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PRIORITIES FOR INCLUSIVE URBAN FOOD SYSTEM TRANSFORMATIONS IN THE GLOBAL SOUTH

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ABSTRACT

This paper is concerned with: (i) challenges to food systems in Africa, Asia, and Latin America caused by urban development, (ii) how existing food systems respond to these challenges, and (iii) what can be recommended to improve their responsiveness. We define 'urban food systems' as food systems related to cities by material and human flows. Urbanisation poses challenges related to food and nutritional security with co-existence of multiple forms of malnutrition (especially for women and children/adolescents), changing employment (including for women), and environmental protection. It is widely

acknowledged that contemporary food systems respond differently to these challenges according to their traditional (small-scale, subsistence, informal) versus modern (large-scale, value-oriented, formal) characteristics. We go beyond this classification and propose six types of urban food systems: subsistence, short relational, long relational, value-oriented SME-driven, value-oriented supermarket-driven, and digital. They correspond to different consumers' food environments in terms of subsistence versus market orientation, access through retail markets, shops or supermarkets, diversity of food, prices and

quality attributes. Urban food supply chains differ not only according to scale and technology but also according to the origin of food (rural, urban or imports) and the perishability of the product. We stress the complementarity between short chains that supply many perishable and fresh food items (commonly nutrient-dense) and long chains that involve collectors, wholesalers, retailers, storage and processing enterprises for many staple food commodities rich in calories. More and more small and medium enterprises are upgrading their business through technologies, consumer orientation, and stakeholders' coordination patterns, including food clusters and alliances. Urban food systems based on micro, small and medium enterprises (MSMEs) have proven resilient in times of crisis (including in the ongoing Covid-19 pandemic). Rather than promoting linear development from so-called 'traditional' towards 'modern' food systems, we propose seven sets of recommendations aimed at further upgrading MSMEs' business, while improving the affordability and accessibility of food to ensure food and nutritional security and accounting for the specificities of the urban contexts of low-income countries.

I. OBJECTIVE AND FOCUS OF THE PAPER

This paper is concerned with: (i) challenges to food systems in Africa, Asia, and Latin America caused by urban development, (ii) how existing food systems respond to these challenges, and (iii) what can be recommended to improve their responsiveness. We define 'urban food systems' as food systems related to cities by material and human flows. "A food system gathers all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities related to the production, processing, distribution, preparation and consumption of food, and

the outputs of these activities, including socio-economic and environmental outcomes" (HLPE, 2014:29). This definition is close to the definition of food chains, with three major specificities. First, it includes food diets and consumers' behaviour. Second, it considers a diversity of food products, which is crucial for nutrition security as well as for the sustainability of production systems. Third, it emphasises the key role of food environments, i.e., "the physical, economic, political and socio-cultural context in which consumers engage with the food system to make their decisions about acquiring, preparing and consuming food" (HLPE, 2017:28). Often contradictory objectives are attributed to food systems, gathered under the general objective of achieving sustainability (Béné et al., 2019). According to FAO (2018:1), a sustainable food system (SFS) is a food system that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised. Among sustainable food systems, inclusive food systems are defined by Fan and Swinen (2020:9) as "reaching, benefiting, and empowering all people, especially socially and economically disadvantaged individuals and groups in society".

II. CHALLENGES POSED BY URBAN DEVELOPMENT

II.1. Urban growth

The world is becoming increasingly urbanised. Half of the world's population now lives in cities, 40% in Africa, 49% in South-East Asia, and 81% in Latin America. These figures are expected to increase by a factor of 25% by 2050 (WUP, 2018). Cities differ considerably in size, and a large share of urban growth is taking place in secondary cities, especially in sub-Saharan Africa where, in 2015, half the population lived in

cities of less than 500,000 inhabitants (OECD/WAC, 2017). Compared to the population of rural areas, urban populations are more diverse in terms of cultural, economic, and social profiles. A middle class is emerging, which means an income ranging from 12 to 50 US\$ per day in Africa, accounting for 13% of the population (Neveu-Tafforeau, 2017). In sub-Saharan Africa, income growth benefits urban areas, which started in 2000 but has faltered since 2013 (Tschirley et al., 2020 based on World Bank data). In Latin America, 40 to 50% of the population of most countries live in few big cities larger than one million inhabitants. Urbanization is positively correlated with income per capita, but Latin America is the continent with the highest income inequality which also persists in urban areas (BBVA Research, 2017; OECD, 2019). Asia has modest levels of urbanization as a region, but it is home to half of the world's urban community, and the continent with the fastest urban growth (Leeson, 2018).

II.2. Challenges for urban food systems

Urbanisation poses several policy challenges for urban food systems. These are related to food and nutritional security, employment, and environmental protection.

II.2.1. Urban food and nutritional security

In contrast to rural areas, the majority of people who live in cities do not produce food and have to rely on local markets. Food purchased in markets represents more than 80% of food consumption in cities of sub-Saharan Africa, compared with 50% in rural areas (Tschirley et al., 2020).

