

THE PLACE OF URBAN AND PERI-URBAN AGRICULTURE (UPA) IN NATIONAL FOOD SECURITY PROGRAMMES



INTEGRATED FOOD SECURITY SUPPORT SERVICE (TCSF)
POLICY AND PROGRAMME DEVELOPMENT SUPPORT DIVISION
TECHNICAL COOPERATION DEPARTMENT





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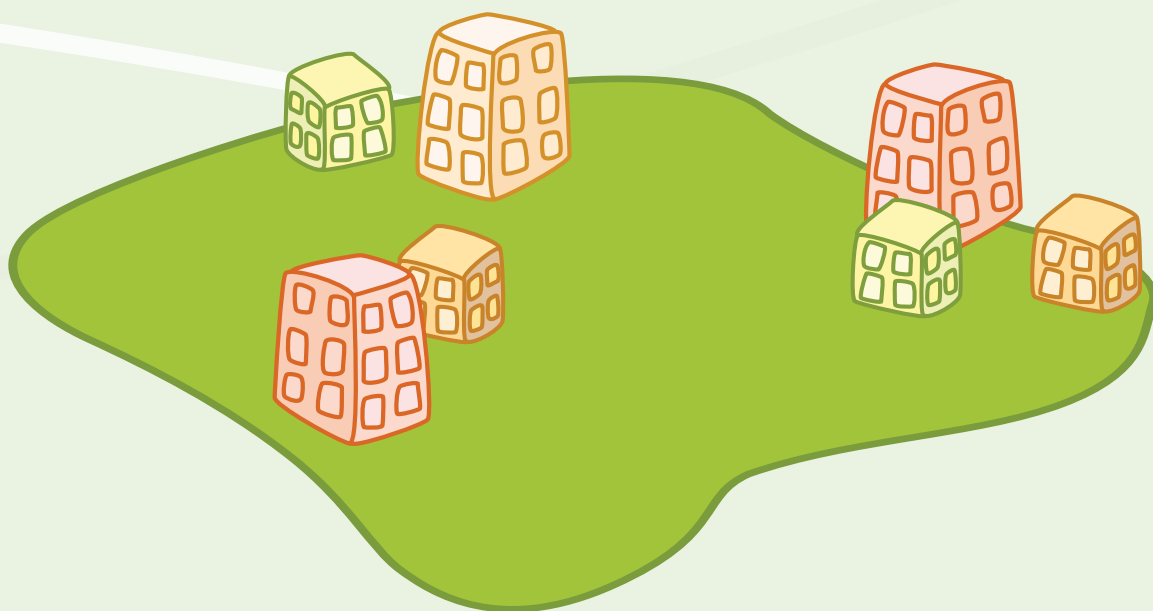
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ACRONYMS AND ABBREVIATIONS

AGA	Animal Production and Health Division (FAO)
AGPM	Management (FAO)
BMH	Municipal horticultural service (Democratic Republic of the Congo)
CIARA	Foundation for Training and Applied Research in Agrarian Reform
COAG	Committee on Agriculture
CONAGUA	National Water Commission (Mexico)
DIABP	Dubai International Award for Best Practices
EXECCOM	Executive Committee
FCIT	Food for the Cities
FFS	Farmer field school
FPMIS	Field Programme Management Information System
GAP	Good agricultural practice
GCP	FAO/Government Cooperative Programme
GDCP	Decentralized Cooperation Programme
GEF	Global Environment Facility
GIS	Geographic information system
GMP	Good manufacturing practice
HORDI	Horticultural Crop Research and Development Institute, Sri Lanka
IDP	Internally displaced person
IDRC	International Development Research Centre
INIA	Instituto Nacional de Investigación Agraria
IPES	Promotion of Sustainable Development (Peru)
ISFP	Initiative on Soaring Food Prices
ISRA	Senegalese Institute of Agricultural Research
LAC	Latin America and the Caribbean
LEAD	Livestock, Environment and Development Initiative
MARNDR	Ministry of Agriculture of Natural Resources and Rural Development
NGO	Non-governmental organization
NPFS	National Programme for Food Security
NRLW	Water Resources, Development and Management Service (FAO)
OSRO	Office for Special Relief Operations
PAHO	Pan American Health Organization
PESA	Special Programme for Food Security (Spanish)
SENAHUP	National Service for Urban and Peri-Urban Horticulture (Democratic Republic of the Congo)
SOUPHA	State of Urban and Peri-Urban Horticulture in Africa
SPFS	Special Programme for Food Security
SSA	Sub-Saharan Africa
TC	Technical Cooperation Department
TCP	Technical Cooperation Programme
TCSF	Integrated Food Security Support Service
UMP	Urban Management Programme

UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDG	United Nations Development Group
UNDP	United Nations Development Programme
UN-HABITAT	United Nations Human Settlement Programme
UNICEF	United Nations Children's Fund
UPA	Urban and peri-urban agriculture
UPA-CC	Urban and Peri-urban Agriculture Consultative Committee
UTF	Unilateral trust fund
WAF	We Are the Future
WFP	World Food Programme



PREFACE



Urban and peri-urban agriculture (UPA) is an important component of FAO's Special Programme for Food Security (SPFS). UPA is a spontaneous response to the increased demand for food linked to urban population expansion, which is more pronounced in developing countries as a result of high birth rates and immigration from rural areas.

The rate of population growth is linked to the fast expansion of urban slum areas, with high levels of unemployment, food insecurity and malnutrition. Such rapid urbanization engendering the harsh reality of urban poverty requires adapted strategies to ensure adequate access to food for all in a context of escalating levels of urban food insecurity together with its adverse health and social consequences.

Urban consumers generally rely on purchased foods, either originating from rural areas or imported into the country. However, when financial resources are lacking, many urban poor have no alternative than to turn to UPA activities as their only survival and livelihood option. Important productive sectors of UPA include horticulture, short cycle livestock and poultry, milk and dairy production, aquaculture and agroforestry.

Support in terms of access to land and quality water for irrigation is the essential prerequisite for integrating UPA in the city development plan. In addition, technical guidance and training are fundamental to ensure sustained productivity and adoption of best practices, including risk management linked to the unconsidered use of untreated

waste water for irrigation and agrochemicals for pest and disease control.

During the last 15 years, FAO has gained considerable experience in a wide range of countries in several continents in the application of UPA technologies under the SPFS. This paper was compiled to capitalize on the lessons learned and to illustrate how UPA has become a key component of the SPFS, targeting improved food security and diet diversification of the urban poor.

The paper recalls the current reality of the urbanization process and addresses the opportunities and constraints of UPA as a means to improving access to fresh and high quality food products for the urban poor thereby contributing to the achievement of Millennium Development Goal 1. A review is made of selected FAO field interventions and sample success stories. On the basis of the experience gained to date, a framework for the formulation of a UPA support strategy is proposed based on key issues to be addressed by central and local government authorities.

The report was prepared by Wilfried Baudoin, a retired FAO horticulture specialist, in close consultation with colleagues from TCSF, AGPM, NRLW and the FCIT working group.

Abdul Q. Kobakiwal
Chief

Integrated Food Security Support Service (TCSF)
Technical Cooperation Department

EXECUTIVE SUMMARY



The world's urban population is expected to double over 30 years, leading to an increasing number of urban poor. According to the United Nations Human Settlement Programme (UN-HABITAT), urban population expansion will be more pronounced in developing countries as a result of high birth rates and immigration from rural areas as people flock to cities in search of food, employment and security. The trend is accelerating, and by 2050, it is expected that about 66 percent of the world population will be living in cities. UN-HABITAT (2006) suggests that the rate of population growth will lead to an increase in urban slum areas, with high levels of unemployment, food insecurity and malnutrition. It is expected that by 2020, 85 percent of the poor in Latin America and 40–45 percent of the poor in Africa and Asia will be concentrated in towns and cities. This situation is of great concern to central and local government authorities.

The year 2008 marked a critical moment in world history: for the first time, more than half of the world's population lived in cities. It is expected that by 2050, urban dwellers will account for 66 percent of the global population. Urban population expansion is more pronounced in developing countries as a result of rural

In 1960, two-thirds of the world population was rural and one-third was urban...

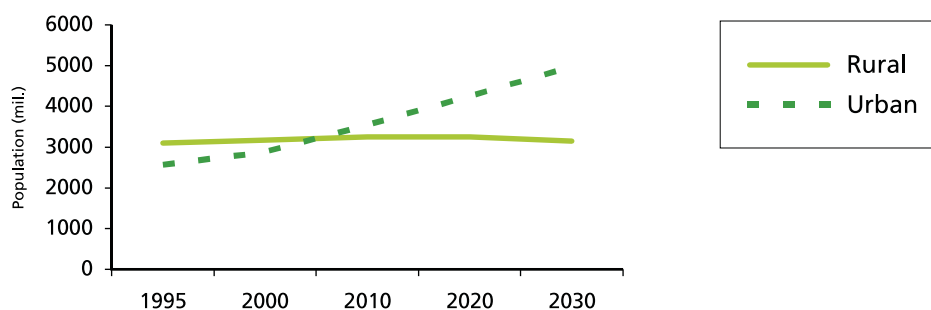
In 2008, one-half of the world population was rural and one-half was urban...

In 2050, it is estimated that one-third of the world population will be rural and two-thirds will be urban.

to urban migration and natural population growth, and the process is often accompanied by increasing poverty, food insecurity and malnutrition. Such rapid urbanization and the harsh reality of urban poverty require sound strategies to ensure adequate food supply and distribution systems to address escalating levels of urban food insecurity together with its adverse consequences.

In 2009, the world witnessed the negative impact of soaring food and energy prices on the economic and social status of many regions. As far back as 1999, the FAO Committee on Agriculture (COAG) brought the attention of the international community to the growing

FIGURE 1.
Trend of rural and urban population growth. (HABITAT 2006)



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World hunger reached a historic high in 2009, with 1 020 million people going hungry every day. The urban poor have had to face the most severe problems in coping with the global recession. The slowdown of the economy is likely to hit urban jobs harder, specifically among the unqualified labour force.

As cities expand, so do the food needs of urban families. While food and financial crises affect both rural and urban populations, the urban poor are hit hardest. Urban consumers are almost exclusively dependent on food purchases, while rural populations can count on some social solidarity and harvesting from the wild. Changes in lifestyle have further contributed to increased urban malnutrition and chronic diseases.

FAO data indicate that as a result of food crises, the number of people with chronic food insecurity has risen by over 100 million in the past 2 years alone, with the urban poor, women and children the most affected. In addition, as more refugees and internally displaced persons (IDPs) seek refuge in urban areas – as opposed to camps – demand for urban food is increasing and prices are subsequently higher.

The Fourth World Urban Forum cited the need for policies and interventions to ensure that the growing legions of urban poor do not get left behind. The food dimension of poverty in urban areas is yet to be translated into appropriate policy action in many countries. While rural-urban linkages are important, urban policies also need to encourage local food production within the city boundaries and its immediate surroundings. This includes removing barriers and providing incentives for UPA, as well as improved natural resource management in urban areas.

food requirements of urban areas and mandated the Food and Agriculture Organization of the United Nations (FAO) to consider urban and peri-urban agriculture (UPA) an integral part of agricultural production systems, with emphasis on its role in feeding the cities, creating employment and generating income for the urban poor. In response to the request of its member countries, FAO accepted the challenge and adopted a multidisciplinary approach to address the effective development and management of UPA systems, involving several departments and divisions in its programme and project activities. The last 10 years have seen a greater understanding of the different assets of UPA, the constraints and opportunities, and the ways it can effectively contribute to improving the availability of and access to fresh produce for the resource-poor segment of the urban population.

