

*Studying food supply and
distribution systems to cities
in developing countries and
countries in transition*

**Methodological and operational guide
(revised version)**

Maurizio Aragrande and Olivio Argenti

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ABBREVIATIONS

CLAs	City and local authorities;
DCTs	Developing countries and countries in transition;
DPSP	Development policies, strategies and programmes;
FAO	Food and Agriculture Organization of the United Nations;
FSD	Food supply and distribution;
FSDSs	Food supply and distribution systems;
ISC	Interinstitutional Steering Committee;
ISG	Interinstitutional study group;
NGOs	Non governmental organizations;
S&I	Structures and infrastructure;
TORs	Terms of reference;
WHO	World Health Organization.

SOURCES OF STATISTICS

Sources of statistics used in this guide (unless otherwise specified):

- United Nations. World urbanization prospects, The 1996 Revision, United Nations;
- UNCHS. Global Urban Indicators Database (WWW.URBANOBSERVATORY.ORG/INDICATORS/DATABASE).

COMPLEMENTARY READING

This guide is complemented by the following technical documents:

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The text of each of these publications can be freely downloaded from the Web site:

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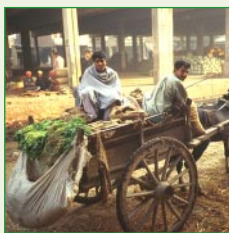


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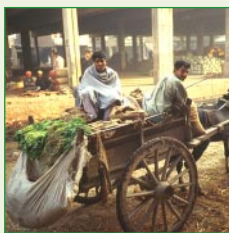
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Foreword

Urban population in many developing countries is increasing rapidly. Forecasts estimate between 60 and 85 percent of these countries' populations will live in cities by 2025. Capital cities are often growing the fastest. Urbanization brings changes in food consumption behaviour, purchasing habits and consumers' location. As urban expansion increases, the demand for food increases boosting food production. New transport and market infrastructure, facilities and services are needed, while existing ones become unable to cope with larger quantities of food. Food supply and distribution systems to cities are thus likely to face additional constraints as a result of urban expansion. The likely consequences? Already high food access costs may continue to rise, food availability will be even more unstable and food quality and hygiene conditions will further deteriorate.

Escalating urban poverty levels in developing countries and countries in transition have exacerbated the alarming status of food availability and accessibility. Poor urban consumers often reside in the most remote, deprived areas which tend to be neglected by city and local authorities. Their food security requires specific attention.

One key challenge is to improve the efficiency and dynamism of food supply and distribution systems. This should be achieved through effective, concerted and sustainable interventions.

This guide is aimed at administrators, technicians and researchers concerned with the urban food security. It proposes an interdisciplinary approach to the analysis of complex food supply and distribution systems for the identification of their present and expected constraints to select sustainable solutions. It reviews the preparation of a case study and ends with a framework for formulating urban food supply and distribution policies, strategies and programmes.

This guide is a revised edition of the French version published in 1998.

All the "Food into Cities" Collection papers mentioned in this guide are available - free of charge - from the FAO Web site <http://WWW.FAO.ORG/AG/SADA.HTM>

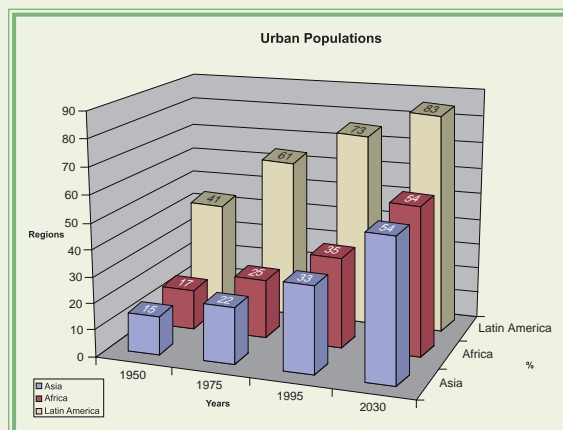


Introduction

According to UN projections, by 2030, 4.9 billion people (or sixty per cent of the world's population) are expected to live in urban areas. Most of the population increase will be absorbed by the urban areas of the less developed regions, thus adding hundreds of thousands of inhabitants annually to their already crowded cities (see Figure I.1, Table I.1 and I.2).

