publication is divided into chapters, each of which is devoted to a major field of action, from food production to the management of organic wastes. The first chapter concerns land management, which among other things helps to maintain agricultural activities in or around cities. The second chapter concerns infrastructure to facilitate food supply and distribution within cities. The third chapter deals with the question of food services. The fourth concerns the management of organic wastes and their possible upcycling for use in agriculture. The fifth chapter briefly presents other levers that cities can mobilize regarding food. A concluding section recalls the interest of urban food policies within the context of the United Nations Sustainable Development Goals and provides some possible responses to questions concerning the governance of these urban policies.

REFERENCES

BRICAS N., 2017a.
"Les enjeux de l'urbanisation pour la durabilité des systèmes alimentaires". In Brand C., Bricas N., Conaré D., Daviron B., Debru J., Michel L., Soulard C.T. (Eds.) *Construire des politiques alimentaires urbaines. Concepts et démarches*. Versailles, Editions Quae, pp 19-42.

BRICAS N., 2017b.
"Les enjeux de l'alimentation des villes". *Cahiers de l'Institut d'Aménagement et d'Urbanisme de la Région d'Ile-de-France*, (173): 6-9.

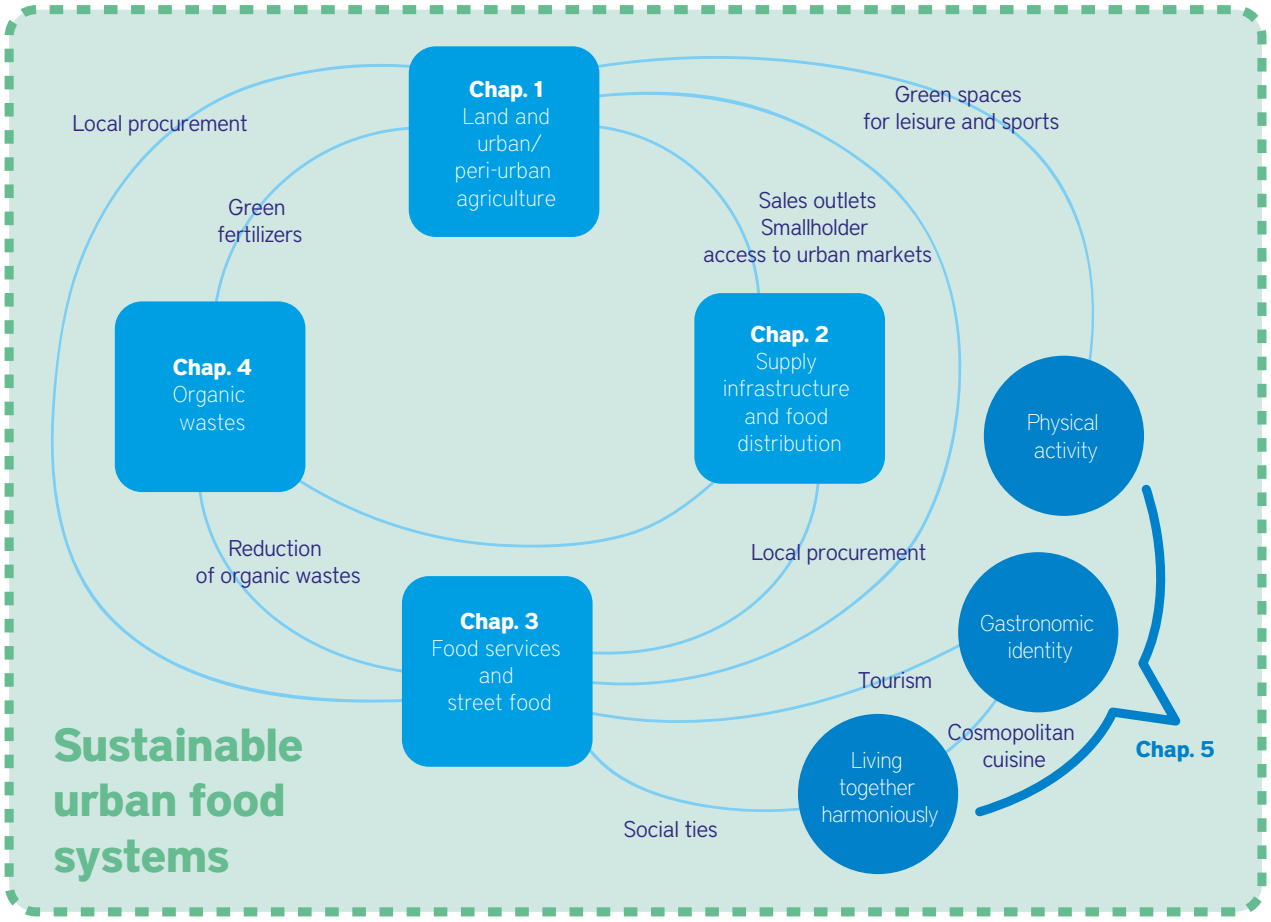
DAVIRON B., PERRIN C. & SOULARD C.T., 2017.
Histoire des politiques alimentaires urba*in*es en Europe. De la ville antique à la ville industrielle. *In* Brand C., Bricas N., Conaré D., Daviron B., Debru J., Michel L., Soulard C.T. (Eds.) *Construire des politiques alimentaires urbaines. Concepts et démarches*. Versailles, Editions Quae, pp 43-65.

VERMEULEN S. J., CAMPBELl B. M. & INGRAM J. S. 2012.
Climate change and food systems. *Annual Review of Environment and Resources*, (37): 195-222

4. Resource Centres on Urban Agriculture and Food Security (RUAF Foundation); Food and Agriculture Organization of the United Nations (FAO); the Charles Léopold Mayer Foundation for the Progress of Humankind (FPH); the International Sustainability Unit (ISU) of the Prince Charles Foundation (ISU); Montpellier Méditerranée Métropole (MMM).

5. A more detailed publication gives an account of each of these experiences and is downloadable from the UNESCO Chair in World Food Systems website: *Urban Food Policies: Proceedings of the international meeting on experiences in Africa, Latin America and Asia*, November 16-18, 2015.

Levers of intervention available to cities for developing a food policy



Various levers are discussed in the chapters that follow. Cities can link these levers in order to develop a comprehensive food policy that will help make their food systems sustainable. For example, they can help ensure sales outlets for the products of urban and peri-urban agriculture (Chapter 1) by creating dedicated markets (Chapter 2) or by reserving some of the supply of those products for public food services (Chapter 3). They can also manage the collection and treatment of urban organic wastes (Chapter 4) for local usage, as fertilizer for urban and peri-urban agriculture. Cities also have several sociocultural levers available. (Chapter 5).

Urban market gardening in Cotonou, Benin. © IRD, Alain Rival.

An FAO report based on numerous case studies of urban and peri-urban agricultural practices shows that this activity is very important in such areas. It is practiced by 35% of the population in Lilongwe, Malawi and in Yaoundé, Cameroon; by 30% in Nairobi, Kenya (representing 1 million people); and by 25% in Accra, Ghana. These studies highlight the fact that it is above all women who are active, including in the associated trade activities. They represent 70% of the producers in Bissau, Guinea-Bissau, and in Brazzaville, Congo (FAO 2012).

Chapter 1

LAND AND MAINTENANCE OF URBAN AND PERI-URBAN AGRICULTURE

City governments have the power to decide or influence how unbuilt land over which they have authority can be used. They have planning tools at their disposal to allow building on their urban or peri-urban land, or to preserve it in order to create green spaces for agriculture or leisure activities. Such vacant land, in cities or nearby, is both rare and expensive; as such, it is often considered as space to be urbanized for the construction of housing or professional activities. This attitude, combined with the persistent conflict between "city" and "countryside" and between "city" and "nature," leads to priority rarely being given to agriculture and natural spaces in cities (Le Gall 2013).

Despite this traditional opposition, agriculture in cities (so-called urban agriculture) or in nearby areas (so-called peri-urban agriculture) is a reality. If we look at cities, especially in developing countries, we can see that agriculture is one component of urban activities. These forms of agricultural production can occur on land or be soil-less (see Box 1). Many city dwellers, especially the poorest, grow vegetables or

Box 1

Securing fresh produce supply thanks to urban agriculture in Antananarivo, Madagascar: the AULNA (Low Space – No Space Urban Agriculture) program

Antananarivo is spread over several hills traditionally reserved for housing and over flood-prone agricultural plains where rice and watercress is grown. The city has undergone rapid population growth, especially in the "low city," which is particularly vulnerable to risks related to climate change (flooding and landslides). The food and nutritional security for the populations of these neighborhoods is a real challenge for the city, especially during the cyclone season.

It is against this backdrop that the AULNA program, carried out by Institut des Métiers de la Ville (IMV) and the Antananarivo urban authority (CUA), was created in 2011. This program was designed as a mechanism for climate-change adaptation and seeks to promote local adaptation and the dissemination of soil-less agriculture, especially for leafy vegetables (called brèdes) and yams.

The pilot phase of the project, in 2011-2012, concerned around 20 public primary schools and around 100 households (mainly those with school children), 70% of which were located in the low city. During this phase, IMV provided the seeds and the material for cultivation (bags, tires, tables for growing, bamboo, etc.). Technicians provided weekly individualized monitoring.

To accomplish even more, the city's organic wastes program has plans on the one hand for actions to upcycle wastes (65% of which is fermentable) to be provided to the urban farmers of the AULNA program, and on the other for maintenance services for the city's green spaces. The project underwent an evaluation phase, and since 2014 IMV and CUA have been providing support for the dissemination and large-scale extension of the project via the coordination of a platform of urban-agriculture stakeholders made up especially of NGOs and associations that do liaison work on the ground.

Find out more (sources in French)**:**

• IMV website: http://www.imvtana.org/agriculture-urbaine

• Aubry C., Dabat M. & Ramanamidonana J., 2014. "Fonctions alimentaires de l'agriculture urbaine dans un pays du sud : le cas d'Antananarivo". Pour, 224(4): 77-88.

• IMV, 2016. Agriculture Urbaine à Antananarivo, un mécanisme d'adaptation au changement climatique. Video viewable online: https://www.youtube.com/watch?v=ZymrhWzJdHA

raise animals; this may be in back courtyards, private or shared gardens, in vacant spaces along the roadside, or on rooftops. These activities are not just a leftover of "traditional" rural agriculture absorbed by urban sprawl. They are also a new form of production in spaces where city dwellers work and live. Because land is rare, they invent new farming or livestock-raising practices there. These practices are more intensive, and sometimes abusive (use of dangerous chemical pesticides) or poorly controlled (use of polluted organic waste). In this case, there may be negative impacts on the environment and on health (Orsini et al. 2013).

But while urban agricultural production, especially that involving animals, is often viewed as a vector of health risks and pollution, this is not the case of all urban agricultural activities. Productive systems that are innovative and efficient from an environmental and health standpoint are also used. These include soil-less livestock raising, rooftop gardening, and aquaponic and hydroponic cultivation.

Beyond simply acknowledging these existing situations, some cities have discovered the value and advantages of these spaces and have decided to protect or even develop them. Indeed, preserving agricultural land against transformation and overbuilding due to urban sprawl enables city dwellers to produce some of their food (Maxwell et al. 1998) and create jobs (Moustier and Danso 2006), and also provides multiple environmental co-benefits such as the management of climatic risks (by cooling down cities and creating buffer spaces against floodwaters) and the maintenance of biodiversity (Konijnendijk and Gauthier 2006). Furthermore, preserving a productive long-term green belt around the outside of cities can act as a tool to encourage the densification of already-existing buildings. Finally, urban and peri-urban agriculture meets an emerging need in the most industrialized countries of the South: a reconnection between urban populations and agricultural production thanks to a shortening of supply lines.

Urban authorities have tools in hand for facilitating–or on the contrary hindering–urban and peri-urban agriculture. These are urban planning management of some of the city's land, the ability to create a favorable institutional framework, and making public infrastructure available (access to water and management of wastes).

WHY MAINTAIN AGRICULTURAL ACTIVITIES IN CITIES?

Maintaining or even promoting urban agriculture does not enjoy unanimous support. For some people, not building on vacant urban spaces represents a loss of potential income when real-estate prices are high and the needs for housing or workspaces significant. For them, this agriculture does not provide enough food to feed cities and therefore does not deserve the attention given to it. Finally, it is said to have health risks. But this urban agriculture also has many supporters, not only among researchers and experts, but also among city political leaders. An abundance of literature highlights its advantages, which are summarized hereinafter.[6]

Enable city dwellers, and especially the poorest, to produce some of their food and thereby strengthen their food and nutritional safety.

Cities in developing countries are facing an especially significant demographic rise, leading to an increase in food needs. By producing some food in the city, city dwellers practicing urban agriculture can enjoy both access to fresh produce and save money thanks to self-consumption of this produce, which also makes it possible to diversify their diet.

The City of Dakar in Senegal has introduced a micro-gardening program in its development plan. These micro-gardens now meet 70% of the city's vegetable demand. This is an asset, because the daily transport of huge amounts of food from very far rural areas makes cities vulnerable in the event of crisis. The City of Antananarivo in Madagascar has developed an urban agricultural project whose objective is to secure food provision, especially during the frequent flooding that disturbs the transport of goods.

Reduce poverty and create jobs.

Most cities in developing countries do not manage to generate enough employment opportunities, be it in the formal or informal sectors, to meet the rapid increase of their population. Cape Town in South Africa regards urban agriculture as a way of fighting poverty and of creating jobs. The city allocates it a dedicated budget each year. This urban agriculture makes it possible not only to produce for self-consumption; it also helps generate surplus that can be sold. When practiced in communal gardens, it also helps re-create social ties that can contribute to reducing the isolation of people living in precarious situations. Furthermore, the processing and distribution of local agricultural products coming from urban and peri-urban agriculture helps promote the local economy. The City of Quito in Ecuador encourages and supports urban farmers in the creation of micro-businesses with the aim of creating added value via processing.

6. Cofe et al. (2006), Yi-and et Zhangen (2000), FAO (2012), Mubvami and Mushamba (2006), van Veenhuizen (2006), CRDI et al. (2003), FAO (2007), RUAF (2011), Zezza and Tasciotti. (2010), World Bank, (2013), Sy et al. (2014), Ba et al. (2016)

The working-class neighborhood Manjakaray in Antananarivo is bordered by rice paddies. Cyril le Tourneur d'Ison.

Urban and peri-urban agriculture alone do not suffice when it comes to feeding cities. Nonetheless, it is practiced by 800 million people the world (FAO 1999) and is complementary to "traditional" rural agriculture by providing a non-negligible share of urban consumption for some products: 80% of vegetables in Dar es Salaam, Tanzania, and in Accra, Ghana (Cofe et al. 2006), as well as 90% of eggs in Shanghai, China (Yi-Zhang and Zhangen, 2000) and 20% of rice in Antananarivo, Madagascar (Aubry et al. 2014).

Preserve the environment and its ecosystemic services, to improve city resilience.

When land is built up, not only is its food-producing function lost, but the city's vulnerability to risks of erosion, flooding, and loss of biodiversity increases. This is all the more true because the effects of climate change affect the cities of the South in particular. This is why Bobo-Dioulasso in Burkina Faso started up a "green band" project combining forestry and market-gardening production. It links up the various green spaces of the city to peri-urban forest zones, with the special objective of mitigating the effects of climate change. Thanks to this green band, which is also used for educational and leisure purposes, both water runoff and urban heat islands have been reduced. Industrial activities operating near water capture zones have negative effects on the quality of water used in cities. Therefore, to preserve its drinking-water resources, Mexico City, Mexico, has protected more than half of its peri-urban land, including 300 km^2 of agricultural land on which the use of chemical inputs is prohibited.

Improve lifestyle through sewage management and the creation of leisure spaces.

Urban farmers need organic and inorganic nutritive elements for fertilization. These elements can be supplied by organic wastes from households or markets and also by human and animal excreta (see Chap. 4 on the management of organic wastes). Thanks to the production of compost locally for urban agriculture, waste collection by the City of Antananarivo is reduced by 800 tons per day. Since 1997, the City of Marilao in the Philippines has been organizing the collection of bio-wastes from households, markets, and businesses for the production of compost used for urban and peri-urban agriculture.