There is still no consensus on the precise definition of UPA. However, it does refer to food production systems within cities or their surroundings, and which

effectively contribute to food access and supply while creating job and income opportunities for the poorer segments of the population. It comprises an important environmental protection dimension with adequate watershed management to preserve productive capacity and the sustainable integration of UPA activities in urban development plans.

Important productive sectors of UPA include horticulture,¹ livestock, fodder, milk and dairy production, aquaculture and agroforestry. UPA is widespread, but tends to be informal; however, it has the potential to become a strong “ally” in urban food and nutrition security strategies, provided adequate production and crop protection technologies are applied that are highly water-, labour- and space-efficient, as well as environmentally friendly and cost-effective.

¹ Horticulture – usually the major component of UPA – comprises vegetables, fruit crops, root and tubers, ornamentals, mushrooms and condiments.

UPA has become a key component of food and nutrition strategies for the poorer segments of the urban population. A key challenge is to integrate UPA into policies and strategies as part of sustainable development within a broader framework of urban development planning, land- and water-use management, urban waste recycling and product safety assurance.

Urban food security requires a reliable year-round supply of food. Urban consumers tend to depend on purchased food which usually comes from rural areas or is imported. However, in response to high food prices and disrupted food supplies, many urban poor have no alternative than to turn to UPA activities for their livelihood and survival. UPA increases the availability of fresh, healthy and affordable food for a large number of urban consumers as the surplus produced by urban households is sold. Support – in the form of access to land and quality water, technical guidance and supervision, training and consumer education – is required, not only to enhance the benefits of UPA, but to reduce the potential health hazards caused by the use of untreated wastewater and agrochemicals, poor food handling, urban pollution,

animal breeding in close proximity to people or within and around urban dwellings and poor sanitation.

Food production, processing and marketing also contribute to the generation of income and employment for many poor urban households. Income from UPA production systems and the related business chain is often equivalent to, or higher than, the official minimum wage. UPA specifically provides an opportunity for the social and economic integration of women, urban newcomers and youth. It helps reduce their vulnerability by diversifying livelihood opportunities and acting as a safety net for the less privileged and less educated sections of the population that often have no other job opportunities. However, support in terms of enterprise development, access to financing and markets and strengthening of producer organizations is required to enhance opportunities in UPA and to secure sustainability. Building more resilient cities is a key to future urban development. City adaptation to climate change has become a growing concern, and poor populations are frequently exposed to floods and landslides. UPA helps to make cities more resilient, not only by diversifying urban food sources and income opportunities, but also by maintaining urban green spaces, enhancing vegetation cover and water infiltration, and contributing to the sustainable management of water and natural resources. Urban and peri-urban forestry, in particular, helps improve air quality, mitigate urban warming, curb erosion and maintain biodiversity. As water becomes increasingly scarce, UPA provides an ideal opportunity to optimize the productive use of urban waste water and rainwater – provided they are treated adequately to meet the standards for safe use as irrigation water. Appropriate risk management techniques and practices should be promoted to ensure the production of safe and healthy food products in the urban and peri-urban environment.

Sub-Saharan Africa (SSA) faces more development challenges than any other major region in the world. It accounts for a growing share of the world's absolute poor: in 1980, one out of every ten poor people lived in SSA, and by 2000, this ratio had risen to one in three. Future projections predict that soon it will be one in two, with increasing numbers of the poor living in urban areas.

In 2009, approximately 38 percent of SSA's population lived in urban areas; by 2030, it is predicted that almost half (48.3 percent) will be urban. Most of these people will be living in slums, without access to adequate food, water or sanitation.

Urban poverty in SSA has taken on a broader meaning of cumulative deprivation, characterized by squalid living conditions, risk to health and life from poor sanitation, air pollution, natural disasters, and the breakdown of traditional family and community safety networks.

**A green city is a healthy city.
A healthy city is a happy city.**

City and national authorities as well as international agencies have a key role in improving urban infrastructure, living conditions and health through integrated interventions by the public, civil society, non-governmental organizations (NGOs) and the

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private sector, with intermediation between central and local government. It is therefore recommended that government officials, municipal authorities and other public and private sector stakeholders take initiatives to:

- protect and improve UPA systems as a component of food and nutrition security strategies, especially for poor households;
- make available technical guidance and capacity-building tools to improve the effectiveness and sustainability of UPA production and post-production systems, giving special attention to improving livelihoods and increasing food availability, safety and accessibility;
- provide policy guidance at municipal and other levels to improve the efficiency of the urban food system as an integral component of the overall food supply and distribution system, taking into account the need to enhance rural-urban linkages;
- promote the protection and improvement of the urban and peri-urban environment, including the watershed and surrounding agroforestry.

At global level, FAO, through its Special Programme for Food Security (SPFS), is working with decision-makers in member countries to strengthen national capacity for policy and strategy development related to UPA and its integration in National Programmes for Food Security (NPFs). In several countries, NPFs have been adopted as the overall framework through which agriculture sector development projects and strategies are implemented.

Lessons learned from FAO field projects addressing UPA for sustainable development have led to the proposal of a standard framework which could serve as a guideline for national UPA strategies. The framework is based on five pillars:

1. Securing land and water resources
2. Securing product quality and safety and environment protection

3. Securing sustainable appropriation by actors and partners
4. Securing market outlet
5. Securing political and institutional anchorage and monitoring


FAO endeavours to share lessons learned and create visibility for UPA programme developments through a variety of activities, including:

- production of resource materials;
- organization of expert consultations and workshops;
- production of advertising material;
- advocacy during international meetings;
- record-keeping and sharing of information on the performance of horticulture crop cultivars; and
- maintenance of a central Web site on Food for the Cities: www.fao.org/fcit as well as a Web site on urban horticulture: <http://www.fao.org/ag/agg/greenercities/>.

FAO provides support to member countries, municipal authorities and other stakeholders from the public and private sector in numerous areas, including:

- awareness of the importance of UPA systems in food and nutrition security strategies;
- availability of technical guidance to improve the effectiveness and sustainability of UPA production and post-production systems;
- guidance to improve the efficiency of UPA as an integral component of the overall food supply and distribution system based on rural-urban linkages;
- promotion of the protection and improvement of the urban and peri-urban environment.

1. THE URBANIZATION OF POVERTY



[...] urban poverty tends to be fuelled by people migrating towards the cities in an attempt to escape the deprivations associated with rural livelihoods. Partly due to the rural decline, the world is urbanizing at a fast pace and it will not be long before a greater part of developing country populations is living in large cities. Therefore, urban food security and its related problems should also be placed high on the agenda in the years to come.

Jacques Diouf,
FAO Director-General
(FAO: The State of Food Insecurity 2006)


The world urban population is expected to double in the next 30 years, leading to a growing number of urban poor. According to the United Nations Human Settlement Programme (UN-HABITAT), urban population expansion will be more pronounced in developing countries as a result of high birth rates and immigration from rural areas as people flock to cities in search of food, employment and security. Population growth will lead to an increase in urban slum areas, with high levels of unemployment, food insecurity and malnutrition. It is expected that by 2020, 85 percent of the poor in Latin America and about 40–45 percent of the poor in Africa and Asia will be concentrated in towns and cities. This situation is of great concern to central and local government authorities, not only in terms of food requirements, but also because of the social and security implications.

In 1999, the FAO Committee on Agriculture (COAG) drew the attention of the international community to the growing food requirement of urban areas. Since then, FAO has multiplied

its interventions in support of urban and peri-urban agriculture (UPA) as an integral part of agricultural production systems and has acknowledged its role in feeding the cities, creating employment and generating income for the urban poor.

The past 10 years have a greater understanding of the different assets of UPA, the constraints and opportunities, and the ways in which it can effectively contribute to improving the availability of and access to fresh produce for the resource-poor segment of the urban population.

In 1960, two-thirds of the world population was rural and one-third was urban. In 2008, one-half of the world population was rural and one-half was urban. In 2050, it is estimated that one-third of the world population will be rural and two-thirds will be urban. FAO data indicate that, as a result of the food crisis, world hunger is projected to reach a historic high in 2009, with 1 020 million people going hungry every day. The global recession of 2008/09 and soaring prices have severely affected the urban poor.



By 2020, the developing countries from Africa, Asia and Latin America will be home to 75 percent of all urban dwellers. [...] renewed emphasis will have to be given to urban and peri-urban agriculture practices within and around the cities, which compete for land, water, energy and labour, with the objective of contributing to the requirements of the urban population through horticulture, livestock, fodder and milk production, aquaculture and forestry.

Jacques Diouf,
FAO Director-General
World Food Day
16 October 2009

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A key challenge for central and local governments is the integration of UPA into policy and strategies and its formal adoption in national programmes within a broader framework of urban development planning, land and water-use management, urban waste recycling and product safety assurance.

Urban consumers generally rely on purchased foods, mainly coming from rural areas or imported into the country. However, due to lack of financial resources, many of the urban poor have no alternative than to turn to UPA activities for their survival and livelihood. Access to land and quality water is the essential prerequisite for integrating UPA into the city development plan. Technical guidance and supervision, training and consumer education are equally essential for ensuring productivity and best practices, including risk management linked to the unconsidered use of untreated waste water for irrigation and agrochemicals for pest and disease control.

Poverty and unemployment are often associated with social exclusion. This means that many poor people have neither physical nor economic access to sufficient quantities of safe food, or to the facilities required to store and prepare them. The challenge of feeding cities lies in:

- facilitating access to food by urban consumers; and
- creating favourable conditions to ensure the investments needed to increase food production, processing and distribution capacities and to increase the number of hygienic, healthy and environmentally sound facilities and services.

Neither the Millennium Development Goals nor the World Food Summit's goals will be achieved if appropriate attention is not given to cities and rural-urban linkages.

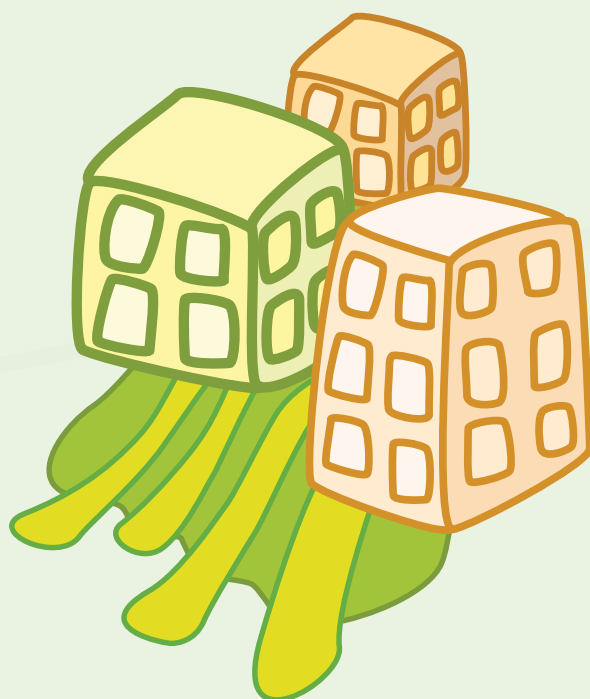
Worldwide, the urban population is growing at twice the rate of the total population, creating unprecedented demands for food, goods and services, as well as increasing pressure on the environment.

While some 800 million persons are believed to be involved in different forms of UPA (Smit, Ratta and Nasr, 1996), it is only recently that UPA has received

formal recognition. For many years, it evolved as an informal activity, competing for land, water and labour in the urban environment. In 1999, FAO – upon recommendations from COAG (CL 116/8, CL 116/9 and CL 116/10) – was officially mandated by its membership to deal with UPA as an integral part of agriculture production systems contributing to feeding the cities, while creating employment and generating income for the urban poor.

The food dimension of poverty in urban areas has not yet been translated into adequate policy action in many countries.

FAO recommends that the opportunities for local food production within the city boundaries and its immediate surroundings within a broader approach of rural-urban linkages be given due attention as a component of the countrywide food security strategy.