There are many signs that urban food security is inadequately addressed, especially in Africa. "Urban food insecurity in low-income countries, estimated by the Food Insecurity Experience Scale of the

Food and Agriculture Organization of the United Nations, is higher (50%) than levels in rural areas (43%). In urban slums, other studies estimate food insecurity at up to 90 percent" (Tefft et al., 2017, page x). Urban food consumption is characterised by a triple burden of malnutrition, with the persistence of undernutrition, micronutrient deficiencies – especially related to iron deficiency anaemia in women of reproductive age and young children, and a rising prevalence of overweight/obesity (GNR, 2020). With rising incomes, urban residents are eating more animal-source foods and processed foods that may be low in micronutrients, high in calories and fat (Popkin et al., 2012; Yaya et al., 2018; Holdsworth et al., 2020; Rousham et al., 2020). These poor quality diets affect children of all ages from infancy to adolescence and food systems do not currently account sufficiently for the nutritional needs of children and adolescents (UNICEF/GAIN, 2018). Nutritional problems are amplified by excessively monotonous diets, limited consumption of fruit, vegetables, and pulses, as well as lack of physical activity (Popkin et al., 2012). Likewise, the consumption of imported food by urban dwellers is increasing – although the proportion is still limited (only 5% in Africa, mostly relating to cereals, according to Bricas et al. (2016) and Tschirley et al., (2014); and consumers commonly combine local and imported products in meals, resulting in a hybridization of cooking (Soula et al., 2020). In Latin American cities, food security improved for many years, partly as result of "zero hunger" strategies first developed in Brazil in the late 1990s and later in other countries in the region. However, in the last years food insecurity is rising again as result of increased social inequality and recently due to the Covid-19 pandemic. At the same time Latin America is facing high levels of obesity rates, affecting 24% of the regional – mostly urban – population, almost double

the global level of 13.2%, which is explained by unhealthy diets and poverty (FAO, RUAFA, 2019).

In parallel, food safety has become a major public health issue. Food safety crises are regularly reported in the media, especially in South-East Asia, where consumers' fears are linked to chemical products in fruit and vegetables and antibiotic residues in meat (Figuie et al., 2004; Ortega and Tschirley, 2017; Hinh et al., 2021). This is because of new industrial and domestic sources of pollution close to agricultural production areas, and the increase in the use of chemical inputs by farmers (de Bon et al., 2010; Reynolds et al., 2015, di Gregorio et al., 2003). The lengthening of food supply chains and the lack of knowledge about hygiene also generate risks of contamination at the processing, marketing, handling and consumption stages (Jaffee et al., 2018). Consumer concerns about food safety have potential nutritional consequences as they may reduce consumption of fruit and vegetables because of concerns about pesticides, or push consumers towards packaged (often highly processed) foods because they are perceived as safer (Trübswasser et al., 2020).

II.2.2. Food convenience

Another growing consumer pattern is related to the convenience of where they buy and what they buy. As women are increasingly employed outside their homes and lifestyles are more sedentary, demand is growing for packed, pre-prepared food that can be purchased near offices or shops where it is easy to park (for the middle classes) (Reardon et al., 2019). In sub-Saharan Africa, processed food accounts for between 60% (in West Africa) and 70% (in eastern and southern Africa) of total food consumption, compared to, respectively, 50% and 30% in rural areas. Food consumption outside the home is on the increase.

The proportion varies across African cities, ranging from 6% in Freetown and Conakry to 25% in cities of Nigeria and Tanzania, and 30% in Cotonou, Lomé and Abidjan (Tschirley et al., 2020). Street food is especially convenient for urban workers and low-income households who may not have the resources and facilities to purchase raw ingredients and prepare dishes at home, especially in slums (Soula et al., 2020; Pradeilles et al., forthcoming). In Latin America, between 2000 and 2013, the consumption of ultra-processed products grew by more than 25 percent, and fast food consumption grew almost 40 percent (PAHO, 2015).

II.2.3. Urban employment

Southern cities are characterized by lack of access to stable employment, which explains that poverty is becoming increasingly an urban phenomenon (Ravaillon, 2016). The difference in living standards among the urban population is widening, increasing social inequalities. The informal sector still provides most employment (especially for women), accounting for up to 90% in low-income countries and 67% in emerging countries (Bonnet et al., 2019). Sub-Saharan Africa is facing premature de-industrialisation with only 11% of employment in manufacturing, mostly in the food industry (Giordano et al., 2019 based on Rodrik, 2016 and ILO, 2018). In Latin America, sixty percent of –mostly urban– people are employed in the informal sector

II.2.4. Quality of the urban environment

Last but not least, the urban environment is responsible for major air, water, and soil pollution problems (Amegali et al., 2017; Adimalla, 2020), severe risks of flooding (Douglas, 2017; Pervin et al., 2020), and waste disposal, as the balance between what enters and leaves the city is