The areas used for urban agricultural production can moreover be multi-functional and be used for leisure activities. In Bangkok, Thailand, aquaculture in urban and peri-urban lakes is combined with leisure activities such as fishing, boating, and the establishment of fish restaurants.

WHAT LEVERS OF ACTION FOR CITIES?

Cities have many resources and tools for creating a framework that can encourage the development of urban and peri-urban agriculture and the corresponding economic, social, and environmental services, and for reducing possible negative effects on public health and the environment.

FACILITATE ACCESS TO URBAN AND PERI-URBAN LAND, AND SECURE AGRICULTURAL USE OF LAND.

Cienfuegos in Cuba, Piura in Peru, and Dar es Salaam in Tanzania have carried out—in particular through the use of geographic information systems (GIS)—an inventory of available vacant land and then analyzed the relevance of the use of such land for agriculture.

Havana in Cuba, Cagayan de Oro in the Philippines, Cape Town in South Africa, Lima in Peru, Bulawayo in Zimbabwe and Governador Valadares in Brazil offer temporary leases to urban agricultural groups for unoccupied municipal land which is, for example, fallow or unsuitable for building development because in a flood zone or under high tension wires. Cagayan de Oro urges landowners to have their land farmed over the long term, by proposing them a tax reduction for example.

Colombo in Sri Lanka, Kampala in Uganda, Dar es Salaam, and Cagayan de Oro require spaces to be reserved for the creation of community gardens in new real-estate or slum rehabilitation projects.

CREATE AN INSTITUTIONAL FRAMEWORK FOR URBAN AND PERI-URBAN AGRICULTURE.

Traditionally, urban sectoral policies have been designed according to the belief that agriculture concerns the rural sphere. Consequently, urban and peri-urban agriculture is not sufficiently taken into account in urban and agricultural agendas.

Recognize agriculture as a legitimate form of urban and peri-urban land use, and integrate it into land-use planning (especially urban zoning), to avoid agricultural land being in competition with other uses. This is all the more important because change in how agricultural land is used is definitive. The City of Kigali in Rwanda has reserved 15,000 hectares for agriculture and the preservation of wetlands. The cities of Dar es Salaam, Dakar, Maputo in Mozambique, Kathmandu in Nepal, Accra in Ghana, Cape Town in South Africa, and Beijing in China have also set zones dedicated to urban agriculture.

Create a municipal administrative service in charge of urban and peri-urban agriculture or integrate those prerogatives within existing services.

The cities of Nairobi in Kenya and Accra in Ghana have each created a municipal department dedicated to urban and peri-urban agriculture. Meanwhile, Cape Town and Bulawayo have set up a working group that brings together members of several municipal and provincial departments—in particular in charge of urban planning, health, and economic development—in order to coordinate an integrated development policy for urban and peri-urban agriculture. The Villa Maria del Triunfo district in Lima, Peru, has created a service in charge of urban agriculture within its economic development department.

Create institutional resources to support urban and peri-urban agriculture.

The City of Quito has given its Municipal Agency a mandate for economic development (called "Conquito") to manage and support urban agriculture.

Box 2

Multifunctionality of urban and peri-urban agriculture in Rosario, Argentina

In 2002, the City of Rosario made urban agriculture part of its policy to deal with a social emergency that occurred following a big economic crisis the previous year. Concretely, an urban agricultural program (UAP) was designed to round out the offer of municipal food banks by providing support to the latter's users in gaining access to and in cultivating vegetable gardens. With this aim, the city joined up with a local NGO, the Rosario Research Center for Agroecological Production (CEPAR) and the national program Pro Huerta, which both support the development of family gardens.

The UAP was a success, and participation by city dwellers, especially the poorest ones, was massive. Since 2008, urban agriculture has been integrated within the Metropolitan Strategy Plan, which allows it to be recognized as a legitimate and permanent use for urban land.

The UAP was initially established for the purpose of food security, but since 2011 it has diversified so as to include actions that enhance the multiple functions of urban agriculture:

• Creation of jobs and income for a marginalized and precarious population, through the creation of an urban agri-food value chain that links a network of urban agroecological vegetable gardens, two artisanal agri-industries, and a network of urban markets. The city has renovated and made available a warehouse to set up a processing workshop for vegetables, some of which are produced from urban agriculture. Part-time workers prepare 2,000 trays per week of pre-cut and mixed vegetables that are used in preparing salads, soups, pies.

• Integration and social cohesion thanks to the creation of five community agroecological gardens.

• Environmental education for schoolchildren and the creation of five parks or gardens that act as spaces for sport and leisure activities.

While the UAP concerns only the City of Rosario proper, in 2014 the municipality launched a program for producing and marketing vegetables from an agroecological market-gardening activity in the city's peri-urban zones; it is included in Rosario's sustainable-development strategy and in its action plan for the climate. Within this framework, the city has doubled (from 400 to 800 hectares) the surface area of protected zones for peri-urban agriculture within its urban development plan.

Find out more:

Soler Montiel, M., 2015. "The Complex Management of Multifunctionality in the Urban Agriculture Programme in the city of Rosario, Argentina". *Revue d'ethnoécologie*, (8). Available online: http://ethnoecologie.revues.org/2390 [accessed Feb. 10, 2017]

Conquito provides subsidized inputs and helps urban farmers develop their management capacity.

SUPPORT THE ECONOMIC VIABILITY OF URBAN AND PERI-URBAN AGRICULTURE.

Facilitate access to water, inputs, and basic infrastructure.

Urban and peri-urban agriculture is limited by water availability. The City of Tacna in Peru provides urban farmers with treated wastewater in exchange for their help in the maintenance of urban green spaces. Mexico City encourages systems for collecting and storing rainwater, building wells, and establishing efficient irrigation systems using localized water

(such as drip irrigation) in urban agriculture. In Curitiba, Brazil, the city provides seeds, seedlings, and other basic material to urban farmers. It also oversees preparing the soil and provides technical advice.

Propose training and technical advice to urban farmers.

Cities can ask a number of private, public, or not-for-profit organizations to provide training, technical advice, and services to urban farmers, especially for environment-friendly growing practices, health-risk management, business management, and marketing. The Rosario Research Center for Agroecological Production, a local association, has been training urban market gardeners for nearly 30 years and works in close cooperation with the city authorities (see Box 2).

Create sales outlets for urban and peri-urban agricultural products.

The City of Governador Valadares in Brazil facilitates the marketing of urban agricultural products thanks to measures that encourage training for cooperatives in the production and marketing of products and the creation of markets dedicated to urban agricultural products, and through the purchase of products from small-scale urban farmers for supplying schools and hospitals.

Develop agri-tourism.

Urban and peri-urban farmers can create leisure activities for city dwellers. In addition to the service provided, such activities can represent attractive extra income that contributes to the profitability of urban agriculture. The City of Beijing, for example, promotes the development of peri-urban agri-tourism in the form of "agri-leisure" parks and in the form of agricultural tourism at the homes of local people (sales of fresh products or prepared food, tours, etc.). The City of Antananarivo has set up eco-tourism paths to enhance the value of urban and peri-urban rice paddies.

CONCLUSION

Urban and peri-urban agriculture remains a controversial topic. It is in no way a cure-all for ensuring the food security of city dwellers. Its production is limited by the small amount of surface area available to it, even if it is protected. At best, it can make a strong contribution to supplying the city in fresh produce. But when underemployment exists, this activity is also an important resource for providing both food and extra income to people who have come from impoverished rural areas and who know how to farm.

Furthermore, besides its food-security function for populations living in economic insecurity, this form of agriculture provides many services and is also a field of experimentation for innovative practices that upcycle urban resources for intensifying production. From this angle, urban agriculture cannot be considered as a transitory activity destined to disappear, especially because it is developing in industrial cities, where it serves new purposes for an urban population seeking to renew ties with agriculture.

REFERENCES

Aubry C., Dabat M. & Ramanamidonana J., 2014
"Fonctions alimentaires de l'agriculture urbaine dans un pays du sud : le cas d'Antananarivo". *Pour,* 224(4): 77-88

Ba A., Cantoreggi N., Simos J. & Duchemin E., 2016.
"Impacts sur la santé des pratiques des agriculteurs urbains à Dakar (Sénégal)". VertigO - *la revue électronique en sciences de l'environnement,* 1(16). Available online: http://vertigo.revues.org/17030 [accessed February 9, 2017].

Cofie O., Bradford A. A. & Dreschel P., 2006.
"Recycling of Urban Organic Waste for Urban Agriculture". In van Veenhuizen R. (Ed.) *Cities Farming for the Future: urban agriculture for green and productive cities*. RUAF Foundation, IDRC, IIRR, pp 2-17.

CRDI, PGU-ALC, IPES, 2003.
"Agriculture urbaine : planification et aménagement du territoire". CRDI, PGU-ALC, IPES, Collection *Principes directeurs pour la formulation de politiques municipales en matière d'agriculture urbaine*, 4 p.

FAO, 1999.
"Questions relatives à l'agriculture urbaine". *Courrier de l'environnement de l'INRA*, (36): 107-108.

FAO, 2007.
The urban producer's resource book. A practical guide for working with Low Income Urban and Peri-Urban Producers Organizations. Rome, FAO, 172 p.

FAO, 2012.
Growing greener cities in Africa. First status report on urban and peri-urban horticulture in Africa. Rome, FAO, 116 p.

FAO, 2014.
Growing greener cities in Latin America and the Caribbean: a FAO report on urban and peri-urban agriculture in the region. Rome, FAO, 51 p.

Konijnendijk C., Gauthier M., 2006.
"Urban Forestry for Multifunctional Urban Land Use". In van Veenhuizen R. (Ed.) *Cities Farming for the Future: urban agriculture for green and productive cities*. RUAF Foundation, IDRC, IIRR, pp 411-442.

Le Gall L., 2013.
Quelle place pour l'activité agricole en ville ? Le cas de Ouagadougou, entre sécurisation et relégation. Disponible sur Internet : http://www.metropolitiques.eu/Quelle-place-pour-l-activite.html [consulté le 08/02/2017]

Maxwell D., Levin C. & Csete J., 1998.
Does urban agriculture help prevent malnutrition? Evidence from Kampala. *Food Policy,* 23(5): 411–424

Moustier P., Danso G., 2006.
"Local Economic Development and Marketing of Urban Produced Food". In van Veenhuizen R. (Ed.) Cities Farming for the Future: urban agriculture for green and productive cities. RUAF Foundation, IDRC, IIRR, pp 171-206.

Mubvami T., Mushamba S., 2006.
Integration of agriculture in urban land use planning. *In* van Veenhuizen R. (Ed) *Cities farming for the future: urban agriculture for green and productive cities*. RUAF Foundation, IDRC, IIRR, pp 54-86

Orsini F., Kahane R., Nono-Womdim R. & Gianquinto G., 2013.
"Urban Agriculture in the Developing World: A Review". *Agronomy for Sustainable Development*, 33(4): 695-720.

RUAF, 2001.
"Intégration de l'agriculture urbaine dans l'urbanisme". *Magazine de l'agriculture urbaine*, (4): 1-78.

Sy M., Baguian H. & Gahi N., 2014.
"Multiple Use of Green Spaces in Bobo-Dioulasso, Burkina Faso". *Urban agriculture magazine,* (27) : 33-36

van Veenhuizen R., 2006.
"Introduction, Cities Farming for the Future". In van Veenhuizen R. (Ed.) *Farming for the Future: urban agriculture for green and productive cities*. RUAF Foundation, IDRC, IIRR, pp 2-17.

World Bank, 2013.
"Urban Agriculture: Findings From Four City Case Studies". Washington, World Bank, Coll. *Urban Development Series Knowledge Paper*, 104 p.

Yi-Zhang C., Zhangen Z., 2000.
"Shanghai: Trends Towards Specialised and Capital Intensive Urban Agriculture". In Bakker N., Dubbeling M., Guendel S., Sabel Koschella U. & de Zeeuw H. (Ed.) *Growing cities, Growing Food, Urban Agriculture on the Policy Agenda*. Feldafing, DES, pp 467-475.

Zezza A., Tasciotti L., 2010.
"Urban Agriculture, Poverty and Food Security: Empirical Evidence from a Sample of Developing Countries". *Food Policy,* (35): 265-273.

The Mahabibo Market in Mahajanga after its renovation. Benjamin Michelon.

Chapter 2

FOOD SUPPLY AND DISTRIBUTION INFRASTRUCTURE

Sales infrastructure management is a strategic area of intervention for local governments that would like to take action on food issues. In this chapter, "supply infrastructure" refers to wholesale markets and slaughterhouses, while "distribution infrastructure" corresponds to markets and retail stores, wherever they may be (central, peripheral, neighborhood, or in the street). These facilities are connected by transport infrastructure and linked to parking areas. All of these infrastructure facilities, for transactions and transport, form the commercial framework of a city.

Because of the continuity of this commercial framework, we decided to analyze the supply and distribution of food in the same chapter. However, it should be pointed out that the supply of provisions to cities concerns more specifically the relations that link them to their close or distant environment, and

therefore to the question of urban-rural connections. The question of distribution systems, on the other hand, is mainly an urban issue.

The primary preoccupation of urban authorities concerning food supply and distribution infrastructure is to reduce congestion and clean up cities as they expand. Accordingly, many cities relocate slaughterhouses and wholesale markets to their peripheral areas.

Interventions on the commercial framework are also related to economic issues. Cities build or renovate their sales facilities, on the one hand to generate revenue via property leases and taxes, and on the other to improve local business operations, notably by regulating prices by making transactions more transparent (AFD 2015).

As the economic markets in Southern countries develop, in particular with the emergence of a middle class, private investors see opportunities to set up large retail chains and to build the infrastructure needed for that purpose: supermarkets, central purchasing services, and logistics platforms (Abdelmajid 2012). These retail chains have been developed very unequally in Southern countries. At the present time, they can be found especially in Asia and Latin America, where they have had an impact on how the food supply and distribution for cities are organized. For instance, the arrival of these new forms of distribution can lead to the exclusion of smallholders and urban dwellers with a low standard of living from urban markets (Grain 2014). Accordingly, the issues related to commercial infrastructure have evolved due to the progressive opening of supermarkets in developing countries

Beyond the goals of being decongested and cleaned up, cities must take account of new preoccupations linked to changing modes of consumption. This involves, for example, meeting the emerging demands for traceability, for quality, as well as for reconnecting with producers. Indeed, the wealthier consumers become, the more criteria they include in their purchasing practices. As a result, in Northern countries, the preoccupation with the environmental impact of food consumption has more and more influence on the supply chain with farmers' market, direct sales, and drive-in farms (for which the customer places an order by Internet and picks it up at the farm), and a growing interest in alternative distribution circuits.

WHY INTERVENE IN THE FOOD SUPPLY AND DISTRIBUTION PROCESS?

The supply and distribution infrastructures are strategic areas of intervention for the cities that wish to improve the food of their residents. Some cities have set clear food- and nutritional-security goals for these infrastructures (Debru *et al.* 2017). They have set up ambitious food supply and distribution policies in their attempts to promote the food security of urban dwellers and the development of dynamic agricultural sectors that create jobs.

ENSURE FOOD AND NUTRITIONAL SECURITY FOR CITY DWELLERS.

Facilitate access to food products.

It does not suffice to produce large quantities of food; it is also essential to make foodstuffs easily accessible to all urban consumers. A forward-looking study completed in 2015 shows that many African countries have encouraged an increase in agricultural productivity but have not made adequate efforts to improve their market and logistics infrastructures (AGRA 2015). This has resulted in significant post-harvest losses, high transport costs, and continued poverty because of jeopardized food security. Linked to the previous point, the limited access to urban markets by farmers leads to lower consumption of fresh produce in cities, where manufactured products that are less nutritional are more readily available (3keel 2015).