2. DIFFERENT FACETS OF URBAN AND PERI-URBAN AGRICULTURE



2.1 HORTICULTURE-BASED ACTIVITIES

A survey carried out in 25 countries in Africa suggests that horticulture-based activities are predominant in the urban environment, while short-cycle livestock, dairy production, aquaculture and forestry are practised as diversification options depending on environmental opportunities. Horticulture works well in urban and peri-urban zones, because it is highly labour-intensive, involving perishable products and short-cycle, productive and high-value crops which require less land and water per unit of produce than other food crops.

The growth of urban populations and changing consumer perceptions about food safety and quality, together with increases in urban income and purchasing power, have led to a shift away from the consumption of staple carbohydrates and highly processed foods towards a demand for higher-value, fresh and minimally preserved foods, especially fruit and vegetables, which are perceived as nutritionally superior. This provides opportunities for improving supply chains for fresh produce, ensuring higher quality and safety for consumers, as well as better returns for producers.

In the past, fresh foods consumed by urban consumers came from rural areas; as cities expand, so does the length of the rural-urban supply chain. Owing to their high perishability, fresh foods must be handled with the utmost care if their quality is to be maintained from producer to consumer. This poses a challenge to supply chains, where the quality of produce reaching urban markets is generally inconsistent as a result of inappropriate storage conditions (e.g. lack of temperature control, poor handling and transportation practices). The quality of fresh produce depends on improved infrastructure, refrigeration facilities, new conservation technologies, appropriate transport, and packaging for storage and distribution. UPA can help meet these requirements by locating production closer to consumption areas and by promoting technologies that can be managed by individual families.

Since microgarden technologies were displayed at the World Food Summit at FAO headquarters (10–13 June 2002), they have received increased attention in the context of urban agriculture. UN-HABITAT projections indicate that world population growth over the next 30 years will be mainly in urban slum areas. Thanks to their flexibility and ability to adapt to the urban environment,

FIGURE 2.
Cheap and simple microgarden technologies enable city dwellers without any land to grow healthy vegetables.



Photo: W. Baudoin

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and despite the limited space and the difficult access to soil and water, microgardens can relieve malnutrition, alleviate poverty and facilitate the access of poor urban dwellers to nutritious vegetables – indeed, they are increasingly a core element of emergency interventions to restore the productive capacity of displaced people. Microgardens are being integrated into food aid and school feeding programmes in order to complement children's diets with fresh and nutritious vegetables; they also open up the way for home-garden schemes and family nutrition education programmes..

People with no land and no income are dependent on food distribution for their survival. However, microgarden systems can change their lives. Starting with an area of just 1 m² and 1–3 litres of water per day, a family can grow a broad range of vegetables, including: leafy vegetables (e.g. cabbage, ceylon spinach and watercress); root and tuber vegetables (e.g. carrot, potato and onion); and fruit vegetables (e.g. tomato and hot and sweet pepper). The standard unit is a 1-m² table assembled with wooden laths obtained from pallets or other discarded material. However, alternative containers, such as halved truck tyres, food aid bags and plastic buckets, can be usefully recycled for vegetable growing.

Microgardens are very popular with women, because soil preparation and weed control are not necessary, and so they require less physical effort than conventional cultivation. Furthermore, the system is highly water-use efficient: it reduces the burden of carrying irrigation water and helps to save water, which is expensive and scarce in the cities, and even rarer and more expensive in slum

areas and refugee camps. For these reasons, there is a demand for microgardens from special interest groups and disadvantaged communities, including orphans, HIV/AIDS-affected persons, the disabled, the elderly in nursing homes, and patients recovering in hospital. They are currently being successfully introduced in schools as educational gardens to create awareness of the health benefits of fruit and vegetables.

Microgardens are gradually expanding in large cities worldwide, and technologies, materials, species and cultivars are adapted to consumer preferences and a wide variety of local conditions, for example: El Alto, Bolivia, 4 000 m above sea level in the Andes; Libreville and Port-Gentil, Gabon, at sea level in hot and humid equatorial conditions; Cairo and Alexandria, Egypt, on rooftops in a Mediterranean climate; Dakar, Senegal, in sub-Saharan Africa; and Caracas, Venezuela, in the humid tropics of South America.

Microgardens enable the urban poor to harvest on a daily basis fresh, safe and highly nutritious vegetables to improve their livelihoods. It is encouraging to see how quickly poor families pick up the technology.

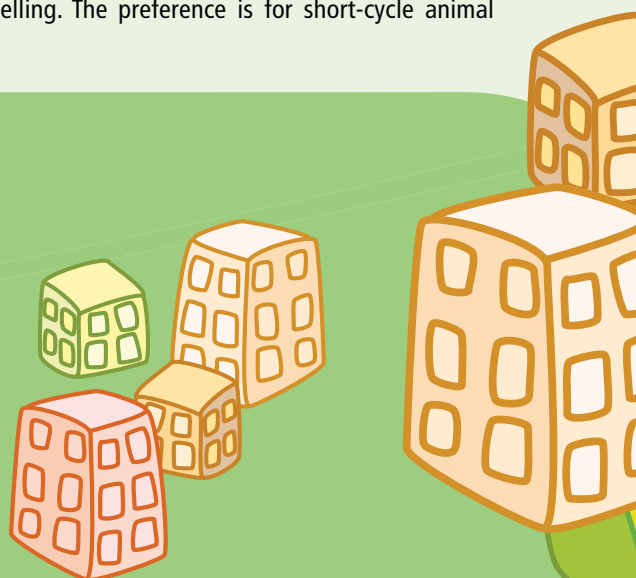
2.2 URBAN LIVESTOCK

Keeping livestock in urban or peri-urban environments is not a new practice; historically, humans have always been closely associated with livestock, often sharing the same dwelling. The preference is for short-cycle animal

FIGURE 3.
Urban and peri-urban horticulture contributes to food availability - particularly fresh produce - in cities, and provides opportunities for employment and income.



Photo: ????????????



species, such as poultry, rabbits, guinea pigs, pigs, sheep and goats, but cattle and even buffalo are also used for meat or dairy production. A “market” quite literally on the doorstep guarantees the consumer a fresh product. Furthermore, the producer usually has relative ease of access to goods and services, such as veterinary care, drugs and feed.

With increasing urbanization and economic growth, the demand for animal food increases and large-scale production operations emerge. As animal products are perishable, but chilling and processing technologies tend to be inadequate in developing countries, production is initially located in and around towns and cities close to consumer demand. On the other hand, in countries with a well-developed infrastructure, livestock raising ceases to be closely associated with urban or peri-urban areas and is driven by access to feed as well as by reduced land and labour costs.

In many developing countries, the phenomenon of keeping animals in urban and peri-urban areas is increasing. When urban poverty is exacerbated by people flocking into cities, every opportunity to produce food or generate income from what is essentially a free resource is fully exploited.

FAO assists in developing strategies to address issues of urban and peri-urban livestock keeping. Capacity building is achieved through advice on good husbandry practices, animal health, small-scale processing, food safety, veterinary public health and policy support. On the practical side, the Special Programme for Food Security

(SPFS) operates in many developing countries to improve food security at both national and household level and is involved in peri-urban as well as rural areas. FAO’s Animal Production and Health Division (AGA) also hosts a specific programme – the Livestock, Environment and Development Initiative (LEAD) – focusing on pollution issues associated with intensive, peri-urban livestock production.

Some of the largest concentrations of intensive livestock production in peri-urban areas are to be found in East Asia. Pollution from inappropriate manure disposal is a major environmental concern. LEAD, with funding from the Global Environment Facility (GEF), implemented from 2006 a project for China, Thailand and Viet Nam, entitled “GCP/RAS/216/WBG-Livestock waste management in East Asia”. The project addressed major environmental threats by developing policies matching the location of livestock production operations with the appropriate land resources, and encouraging the beneficial use of manure and other nutrients. At national level, this project stressed the need to plan in advance for the location of future livestock development so as to create the conditions for improved recycling of nutrients.

Livestock keeping is a major SPFS activity. In Chad, for example, the high demand for poultry and eggs in urban centres represented an important marketing challenge that domestic production failed to meet. Local farmers lacked the resources to obtain a regular supply of improved birds and quality feed, and it was difficult to obtain reliable access to veterinary services, drugs and vaccines. Using modern constraints analysis

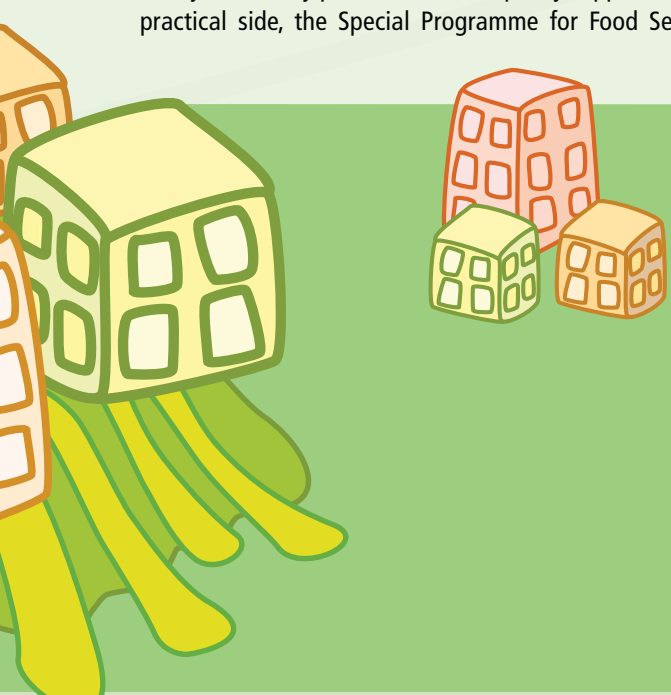


FIGURE 4.
Short-cycle livestock and poultry are kept on rooftops providing eggs, milk and meat.



Photo: W. Baudoin

THE PLACE OF URBAN AND PERI-URBAN AGRICULTURE (UPA) IN NATIONAL FOOD SECURITY PROGRAMMES

and a consultative process, and providing training in improved technologies, SPFS promoted affordable and practical interventions for successful peri-urban poultry keeping, providing real benefits for both producers and consumers.

livelihoods of the poor and to the well-being of society as a whole. However, land insecurity, poverty and institutional weaknesses remain major constraints to the harmonious and long-term conservation and restoration of tree systems.

2.3 AGROFORESTRY

Urban demographics across the world places at risk both the environmental sustainability of cities and the well-being of their inhabitants. The intensification and extension of cities, without taking into account land-use capacity and local requirements for woody building material and fuelwood, has contributed to a drastic depletion of tree and forest cover in and around cities. This is a common situation in developing countries and countries with economies in transition. Cities consequently suffer from floods, dust encroachment, water shortages, soil erosion and landslides – all of which correspond to significant costs in terms of lost infrastructure and human death. Other natural disasters, conflicts and wars exacerbate the situation.

The major challenge is to give trees and forests their rightful place in urban development. A sustainable green city is a mosaic of hedgerows, windbreaks, home gardens, orchards, recreation parks and tree-lined streets distributed over private, communal and public land. Trees and forests are appreciated by various categories of urban dwellers – for their part in productive agroforestry systems and recreational green spaces and for their beautifying role – and they contribute directly to the

2.4 AQUACULTURE

Depending on the environment and the availability of inland valley swamps, aquaculture can be a valuable diversification option as a source of food and income, since fish can be sold fresh or dried, and is a very good source of high quality proteins and lipids.

In peri-urban environments in developing countries, a fish pond may yield between 200 and 400 g of Nile Tilapia per square metre every 4 to 6 months, i.e. 0.4–1.2 kg/m² per year, depending on the level of inputs and management practices.