Concurrently, urban growth is being accompanied by growth in the absolute numbers of people living close to or below poverty levels with some cities already facing poverty rates of fifty per cent or more (see Table I.3). How can this growing urban population, and particularly the poor families, be adequately fed?

Figure I.1
Percentage Population Living in Urban Areas in Africa, Asia and Latin America (1950, 1975, 1995 and 2030)



Source: World Urbanization Prospects: the 1996 Revision, U.N.

Table I.1
Estimated Increase in Urban Population in Selected Countries and Cities (base year 2000)

Country	City	Increase (%)	
		2010	2020
Bangladesh	Dacca	57	145
Benin	Urban pop.	54	136
Botswana	Urban pop.	51	129
Burkina Faso	Urban pop.	59	153
Burundi	Urban pop.	77	212
Cambodia	Urban pop.	55	139
Cameroon	Yaounde	53	135
Chad	Urban pop.	53	135
Congo Dem. Rep.	Kinshasa	55	141
Côte d'Ivoire	Abidjan	53	134
Eritrea	Urban pop.	59	153
Ethiopia	Addis Ababa	64	168
Gambia	Urban pop.	49	121
Ghana	Accra	51	127
Guatemala	Guatemala City	46	112
Guinea	Conakry	60	155
Haiti	Port au Prince	45	110
Kenya	Nairobi	60	155
Laos	Urban pop.	55	140
Lesotho	Urban pop.	56	144
Liberia	Urban pop.	48	120
Madagascar	Urban pop.	59	152
Malawi	Urban pop.	67	180
Mali	Urban pop.	58	149
Mozambique	Maputo	55	142
Namibia	Urban pop.	45	110
Nepal	Urban pop.	61	158
Niger	Urban pop.	70	190
Nigeria	Lagos	54	138
Pakistan	Lahore	47	116
Rwanda	Urban pop.	70	187
Sierra Leone	Urban pop.	44	107
Somalia	Mogadishu	58	151
Sudan	Khartoum	56	143
Swaziland	Urban pop.	46	114
Tanzania	Dar es Salaam	55	140
Togo	Urban pop.	54	138
Uganda	Kampala	65	173
Zambia	Lusaka	49	122

Source: Habitat (1998) data, elaborated by the authors.

Urban expansion has four major consequences for urban food security:

1. demand for land for housing, industry and infrastructure competes with agricultural production within and around cities. Suitable productive lands are thus likely to be lost;
2. increasing quantities of food must be brought into cities and distributed within the expanding urban areas (see Table I.4). It means that an increasing number of food-loaded trucks will come into cities, thus contributing to traffic congestion and air pollution (see Table I.5). It also means additional stress on existing food distribution infrastructure and facilities, most of which are already inefficient, unhygienic and environmentally unfriendly;

3. consumption habits and food purchasing behaviour are modified (see Table 1.6). Consumers in urban areas, who generally pay up to thirty percent more for their food respect to their rural counterparts, have less time to spend preparing food; therefore the demand for more convenience and processed meals increases, raising further food quality and safety issues (in terms of the utilization of adequate inputs, particularly safe water in food processing). For example, food consumption in Hanoi based on staple food (rice, corn, and tubers), vegetable, beans has shifted to a diet with more meat, fish, eggs, milk, soft drink, canned and processed food. Home-prepared meals have been gradually replaced by restaurant and street food. The increasing demand for high quality cooked food in Hanoi has favoured the growth of “supermarkets” which are still insufficient;

Table I.2
Increase in Urban Population between 2000 and 2020 in Selected Cities

From 1 000 000 to 2 000 000 additional inhabitants
Amman, Belem, Benghazi, Brazzaville, Buenos Aires, Caracas, Guatemala City, Hanoi, Harare, Ibadan, La Paz, Managua, Maracaibo, Mogadishu, Port au Prince, Rabat, Seoul, Santiago, Shubra El-Khema, Tunis, Yaounde.

From 2 000 000 to 5 000 000 additional inhabitants
Abidjan, Accra, Addis Ababa, Alexandria, Algeri, Bandung, Bangkok, Baghdad, Bogota, Casablanca, Conakry, Dakar, Dar es Salaam, Douala, Esfahan, Ho Chi Minh, Kampala, Khartoum, Lima, Luanda, Lusaka, Maputo, Mexico City, Nairobi, Sao Paulo, Teheran, Tripoli, Yangon.