The way in which food distribution is organized, and especially where points of sales for food are located in cities, has an impact on people's diets. When there are imbalances, the communities in certain neighborhoods can be far from sources of diversified and/or affordable food supplies. Such cases are known as "food deserts." We see then that the management of food supply and distribution infrastructures must make foodstuffs *physically* accessible to urban consumers. However, access to food products is also a question of price. Investing in the construction, renovation, and maintenance of food supply and distribution infrastructures can reduce the cost of food, thus making it accessible to the most impoverished individuals (Debru *et al.* 2017).

Ensure the hygiene of food products.

Due to the fact that supply and distribution infrastructures have inadequate systems for waste collection and water and electricity distribution, the sanitary quality of food products is a particularly significant preoccupation in developing countries. For public authorities, good sanitary conditions are a requirement in a modern city, and the strategies for modifying supply and distribution infrastructures systematically aim at improvement of those conditions. These needs are particularly urgent in the meat production sectors. For instance, in Central Africa (Chad, Congo, Gabon, and Cameroon) approximately 60% of animal slaughtering takes place with no controls, most often in areas that do not satisfy the minimum requirements for food hygiene and safety (FAO 2013). Meanwhile, consumers have been increasingly concerned about pesticide residues in food (Pulliat 2012).

STRENGTHEN URBAN-RURAL EXCHANGES THAT SUPPORT SUSTAINABLE MODELS OF PRODUCTION.

Although a high demand for foodstuffs is concentrated in cities, access to urban markets is not always easy for rural farmers, especially for the smallest and poorest of them (Tacoli 2004). This is especially true in countries where large retailers are gaining ground—chiefly Asia and Latin America, but soon to be true in East Africa followed by West Africa.

Some cities have chosen to encourage a reconnection that links local agricultural supply to urban demand. Urban wholesale markets are an ideal tool for reconnecting this supply and demand successfully. The central purchasing services of supermarkets standardize quality, limit the number of items marketed, and in this way favor the biggest producers that can provide large volumes. Wholesale markets, on the contrary, enable smallholder farmers and independent distributors to connect with each other. Through this process, they enable a wider range of products to be marketed. The management of these markets is not systematically conducted by urban authorities. It is more or less decentralized according to the country. Nonetheless, cities can, if they wish, set up specific zones for regional producers in urban wholesale markets. These areas can even be reserved for sustainable models of production, such as organic farming and agro-ecology. In addition, making it easier for smallholder farmers to gain access to urban wholesale markets contributes to shortening supply chains, thereby strengthening the bond between the urban and the rural worlds.

WHAT LEVERS OF ACTION FOR CITIES?

Cities can directly modify the public food supply and distribution infrastructures under their management.

DESIGN AND BUILD FOOD SUPPLY AND DISTRIBUTION INFRASTRUCTURE.

Since the 1980s, AFD has regularly supported projects to build new facilities or renovate markets, and many of the examples below refer to those undertakings. Following a capitalization study published in 2015 (see Box 3), AFD established the major principles for making interventions based on the experience it has gained over the past 30 years. In particular, it came to light that it is essential to contextualize the intervention made on a market in the city's commercial framework, and not to consider the intervention without taking account of the hierarchical system of the markets in the city.

Improve and readjust the overall urban commercial framework.

Some cities focus on the commercial framework in their land-use master plans. Such is the case in Bouaké (Côte d'Ivoire) and Maputo (Mozambique), which have established a master plan for all of the markets in the city, to understand their importance and the interactions between them. These reflections at the scale of the commercial framework can lead to complementary interventions on several infrastructures. For example, on a central market and neighborhood markets in order to rebalance the sales offer throughout the city by motivating vendors to invest

Box 3

AFD and urban sales facilities

Since the 1980s, AFD has regularly supported projects to build new facilities or renovate markets with the goals of improving the sanitation and cleanliness of cities, supporting urban economic activity, and boosting local public revenue. AFD helps its partners improve the overall commercial framework of their cities, applying a cross-cutting analysis to all of their urban services, including transport, drainage, removal of solid waste and sewage water, and the provision of electricity and drinking water. To accomplish this goal, reflections were encouraged in relation to urban development plans and land-use master plans.

AFD support and funding have essentially concerned projects to renovate markets, which have been seen as a way of supporting municipal governments in their decentralization processes–in particular by paying close attention to building the capacity of the local project management teams–or to assist in the development of secondary cities. Historically, two categories of interventions on the markets have been funded. On the one hand, the renovation or construction of a particular facility in which there is a large number of shops. On the other, support for improving the commercial framework within the scope of simultaneous or successive interventions on several markets of a city. AFD insists on four major principles that guide its interventions: i) prioritize the rehabilitation of facilities that generate revenues, such as slaughterhouses, bus stations, and markets; ii) maximize the project's social impact by working with local companies as much as possible and using labor-intensive methods; iii) involve local stakeholders, especially by requesting financial participation from the municipal government and/or the users; and iv) improve the programming and project management capacities of the local government.

To learn more, see L'AFD & les équipements urbains marchands, 30 ans de projets de réhabilitation de marchés en Afrique (April, 2015). This capitalization report, which focuses more on food distribution than on food supply, reviews 25 projects carried out in 13 countries, mainly in sub-Saharan Africa. It describes in detail the following 10 recommendations for renovating markets.

1. Adopt a network-based approach for the system of markets.

2. Complete a socioeconomic and technical assessment of the markets, the commercial framework of the city concerned, and the supply circuits.

3. Build custom-made technical solutions that take account of the possible changes of the role of markets and their role in the urban commercial framework.

4. Ensure that projects have a maximum economic and social impact.

5. Implement flexible and adaptable projects.

6. Ensure continuous concertation between the contractor, the management company, and the storekeepers, using MOIS (French acronym for "institutional and social project management"); this is a tool for involving beneficiaries in the projects, through social intermediation mechanisms that help inform and involve storekeepers in the decisions made that concern them directly.

7. Ensure healthy and safe operating conditions for the markets.

8. Support and strengthen the project management operations in the long term.

9. Adapt the mode of management to the local opportunities.

10. Set up systems of intervention in secondary cities that are equivalent to the ones used in capital cities.

in neighborhood markets to relieve the congestion of the central market. The program funded by AFD to develop and clean up the Dantokpa central market in Benin, and the neighborhood markets of Cotonou, was conceived for such a purpose.

Integrate new sales facilities into the commercial framework.

The construction of a new urban sales facility has inevitable effects that can be beneficial or negative on how the sectors are organized, on business, and on local life. When no socioeconomic or technical assessment has been made, these effects can result in an under-utilization of these new facilities. Such is the case of the wholesale market in Bouaké (Côte d'Ivoire), which was built ex nihilo (Debru *et al.* 2017). The most common reasons for these failures are the inappropriate location, given the transportation constraints for vendors and shoppers, and the cost overruns in the new infrastructure. Therefore, the location chosen for building the market infrastructure and attracting future vendors and shoppers are crucial. Some cities deploy innovative policies to build market infrastructure. This is true of Lusaka (Zambia), which, due to a severe lack of market infrastructure, promoted the creation of "self-built" markets that are designed, allotted, and managed by urban authorities, but built by future users who thus become the owners of their stand (see Box 4).

Box 4

Food insecurity reduced by creating market infrastructure in Lusaka, Zambia

Zambia is the third-most urbanized country in sub-Saharan Africa. Its capital, Lusaka, is the city that has been the most significantly affected by rapid urbanization, which has contributed to increasing the food insecurity of its residents. Its growing population has indeed increased the demand for food, while the migration of rural populations to the city has decreased the number of farm workers, pushing down supply and driving up prices.

To achieve its clearly stated goal of improving food security, the Lusaka City Council has taken specific action on the infrastructure of its markets. There are four kinds of markets in the city: municipal, cooperative, street, and self-built markets. The first are built, maintained, and managed on a daily basis by the local government, while cooperative markets are built upon the initiative of local residents, and the local government plays no role in them. Street markets are organized once or twice a week, with the approval of the municipal government.

But market infrastructure remains acutely insufficient despite the existence of these first three types of markets. In fact, no new market infrastructure has been built in Lusaka for 20 years, due to inadequate funds. This has led to the phenomenon of self-built markets, an initiative of the municipal authorities of Lusaka. Self-built markets are helping overcome the infrastructure shortage because they are built by the very people who use them and who subsequently become their owners. Nevertheless, it is the local officials who choose the location, and design and attribute them based on an application process. They also manage these markets, and for that purpose the city collects a monthly tax from those who own a stand in these self-built markets, of which there were 17 in 2016.

The city has identified the obstacles that

must still be overcome to increase their impact: the occupancy rate of the stands must be improved and their owners forced to make their shops operational; the sale of food products must be also increased; these self-built markets must be equipped with storage facilities and equipment for food processing and packaging to encourage producers to open a stand in them. Today, these 17 self-built markets are only used for retail sales. They were not designed to accommodate food producers, which has pushed smallholders to sell their products outside of these markets in poor sanitary conditions.

The city has identified three ways to make these self-built markets more effective: 1) make sure that enough space is allotted in all of these markets for the sale of food products, in particular farm produce; 2) encourage the development of sales facilities that favor local smallholder farmers from the peri-urban areas near Lusaka; and 3) provide assistance for improving commercial networks in order to cut down the number of intermediaries, thereby pushing the prices paid to smallholders upward, while at the same time maintaining the prices of fresh food products at affordable levels for consumers.

Find out more:

Debru J., Bricas N. & Conaré D., 2017. Urban food policies. *Proceedings of the international meeting on experiences in Africa*, Latin America and Asia. November 16-18, 2015. Montpellier, France, 200 p. UNESCO Chair in World Food Systems.

Renovate existing facilities.

The goal of this renovation is to improve these facilities based on input from the users. The main needs concern the concrete works and the roofs to cover the markets, and the organization of cleaning, storage, waste collection, and water and electricity distribution services. Including future users in infrastructure renovation projects, according to the institutional and social project management principles applied by AFD, helps to better meet their needs while making it easier for them to make the projects their own, as was the case in the renovation of the central markets of Mahajanga in Madagascar (see Box 5). The challenge is to ensure the long-term operations and management of these facilities.

Connect supply and distribution infrastructure.

Accessibility to these sales facilities via public transport and their connectivity with other transport infrastructure, such as bus stations, influences their use. In addition, improving the connections between rural areas and cities is a crucial issue for giving farmers access to urban markets. That explains why in Kitwe, Zambia, the local government has attempted to improve and build roads and bridges to facilitate the circulation of food, thereby reducing the distance between the places of production and sales (Debru *et al.* 2017).

INTERVENTIONS THAT FAVOR SMALLHOLDERS

Facilitate local farmers' access to large retail chains.

Cities can set up actions that connect large retail demand to the local agricultural supply. This is the case for example of the Hanoi municipal government in Vietnam, which focuses some of its investments in wholesale markets and supermarkets with the aim of reconnecting them to short supply chains. In partnership with local-government authorities, the wholesaler Huong Canh Company supplies fresh vegetables to 37 supermarkets in Hanoi. Thirty local farmers have a contract to supply them 50 to 70 tons per day (Pulliat 2012).

Organize local agricultural chains so they can supply food to cities.

Cities can contribute to the organization of local chains by investing in infrastructure, such as

Box 5

Three central markets in Mahajanga, Madagascar, renovated via an integrated urban project

Mahajanga is the third largest city and the second biggest commercial port in Madagascar. In 2003, informal trade, which was at that time the main source supplying vegetables, meat, and fish, was common at all of the markets in the city. The lack of hygiene and sub-standard facilities at these markets resulted in epidemics (140 deaths due to cholera in 1999). It is against this backdrop that the project to renovate the markets of Mahajanga was undertaken in December 2003, with co-funding from AFD, the Government of Madagascar, the City of Mahajanga, the Alsace Institut Régional de Coopération-Développement (IRCOD), and the City of Mulhouse. The project targeted the three main markets of the city, and its goal was to improve their sanitary and hygienic conditions, their commercial operations, and the performance of the municipal management team. These three markets (Marolaka, Mahabibo, and Tsaramandroso) account for 85% of sales turnover at the commercial facilities of Mahajanga.

At the end of the project in 2008, the following main results had been achieved:

• Cleaner markets with latrines and showers installed, systematic cleaning, and improved storage conditions.

• Better organized sales conditions with areas reorganized for selling that make the products offered more attractive and strengthen the feeling among vendors who sell the same kinds of products that they belong to the same sector. An additional 740 stalls were created. The shift of sales away from mainly fresh food products to manufactured ones, which often occurs after market renovation projects, was not particularly prevalent. The decrease of sales of fresh food products sold was offset by an increased share of food wholesalers and of places to eat.

• Three associations of vendors were created (one at each renovated market), uniting several hundred vendors organized according to their sector. Today these associations are invaluable partners of the city and play a role as mediators that are in charge of transmitting the vendors' requests to the city. Training on food hygiene is organized for the representatives of these associations by the municipal hygiene office.

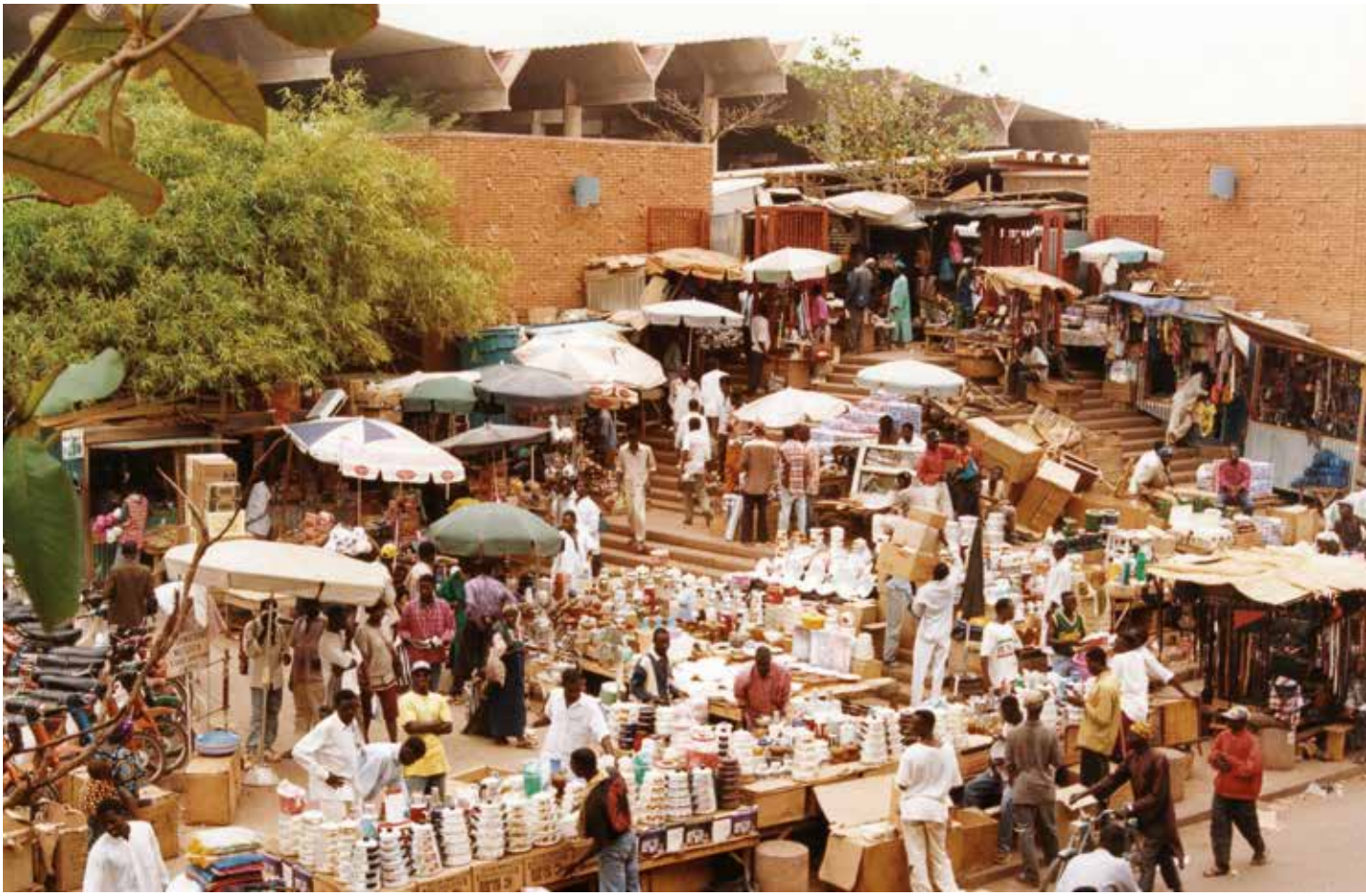
• A new mode of management has been implemented. It is a hybrid system between direct management by the city and self-governance, and a Markets Department was created in the municipal government with its own budget line, which makes it financially independent. This Department coordinates and oversees the municipal workers paid through this budget line, as well as the services concerned (cleaning, maintenance, and hygiene).