FIGURE 5.

Tree and forest products, such as wood, firewood, fodder, medicine and food, generate income, employment and improve livelihoods.



FIGURE 6.

*Nile tilapia (*Oreochromis niloticus*) in fish ponds*



3. CONSTRAINTS, RISKS AND OPPORTUNITIES OF URBAN AND PERI-URBAN AGRICULTURE



UPA generally refers to food production systems in cities or the surrounding areas that effectively contribute to food access and supply while creating job and income opportunities for the poorer segments of the population. UPA requires important environmental protection measures and adequate watershed management in order to preserve productive capacity.

Constraints relate to land tenure issues, competition for water, overuse and misuse of pesticides, and careless use of treated and non-treated wastewater for irrigation.

The long-term sustainability of UPA depends on its integration in the urban resource management and environment conservation process. Risk factors relate to land tenure issues and competition for water, but also to the potential risk for consumers and the environment through overuse and misuse of pesticides and mineral fertilizers. However, these risk factors are largely offset by opportunities at the different stages of the value chain, from field to table, and synergies that need to be further explored, structured and supervised.

Intensified horticulture units can provide between 10 and 40 remunerative jobs per hectare for smallholder producers. Taking into consideration also other jobs related to the production supply chain, it is generally recognized that urban agriculture and related services generate jobs at a rate of 1 for every 50–100 citizens, depending on the level of consumption per capita and the productivity of the production systems. Horticulture production ranges from allotment schemes for organized growers' associations to individual homestead and kitchen gardens, to microgardens in densely populated areas where agricultural land is no longer available for crop production.

Depending on the local context, consumer preferences and sanitary regulations, different types of livestock are

commonly kept in the city: goats, sheep, guinea pigs, pigs, poultry and cattle (usually for dairy products). Other options relate to beekeeping, floriculture, mushroom production and aquaculture, possibly in combination with vegetable growing and dug raising. Urban forestry schemes also have their place in UPA as woodlots or "lung space". General recommendations suggest that at least 30 percent of the urban space should be kept "green" in order to contribute to the absorption of CO₂, the release of O₂ and the cooling of the air temperature, and to enhance the rainwater infiltration rate.

There are further opportunities for exploiting synergies with urban waste management. Organic waste can be usefully converted to high quality organic fertilizer through mechanical composting and vermiculture. Unlike mineral fertilizers, composted organic urban waste materials will contribute to solving the waste disposal problem and improving soil fertility. Similarly, treated waste water can be recycled to irrigate fruit orchards, woodlots and ornamental plants as well as fodder crops. Through these recycling processes, UPA contributes to keeping the city clean and reaps the benefits of a renewable source of water and organic fertilizer, thereby reducing reliance on external inputs.

3.1 SPACE AND LAND TENURE

The greatest constraint to the sustainable development of UPA is unsecured land occupation in a context of competition for land use, with pressures for urbanization, housing and industry. Cities grow, demand for food increases, but areas suitable for agriculture diminish. New urban populations seek access to cultivable land; land values rise as demand for non-agricultural use grows. The environment is extremely competitive and the voice of the players in urban and peri-urban food production is

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rarely heard; there are numerous competitors for access to land for agricultural use, and cultivations are seldom protected by secure tenure arrangements.

Land tenure issues are potentially a major constraint for UPA food production. The population of cities tends to rapidly increase during emergencies and conflicts, and food security problems escalate; the solution may to some extent be found in temporary and flexible land-use rights to enable agricultural use. The already challenging tenure structures typical of conflict situations are further complicated by the high level of demand for land, by lack of clarity on ownership and access rights, and by absentee landholders. Monitoring land use is extremely difficult and the situation almost inevitably leads to violations of rights, regardless of the intentions of the parties. In emergency situations, there is often a need to introduce temporary tenure arrangements to allow the use of vacant land for food production and livelihood maintenance, as well as for the temporary settlement of the displaced population.

In securing land for urban agriculture, it is necessary to deal with the complexity of land ownership overlapping with traditional land rights and private and public claims for the same plots. The situation is often exacerbated by a lack of urban planning and its poor enforcement, if any. UPA is influenced by rapidly changing land rights, uses and values. To urban and some peri-urban farmers, steady access to land at affordable prices is almost unknown. The constant threat of losing access to their plots and being forced to stop production activities looms over many urban farmers, both men and women. In many areas, the inability of non-farming households to access land in the city is the major reason given for not

farming. As urban areas expand, the increased demand for land and the change in land use puts pressure on land tenure arrangements, which are often customary or informal with no link to formal legal institutions.

3.2 Water for irrigation

During the last century, the growth rate of water use has been more than double that of the population. In rapidly expanding urban centres, water has become a fragile and scarce resource in a competitive environment. In marginal zones of “megacities”, often characterized by a high incidence of poverty, a large number of people practise agriculture on a very small scale to satisfy their basic food needs. UPA has expanded mainly as an informal activity carried out by individuals and farmers’ associations, competing for water allocation to support the livelihoods of urban and peri-urban communities. Localized sources of water – groundwater, streams, urban drains, piped water and wastewater – in urban centres in low- to medium-income nations are likely to be severely contaminated due to the concentration of habitations with rudimentary sanitation arrangements and unregulated municipal and industrial effluents. Management of water resources has become an urgent issue, as it is common for urban and peri-urban farmers to apply water from municipal sewage (mostly in its untreated form) for irrigation and to provide plants with nutrients, thereby increasing the risk of illness in both farmers and consumers. Furthermore, the destruction of shallow riverine and coastal aquifers through overpumping and pollution has greatly added to the water crisis in many cities.

FIGURE 7.

Disputes over land access and ownership are common.



Photo: W. Baudoin

FIGURE 8.

Under water scarcity conditions, urban growers are compelled to use wastewater outlets and polluted well water.



Photo: W. Baudoin



Photo: W. Baudoin

Water scarcity is a globally significant and fast-growing phenomenon for between 1 and 2 billion people worldwide. It is exacerbated in the urban and peri-urban environment, where the demand for water is increasing in line with the rapidly growing population and improvements in living standards. In conditions of water scarcity, water reuse can be a solution, optimizing water resources and ensuring a dependable, year-round supply in urban areas – once safety concerns are adequately addressed, as urban growers are compelled to use wastewater outlets and polluted well water. It is also possible to increase water availability by taking full advantage of rainwater harvesting and improving on-farm water management (e.g. by producing more with less water and using drip and micro-irrigation systems, as well as hydroponics and microgarden systems that are highly efficient for water use and productivity).

3.3 Technical capacities

As long as UPA remains an informal sector, the relative technical advisory and supervisory services will continue to be weak or even inexistent. At present, the producer-consumer chain is not organized and farmers are not members of professional organizations. Technical supervision must be strengthened, based on participatory training and extension as per the farmer field school (FFS) guidelines.

3.4 Urban food marketing

UPA is located close to consumers with purchasing power. Compared to the rural population, the urban population relies heavily on the purchase of food commodities. Production within and around the cities can help to offset excessive dependency on higher-priced external supplies as well as mitigating the transport- and storage-related problems and costs of obtaining supplies from rural areas. In developing countries, long distances, bad roads, poorly maintained trucks and lack of cold storage often result in substantial post-harvest losses of 30–50 percent or more. On the other hand, the producer-

consumer proximity of UPA allows for energy savings at various levels of the food chain – packaging, transport, storage and distribution – with a positive effect on the final retail price.

As cities grow in terms of population and area, the infrastructure must improve, along with rural-urban linkages and marketing arrangements, in order to bring increasing quantities of food to consumers. Before reaching urban consumers, food goes through a variety of marketing and organizational links in the food chain, all of which generate additional costs and raise prices. Relevant factors include: market failures; poorly developed urban food systems; absence of market transparency; lack of scale economies along the distribution system; elevated transportation costs; and serious physical losses at all levels of distribution. Food security concerns are especially important in cities in developing countries where the urban poverty rate often exceeds 50 percent. The cost at which poor urban households access adequate food is determined not only by private sector activities and investments, but also by the way the public sector – central and local government – intervenes in the food marketing system and addresses constraints limiting the efficiency of activities.

3.5 Food processing

Factors increasing the demand for shelf-stable, convenience (time-saving) and value-added foods include urban lifestyle, distance between home and workplace, working women and changes in family cohesion. This has stimulated the rapid development of the food processing industry in urban areas and created opportunities for income generation, employment and economic growth. Urban food industries benefit from easier access to consumer markets, lower transport and distribution costs, and proximity to diverse services, including information technology and waste treatment facilities.

However, there are also considerable challenges with regards to quality and safety standards, efficiency and sustainability. Furthermore, competition for resources (land, water, labour and energy) often results in:

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- insufficient quantity and poor quality of water;
- unreliable electricity supply (needed for the processing equipment);
- unsanitary premises (without the appropriate facilities for the disposal of process waste);
- difficulties in accessing processing inputs (including raw materials, packaging and equipment); and
- shortage of trained staff.

3.6 Street foods

Street foods – i.e. ready-to-eat foods and beverages prepared and/or sold by vendors or hawkers, especially in the street and similar locations – have an important socio-economic role in the urban environment and present an opportunity for the marketing of UPA products. They account for a significant proportion of daily urban food consumption for millions of low- and middle-income consumers in urban areas. For many low-income people, street foods can represent the least expensive and most accessible means of obtaining a nutritionally balanced meal outside the home, provided that the consumer is informed and able to choose an appropriate combination of foods.

In developing countries, the preparation and sale of street food provides a regular source of income for millions of men and women with limited education or skills, especially since the initial investment is small. It supports local agricultural producers and food processors, and contributes to local and national economic growth.

Despite the benefits of street food, serious concerns are raised, in particular with regard to food safety. The risk of food poisoning outbreaks linked to street foods remains a threat in many parts of the world, with microbiological contamination a major problem. The lack of knowledge among street food vendors about the causes of food-borne disease is a considerable risk factor. Poor hygiene, inadequate access to a drinking-water supply and garbage disposal, and unsanitary environmental conditions (such as proximity to sewers and garbage dumps) further exacerbate the public health risks associated with street foods.

3.7 Emergency and crisis situations in urban areas

The human population is growing at an exponential rate in some African urban centres due to the large number of refugees and IDPs fleeing violent conflict, poverty, drought and hunger. The rural population, drifting away from the land in search of safety and food security, increasingly challenges the capacity of a city's infrastructure and economy to feed the fast-growing population.

Significantly, although most of these newly settled people are very young, they continue to rely mostly on agriculture to earn a living when settled in urban and peri-urban areas. The challenges to support the growing population are numerous and include provision of: an adequate balanced diet; basic social services; and a source of income, land and energy. In many cases, these challenges are further exacerbated by discrimination, disease and lack of structural support.

FIGURE 9.

Peri-urban gardening provides income and social integration of internally displaced persons in Bujumbura, Burundi.



Photo: W. Baudoin



4. SPFS INTERVENTIONS: SOME SUCCESS STORIES



At a global level, the FAO SPFS works with decision-makers in member countries to strengthen national capacity for policy and strategy development related to UPA and its integration in NPFSSs.

In several countries, NPFSSs have been formulated and adopted as the overall framework through which agriculture sector development projects and strategies are implemented with national resources. This endeavour has been strengthened with interventions funded from external resources, for example: FAO's Technical Cooperation Programme (TCP), FAO/Government Cooperation Programmes (GCP), the Decentralized Cooperation Programme (GDGP), unilateral trust fund (UTF) agreements, emergency operations (Office for Special Relief Operations – OSRO) and investment projects funded by international development banks (Table 1). Such projects have made it possible to demonstrate adapted technologies and production systems successively adopted by the beneficiaries (Annex 2).