From 5 000 000 to 10 000 000 additional inhabitants
Beijing, Cairo, Delhi, Kinshasa, Jakarta, Lahore, Metro Manila, Shanghai.

More than 10 000 000 additional inhabitants
Bombai, Dacca, Karachi, Lagos.

Source: Habitat (1998) data, elaborated by the authors.

Cities need more and more food which has to be produced and/or imported, transported and distributed throughout the urban areas.



Food security depends upon available income, consumers' food habits and the costs faced by urban consumers in accessing food in hygienic conditions.

Table I.3
Some Cities with Poverty Rates Greater than 50% in the Year 2000

City	Poverty (%)
Chittagong	78
Cochabamba	68
Davao	77
Dhaka	54
El Alto	87
Freetown	80
Guatemala City	80
Hanoi	51
Kampala	77
Khartoum	70
Kigali	50
Kinshasa	70
Ibadan	62
La Paz	62
Lagos	66
Lilongwe	66
Onitsha	87
S. Cruz de la Sierra	67

Source: Habitat (1998) data, elaborated by the authors.

Table I.4
Estimated Growth of Food Consumption in Selected Cities (thousands of tonnes)

City	2000	2010
Abidjan	1 761	2 718
Belem	769	986
Brazzaville	580	842
Conakry	774	1 249
Ciudad de Guatemala	297	462
Esfahan	1 417	2 247
Hanoi	507	742
Karachi	2 944	4 536
Kinshasa	2 405	3 886
Lima	3 015	3 760
Managua	309	453
Maracaibo	672	874
Nairobi	686	1 140
Port-au-Prince	441	685
Santiago de los Caballeros	366	463
Yaoundé	670	1 040

Source: FAO (2000) data on national food consumption averages, elaborated by the authors.

4. low-income urban households are likely to reside farther and farther away from food markets, often in slums which do not get provided with water, roads, electricity, markets, etc. They are less likely to have refrigerators. This means that low-income urban households face additional costs, in time and transport, to access food daily.

As a result, the overall cost of supplying, distributing and accessing food, often already higher than need be because of numerous constraints, is likely to increase further. With it, the number of food insecure urban households. The challenge of feeding cities consists therefore in facilitating access to food by consumers and creating conditions to ensure the investments needed to increase food production, food processing and distribution capacity, facilities and services under hygienic, healthy and environmentally sound conditions. If this challenge is met adequately, the development of periurban and rural areas will also be promoted.

Meeting a city's food requirements is a formidable task. Food supply and distribution systems (FSDSs) are complex combinations of activities (production, handling, storage, transport, process, package, wholesale, retail, etc.), performed by dynamic agents, enabling cities to meet their food requirements. Small and large, formal and informal, traditional and modern activities exist side by side in a given FSDS.

The factors likely to improve the efficiency of FSDSs and promote change in commercial operating patterns are food habit changes due to the growth of urban socio-economic groups (middle classes) plus the urbanization of lifestyles. The development of wholesale and retail markets, storage and transport facilities, in line with the demographic, economic and spatial development of the urban areas is another factor. The introduction of more modern marketing techniques including packaging, information technology and management skills is also important but requires significant changes in the traditional practices of all FSD agents. Public interventions such as the removal of subsidies, opening of external markets and deregulation can occasionally give rise to monopolistic and

Table I.5
Estimated Increase in 2010 in Traffic to Selected Cities because of Food Transport

Cities	10-tonne truck loads
Abidjan	124 600
Bandung	58 200
Belem	29 800
Bombay	313 400
Dakar	36 800
Guatemala City	22 900
Ho Chi Min	83 500
Lima	100 100
Lagos	500 000
Maracaibo	27 600
Managua	19 900
Port-au-Prince	32 300
Santiago de los Caballeros	13 100
Teheran	147 900
Yangon	86 900
Yaoundé	48 500

Source: FAO (2000) data on national food consumption averages, elaborated by the authors. Base year: 2000.

monopsonic situations. Or they can bring into play a multiplicity of informal food traders. The complexity, heterogeneity and dynamism of FSDSs mean that situations and problems can rapidly emerge or change. There is, therefore, a need for an adequate knowledge of local FSDSs and an in-depth evaluation of present and expected conditions and problems. Otherwise, proposed interventions, whether they are launched by central or local authorities, may turn out to be insufficient or inadequate by the time they are implemented, or simply unsustainable.