Several positive points in the Mahajanga market renovation project should be highlighted. First, an institutional and social project management approach was used, which through its social intermediation mechanisms made it possible to inform and involve the vendors in the decisions made that concern them, especially during the phases in which their stands were moved around and reinstalled in the temporary platform. Second, the infrastructure built does not only concern the infrastructure of the three renovated markets. Improvements were also made to the surrounding public space, and in particular to the conditions for making deliveries, parking lots, and the bus service. The city's commercial framework could also be renovated through the project, and the surrounding district's capacity was strengthened in a context of decentralization, which explains why this project can be cited as an example of an integrated urban project.

Find out more:

• Granjux J., 2013. "Réhabilitation des marchés centraux : les leçons tirées des projets de Ouagadougou, Mahajanga et Phnom Penh". AFD, Coll. *Ex-Post Evaluation et Capitalisation*, No.50, 40 p.

• Michelon B., 2009. "Capitalisation du projet de réhabilitation des marchés de Mahajanga". *Cahier de la Coopération*, (6) : 1-193.



AFD participated in the reconstruction of the Rood Woko central market in Ouagadougou after it was destroyed by a fire. Emmanuelle Cheyns.

wholesale markets, or by modifying the way they are organized. For example, the City of Shanghai in China has created numerous agricultural cooperatives, mainly for fruit and vegetables, in its peri-urban zone. Their number increased from 38 to 84 between 2008 and 2010. The creation of these cooperatives has helped organize the supply chain and increased sales opportunities for farmers, who have seen their income increase by nearly 20% (WWF 2012).

Create sales areas dedicated to small rural, peri-urban, and urban farmers.

In the framework of the Curitiba Mais Nutrição ("better nutrition for Curitiba") project, the City of Curitiba, Brazil, organizes fairs with socially fair prices that link rural producers directly to urban consumers. At these events, family agricultural cooperatives can directly sell fruit and vegetables at prices set by the city government, which are on average 40% lower than the retail price. Nevertheless, the profits for the producers are about 30% higher than when they sell on the wholesale market (Debru *et al.* 2017). In 2009, the city also opened a new municipal market area exclusively for the sales of organic products.

The city of Rosario, Argentina has developed a fruit and vegetable production project that adheres to good horticultural practices in a peri-urban zone for hotels and restaurants in Rosario that would like to propose higher-quality products. These products are sold with the label "Producto de Mi Tierra" (Products from My Land), which is awarded by the government of the province of Santa Fe, the administrative area in which Rosario is located (FAO 2014). In Quito, Ecuador "bioferias" (organic fairs) are organized in disadvantaged neighborhoods that allow urban farmers to sell their products. The Quito city government has also organized organic and agroecological markets since 2005 (FAO 2014).

RULES AND REGULATIONS CONCERNING COMMERCIAL ACTIVITIES

Intervene in normative and regulation aspects

Provide healthy and safe conditions for market operations.

Many different kinds of stakeholders are present and active at markets, which can lead to organizational problems due to the lack of rules concerning where vendors should install their stands, waste collection, as well as the market closing and surveillance systems. Several management solutions are possible:

- direct management by the city;
- self-governance, with the establishment of a board that oversees the operations;
- a concession with a private management company in charge of maintaining the facilities, ensuring they are cleaned, collecting the fees for stands and rental payments, contending with any over congestion of the rows, and ensuring security on the premises.

The management system adopted depends on the context. AFD regularly provides capacity-building support for independent management systems, which enables local-government authorities to manage the facilities and provides them with the financial independence needed to ensure their maintenance (see Box 5).

Circulate information throughout the sectors.

Supplies that correspond to the demand and the possibilities and specific constraints of the producers can be proposed. In Montevideo, Uruguay, the goal of the Mercado Modelo ("Model Market") is to develop the sales of fruit and vegetables in a framework of transparency and equal opportunity for producers and consumers. To accomplish that goal, it generates and distributes collective, impartial, proven and timely information for all people involved in the supply chain, from producers to consumers. This information includes price surveys, weekly reports, monthly reports on trends in fruit and vegetable availability, and specific reports on products.

Shanghai launched a program in 2009 concerning food traceability for the purposes of food security and safety. Nine main food categories are concerned including grains, meat, vegetables, and fruit. Within this program, agri-business companies must supply certain data such as the product origin and place of distribution, supplier references, and the results of health inspections.

Acknowledge and assist the informal food sector

Informal activities are the source of many nuisances for cities: problems of hygiene and sanitation linked to the conditions of selling in the street; the personal health and hygiene of the street vendors, the use of contaminated water (with the difficulty of controlling its quality); and congestion in places where people come and go, which leads to problems of security and environmental pollution. The informal sector also creates the problem of unpaid taxes for cities.

Nonetheless, the informal sector plays an important role in supplying food products to low-income urban areas and in creating income for poor families, especially for women. In Ibadan, Nigeria, there was one female street vendor for every 52 inhabitants in the 1980s. In Bogor, Indonesia, a figure of one street vendor for every 14 inhabitants was reported in the 1990s, which means about 18,000 vendors (Tinker 1997).

This sector remains significant even in the cities in which modern forms of distribution have developed. In Cape Town, South Africa, supermarkets have been opened based on the argument that they help offset the lack of businesses and fight against the food deserts found in poor neighborhoods. In fact, their installation has greatly challenged informal food stands, particularly the ones run by women, which were not taken into account, thus contributing to an increase in food insecurity (Battersby 2011; Peyton *et al.* 2015).

The reason that the informal sector meets the specific food needs of poor households is that it proposes food products in small quantities at affordable prices at locations that are easy to access (FAO 2009). In this way, it is complementary to and makes up for the gaps in the formal distribution circuits (FAO 2000). Finally, the informal food sector, and especially street food vendors, contribute to the distinctive characteristics of food and the food culture of countries and cities. That explains why some cities are attempting to assist or even organize the informal sector, or at least take account of it in their management and policies, rather than eliminating it.

Create groups and associations of informal operators and strengthen the ones that exist

Associations of informal vendors can engage in conflict resolution, contribute to the management

Congestion and waste created by an urban market in Haiti. Benjamin Michelon.

of markets and the safety of vendors, provide information about the markets, propose training, and make it easier to obtain loans (FAO 2000). Some cities encourage those involved in the informal food sector to organize in groups: they maintain a dialogue with their representatives and make them participate in the action programs that affect them. For example, the association of street vendors in the City of Cebu in the Philippines, which was founded in 1984 and unites 63 associations and over 7,000 members, dialogues regularly with urban authorities and has thus become a key stakeholder.

Provide higher-quality infrastructure, facilities, installations, and services to improve the safety and healthiness of the food products sold informally and to encourage vendors to go to places that are appropriate for food sales.

Urban authorities can intervene at markets and points of sale to improve the availability of clean water, provide public toilets to improve the hygiene of vendors and the cleanliness of points of sale, and improve waste removal. The city of Kitwe in Zambia has decided to regulate the informal food sector, and in this framework improve the infrastructure of its dilapidated markets. The city of Maputo in Mozambique has launched several projects to build and renovate markets in order to improve the quality of the services to vendors and in this way to encourage the informal vendors to sell their goods at the points of sale available in municipal markets.

Improve our knowledge about those involved in the informal food sector so that their needs and constraints will be better integrated into urban planning.

In Maputo, Mozambique all of the sectors of economic activity depend on the informal sector for the supply of raw materials. The city has chosen to regulate these informal sales and began by conducting a survey of the informal vendors to know them better, particularly in terms of their fiscal potential.

Informal tomato vendor in Niger. Benjamin Michelon.

CONCLUSION

We have long considered that food behaviors are determined by the knowledge and intentions of consumers. That explains why the policies aiming to influence these behaviors—for nutrition, health, or the environment—have until now mainly relied on educational, training, and awareness-raising campaigns with results that are ultimately disappointing.

In recent years, we have become aware that consumers' behaviors are also significantly determined and shaped by their environment: the presence of parks, shops, and eating areas, prices, and advertising all have a strong influence on behaviors. The discovery of food deserts in North America and their effects on access to good-quality food and on the new nutritional pathologies played a particularly important role in this change of perspective.

As a result, the roles played by developers and architects in the construction of what we now call "food landscapes" have been acknowledged. A major challenge is thus to have urban planners understand the effects that their urban development options can have on the food of city inhabitants—and beyond that on the farmers who feed those inhabitants—and likewise to develop the skills of those urban planners in dealing with this issue. The Association of European Schools of Planning (AESOP) has understood this very well and created a sub-network of urban food planners. This organization is seeking to invent the cities of tomorrow: cities that will no longer be cut off from the farming environment, but instead exist in a new kind of more balanced and harmonious interrelationship with it.

REFERENCES

3keel, 2015
Food in an urbanized world: the role of city region food systems in resilience and sustainable development. London, Prince of Wales's International Sustainability Unit, 83 p.

Abdelmajid A., 2012
"La grande distribution dans les pays émergents : caractéristiques, enjeux et perspectives". *Marché et organisations* 1(15) : 117-141

AFD, 2015.
L'AFD & les équipements urbains marchands : 30 ans de projets de réhabilitation de marchés en Afrique. Paris, AFD, 40 p.

AGRA, 2015.
A New Era for Agriculture in Africa, Annual Report. Nairobi, AGRA, 64 p.

Battersby, J., 2011
"Urban Food Insecurity in Cape Town, South Africa: An alternative approach to food access". *Development Southern Africa*, 28(4) : 545-561.

Debru J., Albert S., Bricas N. & Conaré D., 2017
Urban food policies. Proceedings of the international meeting on experiences in Africa, Latin America and Asia, on markets, catering services and urban/rural connections. Montpellier, France, November 16-18, 2015. UNESCO Chair in World Food Systems, 204 p

FAO, 2000
Aliments pour les villes : politiques d'approvisionnement et de distribution alimentaires pour réduire l'insécurité alimentaire urbaine. Rome, FAO, 40 p.

FAO, 2009
Promesses et défis du secteur alimentaire informel dans les pays en développement. Rome, FAO, 40 p.

FAO, 2013
Étude sur les abattoirs d'animaux de boucherie en Afrique centrale (Cameroun - Congo - Gabon - Tchad). Libreville, FAO Sub-regional Office for Central Africa, 70 p.

FAO, 2014
Growing Greener Cities in Latin America and the Caribbean: a FAO report on urban and peri-urban agriculture in the region. Rome, FAO, 51 p.

GRAIN, 2014
Food sovereignty for sale: supermarkets are undermining people's control over food and farming in Asia. Barcelona, Grain, 20 p.

Peyton, S., Moseley, W., & Battersby, J., 2015
"Implications of Supermarket Expansion on Urban Food Security in Cape Town, South Africa". *African Geographical Review*, 34(1) : 36-54.

Pulliat G., 2012
"Se nourrir à Hanoi : les recompositions du système alimentaire d'une ville émergente". *EchoGéo* (21). Available online: http://echogeo.revues.org/13205 [accessed March 8, 2017]

Tacoli C., 2004
Rural-urban Linkages and Pro-Poor Agricultural Growth, an Overview. Helsinki, OECD, 17 p.

Tinker I., 1997
Street Foods: Urban Food and Employment in Developing Countries, Oxford, Oxford University Press, 246 p.

WWF, 2012
Shanghai Urban Farming. Available online: http://wwf.panda.org/what_we_do/footprint/one_planet_cities/urban_solutions/?204455 [accessed March 10, 2017]

School meal program in Guinea. Julien Harneis.

Around the world, 368 million children benefit from school meals. Of these, 47 million are in East Asia and the Pacific, 121 million in South Asia, 85 million in Latin America and the Caribbean, and 30 million in sub-Saharan Africa (WFP 2013). The number of children benefiting from a school meal program in sub-Saharan Africa is much lower than the actual need. According to AFD, the capacities of local governments to set up school meal systems must be greatly strengthened there.

Chapter 3

FOOD SERVICES AND STREET FOOD

Local governments can take action in daily diet for some of the population by direct or indirect management of food services. These services concern mainly public institutions such as schools, retirement homes, hospitals, and prisons, etc. Some cities also provide meals or food aid in the form of packages or coupons for underprivileged populations in dedicated locations called meal centers or soup kitchens. Initially, these food services provided by cities had several objectives: encouraging parents to send their children to school by providing the latter at least one daily meal, caring for people in difficult circumstances, and reducing city congestion caused by the movement of workers during the midday break.

Today, cities are assigning different or expanded roles to food-service spaces, and new challenges are emerging. Some cities, conscious of the importance of food for health, now view food services not only as a tool for improving nutrition and for educating children about taste, cultural diversity, or environmental issues (Bundy et al. 2009), but also for stimulating the local economy and furthering certain forms of

agriculture (peasant, organic, agroecological, local, etc.) (FAO 2015). Food services, especially at schools, also represent a non-negligible potential for jobs for women, who are often hired for cooking and catering management. At the same time, food services continue to contribute to food and nutritional security for city dwellers, especially for the most vulnerable among them: young people and the poorest. In this way, food services can also play a role of social security net (World Food Programme (WFP) 2013).

Street food also plays an important role in the diet of city dwellers in many developing countries (Steyn et al. 2013). This type of food service corresponds to ready-to-consume food and drinks prepared and/or sold on the streets. Such food makes up a significant share of the daily food intake for millions of urban residents with low or medium incomes. In addition to being the source of a significant number of jobs, street food is an inexpensive and practical way to feed oneself outside the home in many developing countries (FAO 2013).

As in the case of the sale of fresh produce mentioned in the previous chapter, this activity is largely carried out in the informal sector and can be the source of many drawbacks in terms of public health and urban congestion (Alimi 2016). For these reasons, many cities perceive street-food activities as archaic and seek to eliminate them. But some cities, such as Colombo in Sri Lanka (see hereinafter) do the opposite by choosing to acknowledge the importance of street food for their inhabitants and by providing support to street vendors to improve their practices. Street food has also become a non-negligible tourist attraction in many countries and is perceived as a sign of authenticity and an integral part of traditional and cultural heritage (Priviteraa and Saverio Nescib 2015). In industrialized countries, street food is even making a comeback as a sign of postmodernity in food (Gross 2000).

Around the world, 368 million children benefit from school meal programs. Of these, 47 million are in East Asia and the Pacific, 121 million in South Asia, 85 million in Latin America and the Caribbean, and 30 million in sub-Saharan Africa (WFP 2013). The number of children benefiting from a school meal program in sub-Saharan Africa is much lower than the actual need. According to AFD, the capacities of local governments to set up school meal systems must be greatly strengthened there.

WHY INTERVENE IN FOOD SERVICES AND STREET FOOD?

Ensure food and nutritional safety among children and adolescents in schools, their families, workers, and the poorest.

Food services play a safety-net role for the most vulnerable populations when they are provided with low-cost or even free meals via subsidies. They also help in educating the beneficiaries about food and are a privileged tool for promoting good eating habits that can be passed on to family and friends. School food programs in particular provide direct support to the most economically insecure households when they are implemented in the form of distribution of coupons or food donations. In this way, they act as a social safety net that can reach an especially large number of people. Over the long term, these programs further children's development and improve their learning capacities by covering their nutritional needs (WFP 2013).