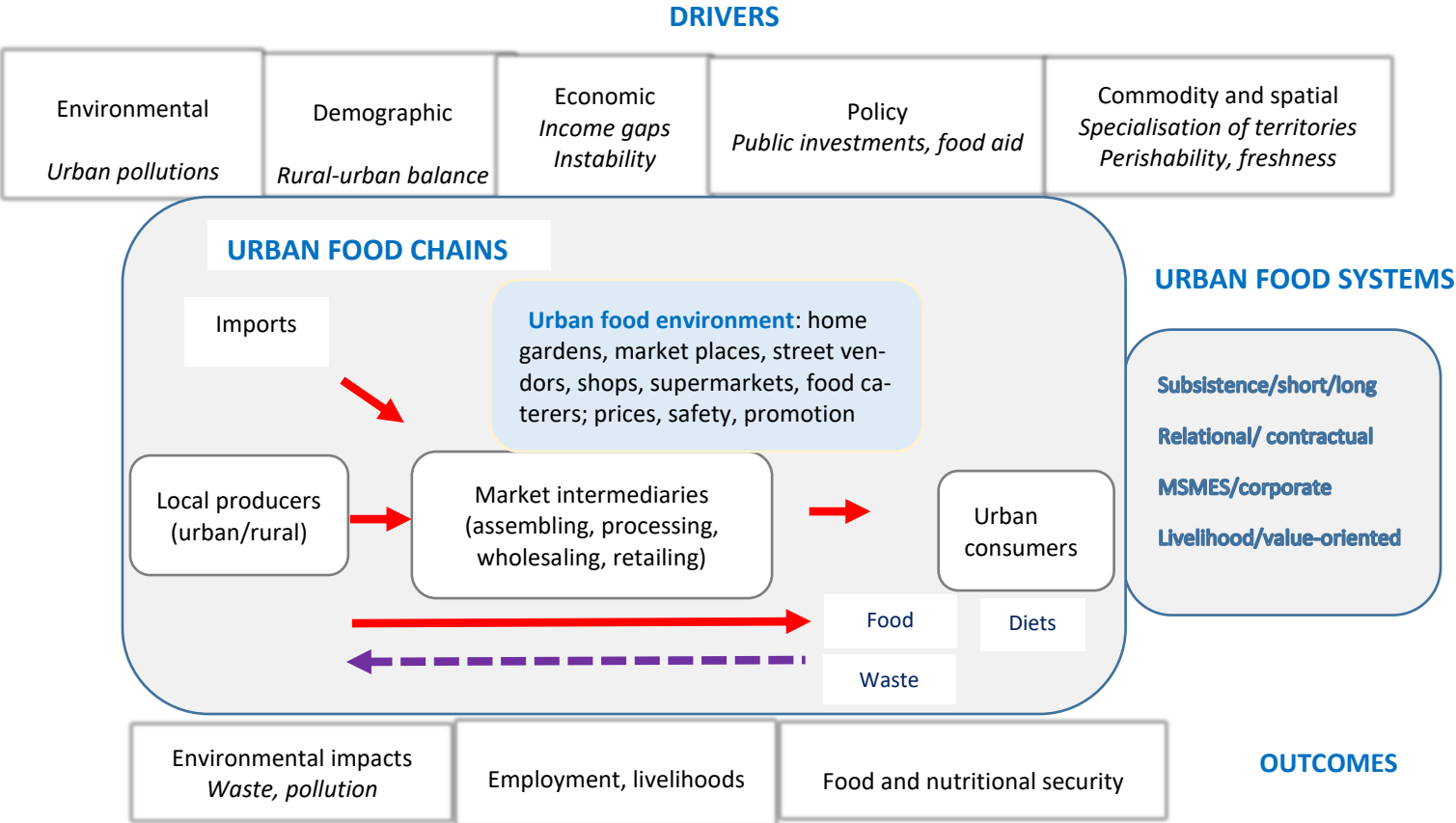
largely negative (Guerrero et al., 2013; Remigios, 2010; Zhou et al., 2017). This jeopardises the production of safe food in cities. At the same time, if handled safely, agriculture can recycle part of the waste produced (De Bon et al., 2010).

Cities can be viewed as concentrations of people and biomass that produce particular economic and environmental stresses (Chaboud et al., 2020). Yet they also concentrate knowledge, as people of different

backgrounds mix, including rural and international migrants, as well as public and private investments that provide a favourable substrate for innovations (Cobbinah et al., 2015).

The challenges faced by urban development and new consumer expectations question the capacity of existing urban food systems to adapt. This is detailed in the following section.

Figure 1. The characteristics of urban food systems in the Global South



Adapted from HLPE (2017) and David-Benz et al., forthcoming.

III. THE CHARACTERISTICS OF URBAN FOOD SYSTEMS IN THE GLOBAL SOUTH

III.1. Spatial and relational organisation

The organisation of urban food systems in Africa, Asia, and Latin America is summarised in Figure 1.

We review the characteristics of the chains that supply food to urban consumers, their relations with urban food environments, and urban consumers’ profiles. The nature of urban food environments, especially in terms of food retailing landscapes, as well as the profiles of consumers

in terms of living standards, in addition perishability and origin of food, result in major differences between food supply chains.