The SPFS launched and supported a series of UPA initiatives for integration into NPFSSs, for example:

- Urban and peri-urban horticulture production in several cities in the world, e.g.: Kinshasa and Lubumbashi (Democratic Republic of the Congo); Libreville (Gabon); Buenos Aires (Argentina); Cairo and Alexandria (Egypt); Medellin (Colombia); Caracas (Venezuela); La Paz (Bolivia); Windhoek, Rundu and Oshakati (Namibia); Teresina (Brazil); Kigali (Rwanda); Bujumbura (Burundi); Banjul (the Gambia); Bissau (Guinea-Bissau); Abidjan (Côte d'Ivoire); Conakry (Guinea); Port au Prince (Haiti); Nouakchott (Mauritania); and Dakar (Senegal).

- Short-cycle urban and peri-urban livestock production in the Democratic Republic of the Congo and Djibouti.
- Access and use of quality irrigation water for UPA in: Dakar (Senegal); Luanda (Angola); Guatemala; Managua (Nicaragua); Bissau (Guinea-Bissau); and Sanaa (Yemen).
- Urban and peri-urban forestry in: Brazzaville (the Congo); N'Djamena (Chad); Bangui (Central African Republic); and Nouakchott (Mauritania).

In addition, support has been provided at regional and global level for project identification and formulation, creating awareness about UPA and providing guidelines for organizations of smallholder UPA producers. To date, quantitative and qualitative data on UPA have tended to be scattered and inconsistent. FAO has therefore undertaken a survey to gain insight into UPA status and is organizing an international UPA symposium, which will take place in Dakar, Senegal from 4 to 9 December 2010, at which the major paper on the "State of Urban and Peri-Urban Horticulture in Africa (SOUPHA)" will be validated. Information available to date has been compiled in a table, available in Annex 1, "Mapping worldwide urban and peri-urban agriculture status", indicating the importance of UPA for all continents.



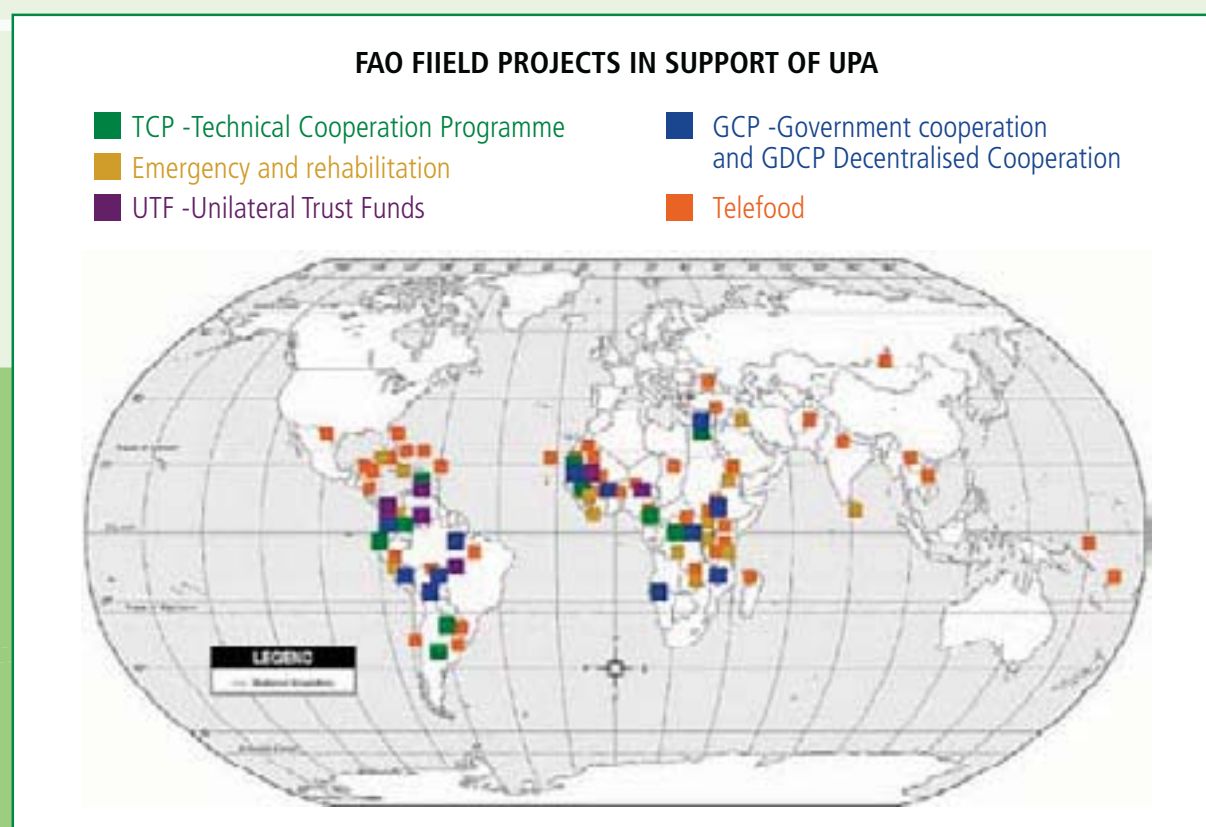
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TABLE 1. List of FAO field projects with qualifiers: urban and peri-urban agriculture and food security (March 2009)

FUNDING SOURCE	NO. OF PROJECTS	AMOUNT (USD)
SPFS	6	12 062 815
GCPs and GDCP	16	27 899 007
TCP	18	5 195 614
UTF agreements	20	182 327
OSRO	22	20 131 698
Other	5	13 639 863
Total	87	79 111 324

Source: FAO Field Programme Management Information System (FPMIS).

FIGURE 10. FAO field projects in support of UPA, as at 2009



4.1 DEMOCRATIC REPUBLIC OF THE CONGO

SUPPORT TO THE DEVELOPMENT OF URBAN AND PERI-URBAN HORTICULTURE (GCP/DRC/028/BEL)

A city like Kinshasa needs some 500 tonnes/day of fruit and vegetables to achieve a low consumption level of 50 g per capita. Not only does UPA provide essential food for a balanced family diet, it has developed into a real commercial activity, providing significant employment opportunities in a city where unemployment stands at an estimated 80 percent. A small plot of 100–250 m² yields a net monthly income of up to USD 200, i.e. more than the wage of a public employee. However, unlike rural horticulture, urban and peri-urban horticulture is at risk if adequate planning and conservation measures are not put in place. Land and water are key resources, but they are scarce and there is competition for other uses. Furthermore, uncontrolled application of pesticides and organic waste will result in soil and water table pollution.

With the assistance of the FAO project, "Support to the development of urban and peri-urban horticulture in the Democratic Republic of the Congo" (GCP/DRC/028/BEL):

- 900 ha have been legally protected and documented for UPA activities;
- infrastructure and equipment have been put in place to secure irrigation and drainage for 1 500 ha;
- 45 000 direct and 225 000 indirect jobs have been created;
- a microcredit scheme has empowered 15 500 farmers and entrepreneurs;
- 255 farmer organizations have benefited from training and technical advice.

Furthermore, the institutional context has been strengthened with the creation of SENAHUP (National Service for Urban and Peri-Urban Horticulture), with technical support provided by the municipal horticultural service (BMH). Collection and sales points have been constructed in 12 neighbourhoods. In addition, UPA has been introduced in 25 schools through educational school gardens, providing training for 9 500 students and 80 school teachers. The farmer field school has been adopted for training and extension to ensure the dissemination of good agriculture practices, product safety and environment preservation.

FIGURE 11, 12.

Allotment garden schemes in peri-urban areas in Lubumbashi (Democratic Republic of the Congo).



Photo: W. Baudoin



4.2 BOLIVIA

FAMILY MICROGARDENS IN EL ALTO-LA PAZ (GCP/BOL/035/BEL)

The project was the initiative of the municipality of El Alto and the Bolivian Government, with the assistance of FAO and the financial support of the Belgian Government. The objective of the 3-year pilot project was to improve the livelihood of the indigent families living in the municipality.

El Alto is located between 3 850 and 4 150 m asl in the flat Altiplano, and is characterized by low temperatures, drying winds, strong solar radiation and frequent frosts limiting open field agriculture to short-season crops. The current population is estimated at 1 000 000; 73 percent live in poverty and around 60 000 families have no adequate access to basic services, such as education and health. Some 40% of children under five are malnourished – 20% severely – and there is an infant mortality rate of around 5%.

Against this daunting background, the project began its activities in August 2003 with the aim of introducing microgarden technologies that could be managed individually by poor families. The objective was to increase food availability in terms of quantity and quality through local production. In Bolivia (Plurinational State of), microgardens are small-scale greenhouse production units implemented by individual families; they improve year-round access to fresh vegetables for family consumption or neighbourhood marketing.

Project interventions focused on the organization of small-scale production of fresh vegetables, fruits, herbs and condiments to improve food diversity and generate additional income through the marketing of production surplus. Families were trained to cultivate organic produce and to adopt innovative growing techniques, such as soilless culture, making the best use of limited areas.

Temperature variation during the winter ranges from -15°C at night to 15°C during the day. A small low-cost greenhouse – “carpa solar” – was adopted, and to maintain the greenhouse temperature at night, an innovative low-cost technology was developed: the re-use of waste plastic bottles, painted black and filled with sand or water. During the day, the plastic bottles accumulate the strong radiation of the sun and during the night they diffuse the heat accumulated. This technology has a reduced cost and can easily be reproduced by poor families.

FIGURE 13.
Growing fresh vegetables in solar greenhouses at 4 000 m in Bolivia.



Photo: W. Baudoin

FIGURE 14.
Re-use of waste plastic bottles for passive heating of solar greenhouses in Bolivia.



Photo: W. Baudoin

4.3 SRI LANKA

NOURISHING INSPIRATION IN THE SRI LANKA MODEL GARDEN

Urban home gardens can be located on the ground, on balconies or on concrete roofs; productivity depends on factors such as the number of family members, the time devoted to the garden and the regional climate. In Sri Lanka, as in other countries, the percentage of families using a home garden increases where there is higher rainfall – about 45% in wet zone cities, 30% in intermediate zone cities and 20% in dry zone cities.

The majority of urban home-gardening families in Sri Lanka grow crops to meet their domestic needs, but in semi-urban areas and villages, some products (typically fruit, such as mangoes, avocados and rambutan) are deliberately grown for market or sold when in excess. Productivity is affected not only by time and climate, but also by access to space, to water in times of drought and to fertilizers (whether purchased or home-made); gardeners' ability to benefit from lessons learned is also an important factor.

In order to help families in Sri Lanka establish and maintain high-output home gardens, a model home garden was created 9 years ago at the Horticulture Research and Development Institute (HoRDI) in Gannoruwa. According to HoRDI, the model garden was created to help people increase their knowledge of gardening techniques. The 900 m² model garden features many of the vegetables, fruits, spices, herbs and tubers which are grown in Sri Lanka. During 2006, over 63 000 people from all over the country viewed HoRDI's model home garden, including large numbers of school children.

FIGURE 15.
Growing leafy vegetables on towers helps overcome land and space scarcity.



Photo: HoRDI

FIGURE 16.
Adaptable and affordable nursery techniques.



Photo: HoRDI

FIGURE 17.
Potted and supported cultivation.



Photo: HoRDI

4.4 NAMIBIA

INTEGRATED INITIATIVE ON URBAN AND PERI-URBAN HORTICULTURE DEVELOPMENT IN NAMIBIA (GCP/NAM/008/BEL)

The Ministry of Agriculture, Water and Forestry with the assistance of FAO and donor support from Belgium established a microgarden demonstration at the Windhoek Multipurpose Youth Resources Centre. Crops included cabbage, lettuce, parsley, tomato, spinach, swiss chard, carrot and eggplant.