Ensuring the food security of city dwellers is not limited to responding to problems of access. A key point for reaching this food security is making sure that food offered in the city is safe. This is why the City of Colombo has created a central office for food safety dedicated especially to street food, so as to reduce the risks in the sector rather than eliminate it to the benefit of big companies (Debru *et al.* 2017) (see Box 6).

Promote specific forms of agriculture.

Cities can decide to promote certain kinds of agriculture by facilitating farmers' access to the food-service market, which is both large and stable. For example, they can decide to orient their procurement policy so as to favor smallholder producers practicing sustainable, agroecological, or organic agriculture. This gives such producers the possibility of increasing their incomes. Nevertheless, it should be pointed out that provisioning from local smallholder producers may give rise to difficulties such as irregularity in their supply and the lack in diversity of their products, which means they cannot cover all food needs. One of the challenges for local governments is thus to succeed in building a network of producers for supply.

Box 6

Ensuring good health for the inhabitants of Colombo by making sure their food is safe

About 40% of the population of Colombo, the economic capital of Sri Lanka, are considered to be nutritionally insecure. The City of Colombo does not directly manage the food services of public institutions or of schools. However, its municipal public-health service plays a crucial role in organizing and regulating these services.

After the ministries of Health and Education developed a national policy for school meal programs, the City of Colombo decided to implement it locally by expanding it to food-service locations frequented by workers from the public and private sectors. At first, a situational analysis of the city's food-service locations was carried out to determine the dysfunctions, especially in terms of food-hygiene standards. This was because the epidemiological databases of the public-health service of the city had indicated that inadequate hygiene and cleanliness standards within Colombo's restaurants had caused a high incidence of food poisoning among consumers. In a second phase, the city sought to evaluate the knowledge, attitudes, and practices of workers in contact with foodstuffs. This analysis made it possible to identify the main obstacles to respecting hygiene conditions and food safety in food-service facilities. These mainly had to do with i) the considerable turnover of kitchen staff, most of whom came from the informal sector and had never received training in food hygiene; ii) unsuitable facilities that do not meet hygiene and cleanliness standards; and iii) an inadequate system for selecting service providers.

Following this analysis, the City of Colombo launched an action program with the aim of ensuring food security for users of food-service facilities. All such restaurants located in the city are now registered with the city's public-health service and are monitored by public-health inspectors and the school authorities. The city also set up a program for basic training in health and food safety that targets workers in contact with food. These workers underwent medical tests, after which they could be registered as food handlers by the public-health service. Finally, the central office for food security was created within the public-health service to enable complaints to be filed when negligence in hygiene standards is observed, and to conduct surveys and engage legal proceedings. An analysis of the preliminary results seems to show considerable reduction in complaints by food-service users regarding food and food poisoning.

Colombo's example shows how a food policy developed at the national level can be implemented locally, with suitable strategic adjustments to adapted to the local situation.

Find out more:

Debru J., Albert S., Bricas N. & Conaré D., 2017 *Urban food policies. Proceedings of the international meeting on experiences in Africa, Latin America and Asia, on markets, catering services and urban/rural connections*. Montpellier, France, November 16-18, 2015. UNESCO Chair in World Food Systems, 204 p.

Cities can also give priority not just to a model of agriculture but also to local production, which enables greater diversity of fresh produce and respects the food habits of the population (WFP 2013). Giving priority to local procurement from the city's rural hinterland is also a means of supporting the rural economy and consequently jobs and incomes for people in those rural areas who might otherwise be attracted by migration to the city (FAO 2015). Many countries that have set up school meal programs encourage local procurement, sometimes just for additional fresh produce. This is notably the case in Brazil, Honduras, Peru, Namibia, Côte d'Ivoire, Ghana, Kenya, and Mozambique (FAO 2015, WFP 2013). The role of the central government remains important, even if management of food services is often decentralized. One reason for decentralization is that it can remove regulatory or legal obstacles, such as those in public-procurement legislation (WFP 2013).

Enable people to participate in learning social norms.

School canteens can be important places, parallel to the home, where children learn, by repetition, the social norms that meals teach: respect for food, learning about the diversity of foods and dishes, learning not to be greedy about food, learning about sharing, fitting in socially, etc. School canteens thus have an important role in acculturation, and when this is recognized they can become a fully-fledged educational tool. This realization has now occurred chiefly in the developed and emerging countries, in relation with public-health programs.

WHAT LEVERS OF ACTIONS FOR CITIES?

ESTABLISH GOVERNANCE OF AND A POLICY FOR URBAN FOOD SERVICES

Create an administrative body in charge of food services

a. School meal programs

Most countries have developed school meal programs. Brazil is one of the pioneers in this field, having adopted a program in 1955. While these programs are frequently initiated at the national level, decentralized management at the regional or local level is practiced more often than not. Decentralization of national programs enables more in-depth management as well as better adaptation to local contexts. Mexico, for example, decentralized its program in 1997, following the observation that the nationally managed program did not correspond to local preferences and food cultures (WFP 2012).

The governance of food-service programs is a cross-cutting challenge. It is often carried out by partnerships among various municipal services and is usually managed by the services dedicated to education. This is the case in Curitiba, Brazil, where the Municipal Secretariat for Education developed and is coordinating the school nutrition program in partnership with the Municipal Secretariats for Health and Food Procurement. Similarly, the City of São Paulo in Brazil has created a coordinating body for school meals, within its Municipal Secretariat for Education (see Box 7). In contrast, the school food program in Medellín, Colombia, is run by the Secretariat for Social Integration and Family (Debru *et al.* 2017).

b. Meal centers

Meal-center programs are created for the purpose of food security for disadvantaged people. As such, they are usually managed by municipal services in charge of social affairs. In Curitiba, for example, the meal-center program is managed by the Municipal Secretariat for Food Procurement, whose main task is social access to food (Debru *et al.* 2017).

Perform an analysis of how urban food services operate.

Learning how urban food services work helps in establishing an appropriate food-services policy or in reorienting existing programs. This may involve finding out the location and management method of kitchens and public restaurants, the quantity of food processed and served there, and/or the number of staff and their qualifications. This analysis must help facilitate decision-making and aid in planning. The City of Colombo, for example, has conducted a situational analysis of its canteens—both at schools and businesses—in order to identify dysfunctions, notably with regard to respect of food-hygiene standards. The findings identified the lack of training in good hygiene practices among food-service personnel, and as a result a training program in health and food safety was launched in 2015.

Box 7

Ensuring quality provisions for school meals in São Paulo, South America's biggest metropolis

Each day, nearly 2 million meals are served to around 926,000 students in 2,800 schools in São Paulo. Although school meal programs are the responsibility of the central government, São Paulo makes a significant contribution through its municipal school meal program.

The main challenge in schools faced by the city is logistics, given the huge size of the city, the number of points of distribution, and the volume of food concerned, and it accounts for the greatest proportion of the budget. To deal with this challenge, the city has endowed itself with one of the largest management systems in the world by creating the School Meals Coordination Body (CODAE), which is part of the Municipal Secretariat for Education. To organize the supply chain to schools, the city calls on many storage and delivery companies. In all, nearly 180 small trucks and vans are used, and nearly 8,000 professionals, including 200 municipal personnel, are employed by this sector.

From an institutional standpoint, the school meal program is based on a law passed in 2013: by obliging the city to gradually ensure the population's food security, this law laid the foundations for the implementation and consolidation of the municipal policy for food and nutritional safety. It also led to the creation of the Municipal Council for Food and Nutritional Safety (COMUSAN).

In accordance with national guidelines, the City of São Paulo procurement policy favors fresh produce, from family farming if possible. To finance this policy, the city has been supplying itself since 2013 with fruits and vegetables of a lower quality category than purchased previously. The main difference in category has to do with grading, and the lower category has equivalent nutritional quality. Purchases of this new category were carried out gradually in order to make the changeover less abrupt and so that the change in the aspect of the food was not a source of concern. This modification in procurement policy allowed the city to save about 14% in its annual budget allocated to fresh produce.

In 2014, a new municipal law required that foodstuffs produced by agroecological or organic methods, and purchased if possible from local producers, be included in the meals served at schools. However, currently, the food items produced from family farming purchased by the city to supply its school meal program are not produced locally in the peri-urban areas of São Paulo, even though some of the demand could be met by local farms.

The outcomes of the school meal program policy carried out by São Paulo since 2013 were soon apparent. For example, in 2012, parboiled rice was the only product purchased from family farming. This procurement benefited 29 families, using 1% of the federally allocated funds. In 2014, 17% of these funds were allocated to the purchase of products from 910 family farms, and in 2015 this figure grew to 22%. Municipal

purchasing also concerns procurement for 400 social welfare organizations. The scale of municipal public procurement has induced family farmers to form associations and cooperatives so that they can organize themselves to better meet demand. Some young people are returning to the rural properties of their families that they had left. Finally, since 2015, São Paulo's procurement strategy has been targeting the promotion of local dietary and traditional customs, with the introduction of products such as manioc and corn.

Find out more:

Debru J., Albert S., Bricas N. & Conaré D., 2017. Urban food policies. Proceedings of the international meeting on experiences in Africa, Latin America and Asia, on markets, catering services and urban/rural connections. Montpellier, France, November 16-18, 2015. UNESCO Chair in World Food Systems, 204 p.

FOOD SECURITY FOR THE MOST ECONOMICALLY INSECURE

Create subsidized meal centers, accessible according to social criteria.

The City of Medellín in Colombia has chosen to target people over age 60 in particular and serves nearly 2,000 of them each day in 20 municipal canteens (Debru et al. 2017). The meal-center program in Belo Horizonte, Brazil, keeps the cost of meals served there to their actual unit cost. The poorest city residents can benefit from an extra subsidy, and the homeless from free meals. More than 3 million meals are served annually at these meal centers, and the program is a benchmark in Brazil (Forster et al. 2015).

Mexico City started up a municipal program of community canteens, with the purpose of strengthening food security by providing access to daily, healthy, nutritious, and affordable meals for all. The program started in 2009, serving 8,000 meals per day in 160 canteens and by 2015 was serving 33,500 daily meals in 204 canteens. It is estimated that opening a canteen in the neighborhood helps to reduce the number of people suffering from hunger by 30%. Finally, this program aims for inclusion of the most vulnerable groups of society—by employing them at the canteens—in particular female victims of marital violence, the elderly, and the disabled.

PROMOTE CERTAIN FORMS OF AGRICULTURE THROUGH PROCUREMENT POLICIES

School canteens are supplied through public contracts that can represent a market for certain types of producers. And by choosing specific types of producers, cities can help promote certain models of agriculture.

Set up procurement policies to promote family, organic, or local agriculture.

For municipal food services, procurement management makes it possible to manage demand for large quantities of basic foodstuffs in advance. Brazil, for example has realized that food services play a real role in ensuring a stable outlet for smallholder producers, by reserving them a share of the market. Brazil's National School Meals Program has indeed been working towards local food sources, and since 2000 a law requires municipalities to devote 30% of their procurement budget to products from family farming, and preferably from local farms.

In addition to this national program, the City of Curitiba in Brazil has taken the initiative of extending this obligation to its meal-center program, which gives priority to regional producers and to organic products in its procurement. São Paulo goes even further in mode-of-production requirements: since

2014, it has been imposing inclusion of foodstuffs produced through agroecological or organic farming, preferably locally, in school meals.

Urban and peri-urban agriculture can also act as a supply source for municipal food-service programs. In Havana, in 2013, it furnished 6,700 tons of food to nearly 300,000 people in the schools, hospitals, and other institutions of the city. (FAO 2014).

Facilitate conditions of access by smallholder producers to the food-service market.

Even if demand for fresh local produce–if possible produced sustainably–does exist, smallholders working on the smallest scale still have trouble meeting it. Their access to the food-service market comes up against public-procurement requirements in terms of quality standards, delivery deadlines, and stability and volume of production. More often than not, only the biggest producers or those organized into cooperatives or into associations manage to meet these requirements.

Cities can help smallholder producers to strengthen their production capacity and to become organized to meet demand. To do so, it is important initially to determine the local agricultural offer by identifying the volumes, nature, and methods of production of the available foodstuffs. This information can then be taken into account by the cities when establishing their purchasing policy. Cities can support or initiate the structuring of producer networks for local procurement and then have these networks participate in purchases of supplementary products.

The City of Tarija in Bolivia, for example, divides its bids for tender into lots so that producers can apply for supplying a single type of product. This method of purchase is more flexible and enables smallholder producers to respond more easily. Another example in Bolivia is the several municipalities from the Chuquisaca Department that joined together to form an association to jointly manage the supply chain, from purchasing directly from producer collectives to product storage (FAO 2015).

IMPROVE NUTRITION AND RAISE AWARENESS ABOUT AGRICULTURE

Besides its essential feeding role, food services are enlarging their objectives to include improvement in nutrition, education about taste, and awareness-raising about agriculture and environmental protection through school gardens.

Provide nutritional education and monitoring.

With appropriate supervision and monitoring of menus, food services can seek to promote the adoption of balanced and healthy diets. The cities of Medellín, Curitiba, and Belo Horizonte, for example, have nutritionists employed by the local government draw up menus (Debru et al. 2017). In this way, the meal centers in Medellín are specifically designed to cover around 55% of daily needs in calories and nutrients of persons age over 60, who are the target of the program.

In addition to providing special attention to the nutritional value of the meals served, some cities closely observe the nutritional state of people frequenting the food-service locations. For example, the education and health services of Curitiba follow the nutritional status of all the children of the public network during their school years in order to monitor the results of their actions on the children's state of health. Medellín conducts a nutritional evaluation of the beneficiaries of community canteens and provides nutritional supplements to undernourished adults. Mealtimes can become a fully-fledged opportunity for education. That is why the cities of Curitiba and Medellín organize a diverse range of workshops, classes, and educational games about food in schools.

Create educational vegetable gardens.

In the countries of the South, the purpose of school vegetable gardens is mainly to produce supplementary food—especially fresh produce—for schoolchildren, or to generate income for the school. For example, in Antananarivo, many schools have canteens but lack the financial resources to supply them unless the students' parents mobilize to provide and prepare the students' meals themselves. The city developed the AULNA program (see Chap. 1), which has made it possible to assist many schools in growing vegetables. In Dakar, many schools cultivate micro-gardens, whose development is encouraged by the city (see Chap. 1). They make it possible to provide fresh vegetables and to help schoolchildren discover or rediscover them. The perception of the educational potential of vegetable gardens has now changed, and they are given new roles, such as promoting varied and balanced diets, learning about agriculture, and raising awareness about the environment.

All of these objectives contribute to the long-term

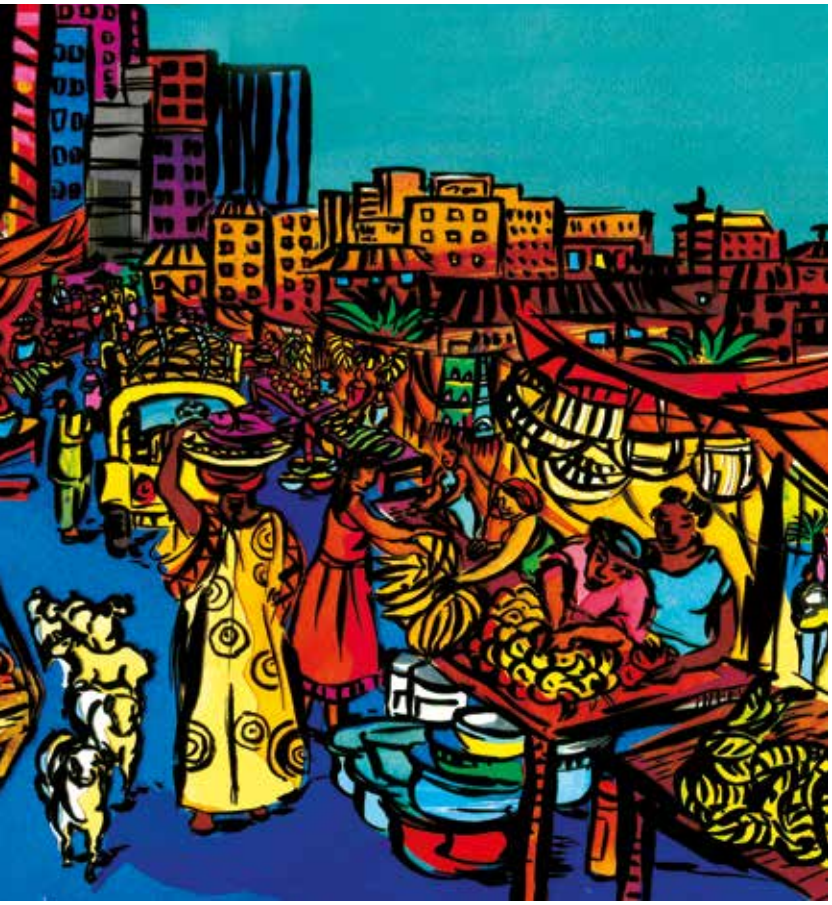
Street vendor in Ho Chi Minh City, Vietnam. Thomas Schoch.