Food chains and food systems in low-income countries (LICs) are currently classified differently depending on their operation and organisation, which is related to the evaluation of their outcomes/impacts/performance (HLPE, 2017). Such a classification relates to the market-orientation, the scale of activities, informal versus formal (referring to whether or not the business is registered), added value in the chain through technologies and orientation towards consumer expectations, in particular regarding visual, organoleptic, and sanitary quality. The HLPE (2017) report distinguishes traditional food systems, which are dominant in rural areas and involve open-air markets and small shops without much concern for food quality nor diversity, and modern food systems which develop in urban areas and are driven by supermarket development and income growth, with an intermediary type labelled as mixed food systems. As the HLPE typology mostly considers differences between rural and urban settings, and as urban food supplying chains are diverse, the rest of the paper will highlight determinants that influence the variable organisation and performance of urban food systems and will result in the proposition of six types.

Even though subsistence agriculture is of minor importance in terms of total urban food consumption, in cities in the Global South it can play an important role in the livelihoods and social inclusion of some vulnerable inhabitants as evidenced in Tamale and Ouagadougou (Bellwood-Howard et al., 2018), Cape Town (Olivier et al., 2017), Hanoi (Pulliat, 2015), Quito and Rosario (Renting and Dubelling, 2013). Urban gar-

dens have also important pedagogical functions, e.g. through schooling programmes or community gardens (Hou, 2017). The multi-functionality of urban agriculture means it is a 'cheap' producer of public goods (Moustier and Danso, 2015),

We now turn to market-oriented urban food systems. Urban consumers are mainly supplied by small-scale market vendors and neighbourhood shops, even though supermarkets and convenience stores are increasing their market share. Supermarket distribution is still limited for food, especially in Africa and South-East Asia: less than 10% of purchases in Côte d'Ivoire (Neveu-Tafforeau, 2017), Kenya and Uganda (Wanyama et al., 2019), and less than 20% Vietnam (Un. Adelaide, 2014) – the percentages being even lower for fresh food-, which may be explained by low consumer purchasing power as well as consumer preference for traditional retail formats. So-called urban traditional food systems are dominant in the urban context of low-income countries. There is a common overlap between what is termed as traditional or informal markets/sectors/systems, referring to the small scale of production, absence of registration, and public support. Traditional systems are often described as poor-friendly, as suppliers are mostly concerned with subsistence incomes (Vorley, 2013). Moreover, they are an important part of the social fabric of low-income urban communities, as seen in studies in Ghana and Kenya (Pradeilles et al., 2021). Food processing, food distribution, and food catering are major sources of urban employment, especially for the vulnerable poor (particularly women) who lack qualifications and capital (Allen et al., 2018). The urban food catering sector is diverse, ranging from school canteens to

street caterers and restaurants targeting different types of customers. Most processing takes place in micro, small and medium enterprises (MSMEs) at an artisanal scale (Tshirley et al., 2020) in various locations within and outside cities. While street vendors are documented as major providers of food and livelihoods to poor urban residents, especially women, in Africa and Asia, they commonly lack public support (Turner and Schloenberger, 2011; Ogunkola et al., 2021).

Traditional food systems are sometimes judged to be inefficient in responding to new consumer expectations, especially quality and convenience (Reardon et al., 2019). Low investments in infrastructure may limit the regular availability and supply of some nutrient-dense foods like fruit and vegetables (Maestre et al., 2017). Regarding the effect of traditional food systems on waste reduction, some studies report evidence for inefficiency related to poor logistics, while others argue that less stringent quality criteria help reduce waste (Chaboud and Moustier, 2020).

In addition to scales and technology, another major factor that influences the organisation of food chains is food perishability as it influences the location of production and the length of chains, especially when logistics are limited, which is even worse in times of crisis, like the current Covid-19 crisis. The location of production and the possibility of producing locally depends on the climate and on soil, as well as on the history of specialisation in some territories. Mapping food supply chains is crucial to represent differences in the length of chains, in the number of intermediaries and in their origin. This is the basis of approaches based on foodshed identification, city-region food systems and short versus

long chains (Blay-Palmer et al., 2018; Schreiber et al., 2021). Short versus long chains refers to physical as well relational, and the two are linked (Morgan, 2004; Kebir and Torre, 2010). Short chains (in terms of distance and relations) have fewer intermediaries than long ones. This may lead to lower final prices than longer chains but this is not systematic because long chains may enable economy of scale (De Cara et al., 2017). In line with predictions from spatial economics, short food chains predominate in the supply of perishable produce, e.g. leafy vegetables, milk, eggs, chicken. These commodities are nutrient-dense and commonly under-consumed relative to nutritional recommendations. Farmers or one of their relatives are frequently involved in wholesale and/or retail. On the other hand, staple food crops including cereals, tubers, pulses, and vegetables that can be stored, e.g., onions, and some animal products, are supplied by long chains originating in local rural areas or by imports (Moustier, 2017; Lemeilleur et al., 2020; Karg et al., 2018, 2019). They often involve a chain of rural collectors, rural wholesalers, urban wholesalers, and urban retailers who supply all types of urban consumers. Transactions take place on wholesale and retail markets that are located to minimise traders' and consumers' transport costs (Blekking, 2017; Lemeilleur et al., 2019). With the development of transport, credit, and telephone, these chains may be shortened, and the roles of rural collectors and wholesalers may be reduced. This transformation is termed as a 'quiet revolution' in agrifood value chains of developing countries by Reardon et al. (2015).