At the National Youth Expo in 2006, the project participants won first prize in the small medium enterprises category. However, the young farmers had already been reaping the benefits of their labour for months before they received the prize. The Expo was an opportunity for experiences to be shared among the Garden of Hope, the AIDS Care Trust, the after-school daycare centre and the Okuryangava Kindergarten. The Garden of Hope, for example, harvested a variety of vegetables grown in microgarden systems.

The microgarden system is easy to practise, can provide nutritious vegetables for home and commercial use, avoids pest problems, uses little water and does not require a lot of space. The floating gardens of the Aztecs and Incas which once amazed the Spanish colonialists are now, 500 years later, successfully contributing to food security in developing countries like Namibia.

In Namibia, one of the objectives of the programme is to improve food security in urban and peri-urban areas. In some urban areas, more than 60 percent of rural households derive income from selling surplus subsistence production, and crop cultivation is the most important source of income.

FIGURE 18.
Inauguration of microgarden training and demonstration centre at the Youth Resources Centre, Windhoek, Namibia.



Photo: Albert Fosso, FAO-UNV

FIGURE 19.
Microgardens awarded first prize for small and medium-size enterprises at the National Youth Expo, Windhoek, Namibia.



Photo: Albert Fosso, FAO-UNV

4.5 SENEGAL

CONSOLIDATION OF MICROGARDENS FOR THE IMPROVEMENT OF FOOD SECURITY IN DAKAR, SENEGAL (GDCP/SEN/002/ITA)

The project originated in 1999 from FAO-initiated activities within the SPFS and is an example of good practices in UPA. Its objective is to improve food security in Dakar through the introduction of microgarden systems supported by the training of beneficiaries in horticultural practices. With a budget of USD 450 000 over 2 years (2006–08), co-funded by the City of Milan (Italy), FAO and the Italian Foreign Ministry, the project has achieved remarkable results in sustaining urban production of vegetables and initiating marketing practices for poor families in the city and its surroundings. Over 4 000 households were involved in the first phase; almost 65 percent of them have established individual microgardens, while 35 percent are members of community production centres in different areas of Dakar.

In December 2008, the project was selected by UN-HABITAT among 500 other projects as the winner of the Dubai International Award for Best Practices (DIABP) to Improve the Living Environment. A prize of USD 30 000 was assigned to support activities in the second phase. Further expansion of the project is planned for this phase to focus on organizational sustainability of the microgarden programme under the operational leadership of the Mayor of Dakar, as well as marketing of microgarden products. Microgarden technologies will be extended to other African countries (the Gambia and Niger) with a view to presenting this experience at Expo 2015 in Milan.

FIGURE 20.

Community Production Centres allow several producers, usually women, to socialize while taking care of their individual microgardens.



Photo: W. Baudoin

FIGURE 21.

Community Production Centres allow several producers, usually women, to socialize while taking care of their individual microgardens.



Photo: W. Baudoin

4.6 BRAZIL

MICROGARDEN TECHNOLOGIES FOR IMPROVED FOOD SECURITY IN SELECTED DISTRICTS OF THE CITY OF TERESINA IN THE STATE OF PIAUI, BRAZIL (GDGP/BRA/002/ITA)

The project aimed to introduce hydroponic microgarden systems to ten mothers club groups, for the benefit of both the children's nutrition and the mothers' economic situation: the nutritional quality of the children's meals is improved by including fresh vegetables, and resource-poor mothers were given the opportunity to learn a new skill to increase their income-earning capacity.

With a limited budget of USD 150 000, co-funded by the Region of Veneto (Italy) and FAO, the project has trained 120 women, enabling them to feed 400 children as well as generating extra income by marketing horticultural produce. The project also strengthened capacity-building and information exchange by establishing direct cooperative arrangements between the University of Padova, Italy, and the University of Teresina, Brazil.

SUPPORT TO THE WATER CONTROL COMPONENT OF THE FOME ZERO PROGRAMME IN THE AREA OF DOIS IRMAOS, BRAZIL (GDGP/BRA/001/ITA)

The project aims to help vulnerable farmers make better use of rainwater in order to improve access to drinking water and increase homestead vegetable production. The project promotes water availability at household/farmer level as a powerful incentive for families to engage in agricultural activities by growing vegetables in their back garden or initiating related income-earning activities, such as poultry, small ruminants, food processing (jam and marmalade production) and apiculture.

FIGURE 22.

Microgardens have become a component of the school feeding programme in Brazil.



Photo: W. Baudoin

FIGURE 23.

Rainwater harvesting allows vegetables to be grown around the homestead and used fresh from field to kettle.



Photo: W. Baudoin

5. URBAN FOOD PROCESSING



5.1 REDUCTION OF POST-HARVEST LOSSES

- Over the years, FAO has provided technical support to improve **oil seed** processing in GHANA, KENYA, UGANDA and ZAMBIA, where large quantities of palm and other vegetable oils are consumed in urban areas.
- The Organization's regional office in Accra, GHANA, provided technical assistance to the Government of Ghana for the creation of a **tomato**-processing promotion centre. Through training in processing techniques, good manufacturing practices (GMPs), quality assurance and business management, the centre supports the processing of tomatoes into paste and other value-added products.
- In West Africa, pre-cooked **cassava** is becoming increasingly popular in urban areas because it is easy to prepare – a convenience highly valued by city dwellers. FAO has collaborated with partners to develop machines for the post-harvest processing of fonio in MALI, GUINEA and BURKINA FASO.
- In the CARIBBEAN, FAO is currently developing best practices and appropriate technologies for the cottage-scale processing of **hot pepper** sauce. Hot pepper sauce is a major spice in Caribbean countries and is produced in facilities located in or near urban areas. FAO has also developed technologies for processing **coconut water**, a popular beverage widely consumed in urban areas of the Caribbean.

5.2 STREET FOOD

Several projects have been implemented by FAO in collaboration with national and municipal authorities in order to:

- improve the conditions in which street foods are prepared and sold;
- strengthen the food quality control capacity of the local authorities in order to improve the overall quality of both raw material and processed foods;

FIGURE 24.

Pre-cooked cassava, known as "chickwanga", is a popular processed food meeting the urban consumers' needs and generating income, especially for women



FIGURE 25.

Making Tomato-Pepper sauce in Mbanza Ngungu (DR Congo).



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- undertake further research in the street food sector: socio-economic impact, legislative framework, hygienic and nutritional improvement;
 - improve vendors' knowledge of sanitation and food hygiene, and the nutritional value of foods through education and training;
 - share experiences and promote networking among local and national authorities at regional level to disseminate good practices and promote a common strategy;
 - raise awareness among consumers of the nutrition and hygiene aspects of street foods.
- Specific training material is available, as well as a variety of recommended designs for the sale and transport of equipment, aimed at minimizing the risk of contamination. Important lessons have been learned during over 20 years of experience in Latin America (Bolivia, Brazil, Colombia, Ecuador, Guatemala, Mexico and Peru), Asia (India, Nepal, the Philippines and Thailand), and most recently, Africa (Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Democratic Republic of the Congo, Ghana, Guinea, Guinea-Bissau, Nigeria, Senegal, South Africa, United Republic of Tanzania and Uganda) and the Near East (Egypt, Morocco and Sudan).



6. LESSONS LEARNED AND THE WAY FORWARD FOR FUTURE ACTION



FAO endeavours to share lessons learned and create visibility for UPA programme developments through a variety of activities:

- Production of resource materials (e.g. guidelines, manuals, resource books) for municipal administrators, government executives and other urban actors.
- Organization of expert consultations and workshops, such as: the International Seminar on Urban and Peri-urban Agriculture in La Paz, Bolivia (2007); international collaborative workshops on urban and peri-urban forestry in Bogotá, Colombia (2008) and Rome, Italy (2009); the International Fruit and Vegetable Summit in Paris, France (2008); and the urban horticulture side event at the All Africa Horticulture Congress, Nairobi, Kenya (2009).
- Production of advertising material (e.g. pamphlets, posters).
- Advocacy during international meetings (e.g. display of UPA microgarden production technologies on FAO premises during the World Food Summit 2002).
- Record-keeping and sharing of information on the performance of horticulture crop cultivars through the Hortivar Web site (www.fao.org/hortivar).
- Maintenance of a central Web site on Food for the Cities: www.fao.org/fcit as well as a Web site on urban horticulture: <http://www.fao.org/ag/agp/greenercities/>.

In order to pave the way forward, FAO encourages member countries, municipal authorities and other stakeholders in the public and private sector to:

- be aware of the need to protect and improve UPA systems as a component of food and nutrition

security strategies, especially for the benefit of poor households;

- make available technical guidance and strengthen capacities to improve the effectiveness and sustainability of UPA production and post-production systems, giving special attention to improving livelihoods and increasing food availability, safety and accessibility;
- make policy decisions and provide guidance at municipal and other levels in order to improve the efficiency of UPA as an integral component of the overall food supply and distribution system based on rural-urban linkages;
- promote the protection and improvement of the urban and peri-urban environment, including the watershed and surrounding agroforestry.

FAO takes action through a variety of activities, including:

- organization of national and inter-country workshops on urban food supply, UPA, urban forestry and low-income producer organizations;
- production of written and audio-visual resource materials;
- participation in international fora and networks.

In addition, FAO provides technical assistance at regional, national and local level by supporting or implementing NPFs, emergency relief operations, TeleFood projects and decentralized cooperation projects, many of which are relevant to urban development.

UPA remains an informal sector in many cities of the world and its role is still largely undervalued, despite

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its significant contribution to urban food and nutrition security. UPA has a definite place in the context of expanding urbanization and growing poverty.

The advantages of UPA largely outweigh the risks and constraints. The key to success lies in political awareness and commitment to the implementation of an ad hoc strategy adapted to the local environment with the ultimate goal of integrating UPA in the city master plan and its management.

FAO has been instrumental in formulating UPA strategies and guiding their implementation. The successful implementation of these strategies is based on participatory consultation and a monitoring process to ensure multi-partner involvement and cooperation from various ministries in charge of agriculture, education, health, environment, land tenure and social development, as well as private sector and financial partners, international organizations and NGOs.

From an institutional point of view, this consultation and monitoring process is facilitated by the Urban and Peri-urban Agriculture Consultative Committee (UPA-CC) chaired by the mayor of the city. The principal role of the UPA-CC is to ensure the timely implementation of the annual work plan and budget, and the recurrent updating of the UPA strategic plan.

Lessons learned from FAO's field projects addressing UPA to consolidate its sustainable development have led to the proposal of a standard framework for action, which could serve as a guideline for NPFs.

The framework is based on five pillars:

- Securing land and water resources
- Securing product quality and safety and environment protection
- Securing sustainable appropriation by actors and partners
- Securing market outlet
- Securing political and institutional anchorage and monitoring

6.1 PILLAR No.1: SECURING LAND AND WATER RESOURCES

6.1.1 Land availability and use

The perception of space depends on the environment and urbanization density, as well as the position in the urban-rural continuum. UPA typologies include:

- open peri-urban areas where allotment garden schemes or agroforestry areas can be established;
- family gardens around individual houses;
- microgarden systems on patios, terraces and rooftops in high-density urban areas and slums where there is no access to land.

FIGURE 26.

Urbanization is encroaching on very fertile land that will be lost for UPA unless protective measures are taken.