Street food contributes a large portion of nutritional intake for city dwellers: 50% in Abeokuta, Nigeria; 46% in Ouagadougou, Burkina Faso; 25% in Port-au-Prince, Haiti; and 19% in Hyderabad, India. (Steyn *et al.*, 2013)

improvement of national health and food security. The presence of a vegetable garden within a school can also fit in with educational projects and enable improvement of the meals offered by supplying more fresh produce (FAO 2010).

RECOGNIZE AND SUPPORT THE STREET-FOOD SECTOR

Many city dwellers buy their meals from street vendors, and ensuring the sanitary quality of these meals cities can result in various benefits. It is critical to recognize both that this chiefly informal activity is an integral part of the city's economy, and that it plays an important role in feeding city dwellers in many countries of the South. As explained in the discussion of retail sales in Chapter 2, cities can train street vendors in quality and good hygiene practices. They can also improve sanitary conditions in places where street food is sold, by making sure that infrastructure and services are adequate, especially access to water and electricity, as well as waste removal. Abidjan in Côte d'Ivoire has, for example, trained more than 200 mostly female street vendors in food hygiene and safety, management, and nutrition. Trainers have been trained by municipal personnel in order to maximize the number of people reached by the program (IPES-Food 2017).



CONCLUSION

Just as urban agriculture cannot be considered only from the angle of production, food services cannot be considered solely in terms of their function for nutrition. One of the major advantages of this sector resides in the source of jobs it represents, especially for women. Its food-security aspect is thus also strongly linked to the fact that it generates income, especially for vulnerable populations.

A new role for food services has also emerged in recent years: that of rebuilding ties with rural agricultural areas. In Latin America, school meal programs and public purchasing are levers that cities can activate to promote specific forms of agriculture, especially family farming. More recently, a trend has emerged by which gourmet chefs have been highlighting forgotten local products and giving new value to traditional know-how in order to build a food culture with roots in rural territories in particular. The demand among urban chefs for these products is helping to structure value chains that are opening up new potential outlets for rural producers[7]. Here as well, cities are not working just for their own territory: through food services, they can build new relations with rural agricultural zones.

REFERENCES

ALIMI B. A., 2016
Risk factors in street food practices in developing countries: a review." *Food Science and Human Wellness*, (5): 141-148.

BUNDY D., BURBANO C., GROSH M., GELLI A., JUKES M. & DRAKE L., 2009
Repenser l'alimentation scolaire : filets de protection sociale, développement de l'enfant et secteur de l'éducation. Paris, World Bank, Pearson France, 205 p.

CROSS J., 2000.
"Street Vendors, and Postmodernity: Conflict and Compromise in the Global Economy". *International Journal of Sociology and Social Policy*, 20(1/2): 29-51

DEBRU J., ALBERT S., BRICAS N. & CONARÉ D. (Eds), 2017.
Urban food policies. Proceedings of the international meeting on experiences in Africa, Latin America and Asia, on markets, catering services and urban/rural connections. Montpellier, France, November 16-18, 2015. UNESCO Chair in World Food Systems, 204 p.

FAO, 2009.
Promesses et défis du secteur alimentaire informel dans les pays en développement. Rome, FAO, 40 p.

FAO, 2010.
A new deal for school gardens. Rome, FAO, 28 p.

FAO, 2014
Growing greener cities in Latin America and the Caribbean: a FAO report on urban and peri-urban agriculture in the region. Rome, FAO, 51 p.

7. CPersonal testimony from Teresa Corção, gourmet chef , Rio de Janeiro, during the "Se nourrir de plaisirs" symposium held in February 2017 in Montpellier by the UNESCO Chair in World Food Systems.

FAO, 2015
School feeding and possibilities for direct purchases from family farming, case studies from eight countries.
Santiago, FAO, 147 p.

Forster T., Egal F., Getz Escudero A., Dubbeling M. & Renting H., 2015
Milan urban food policy pact. Selected good practices from cities, Milan,
Fondazione Giangiacomo Feltrinelli, 125 p.

IPES-Food, 2017
What makes urban food policy happen? Insights from five case studies.
Bruxelles, International Panel of Experts on Sustainable Food Systems.

Priviteraa D. & Saverio Nescib F., 2015
"Globalization vs. local: the role of street food in the urban food system". *Procedia Economics and Finance*, (22): 716-722.

Steyn N. P., Mchiza Z., Hill J., Davids Y. D.,Venter I., Hinrichsen E., Opperman M., Rumbelow J. & Jacobs P., 2013
"Nutritional contribution of street foods to the diet of people in developing countries: a systematic review". *Public Health Nutrition,* 17(6): 1363-1374

WFP, 2013
La situation de l'alimentation scolaire dans le monde en 2013. Rome, WFP, 144 p

Composting municipal waste in Mahajanga, Madagascar. © IRD, Dominique Masse.

Chapter 4

RECYCLING ORGANIC WASTE

How cities manage organic waste is first of all a sanitary issue. The number one challenge facing local governments is to organize the collection of organic waste and transport it outside of the city limits to prevent soil and water resources from being contaminated, so as to protect human health and the environment. In many developing countries, the overall management of municipal solid waste (especially organic waste) is inadequate and is often limited to storing it in open dumps that are more or less supervised and that regularly become part of the urban habitat due to urban sprawl (Cofie et al. 2006). That is the case for 47% of the solid waste processed in Africa, while only 29% is placed in modern waste landfills (World Bank 2012). In addition to the transport costs, this storage of unprocessed waste results in major public health and environmental nuisances: unhealthy conditions for local communities, polluted groundwater, and the emission of very large amounts of methane that contribute to global warming.

Studies focusing on urban metabolism show that, since the industrialization of agriculture, cites have become giant pumps that concentrate matter (Barles and Billen 2017). They get their supplies from increasingly distant sources, and in this process transfer the nitrogen, phosphorous, potassium, and micro-nutrients found in food from the countryside to the city. At the same time, they recycle less and less organic waste and excrement, which are now found in the sludge of wastewater treatment plants. A large portion of these nutrients is thrown away or lost, while at the same time chemical fertilizers made from non-renewable resources are used to nourish crops: natural gas and oil are used to produce urea

(nitrogen), while phosphate, potassium, and zinc are mined for the key elements needed for plant fertilizers. The pressure on some resources is particularly strong: such is the case for phosphorous, an element that cannot be metabolized by plants and is being depleted. Cities are therefore significant potential sources of fertilizer. We must remember that before the industrialization of agriculture and the intensive use of non-renewable resources, many cities recycled their waste. For instance, at the beginning of the twentieth century, Shanghai was well known for the way it transferred, from the city to rural areas by boat, human excrement in hermetically sealed pots, which was then used to fertilize the farms that supplied food to the city (King 1910).

After adequate processing, such as composting, organic municipal waste can be upcycled for use as energy and fertilizers, thus closing the material recycling loop. Likewise, organic waste management projects no longer solely focus on sanitation, but become or re-become key elements of a circular economy. The environmental impacts of our modes of consumption and urban lifestyle are also reduced. In addition, the projects that link sanitation to the upcycling of these waste products can become sectors of real job creation (RUAF 2015).

Yet obstacles remain for certain forms of upcycling of organic municipal waste. The main impediment is linked to health. Depending on the origin of this organic waste and how it is collected and processed, it may be polluted by substances such as heavy metals. Even if we now have the knowledge and technology needed to eliminate some of these substances, in certain cases we are unable to control the risks. For human excreta, drug residues such as hormones or antibiotics can also represent a sanitary risk if they are found in the natural fertilizers used for agriculture. Yet, we must not overlook the barriers and cultural differences that make it harder for some to use these products to fertilize farm products intended for human consumption. In Asia, waste, including human excrement, has always been used in agriculture and aquaculture. For example, the network of wastewater-fed aquaculture ponds in Calcutta, India, is the largest in the world (Furedy et al. 2000). In other places, the use of human excrement for agriculture—even if it is processed—remains difficult to imagine.

WHY INTERVENE IN ORGANIC WASTE MANAGEMENT?

The collection and processing of municipal waste are a significant expense in municipal budgets. For example, the simple removal of household garbage (not including the management of wastewater) accounts for nearly 20% of the total budget of the cities of Douala and Yaoundé in Cameroon (Ymélé 2012). Several cities have become aware that instead of depositing waste in open dumps, it can be upcycled to produce fertilizers or energy, thereby reducing the cost of managing it and having a positive impact on the environment and on the quality of life of urban dwellers.

UPCYCLE MUNICIPAL WASTE INTO REUSABLE RESOURCES.

A large portion of organic municipal waste can be upcycled. Such waste includes food waste from households, markets, and eateries, green waste from yards, as well as human and animal excreta.

Close material loops by upcycling organic waste as a green fertilizer.

The increasing price of chemical fertilizers is pushing farmers to find alternative solutions for feeding their crops. Composting fermentable organic municipal waste can be part of an effective solution for using less chemical fertilizer. This aerobic process produces compost that is rich in humic substances, which improve soil fertility and structure by increasing their capacity to retain humidity. One hundred tons of household waste can produce 25 tons of compost, which can be used to fertilize about one hectare (Gevalor 2017).

Organic municipal waste is indeed a major potential reservoir for making natural fertilizers for farms, because every year African cities generate about 50 million tons of compostable waste. In Dakar, the use of compost has enabled market gardeners to increase their income by 60% by spending less on chemical inputs (FAO 2012). The use of compost produced from municipal waste in rural areas near cities could also contribute to strengthening urban-rural relations.

Composting can be done on several scales (individually, in small groups, and on a large scale). For example, the City of Marilao in the Philippines

organizes the collection of organic waste from households, markets, and companies to produce compost for urban and peri-urban farms (Cofie et al. 2006). However, few examples of upcycling municipal waste as compost on a large scale have been documented (FAO 2012).

Upcycle waste to produce biogas and a digestate rich in organic matter that can be used to fertilize soil. Anaerobic digestion is a process that decomposes the organic matter contained in waste under conditions without oxygen. This process generates matter that is rich in organic substances (the digestate), which can be returned to the soil directly or after a phase of composting. Anaerobic digestion also produces biogas (methane and carbon dioxide), which can be harnessed to produce electricity and heat, or even transformed into fuel for vehicles that burn natural gas. Waste incineration—while not directly linked to the food used by cities—can also be used to produce heat, which can then be used to feed into an urban heating network or to produce electricity (Fédération nationale des activités de la dépollution et de l'environnement 2017).

AFD has been providing support to such a waste-to-energy project since 2016, for the restaurant food waste sector in the city of Shaoyang, China, the second largest urban area in Hunan Province (about 8 million inhabitants). This project will contribute to reducing the greenhouse gases (70,000 tCO_2/year) linked to processing waste, by setting up a cogeneration system (heat and electricity), while at the same time harvesting the biogas produced by a landfill site near the biogas plant. These three generators are expected to produce 17,220 MWh/year.

IMPROVING THE SOCIOECONOMIC CONDITIONS OF CITY DWELLERS

Create innovative sectors that generate jobs.

Waste management, combined with the possible chain for upcycling it, creates a large number of jobs—1 to 5% of urban jobs worldwide. Many people with different levels of qualification and social status are involved in these activities: this includes workers in the public sector, private sector, and informal sector, with the latter representing a considerable proportion of the value chain (37.5% in Lusaka and 79% in Cairo). The numerous stakeholders coexist and are complementary, with for example the installation of small private or informal entrepreneurs in neighborhoods with no municipal services. The issues that concern municipal waste and its upcycling are stimulating innovation, which is often initiated by civil society.

Clean up cities to improve the urban environment and help preserve nature.

The management of solid waste helps prevent urban congestion, thus improving hygiene and reducing the risk of fire. The removal of wastewater and human excreta significantly decreases the impacts that waterborne diseases and the proliferation of germs have on health. Upcycling organic waste helps keep it out of illegal dumpsites, thus minimizing the methane emissions generated by its decomposition, and reducing the soil and water pollution that result from its accumulation.

WHAT LEVERS OF ACTION FOR CITIES?

ORGANIZE ORGANIC WASTE MANAGEMENT CHAINS.

Work in cooperation with:

Outside stakeholders...

Local governments can rely on various stakeholders to implement their organic waste management policies and coordinate them so that this sector functions better.

The private sector, NGOs, and associations (civil society).

Local authorities can delegate certain tasks in the waste-processing chain to others, and establish incentives. In Rio de Janeiro, Brazil, a municipal program organizes the collection of used cooking oil by cooperatives, which is then recycled by companies that make soap and biodiesel. This program upcycles 3 million liters of oil every year while creating 400 jobs (Gianfelici 2016). The Africompost Program[8] supports the development of household-waste-processing facilities in Africa through its inclusion in the waste management policies defined by local governments. The local operators—often NGOs or other civil society organizations—manage the waste-processing facilities, raise awareness, and promote compost vis-à-vis farmers. Today this program is active in five

Africompost Project workers at the Mahajanga composting facility. © Gevalor.

This early Gevalor project has been supported since 2001. Its composting facility is operated by MADACOMPOST, an LLC that also recycles slaughterhouse waste and plastic bags

cities, with the greatest progress having been made in Lomé, Togo; Dschang, Cameroon; and Mahajanga, Madagascar

The informal sector.

In a great many developing countries, the informal sector plays an important role in waste management and cannot be ignored by local-government authorities, particularly in the pre-collection and collection phases in neighborhoods that are not covered or little covered by the official waste services. The construction of latrines and the pumping out of septic tanks are particularly concerned by these informal activities. These activities require supervision from an environmental and sanitary point of view. For example, in Lomé, where 70% of the collection of solid waste had been managed informally, the municipal government has since 2007 been running a project to improve these operations

8. GoodPlanet Foundation- Gevalor - Etc Terra Consortium, with support from AFD and the French Facility for Global Environment (FFEM), 2015

(see Box 8). Since the informal sector was initially well organized, the municipal authorities have made an effort to include those who worked in it without reorganizing them: about one hundred informal waste collectors have thereby been officially added to this public service.

Box 8

Upcycling waste in Lomé, Togo: A way to reduce the public service costs

In Lomé, a city of nearly one million inhabitants, waste management is the biggest expense in the municipal budget. Today, the city's waste management chain is being completely modified with the expected closing of the Agoé municipal landfill, which due to urban expansion is now in a residential area and also nearly full. This landfill is a source of water pollution and is responsible for the propagation of diseases like cholera and diarrhea. It will be replaced by a new municipal solid waste landfill.

The required investments are expected to increase the waste chain management costs. However, the upcycling of municipal waste will be a way to reduce the flow of waste to be collected and buried, and thus a way to lessen those management costs. Aware of this economic challenge, the City of Lomé has gradually included waste upcycling in its management system, and several value chains for upcycling already exist in this city.