Another important aspect of chain organisation concerns business-to-business relationships. Food chains in low-income

countries are characterised by long-term acquaintanceship and reciprocity, together with competition between hundreds of vendors which together enable a certain degree of price homogeneity, even though oligopolies of wholesalers are observed because of limited access to credit and storage facilities (Fafchamps, 2004).

Modern distribution systems, driven by supermarkets, are characterized by labour-saving and capital-intensive technologies in terms of logistics, refrigeration, self-service, packaging, cash registers, in addition to the recourse to contractual arrangements with dedicated wholesalers (Hagen, 2002). They are judged to be efficient in terms of logistics and quality (Reardon et al., 2019), but with potential negative effects on nutrition because they supply a wide range of highly processed food rich in fats and sugar (Demmler et al., 2018; Gomez and Ricketts, 2013; Peyton et al., 2015; Wertheim-Heck et al., 2020). Regarding affordability for the poor, modern systems are usually presented as less poor-friendly because of higher prices and transport constraints. Modern systems also create less employment per unit of product (Moustier et al., 2010; Wertheim-Heck et al., 2015). Regarding differences in prices between supermarkets and traditional vendors, when controlling for quality differences, results are country-specific. When supermarkets gain a substantial market share, they can reduce their logistic costs and provide food at lower prices, especially food that can be stored (Reardon et al., 2010, Nuthalapati et al., 2020). Prior to that stage, food is usually more affordable and accessible in open markets and small shops than in supermarkets (Moustier et al., 2009; Wanyama et al., 2019). Moreover, supermarkets favour the use of plastics for wrapping fresh food, which is a major environmental concern.

III.2. Innovations in urban food systems

Considering the ability of urban food systems to adapt to new consumer demand for quality and convenience, we need to look beyond the traditional approach that qualifies modern or supermarket-driven chains as innovative and traditional chains as obsolete and lacking dynamics. A number of micro, small and medium enterprises (MSMEs) are indeed increasingly upgrading their technologies and improving product quality in response to new consumer expectations. At the same time, they create new chain organisation patterns with increased chain interactions and different forms of vertical integration, with the general support of national and international public programmes (Moustier and Renting, 2015; de Brauw et al., 2019; Tefft et al., 2019). This is the case of farmer organisations that sell food in shops or farmer markets in Laos, India, Ecuador, Colombia, Brazil, or Kenya, or by subscription in Dakar and, in some South African cities (Freidberg and Goldberg, 2011; Joshi and Hioki, 2012; Renting and Dubelling, 2013). Entrepreneurial producers, e.g., *le Terroir* in Abidjan, are able to sell dairy products and cold cuts to wealthy urban consumers thanks to processing and cold storage (Neveu-Tafforeau, 2017). Caterers, both private companies, restaurants, and school canteens are developing strategies to ensure food safety and promote local products by signing contracts with local producer groups. This is also the case for public programmes targeting the urban poor, e.g., the food purchase programme in Brazil (Berchin et al., 2019). Yet these initiatives are evidenced as precarious because of the cost of access to sales points for farmers, low levels of state support, lack of product diversity, and lack of guaranteed food safety.

Supermarket chains are developing rapidly in countries where incomes are rising, like in South Africa, Côte d'Ivoire, and China. Supermarkets carry both local and international brands and are developing strategies for quality control and guaranteed origin, including using dedicated wholesalers and contracts but still face difficulties concerning quality control and traceability. Supermarket chains are usually supported by city and national governments on the grounds of modernity and hygiene but face increasing competition, from traditional markets and from companies that use digital technology for logistics and delivery to consumers (Neveu-Tafforeau, 2017 in reference to Côte d'Ivoire and Si et al., 2019 in reference to China). Overall, supermarkets vary in their supply strat-

egies, including whether they favour linkages with local food chains, in their pricing and in the payment conditions offered to local farmers, as well as in the training and logistics they may provide to farmers (Minten et al., 2017).

Digital technology can be used by MSMEs as well as by supermarkets or by new large-scale capital-intensive companies which sometimes partner with SMEs for their supply, logistics, or final delivery (Reardon et al., 2021; Tefft et al., 2019; Si et al., 2019). E-commerce has been spurred by sanitary crises including SARS and Covid-19 and is developing especially fast in Asian countries including China, India and Vietnam (Reardon et al., 2021; Vietnamnews, 2021; Dao T.A., 2020).