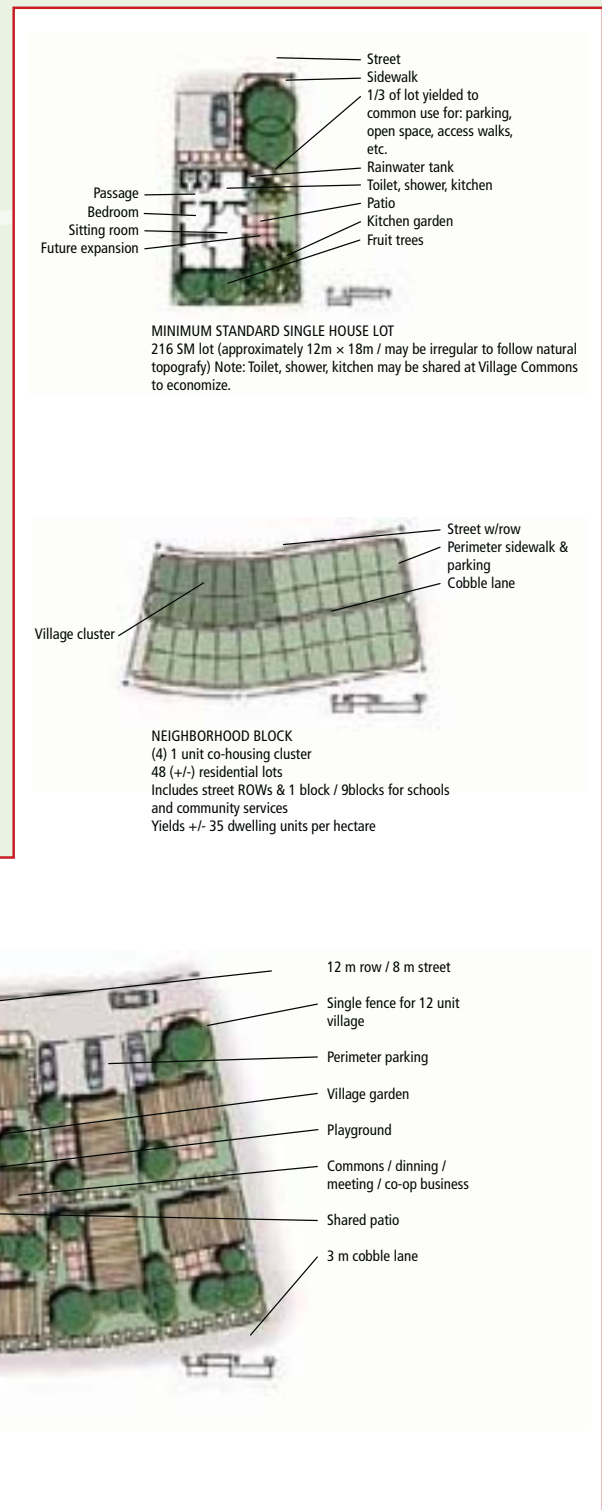
Photo: W. Baudoin

A microgarden programme can have a direct impact on the food and nutrition security of the poor. It is based on low-cost and low-energy technologies that are environmentally friendly and ensure low input sustainability: rainwater harvesting; solar water treatment; and recycling of household garbage into lombricompost for sustainable soil or substrate fertility management.

A series of steps must be followed in securing space for UPA activities:

- Identify the most suitable areas (soil quality; availability of water for irrigation) in terms of their comparative advantage for UPA.
- Map these areas using GIS (geographic information system).
- Mark out the boundaries and register the areas in the land register.
- Enforce legal protection of the reserved areas (obtaining a decree for protection as *non-aedificandi*).²
- Insert the reserved areas in the city development plan.

FIGURE 27.
Planning for green space and home-gardens in the new housing schemes (Kigali, Rwanda)



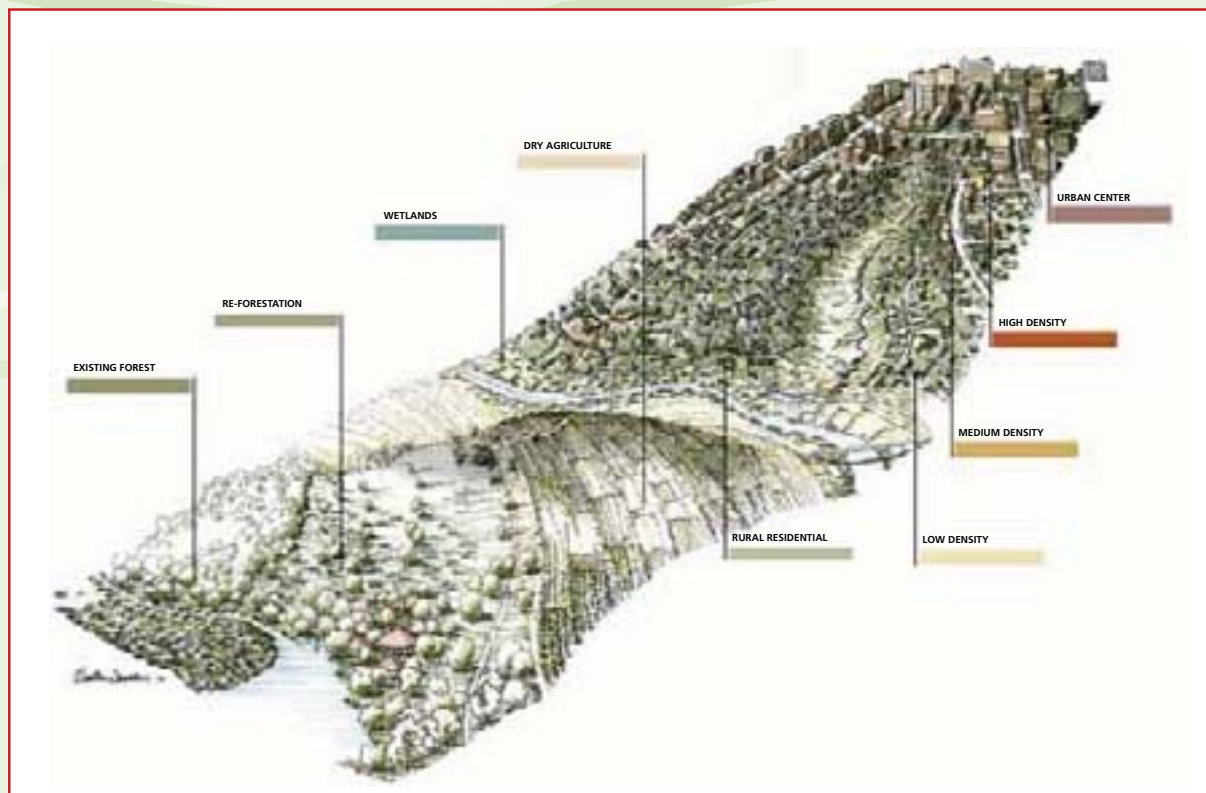


FIGURE 28.
Insertions from the Kigali Urban Master Plan - The urban-rural land-use transect

This graphic presentation is a useful tool for visualizing how UPA activities become a component of continuum in a rural-urban food production chain. Each level in the transect has its own role and vocation with respect to land and water use and management.

Urban land-use planning is essential for converting UPA areas from “squatter” status to acknowledged, reserved areas with *non-aedificandi* status, registered in the cadastre with a title deed and included in the urban development plan.

Local governments can promote UPA on publicly owned land, in congested slum and squatter areas, and on environmentally degraded land. Analysis has shown that there is a surprising amount of open space and usable land that could be allocated or leased for UPA.

Inventories need to be drawn up and mapping carried out, combined with research on status, ownership and UPA potential.

6.1.2 Water availability for irrigation

Although water comes from rivers, water tables and rainfall, access to good quality water for irrigation is increasingly difficult and expensive. There is considerable potential for storage of rainwater through surface catchments or roof water collection – with the added benefit of reduced risk of erosion. Cities harbour another potential source: treated wastewater. At global level, about 2 million ha are currently irrigated with wastewater of varying quality.

Given the limited space available in urban environments, irrigation and adequate water management are essential for sustaining year-round productivity of high-value crops.

The proposed approach consists of:

- application of highly efficient water-use production and irrigation systems (localized irrigation and drip irrigation, microgarden systems);
- infrastructure developments for water catchments;
- rainwater harvesting;
- safe use of treated wastewater.

Guidelines for the safe use of wastewater for agricultural production (WHO/FAO, 2006) include FAO's field-tested capacity-building modules for training in non-treatment options through farmer field schools (FFSs) and extension training. The modules cover a variety of non-treatment options for wastewater at farm, market and food-vendor levels; the effectiveness in reducing health risks has been quantified. Through field programmes, FAO has assisted UPA monitoring and institutional frameworks, and assessed institutional capacity needs with a gender balance to effectively implement and monitor non-treatment measures as well as treated wastewaters in sub-Saharan Africa.

6.2 PILLAR No. 2. SECURING PRODUCT QUALITY AND SAFETY AND ENVIRONMENT PROTECTION

UPA products must conform to international and national quality and food safety standards. Product quality and safety start in the field and depend on the application of good agricultural practices (GAPs). GAPs are based on a series of crop management principles throughout the producer-consumer chain. Their principal concern is to avoid the inappropriate use of agrochemicals, reducing the risk of consumer poisoning and soil and water pollution.

An appropriate capacity-building mechanism is essential to permit farmers and stakeholders in the production-consumption chain to apply GAPs. Product safety modules are being integrated into farmer field schools and training curricula, so that urban farmers can analyse for themselves the conditions in which they work and their impact on the safety of their products.

Product quality and safety in conjunction with environment protection are based on a series of measures to be adopted:

- Definition of production protocols and quality and safety standards based on GAP principles.
- Farmer training for the adoption of GAPs in the field.
- Enhancement of local capacity for product quality control.
- Surveillance of water quality to comply with international standards for irrigation and drinking water.
- Recycling of organic and household waste into compost for sustainable soil fertility management.

FIGURE 29.

Low pressure, simple drip irrigation is being promoted for efficient water use and risk management of recycled water.



Photo: W. Baudoin

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6.3 PILLAR No.3. SECURING SUSTAINABLE APPROPRIATION BY ACTORS AND PARTNERS

The successful and sustainable implementation of the UPA strategy will depend on the empowerment of its actors throughout the food chain. Community empowerment is essential for the sustainability and acceptance of programme interventions and begins with farmer organization. Farmers and their families should be encouraged to create and join professional associations; they can benefit from participative training through the FFS approach and improve their eligibility for loans. Farmer organizations, however, must be organized in a participatory manner in order to create a true sense of ownership among farmers. They have become a prerequisite for access to training and microcredit, particularly in the urban and peri-urban environment where individual participants are scattered over different neighbourhoods.

Appropriate interventions for sustainable UPA involve:

- securing access to inputs in line with the recommended production protocols, including quality seed and planting material of adapted cultivars;
- provision of access to microcredit and investment for infrastructure development;
- coordination of the proper functioning of professional farmers' organizations;
- capitalization on experiences to ensure their dissemination.

6.4 PILLAR No.4. SECURING MARKET OUTLET

While a significant proportion of UPA production may be consumed by the family (up to 60 percent of the microgarden harvest in Senegal), marketing for income remains a major driving force. UPA enjoys the comparative advantage of its location close to important concentrations of consumers with solvent demand: the urban population with purchasing power. However, the distribution of urban and peri-urban production must be properly organized and offer reliable quantities while guaranteeing quality, in order to gain and maintain consumer confidence.

UPA products may be successfully marketed in various ways in neighbourhood markets: doorstep marketing, evolving to door-to-door distribution and community sales points. Institutional and commercial supplies also offer potential: products can be sold to health and youth centres, schools, supermarkets and hotels, based on producer-consumer agreements with organized farmer associations.

Proactive interventions are required to secure market outlets:

- Stimulate consumer demand by highlighting the quality and origin of the produce, as well as the health benefits of a diversified diet including fruit and vegetables.
- Develop opportunities for processed commodities whenever applicable and in full compliance with the rules for hygiene and quality standards.

FIGURE 30, 31.