Upcycling of the organic part of waste by composting

A waste characterization report in Lomé shows that its waste contains 56% organic matter, which represents a source of approximately 114,000 tons that can be upcycled per year. The association ENPRO (Ecosystème Naturel Propre) has been upcycling the city's organic waste as compost for peri-urban farmers and market gardeners since 2011, and today is seeking to fully integrate the municipal management strategy. ENPRO is supported by the NGO Gevalor within the framework of the international Africompost Program. This program brings together three partners (GoodPlanet, Gevalor, and ETC Terra), and with the assistance of AFD is developing municipal waste-processing solutions based on composting in five large cities including Mahajanga and Antananarivo in Madagascar, Lomé in Togo, and Dschang in Cameroon. From 2013 to 2016, ENPRO processed 2,000 to 4,000 tons of waste annually on a field lent to it by the City. The ultimate goal is to process 11,000 tons. The association produces two types of compost: standard compost (from raw household waste), and enriched compost (that includes animal waste from the Gbossimé market). This activity employs about 40 people.

Upcycling biogas: anaerobic digesters for the slaughterhouses

A recent joint initiative by ENPRO and the University of Lomé consists in upcycling waste from two slaughterhouses in Lomé as biogas in an anaerobic digester. The biogas produced will replace the wood energy and tires used up until now by these slaughterhouses to smoke the meat, and which cause many environmental and health problems. The digestate (a solid residue rich in organic matter that remains after the anaerobic digestion process), which is also produced in this process, is used to enrich the compost produced by ENPRO.

Energy production at the municipal landfill site

In terms of the operations of the municipal landfill site, which is expected to be launched in 2017 thanks to AFD financing, part of the waste initially intended to be buried will be upcycled as solid recovered fuel (SRF). The SFR is produced for a local cement manufacturer to replace the coal it uses, which comes from South Africa.

Find out more (documents in French):

- Garnier J., 2016. *Valorisation des déchets à Lomé : la valorisation des déchets perçue comme un moyen de réduction des coûts du service public. Rapport de terrain n°6*. Gevalor.
- EtcTerra, 2017. *Valorisation des déchets à Lomé*. Disponible sur Internet : http://www.etcterra.org/fr/energie-dechets/africompost/africompost-lome [consulté le 12/04/2017]
- Gevalor, 2017. *L'unité de compostage de Lomé*. Disponible sur Internet : http://www.gevalor.org/fr/projets-compostage/lunite-de-compostage-de-lome-togo [consulté le 12/04/2017]
- AFD, 2017. *Projet Environnement Urbain de Lomé et Centre Enfouissement Technique de Lomé*. Disponible sur Internet : http://www.afd.fr/home/pays/afrique/geo-afr/togo/les-projets/developpement-urbain-togo_1/environnement-urbain-lome-II [consulté le 12/04/2017]

Invest in waste upcycling infrastructure and facilities

These investments are not only intended to reduce the volumes of waste. They also help create new value chains that generate income for local governments and create jobs.

For instance, some cites have chosen to build the composting facilities themselves, as is the case in Balangoda, Sri Lanka (see Box 9). Nevertheless, the creation of such chains must be based on the existence of economic opportunities. Local governments can ensure this by installing solid organic waste recycling sites near the places where this waste is generated, collected, and eliminated (RUAF 2015). In other words, composting must be conceived in a way that corresponds to market gardening and farming activities.

For example, in the secondary city of Mahajanga, an LLC was founded in 2011, within the scope of the Madacompost Project carried out by the local government in a partnership with NGOs, as part of decentralized cooperation activities. Every year approximately 12,000 tons of organic waste are upcycled as compost for agricultural use, and nearly 120 people are employed during busy periods, particularly women and former rag pickers. Two major problems that concern the large-scale waste-processing units are the costs of funding their construction and of purchasing machinery. In addition, large facilities require a continuous supply of raw materials and sufficient demand for compost in order to generate income. New approaches have been developed since the 1990s, based on the small-scale composting projects started by NGOs and local communities. Small groups are involved in local composting operations that have low production costs. Local governments or other institutions can support such projects by educating the public, providing the land for the transformation facility (not much space is required), providing funds to cover the startup costs, transporting and placing the waste in the local landfill sites, and, finally, by using the compost produced in public parks (Cofie *et al.* 2006).

TRAIN CITIZENS AND RAISE THEIR AWARENESS.

Citizen-oriented actions aim to address several aspects of waste management:

Incite people to sort organic waste at the source.

This issue concerns households and other places where food waste is produced, including markets and restaurants. Such behavior makes it easier to upcycle

Box 9

Upcycling of organic municipal waste in a municipal composting facility in Balangoda, Sri Lanka

In order to halt the accumulation of municipal solid waste that was contaminating its bodies of water and rice fields, the City of Balangoda (24,000 habitants) started a waste management project in 1999. This project mainly included the construction of a municipal composting facility for the upcycling of urban fermentable solid waste, waste from slaughterhouses, and, since 2008, sludge from septic tanks and latrines. Seventeen people are employed by the facility, which can process up to 14 tons of waste per day. The municipal collection service covers the entire city and harvests 20 tons of waste per day. A door-to-door collection system has been operational since 2010, and the fermentable waste is collected separately. To improve the quality of the compost produced, it is enriched with animal dung, rice hulls, and phosphate rock, as well as dried sludge from septic tanks and latrines. This compost is then sold to local farmers. Balangoda has connected with a local university with the aim of fostering research and development on waste upcycling technologies and creating a training center where people can complete a degree in solid waste management.

Between 2003 and 2009, the annual quantity of compost produced increased from 2.6 to 386 tons. There was a 100-fold increase in the income generated by selling it even though its price is much less expensive than equal amounts of chemical inputs, which are highly subsidized and used in small quantities. The increase in sales can be explained on the one hand by the growing awareness of the risks for the environment and human health of using chemical fertilizers. On the other hand, the soil is sandy in the rural and peri-urban zones near Balangoda, which favors the leaching of chemical fertilizers, and means that they are dissolved by rainwater and as a result pollute the groundwater and rivers. The use of compost helps stabilize this sandy soil, which reduces the leaching effect and makes it possible to reduce the amount of fertilizers used.

Two points have made the project particularly successful. First, waste is sorted where it originates, because mixed waste is rejected; second, a tax has been introduced for the collection of unsorted waste, while the collection of sorted waste remains free. A third element explaining the success is that the composting facility was installed in a peri-urban zone where there is a demand for compost. Finally, the development of organic farming, especially for the export of tea, vegetables, fruit, and spices has increased the demand for organic fertilizers, and contributes to the long-term viability of the composting facilities.

Find out more:

• Gianfelici F., Lancon L., Bucatariu C., Dubbeling M., Santini G., Ocampo G. & Upegui Velasquez A., 2016. "Food redistribution and value addition from rural to urban areas". In Dubbeling M., Bucatariu C., Santini G., Vogt C. & Eisenbeiss K. (Eds.), *City region food systems and food waste management: linking urban and rural areas for sustainable and resilient development*. Eschborn, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, pp 172-181.

• City of Balangoda, 2017. Solid waste management center. http://www.balangoda.uc.gov.lk/en/Compost/index.html [accessed April 12, 2017]

waste and to reduce the amount of waste discarded in illegal dumps, while saving money on transport costs. Cities can deploy communication and educational strategies that motivate their citizens to sort their organic waste. The City of Curitiba is implementing a program called "Cambio Verde" (green exchange), in which organic waste that can be upcycled is exchanged for products grown by peri-urban and rural smallholders (Gianfelici et al. 2016). It promotes selective sorting in schools, hospitals, and public institutions to set the example for everybody to follow. Several cities also propose composting training.

Raise awareness and provide mentoring so wastewater is used more safely in farming.

There are many advantages to using wastewater in agriculture when farmers know how to do it right, especially in water savings. However, if they are not well enough informed, this can lead to health problems including enteric infections, skin ulcers, and waterborne diseases (Furedy et al. 2000). As a result, most cities forbid the use of wastewater for urban and peri-urban farming, but without necessarily proposing an alternative solution.

FIGHTING FOOD WASTE.

Some cities of the South—particularly in Latin America—are trying to reduce the amount of organic waste by fighting food waste. There are several possible actions to achieve that goal including the upcycling of unsold goods by donating them to the needy. For example, the city of Medellín has had a municipal program (REAGRO) since 2012 that collects and redistributes unsold food items to the neediest. It is run in partnership with the SACIAR Foundation, which is the most important food bank in Medellín. The goods that are recovered come from farmers, the food industry, and major retailers, as well as markets (Gianfelici *et al.* 2016).

Other actions can be taken to fight food waste. In the generally accepted order of importance, these include decreasing food waste at the source, and then redirecting the goods saved either through donations or transformations to feed people, reusing the goods saved for animal food or organic upcycling as compost or for spreading on fields, upcycling it as energy through anaerobic digestion, and last but not least incineration (French Ministry of Ecology and Sustainable Development 2016).

CONCLUSION

Cities around the world are overwhelmed by their waste, not only organic waste, but other less biodegradable materials such as paper, cardboard, plastics, and metals, part of which come from the food sector in the form of packaging. A century of inexpensive energy freed humans from the burden of recycling waste. Cities organized their services as much as possible to remove their waste, and city dwellers externalized waste management. However, such a situation is untenable in the long term. That explains the emergence of the concept of a circular economy in recent years, and the growing awareness that waste products are not materials to eliminate but rather resources that can be upcycled.

Technological progress must be made to facilitate the depollution and recycling of waste, but that will not be enough. City dwellers must adopt new practices to sort the different types of waste at the source, and also to produce less non-organic waste. Those involved in food chains, who transform and sell food, must also reduce the amounts of packaging used and make the ones used recyclable. Some cities have set the goal of significantly reducing the volumes of plastic waste from bags and bottles. To succeed, they must take action at every step in the product cycle, and not only after they are used.

REFERENCES

AFD, 2015
Développement économique local à l'usage des élus locaux africains, AFD, Coll. Guide méthodologique, 89 p.

Barles S., Billen G., 2017
"Métabolisme urbain et écologie territoriale." In Brand C., Bricas N., Conaré D., Daviron B., Debru J., Michel L., Soulard C.T. (Eds.) *Construire des politiques alimentaires urbaines*. Concepts et démarches. Versailles, Editions Quae, pp 39-40.

Cofie O., Bradford A. A. & Dreschel P., 2006
"Recycling of Urban Organic Waste for Urban Agriculture". In van Veenhuizen R. (Ed.) *Cities farming for the future: urban agriculture for green and productive cities*. RUAF Foundation, IDRC, IIRR, pp 2-17.

FAO, 2007
Manuel de référence du producteur urbain. Guide pratique pour travailler avec les organisations de producteurs urbains et péri-urbains à faible revenu.
Rome, FAO, 193 p.

FAO, 2012
Growing greener cities in Africa. First status report on urban and peri-urban horticulture in Africa. Rome, FAO, 116 p.

Fédération nationale des activités de la dépollution et de l'environnement, 2017
Valorisation énergétique des déchets. Available online: http://www.fnade.org/fr/produire-matieres-energie/valorisation-energetique [accessed April 12, 2017].

Furedy C., Maclaren V. & Whitney J., 2000
"Réutilisation des déchets organiques pour la production alimentaire dans les villes asiatiques: perspectives sanitaire et économique". In Koc M., MacRae R., J.A. Mougeot L.& Welsh J. (Eds.) *Armer les villes contre la faim: systèmes alimentaires urbains durable*. Toronto, CRDI, pp 144-154.

Gevalor, 2017
Tri-compostage des ordures ménagères. Available online: http://www.gevalor.org/fr/compostage/tri-compostage-des-ordures-menageres [accessed April 12, 2017]

Gianfelici F., Lancon L., Bucatariu C., Dubbeling M., Santini G., Ocampo G. & Upegui Velasquez A., 2016
"Food Redistribution and Value Addition from Rural to Urban Areas". In Dubbeling M., Bucatariu C., Santini G., Vogt C. & Eisenbeift K. (Eds.) *City region food systems and food waste management: linking urban and rural areas for sustainable and resilient development*. Eschborn, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, pp 172-181

GoodPlanet Foundation, 2015
Africompost : compostage de déchets en Afrique. [video]. Available online: https://www.youtube.com/watch?v=nftoqpgm35k [accessed April 12, 2017]

King F.H., 1910
Farmers of Forty Centuries: Organic Farming in China, Korea, and Japan. 2004 (reprinting), Dover Ed edition, 464 p.

Ministry of Ecology and Sustainable Development (France), 2016
Law no. 2016-138 of February 11, 2016, concerning the fight against food waste. *Journal officiel*, no. 0036, Feb. 12, 2016.

RUAF, 2015
Safe and productive use of waste for urban and periurban agriculture - RUAF experiences in WASH. Available online: http://www.ruaf.org/publications/safe-and-productive-use-waste-urban-and-periurban-agriculture-ruaf-experiences-wash [accessed on April 7, 2017]

World Bank, 2012
What a Waste: A Global Review of Solid Waste Management, Washington, World Bank, Coll. Urban development series knowledge paper, 116 p.

Ymelé J-P., 2012
"Les déchets : quels enjeux pour les pays en développement ?". *Secteur privé et développement, la revue de Proparco*, (15): 5-8.

Chapter 5

OTHER EXAMPLES OF URBAN FOOD POLICIES

Many cities around the world are taking action on food and nutrition through levers other than those presented in the preceding chapters, especially levers that are sociocultural in nature.

PROMOTING LIVING TOGETHER IN HARMONY

Cities are places where people of diverse cultural origins and mixed social backgrounds coexist. This cohabitation can lead to social tensions that are in turn exacerbated by economic insecurity and growing inequalities. But cities can promote ways for their residents to live together in harmony. Some cities, for example, use cuisine and gastronomy—activities that are eminently cultural and signs of identity—to help generate identities that integrate populations and encourage them to know about and appreciate other cultures (Bricas 2017).

Since 1985, Rosario, in Argentina, has organized an annual ten-day festival of foreign communities. It is now the biggest people's event of the city. Its main objective is to make people familiar with the diversity of the cultures and traditions of the foreign communities living in Rosario. Gastronomy in particular is highlighted, alongside music and dance, at the 40 or so stands representing the various foreign communities. Each year, the festival attracts between 750,000 and 1 million visitors (Rosario City, 2017).

Likewise, in Papeete, in French Polynesia, a multicultural food court has developed, where the general public can buy a wide variety of typical dishes of the communities living in the city. Numerous stands are set up in the evening in a huge area by the port, in the city center. Municipal authorities have provided support by installing electricity terminals, water faucets, and trashcans. They also encourage music groups to come to the location, which is well frequented by city residents of many origins (Serra-Mallol 2012).

Following the socioeconomic crisis suffered by Greece in 2010, "people's kitchens" have appeared in Athens. They were initiated by civil society and subsequently supported by the city authorities. These people's kitchens give food a multidimensional image. In addition to their social and solidarity objectives, they enable the beneficiaries to cook and eat together, all the while promoting food education and Greek cuisine. The Athens city authorities acknowledge the importance of these people's kitchens for urban social cohesion and for integration of sociocultural and ethnic diversity. In 2014, Athens also supported the holding of the "Athens, Metropolis of Taste" event, in collaboration with associations of Afghan refugees and Nigerian women (Forster *et al.* 2015).

GOING BEYOND FOOD, TO PROMOTE PHYSICAL EXERCISE

While nutrition is of course a question of the quality of food eaten, it cannot be separated from food behaviors. And these latter are intimately related to physical activity, which plays an essential role in fighting excess weight, obesity, and their associated pathologies that are now common in all cities of the world due to increasingly sedentary lifestyles. In order to improve the health of city dwellers, some elected officials are trying to incite physical activity by providing an urban environment that encourages it.

Since 2006, the city of Stavropol, Russia, has been part of the Healthy Cities network of the World Health Organization (WHO). The purpose of this network is to promote healthier lifestyles, create better living conditions, and prevent chronic illnesses. Stavropol has carried out several actions to this effect: it opened several locations where body mass index (weight/height relationship) can be measured, it organized numerous sports events, and it built 112 sports and leisure grounds in residential neighborhoods to encourage physical activities. The inhabitants of the city enjoy 112.5 m^2 of green spaces per capita, a much higher figure than the national average. Between 2007 and 2012, average life expectancy there increased by more than 12 months, to more than 71 years (WHO 2013).