Table 1. Characteristics and outcomes of the six types of urban food systems

Type of UFS (urban food system)	Description	Outcomes
Subsistence	Urban agriculture, including home gardens	Variable additional contribution to the food and nutrition security of the poor Waste recycling Possible food safety problems when use of polluted soil, water or waste
Short relational (perishables)	Chain of farmers and retailers in markets or streets Oral commitments All income categories of consumers	Provisioning of nutrient-dense fresh food at low cost Employment of low qualified population Limited quality management
Long relational (non perishables)	Chain of farmers, collectors, wholesalers, market and street retailers Oral commitments All income categories of consumers	Possible high margins due to wholesalers' oligopolies Employment of low qualified population Limited quality management
Value oriented SME-driven	Chain of farmers-entrepreneurs or collectives, processors, retailers; quality control and labelling Middle and high income consumers	Employment and value added for low qualified population Rise in quality Rise in price
Supermarket-driven	Like above + common dedicated wholesalers + contracts Middle and high income consumers	Rise in quality Rise in price Variable impacts on inclusion of the poor Increased availability of unhealthy food

Digital	Cross-cutting use of digital technologies in the types above, plus some specialized e-commerce companies delivering food, sometimes partnering with SMEs Middle and high income consumers	Overcome risks linked with sanitary crises Higher traceability and trust, supporting for certification schemes Increased convenience Rise in price Exclusion of consumers with poor internet access
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III.3. Six types of urban food systems

To summarise, we advocate going beyond the classification of traditional versus modern food systems. This classification may appear to stigmatise the small-scale relational food systems that are competitive in terms of food availability, accessibility, and affordability. Moreover, it may suggest a linear trend of evolution from one system to another, while the reality is a frequent combination and synergies between different patterns. Hence, based on the reviewed literature, we propose the following typology – acknowledging for some possible overlaps and combinations between each type. The main characteristics of each type are summarised in Table 1.

IV. THE ADAPTATION OF URBAN FOOD SYSTEMS TO CHANGING URBAN DEMAND: A CASE FOR LOCAL VALUE-ORIENTED SMALL AND MEDIUM ENTERPRISES (SMES)

The capacity of food systems in less-developed countries to supply urban populations in sufficient quality and quantity is often questioned. The development of agribusiness at all stages of food chains is sometimes seen as one way to overcome these shortcomings. Large-scale private investments in mechanised production, processing, storage, and retailing are put to the fore. Yet innovations are not neutral in terms of social inclusion. It is sometimes even claimed that the present problems of food security, including unhealthy food, are

caused by innovations and agribusinesses (Glover and Poole, 2019). Labour-saving and scale-biased innovations have a negative impact on employment for the poor and they are less suitable in regions where labour is in excess supply than is the case of capital-saving or neutral innovations (unless massive credit programmes focusing on the poor are launched). Moreover, they ignore the diversity and creativity that exist at the level of food systems driven by MSMEs, including producer organizations, as displayed in III.2.

The Covid-19 crisis has caused major disturbances, the most important being the decrease in sources of income among vulnerable urban dwellers, impacting on women and children, due to restrictions on movement and the disturbances in logistics systems (Shekar et al., 2021). In some countries, the increased vulnerability of the urban poor has been addressed through food aid programmes and increased social safety nets targeting women (Shekar et al., 2021). At the same time, the local food provisioning sector has proven to be quite resilient with no major breaks in the food supply chains. Public policies restricting the sale of food in open markets have varied, with varying consequences for access to employment and food by the poor. For instance, the municipalities of Abidjan and Dakar, found ways to maintain retail sales of food in open markets through regulations concerning hygiene and social distancing, enabling some contactless proximity, which was not the case in Burkina Faso where markets were shut down at the beginning of the crisis (Dury et al., 2021; IPES

Food, 2020; Moustier, 2020; Devereux et al., 2020).

Considering their inclusiveness and resilience, we recommend supporting urban food transformations based on MSMEs. These are developed in the next section.

V. SOLUTIONS TO ENHANCE INCLUSIVE URBAN FOOD SYSTEM TRANSFORMATIONS

In the previous section, we reported insights from the literature on the advantages and shortcomings of current urban food systems. Yet these insights are quite patchy in terms of time, space, and commodity coverage. That is why our first recommendation relates to a need for better data. Second, we provide recommendations related to urban food planning, mostly concerning the protection of land for agriculture, marketplaces, and shops, as well as regulations pertaining to supermarkets and food safety. These should enable urban consumers to benefit from a variety of food retailing formats. We also recommend communication actions to promote nutrient-dense foods, e.g., fruit, vegetables, nuts and legumes, which may be available to consumers locally, but which are not always purchased because consumers

may have little knowledge of their health benefits or of how to include them in their meals and dietary practices. Rural-urban transportation, which is the mandate of national governments, should be a priority to improve both food availability and quality and to reduce food losses. National programmes should also improve access to credit and training on food processing and storage for food MSMEs. Improvements in food quality can be obtained by food processing and storage technologies which are not always available to MSMEs because they have no access to credit and training programmes. Finally, securing coordination between food system actors is required to enhance the quality and availability of diverse food items. Details of these recommendations are given below. Some recommendations concur with the recent work of London Center for Food Policy to identify policies and actions to orient food systems towards healthier diets for all (Hawkes et al., 2020).