How can a well identified problem be linked with numerous possible solutions? What will be the “best” solution? How can selected solutions be framed in the context of development programmes spanning urban, periurban and rural areas? This guide is designed for use by researchers and professionals in the developing countries and



countries in transition for the analysis of FSDSs and the formulation of development policies, strategies and programmes. It proposes an interdisciplinary approach based on the pipeline (the French “filière”) and system concepts. A system approach is required because the food security of urban populations is the outcome of a long series of interrelated decisions, events, factors, etc., which affect the various subsystems of production, processing, marketing, distribution and consumption. Interventions in any subsystem are likely to have multiple repercussions.

The tools presented in this guide seek to help identify those external and internal factors that influence FSDSs. This analysis makes it easier to understand the strengths and weaknesses of the various FSDS components in relation to their specific functions. The analysis of



constraints affecting FSDSs requires an interdisciplinary approach. This is the objective of the “case study” that cities need to undertake drawing upon agricultural economics, development economics, geography, urban planning, agriculture, marketing, law, etc., discussed in Annex 1. Any precise point of view must meet general criteria to formulate a coordinated and coherent framework of knowledge. The problem/ approach grid, proposed in this guide, is the tool which connects the various elements of the analysis with the required disciplines.



FSDS case studies cover the following aspects: the urban, socio-economic and institutional context; present-day urban food demand and FSDSs; and the city and its FSDS in the future. Case studies are undertaken in two phases. The aim of phase 1 (pre-case study) is to describe FSDSs to a city in their entirety and to pinpoint the major present and expected problems. This phase includes bibliographic research, collecting and analysing available information, preliminary interviews and observations. Phase 1 may commence by categorizing past and expected urban physical expansion as well as the main food supply areas, food transport flows and urban markets using maps. The process gradually expands to cover institutional responsibilities as well as past, present and planned interventions. Although it may not be possible to cover all the topics, the description and analysis should suffice to show the complexity and interrelationships between the various FSDS elements. Major constraints are identified as well as problems requiring immediate solutions. Problems and constraints will not simply be listed, but will be presented as sets interconnected at critical points. Key areas for further investigation will be identified.

During phase 2 (the case study proper), issues identified in phase 1 for further analysis will be investigated and the required sustainable interventions identified. There will be an analysis of FSDS efficiency and dynamism from a spatial, structural and temporal perspective. Possible interventions will be analysed to select suitable ones. FSD policies, strategies and programmes will then be formulated with clearly defined institutional responsibilities.

Chapter 1 covers the key elements of FSDSs. Chapter 2 covers the case study including the preparation of the terms of reference (TORs), the arrangement of the study into several phases and the internal and external reviews of the results. Chapter 3 deals with the formulation of urban FSD policies, strategies and programmes. Annex 1 discusses some methodological approaches followed in previous case studies. Annex 2 contains general TORs of a case study to be adapted to local conditions. Annex 3 helps identify the necessary human, logistic and financial resources and prepare an activity programme. Annexes 4, 5 and 6 provide details and examples of various technical issues discussed in Chapters 2, 3 and 4 respectively. A bibliography for further reading and related Web sites are listed in Annex 7.

Table I.6
City of Zanzibar:
Daily Consumption Projections (tonnes/day)

Year	Fruits and Vegetables	Meat	Poultry	Fish
Pessimistic scenario: annual population growth 3.6%				
1995	92.21	1.25	0.53	12.07
2000	110.04	1.49	0.63	14.41
2005	131.33	1.77	0.75	17.20
Optimistic scenario: annual 3.6% population growth plus annual 2% increase in income				
1995	99.14	1.51	0.63	12.70
2000	140.50	2.64	1.07	17.16
2005	196.90	4.26	1.69	23.13

Source: UNCDF, Project N° URT/93/C06
(Renovation of Old Stone Town Market in Zanzibar, 1994).