In Amsterdam, in the Netherlands, the percentage of teenagers age 12 to 16 who are overweight is 24%, twice the national average. In 2012, city authorities initiated a plan to fight obesity, with the goal of achieving a healthy weight for all of Amsterdam's children by 2033. Among other things, this plan provides for the creation of public spaces and infrastructure that encourage physical activity (Forster *et al.*, 2015).

In one of its publications (Edwards and Tsouros, 2008), WHO provides many examples of cities that have taken account of physical activity in their planning, especially by promoting soft modes of transport. Brno in the Czech Republic and Bursa in Turkey have renovated and fitted out urban green spaces in order to encourage physical activity by city residents. Helsinborg in Sweden and Milan in Italy are encouraging walking by developing zones for strolling. Meanwhile, Copenhagen in Denmark and Sandnes in Norway are developing infrastructure and services helping to encourage travel by bicycle (bicycle lanes, regulation of urban traffic, making city bicycles available).

PROMOTING IDENTITY THROUGH CUISINE

Cities are spaces for creating an original culture, and among the building blocks of urban identity is cuisine, be it through the gastronomy and the major chefs associated with the city, or more often via the development of popular cuisine that emerges from more modest restaurants. In Africa, Dakar-style rice and fish (*thiébou dième*), Abidjan's manioc semolina (*garba d'attiéké*), and Ouagadougou's cornmeal cooked with leafy vegetables (*baabenda*) are typically urban dishes that contribute to cultural integration and to the construction of the city's identity. This gastronomic identity moreover contributes to cities' tourist appeal (Bricas 2017).

The UNESCO Creative Cities Network was launched in 2004 to promote cooperation with and among cities having identified creativity as a strategic factor for sustainable urban development. It now includes 116 member cities from 54 countries and covers seven creative fields, including gastronomy. For example, in Phuket, Thailand, traditional culinary culture is perceived as a vehicle for intercultural and intergenerational dialogue. The gastronomy sector contributes $3.6 billion to the local economy annually. The annual festival of the Old City, which for three days highlights ancestral know-how in gastronomy, crafts, folk art, and the visual arts, attracts more than 400,000 local and international visitors.

Other examples come to us from cities of the North. For example, the American city of Tucson, which has the oldest agricultural history of all US cities, organizes many producers' markets and more than two dozen culinary festivals each year. Meanwhile, Dénia, Spain, is a port city where traditional fishing plays a vital role in the local economy. Each year, the city boasts a creative international cooking contest focusing on a local product—the Dénia red *gamba* (prawn). This contest attracts more than 50 chefs from around the world (UNESCO 2017).

Many cities, especially in English-speaking countries, have set up a Food Policy Council.

ESTABLISHING PARTICIPATIVE GOVERNANCE THAT INCLUDES CIVIL SOCIETY

The levers that cities can use to reach their food policy objectives are not always limited to a single field of intervention. It is possible to mobilize several levers in a coordinated way. Food is in fact a cross-cutting issue and is not the responsibility of a single administrative service. Acknowledgment of the trans-sectoral nature of food policies is beginning to emerge in the cities of the North.

Organization of this trans-sectoral nature of the governance of urban food policies can take several forms. In the last 20 years, the most common form has been Food Policy Councils (FPCs), which have been set up in many countries, English-speaking in particular. These councils bring together various actors in food—from civil society, the public sector, and the private sector. Not only do they make it possible to involve different elements of the local community, but they also help make actions sustainable regardless of the political changes (Pothukuchi and Kaufman 1999, Harper *et al.* 2009, Dahlberg 1994).

FPCs are currently the foremost model of governance for food policy at the local level. The FPC of Toronto, Canada, created in 1991, can be mentioned as an example (Blay-Palmer 2009). This FPC, supported by the city authorities, is made up of technicians, researchers, members of nonprofit organizations, farmers, and industrialists. The Toronto FPC has carried out several initiatives, such as the mapping of urban food deserts and the development of urban community gardens[9].

While the FPC model does enjoy great popularity, these partnerships are far from being the only type of governance for urban food policy. In some cities, governance is formally rooted within public responsibilities for managing the food system, all the while including practical contributions from civil society, the private sector, universities, and research institutes. For example, when Montpellier Méditerranée Métropole, in France, decided to develop its agroecological and food policy (P2A), it had a team of researchers involved alongside the

9. Toronto Food Policy Council: http://tfpc.to/

public sector. In development since 2014, it targets five objectives: 1) provide healthy and local food to as many people as possible, 2) support the economy as well as agricultural and agri-food jobs, 3) preserve landscape heritage and natural resources, 4) limit greenhouse gas emissions and adapt to climate change, and 5) promote social cohesion by looking after the bond with nature and the ties between city and countryside (Michel and Soulard 2017).

CONCLUSION

Food is not limited to the material purpose of satisfying the body's biological needs. It is an eminently social act: all the world's societies build and activate their social interactions through the sharing of food and organizing meals together. Whether at the family scale, or that of the neighborhood, workplace, or even city, food supports social ties and identities. These functions are not of secondary importance in economic development. They are both a source of social stability and of territorial attractiveness, and as such a vehicle of economic development.

REFERENCES

Blay-Palmer A., 2009
"The Canadian Pioneer: The genesis of urban food policy in Toronto". *International Planning Studies*, 14(4): 401-416.

Bricas N., 2017
"Les enjeux de l'urbanisation pour la durabilité des systèmes alimentaires". In Brand C., Bricas N., Conaré D., Daviron B., Debru J., Michel L. & Soulard C.T. (Eds.) *Construire des politiques alimentaires urbaines*. Concepts et démarches. Versailles, Editions Quae, pp. 19-42.

Dahlberg K., 1994
"Food Policy Councils: The experience of five cities and one county". In *Joint Meeting of the Agriculture Food and Human Values Society and the Association for the Study of Food and Society*, Tucson, AZ.

Edwards P., Tsouros A. D., 2008
A Healthy City is an Active City: a physical activity planning guide, Copenhagen, WHO, 90 p.

Forster T., Egal F., Getz Escudero A., Dubbeling M. & Renting H., 2015
Milan urban food policy pact. Selected good practices from cities. Milan, Fondazione Giangiacomo Feltrinelli, 125 p.

Harper A., Shattuck A., Holt-Giménez E., Alkon A. & Lambrick F., 2009
Food policy councils: Lessons learned. Institute for food and development policy, 63 p.

Michel L., Soulard C.T., 2017
Comment s'élabore une gouvernance alimentaire urbaine ? Le cas de Montpellier Méditerranée Métropole. In Brand C., Bricas N., Conaré D., Daviron B., Debru J., Michel L. & Soulard C.T. (Eds.) *Construire des politiques alimentaires urbaines. Concepts et démarches*. Versailles, Editions Quae, pp. 137-152.

Pothukuchi K. & Kaufman J. L., 1999
"Placing the Food System on the Urban Agenda: The role of municipal institutions in food systems planning". *Agriculture and Human Values*, 16(2): 213-224

Rosario City, 2017
Encuentro y Fiesta Nacional de Colectividades. Available at: http://www.rosario.gov.ar/web/ciudad/cultura/festivales/encuentro-y-fiesta-nacional-de-colectividades [accessed April 17, 2017].

Serra-Mallol C., 2012
"Roulotte". In Poulain J.P. (Coord). *Dictionnaire des cultures alimentaires*. Paris, PUF, pp. 1185-86.

UNESCO, 2017
Creative Cities Network. Available at https://en.unesco.org/creative-cities/ [accessed April 17, 2017].

World Health Organization, 2013
"A healthy lifestyle is the fashion in Russian cities". Available at: http://www.who.int/features/2013/russia_healthy_cities/en/ [accessed April 17, 2017].

CONCLUSION

This publication uses examples to show how city governments can impact food by mobilizing levers in various sectors including land ownership, market infrastructure, food services, waste management, and others. Most of these levers did not initially have food as a target, but with food becoming an increasingly crucial issue for urban residents, cities have had to mobilize these levers to address new food challenges. These latter include reducing inequality in access, improving sanitary and nutritional quality, reducing negative impacts on the environment, and encouraging different communities to live together in harmony.

These challenges can also be found in several of the UN's Sustainable Development Goals (SDGs): no. 2: Zero Hunger; no. 3: Good Health and Well-Being; no. 9: Industry, Innovation and Infrastructure; no. 10: Reduced Inequalities; no. 11: Sustainable Cities and Communities; and no. 12: Responsible Production and Consumption. Thus, by carrying out food policies, cities can contribute to achieving several SDGs, specifically goals 2, 3, and 11.

Some cities deal with food only through targeted actions, without responding to some of the previously mentioned challenges. Others enact real and more integrated urban food policies. Such policies do not form a new sector of public action. Rather, they consist in a set of sector-based interventions linked together according to the objectives related to food challenges. In this case, cities create mechanisms for inter-sector coordination that are institutionalized by food policy councils (see Box 10).

Implementation of these policies is limited due to lack of skills in the food-related sphere among managerial-level personnel in local governments. An initial challenge is thus to train these managers, who work in such fields as urban planning, social work, and waste management, etc[10]. Another challenge is to better organize exchanges of experiences between cities. Local-government networks, such as United Cities and Local Governments (UCLG), Local Governments for Sustainability (ICLEI), the C40 Cities network of megacities (of which there are about 90), and the Urban Food Policy Pact, known as the "Milan Pact", have all created programs dedicated to food issues. There are also permanent sources of information such as FAO's Food for the Cities forum or the international platforms of the International Network of Resource Centres on Urban Agriculture and Food Security (RUAF) and the International Urban Food Network (IUFN).

While these forums currently act as a community of practices and exchanges, they are becoming aware that they can help to play a role in the national or international policies that impact cities' food, in particular commercial policies (e.g. free-trade agreements) and industrial policies (support for industries or SMEs). One of the challenges in the coming years will probably be the growing participation of cities in the national and international debates on food and even on agricultural issues.

As a technical and financial partner of these cities, and as part of its mission to contribute to the SDGs and the fight against climate change, AFD is following the trends in these policies in order to support them better. Among other things, this involves helping the current practices, projects, and programs to develop in order to meet the new challenges of local communities.

Although cities do have the power—at least partially—to take action within their own boundaries, especially on agriculture, we must keep in mind that they cannot feed themselves from their own territory alone, or even from their peri-urban areas,

10. Montpellier SupAgro and Cirad, under the aegis of the UNESCO Chair in Food Systems, has been offering, annually since 2016, a continuing-education module on food and cities, open to officials from local authorities.

with the possible exception of perishable foodstuffs such as vegetables. The growth in population concentration inside cities means that procurement from farther away is still necessary. As the famous historian Fernand Braudel said, throughout history, cities have often developed thanks to exchanges with distant places. This is especially the case of sea or river port cities[11]. Such expansion of their procurement areas, including international exchanges, is nevertheless being put into question by many observers, especially since the crises in commodities prices in 2008 and 2011.

Reconnecting cities with their hinterland is now an important issue, and supported for example by the concept of "City Region Food Systems,"[12] which advocates an inclusive and equitable reconnection between cities and their agricultural periphery. Nonetheless, recourse to large peri-urban areas will not be enough, given the growing size of cities. It will be necessary to invent new forms of relationships between cities and rural areas, which must also be inclusive and equitable while making it possible to diversify supply areas to create greater resilience in case of adverse climate events.

Recourse to local procurement is a growing priority for cities in industrialized countries, but this concern now extends to big cities of developing countries, especially in Latin America. It helps reassure city dwellers who are worried about their relationships to food and agriculture, and, even more broadly, about nature becoming more distant.

However, putting too much effort just on local procurement has a pitfall—that of focusing attention on peri-urban areas and on over-focusing on local procurement, at the risk of neglecting the issues of rural areas that are further away and that for city dwellers are out of sight, out of mind. Because cities' procurement policies have an impact—intended or not—on agricultural areas that are necessarily far away, cities will have to consider this extraterritorial impact and include such issues in their urban food policies in the future. Cities can help invent new forms of relationships with rural areas that reconcile these two worlds through the types of agreements made with these rural areas for food procurement, through the investments they can make in agriculture, and through the supply-chain models they can promote. ■

Box 10

The integrated food policies of Belo Horizonte (Brazil) and Medellín (Colombia)

With a population of 6 million, Belo Horizonte is one of the largest cities of Brazil. In the early 1990s, 38% of families there lived below the poverty line, and nearly 20% of children under three were in a state of malnutrition. In 1993, the Workers' Party was elected to lead the city, on a platform of social justice and food security. The new city government developed and started up a genuine food policy coordinated by the Municipal Secretariat for Food Security and Nutrition (SMASAN) and the Municipal Council for Food Procurement and Security (COMASA). Both of these were intersectoral bodies. The policy mobilized four crucial levers: 1) promotion of ties between producers in rural areas and consumers in urban areas; 2) recognition of smallholder family farming as a significant factor in sustainable food systems; 3) SMASAN procurement

11. Braudel F., 1979. Civilisation matérielle, économie et capitalisme, XVe - XVIIIe siècle. Tome 3 : Le temps du monde. Armand Colin, 606 p.

12. City Region Food Systems: www.cityregionfoodsystems.org/

for food programs from local farmers; and 4) education about food and nutritional security.

The policy involved a number of programs:

- meal centers providing a balanced and affordable meal to each citizen;
- a school meal program with procurement from local family farming;
- food banks to collect foodstuffs and distribute them to people living in economic insecurity;
- promotion of sustainable agriculture and development of urban agriculture;
- improvement of access to basic food products for people living in economic insecurity, with promotion of local shops;
- education in food and nutritional security;
- subsidized baskets of basic products for people living in economic insecurity;
- nutritional assistance through distribution in health centers and schools of flour enriched in vitamins and minerals for women who are pregnant or breast-feeding, or who have young children.

This policy helped both to improve access to products and meals of good nutritional quality for nearly 40% of the city's population and to lower the child mortality rate by 60% between 1993 and 2005. Through the development of participative governance, it enabled the population and especially marginalized people to become involved in issues of food security.

A number of factors were decisive for the success of Belo Horizonte's food policy: the city government's goal of social justice, combined with the interdisciplinary nature of the teams, the intersectoral coordination, the importance of transparency in institutions, and the quality with which the services were provided. The policy was largely inspired by the national policy of "Zero Hunger" (*Fome Zero*) set up by President Lula in 2003 and by the right to food having been included in the Brazilian Constitution in 2010. This national policy was then strengthened by the municipal policy.

Several cities, especially in Latin America, built on the experience of Belo Horizonte. From among these, we can mention the spectacular case of Medellín, the second largest city of Colombia with a metropolitan-area population of 3.5 million. The city went from being the most dangerous in the world in the 1990s to being the most innovative 20 years later! To overcome the catastrophic situation linked to the civil war, the city government undertook an ambitious policy of social urban planning in which food plays an important role. Here as well, an intersectoral and multi-stakeholder Municipal Plan for Food and Nutritional Security coordinates a series of actions in schools, targeting the most economically insecure people. The strong political will of the successive local governments enabled continuity and coherence in these actions, which were keys to the success of this policy.

Find out more:

- Rocha C., 2001. "Urban food security policy: the Case of Belo Horizonte, Brazil". *Journal for the Study of Food and Society*, 5(1): 36-47.
- FAO, RUAF Foundation, 2016. *Sistemas agroalimentario ciudad-region analisis de la situacion*, Medellín, Colombia. Available online: http://www.fao.org/3/a-bl884s.pdf [accessed April 19, 2017].

L'AFD &

N° 4 - September 2017

FOOD FOR CITIES

AFD
AGENCE FRANÇAISE DE DÉVELOPPEMENT

Agence Française de Développement (AFD)
The head office
5, rue Roland Barthes, 75012 Paris
Tel: +33 (1) 53 44 31 31
www.afd.fr

Design : lendroit.com