While some recommendations (V.1, V.3) relate to all types of urban food systems, some are more particularly relevant for some of the identified urban food system types (see Table 2).

Table 2. Recommendations according to targeted types of urban food systems

	V.2.1. Land protection	V.2.2. Upgrading of open market places	V.2.3. Mobile vendors' markets	V.4.1. Rural-urban transportation	V.4.2. Services to MSMEs
Subsistence	X				
Short relational	X	X	x		
Long relational		X	x	x	
Value-oriented SMEs				x	x
Supermarket-driven				x	x
Digital					x

Recommended interventions are meant to upgrade the operation of MSMEs as well as changing consumers' environments towards more healthy food, while keeping costs and prices affordable for the urban poor. This is why proposed interventions are sober in terms of capital and energy; moreover, economies of scale are reached through coordination of SMEs rather than support to agribusinesses.

V.1. Obtaining accurate data on food consumption, foodsheds, and food chains¹

Policy makers need to support interdisciplinary teams of researchers, including geographers, economists, specialists of consumption and statistics, to collect accurate and updated data on food consumption, foodsheds and food chains.

Available data on food consumption under-estimate two kinds of patterns: food consumed away from home, and seasonal food, including fruit and vegetables. Adequate and valid measuring methods are needed to address this deficiency (Rousham et al.; 2020). Identifying the specific role of different production areas and market intermediaries in urban food supply requires original sources of data. Comparing what is produced over a year in a city, in rural areas and what is imported has many limitations, including difficulties in grasping information on perishable seasonal products; and also because it does not take the destination of products into consideration. Precisely appraising the role of different production areas and intermediaries in urban food supply requires surveys of wholesale and retail markets, and of the origin and quantities of products

traded. Surveys should be conducted at different times of the year to account for seasonal variations, and with specific relational expertise. A foodshed approach (Schreiber et al., 2021) combined with value-chain analysis (Smith and Dyer, 2021) is recommended to identify the production areas of targeted nutrient-dense food and assess how value chain organisation (geographical and intermediation) determines the quality, accessibility and competitiveness of the supply of targeted food products.

V.2. Urban food planning for poor-friendly production and marketing spaces

V.2.1. Protection of land for multifunctional urban agriculture

If market forces are left unrestricted, urban agriculture is doomed to disappear given the forces of pressure on land and water. This is detrimental to urban food security and livelihoods and may create environmental problems. We consequently recommend protecting land for agriculture in areas where it is documented to play a major role in both food supplies and livelihoods, and where pollution is not an issue. Access to land can be secured through regulations (protecting agricultural parks or zoning measures) and formal contracts. How urban planning is enforced needs to be closely monitored as it has frequently been observed that legal protection of land is regularly trespassed because of the attraction of private investors' urban development schemes (de Bon et al., 2010; Valette and Philibert, 2014; Ayambire et al., 2019; Dao T.A., 2019).

¹ The lack of data was underlined at the Milan Urban Food Policy Pact meeting in Ouagadougou, 15-19 February 2021.

V.2.2. Upgrading food marketplaces

Urban marketplaces are frequently characterised by congestion, difficulty moving around, and lack of hygiene. Some past projects aimed to replace urban marketplaces with wholesale markets located outside the city boundaries, but these markets were underused due to limited transport facilities as well as the high cost of stalls (Moustier, 2017). We thus recommend upgrading existing markets. A priority is covering them and concreting the ground. Other basic infrastructures and services should be provided, including access to clean water. Planning new markets should include in-depth consultation of a panel of market users, especially wholesalers and retailers (Hubbard and Onumah, 2001). Food markets can also be combined with a “food hub” function, thereby creating new market linkages with food producers in the region, as developed in Colombia (Dubbeling et al, 2017). Market regulations concerning hygiene should be designed with the involvement of representatives of market users. Farmers’ markets should be encouraged by providing adequate space and market services (Baker and de Zeeuw, 2015).

V.2.3. Accommodating space for mobile vendors

Given the importance of street vending in the livelihoods of vulnerable urban populations (especially women), we recommend their business should be acknowledged and supported towards “semi-formality” (Cross, 2010). Semi formality refers a self-regulating system with some light third-party regulatory enforcement, thus protecting the flexibility of street vending which is uniquely adapted to the conditions

of the urban poor. Regulatory enforcement requires consulting a panel of street vendors to protect some urban spaces in order to allow them to conduct their temporary business while ensuring their commitment to respecting rules of hygiene and traffic safety. Some examples of successful integration of street vending in urban planning in Vietnam can be found in Loc and Moustier (2016), in India in Srivastana (2012), in China in Dai et al., (2019), and in Thailand in Tangworamonycon (2014).

V.3. Consumer-oriented promotion of nutrient-dense food

Culinary recipes and techniques that enhance the nutritional quality of the food, as well as the packaging and labelling of local nutrient-dense food items, including fruit, vegetables, pulses, and nuts, should be promoted. These food items are recommended to enable urban consumers, including women and children, to diversify their diets in line with nutritional and planetary limits, and the promotion of local biodiversity (Eat Lancet Commission, 2019). Different ways to increase public awareness about healthy food and promote traditional food cultures are developed by Hawkes et al. (2020).

V.4. National provisioning of infrastructures and services for MSMEs.

V.4.1. Improving rural-urban transport

Roads between cities and the rural areas, which play a major role in supplying food to cities, need to be expanded and maintained, along with alternative transport routes by rail or water (Poppoola et al., 2021).

V.4.2. Disseminating small-scale food processing technologies

Technological innovations exist to improve the safety and nutritional qualities of food, but are not available to MSMEs at a sufficient scale (Ferré et al., 2018; Pallet and Sainte-Beuve, 2016). Examples of small-scale food storage and processing technologies reducing food losses, based on a thorough assessment of losses along food chains, are given by Tefft et al. (2019).

V.4.3. Service provisioning for MSMEs

Innovation in the artisanal sector needs to be supported by providing credit to increase the working capital, to enable investment in semi-industrial processing. Training on how to improve the quality of food needs also to be made available to MSMEs. This falls under the mandate of the public sector. As public resources are scarce, partnering with the retail sector may be an appropriate solution, if it enables sufficiently wide coverage of both farmers' and consumer's economic profiles. The public sector also needs to invest human resources in food quality control, with random checks of food safety and labelling frauds, and graduated sanctions for non-compliance, at various points of the chain including wholesale and retail markets (Hawkes et al., 2020; Dao T.A, 2020).

V.5. Fostering multi-stakeholder coordination and governance

Secured forms of coordination between food suppliers and vendors range from agreements on quality or quantity requirements to contractual joint commitments. Innovative producer organisations which include processing and distribution,

e.g., “Entreprises de Services et Organisations de Producteurs” (ESOPs), should be encouraged as this increases the scale of operation and investments in quality while creating added value for farmers (Maertens and Valde, 2017). The concept of ‘intermediate food systems’ (*systèmes alimentaires du milieu*) developed by Chazoule et al. (2018) and tested in some African situations (Sirdey, 2020) can be used to model the hybridisation of traditional and modern systems that combine cooperation mechanisms with economies of scale.

Cities become important actors in the development of sustainable food systems, particularly through their governance of urban agriculture, school canteens, and waste (Bricas, 2019; Fages and Bricas, 2017). Through the Milan food policy pact (<https://www.milanurbanfoodpolicypact.org/>), city officials are invited to commit to thirty-one actions aimed at sustainable food provisioning and consumption. In many cities, permanent urban food policy councils have been set up with interesting outcomes, e.g., school catering programmes (Sonnino et al., 2019). Governing urban food systems in an inclusive way involves setting up multi-stakeholder city-region food platforms. These include public stakeholders working in different sectors (agriculture, trade, environment, health, social care) and at national and city scale, together with a panel of value chain actors and service support organisations. They meet regularly to exchange and discuss information, aiming at reaching a consensus on desirable outcomes and a set of policy recommendations (Blay-Palmer et al. 2018; see also <https://ruaf.org/> for many examples of urban food policy platforms, sometimes starting on urban agriculture pro-

grammes, like in Qito). Food system assessment and dialogues are good starting points for those (Huynh, T.T.T. et al., 2021; David-Benz et al., forthcoming).

In all these platforms, access and use of market information is strategic. Systems favouring the interactions between farmers, traders and public agencies, conducive to new marketing decisions for farmers, new supplying options for traders, as well as priorities for extension workers and input suppliers, e.g., for the support of off-season production to substitute for imports, are termed as alliances, by World Bank (2016) quoted by Tefft et al. (2017), or market information and consultation system (MICS) by Moustier et al., 2014. Modelling tools and serious games can be combined in such information and consultation systems to present options for local production that better address consumer needs (Verger et al., 2020; Mangnus et al., 2019).

VI. CONCLUSION

In the context of continuous urban development and widening income disparities, urban food systems in countries of the Global South are becoming more market-oriented and innovative, with new investments in logistics and quality. Small-scale, labour-intensive food supply chains, with relational governance and decentralised food distribution that provide food at a low price close to consumers' homes have proven resilient and are poor-friendly and adapted to the time and work demands of women, in particular compared to agro-industrial schemes. Relative to the vast recent literature on food systems, the paper brings to the fore some peculiarities of the

urban context and food systems of low-income countries. These include the importance of food caterers, mobile and open-market vendors, as well as urban agriculture, in the provisioning of the urban poor; the high pressure on urban agricultural land and water; the innovative nature and consumer-orientation of many food MSMEs; the growing concerns and involvement of urban authorities relative to urban food security. Opportunities exist to respond to consumer demand and needs in terms of nutritional balance and food safety, while generating employment for less educated urban populations, especially for women. To exploit those, we recommended a set of actions representing public support to endogenous patterns, adapted to the six types of urban food systems which were brought to the fore, as a plurality of food systems is needed to target different objectives and local contexts (Seck, 2021).

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