New entrepreneurs selling horticulture seeds and inputs with the benefit of a microcredit scheme, Lubumbashi, Democratic Republic of the Congo. (Photo: Grégoire Mutshaila, Ministry of Agriculture)



- Intervene at school level, with proper nutrition education in conjunction with school garden programmes to promote a healthy diet.

6.5 PILLAR NO. 5. SECURING POLITICAL AND INSTITUTIONAL ANCHORAGE AND MONITORING

Policy decisions and integration of UPA into development strategies are prerequisites for the efficiency and long-term sustainability of UPA programmes, which must address multisector and multidisciplinary issues including crop and livestock production, aquaculture and agroforestry in the overall context of proper natural resource management.

FAO has been instrumental in creating public awareness among policy-makers, reflected in the Dakar Declaration (for Africa) and the Declaration of Quito (for Latin America and the Caribbean). Follow-up action is now required to formulate UPA strategy plans for integration in national food security and nutrition programmes.



DAKAR DECLARATION

We recognize the important role which African cities and local authorities can play in ensuring urban food security. We stand ready to undertake, in partnership with all concerned stakeholders:

- the identification of institutional responsibilities to facilitate stable food access to urban households;
- the promotion of required research to improve the efficiency of food supply and distribution systems;
- the adequate maintenance of market infrastructure;
- the promotion of cooperation and partnerships with rural and peri-urban areas;
- the availability of market information.

Declaration by the African mayors participating at the FAO-ISRA sub-regional Seminar "Food Supply and Distribution to Francophone African Cities".

Dakar, Senegal, 14–17 April 1997

FIGURE 32.
Marketing on the doorstep, Dakar, Senegal.



Photo: W. Baudoin

FIGURE 33.
Neighbourhood markets, Korogho, Côte d'Ivoire.



Photo: W. Baudoin

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DECLARATION OF QUITO

Whereas,

Our cities are faced with severe problems of poverty, food insecurity and environmental degradation.

Several Urban Agriculture experiences have been recently and progressively developed in Latin America and the Caribbean with the aim of increasing the intake of food, generating income and jobs for vulnerable urban populations, and improving food security and the environment.

These experiences have limitations, but the trend is towards their consolidation and sustainability.

They deserve broader support in view of their impacts on the standards and the quality of life of the populations in our cities.

Acknowledging that

Urban Agriculture experiences in Latin American and Caribbean cities have limitations, but this is not an obstacle to acknowledging their significant contributions to the production of cities under precepts of equity, health and food security.

These experiences reveal that it is possible to use local resources and technologies to help reduce the costs of urban economies and improve the standards and the quality of life of the population.

The consensus reached by local and national actors is a strong incentive for Urban Agriculture. It is necessary to execute training programmes for local governments and for urban farmers themselves in order to increase the efficiency of Urban Agriculture. It is necessary to disseminate and exchange these experiences in the Region in order to improve and strengthen efforts and reduce the costs of these programmes.

Encouraging

Cities to recognize the significance of the contribution of Urban Agriculture to social development approaches, generation of jobs and income, self-esteem, environmental improvement and particularly food safety, and to add them to their key development goals in a transparent and concerted way.

Local governments to become strongly committed with the development of Urban Agriculture, optimizing existing local resources, institutionalizing Urban Agriculture and procuring its extension at national level; and to allocate municipal budget items to the execution of Urban Agriculture practices.

The execution of training programmes for technicians and the community in general and encouraging local stakeholders by promoting exchanges between municipalities on regional, national and international experiences related to municipal Urban Agriculture policies, and establishing criteria and indicators that allow the systematization of experiences and facilitate decision making.

The inclusion of Urban Agriculture within territorial planning processes as an element for the multiple use of land and environmental protection.

The development of Urban Agriculture for self-consumption as well as commercial purposes, via research, health and certification of organic products, the promotion of small agricultural business, and raising the awareness of consumers by urban agriculture sponsors.

The development of credit and financial policies and instruments for Urban Agriculture, with special emphasis on the most vulnerable producers, to supplement technical assistance programmes.



Research, dissemination, awareness raising and training in the alternative and efficient use of water and regulations and agreements on the sanitary use of household waste water, in order to enhance and validate techniques for the use of solid waste in Urban Agriculture: training urban producers in techniques of reuse and recycling of waste; educating the community in the selection of waste at the source (formal and informal education); and fostering policy-making at local and national government levels to promote and regulate the sorting and use of solid waste.

Recommending

That new, broader and more frequent gatherings and exchanges are organized between our cities in order to develop linkages with other cities within our countries and to address municipal policies related to Urban Agriculture and Food Security.

The execution of follow-up and assessments of existing experiences as well as of others that may arise in the Region.

Urging

Local governments to promote Urban Agriculture in their cities, develop tax incentives and other policies, and promote the collection of information on Urban Agriculture activities in their territorial planning processes.

State and national governments to include Urban Agriculture in their programmes to alleviate poverty, food safety, promotion of local development and environmental and health improvement.

Technical and financial cooperation agencies to accord to Urban Agriculture the significance and specificity deserved by the promotion of sustained and sustainable development.

The Urban Management Programme for Latin America and the Caribbean, IDRC, FAO, PAHO and IPES to continue supporting Urban Agriculture experiences in the region.

We reaffirm

Our commitment to improve urban management through the promotion of Urban Agriculture experiences in our cities, establishing the Working Group "Cities and Urban Agriculture in Latin America and the Caribbean", with the goal of replicating and improving Urban Agriculture municipal policies and actions developed in Latin American and Caribbean cities to enhance food security, address urban poverty, improve urban environment and health management, and develop more participatory and less excluding governance processes, as well as to protect urban biodiversity with the support of the Urban Management Programme for Latin America and the Caribbean.

Our determination to produce and disseminate, at least once a year, methodology tools, guidelines and mechanisms that collect regional experiences and report on the formulation and execution of urban planning and land use, reuse of waste water and organic solid waste, credits for Urban Agriculture, transformation and marketing.

Our will to jointly support the execution of City Consultations on Urban Agriculture, with the support of the Urban Management Programme for Latin America and the Caribbean, IDRC and IPES.

We invite

All public and private actors of Latin American and Caribbean cities to embrace the practice, promotion and support of Urban Agriculture.

All Latin American and Caribbean cities to join the Working Group on Urban Agriculture and to assume the ownership of this Declaration.

Declaration by the cities participating at the UNDP-UMP-LAC-UN-HABITAT-FAO-IDRC-IPES-Quito Metropolitan Workshop "Urban Agriculture in 21st Century Cities".

Quito, Ecuador, 20 April 2000

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The five pillars of the UPA standard framework are complemented by two cross-cutting activities:

1) Monitoring and evaluation: It is recommended that UPA strategies have a built-in component for constant monitoring, evaluation and reporting to assess progress, identify bottlenecks and propose solutions. The monitoring and evaluation unit should report regularly to the UPA-CC chaired by the mayor of the city. Progress and impact should be monitored on the basis of agreed indicators.

2) Capitalization and dissemination of information and know-how: Countries engaged in UPA need to set up an information unit capable of safeguarding and disseminating experience related to the programme structure and its operation (methodological information) and to the value chains of selected commodities (technological and economic information). It is important to use local Web sites and to release information in the local language in order that stakeholders, including NGOs, be updated with regard to the status of the programme and its experiences.

Projects carried out to date indicate that the successful implementation of UPA strategies and action plans is based on four principles:

- Grassroots empowerment and responsibility (growers' associations).
- Commitment and competencies for programme and project implementation decentralized at municipal level.
- Capacity-building through participatory training and extension based on FFS principles.
- Implementation of GAPs for product quality and safety.

UPA programmes and projects are gaining the interest and acceptance of central and local governments as a result of a better understanding of their scope and impact on the livelihood of the urban poor. It is anticipated that this publication will further enhance the implementation of UPA programmes so that more people and cities can reap the benefits.

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ANNEX 1

MAPPING WORLDWIDE URBAN AND PERI-URBAN AGRICULTURE STATUS



To date, a great deal of quantitative and qualitative production data on **urban and peri-urban agriculture (UPA)** are in-existent, or scattered and inconsistent. However, the following table indicates the importance of this production type for all continents.¹

¹ Millstone and Lang (2008).

Mapping worldwide urban and peri-urban agriculture status

SELECTION	NO. OF URBAN FARMERS	CROP AND LIVESTOCK PRODUCTION	AREA CULTIVATED	AVERAGE PLOT SIZE
AFRICA				
Harare (Zimbabwe)	Private property plots: 80% of all households in summer, 60% in winter. Population: 1.9 million	Over one-third of households surveyed in Harare keep livestock, mainly chickens, but also rabbits, pigeons, ducks and turkeys.	4 900 ha open space cultivation in 1990. 9 300 ha open space cultivation in 1994 (16% of city area).	Private property plots: up to 50m ² ; public (e.g. open spaces): 200 m ² . Peri-urban: ha for smallholders, >5 ha large-scale farming. On-plot-production in high-density settlements: 2–25 m ² , medium density: 15–105 m ² , low density: 50–200 m ² .
Nairobi (Kenya)	25–30% (at least 150 000) of all households involved in urban agriculture. 1985: 29% of households growing crops, 17% raising livestock. Agriculture is absorbing 24.4% of Nairobi's formal sector jobs, and provides the highest self-employment earnings in small-scale enterprises.	Estimated: 25 000 cattle, 53 000 sheep and goats, 260 000 poultry, 9 500 pigs, 43 500 rabbits. 5 200 tonnes of annual crop production in the mid-1980s. 50% of food consumed by low-income households is produced within the city.		99 m ² (mid-1980s; including backyard farming).

SELECTION	NO. OF URBAN FARMERS	CROP AND LIVESTOCK PRODUCTION	AREA CULTIVATED	AVERAGE PLOT SIZE
AFRICA				
Harare (Zimbabwe)	Private property plots: 80% of all households in summer, 60% in winter.	Over one-third of households surveyed in Harare keep livestock, mainly chickens, but also rabbits, pigeons, ducks and turkeys.	4 900 ha open space cultivation in 1990. 9 300 ha open space cultivation in 1994 (16% of city area).	Private property plots: up to 50m ² ; public (e.g. open spaces): 200 m ² . Peri-urban: 1.5 ha for smallholders, >5 ha large-scale farming. On-plot-production in high-density settlements: 2–25 m ² , medium density: 15–105 m ² , low density: 50–200 m ² .
Population: 1.9 million				
Nairobi (Kenya)	25–30% (at least 150 000) of all households involved in urban agriculture. 1985: 29% of households growing crops, 17% raising livestock. Agriculture is absorbing 24.4% of Nairobi's formal sector jobs, and provides the highest self-employment earnings in small-scale enterprises.	Estimated: 25 000 cattle, 53 000 sheep and goats, 260 000 poultry, 9 500 pigs, 43 500 rabbits. 5 200 tonnes of annual crop production in the mid-1980s. 50% of food consumed by low-income households is produced within the city.		99 m ² (mid-1980s; including backyard farming).
Population: 2.0 million				

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<p>La Paz/EI Alto (Bolivia)</p> <p>Population: 1.5 million (La Paz); 1.0 million (EI Alto)</p>	<p>4 000 farmers formally working in urban agriculture (La Paz), 2 000 formally in EI Alto.</p> <p>1985: up to 55% of EI Alto's households raised small livestock for self-consumption and up to 68% grew food crops.</p>	<p>30% (2 150 tonnes) of La Paz's agricultural requirements are produced in urban agriculture.</p>	<p>2 950 ha used for urban agriculture in La Paz.</p>	<p>Home gardens: 8–30 m².</p>
ASIA				
<p>Cagayan de Oro (Philippines)</p> <p>Population: 0.5 million</p>	<p>Agriculture employs 9% of the economically active population. 13 000 farmers in the peri-urban area.</p> <p>40% (95 000) of all households maintain backyard gardens.</p>	<p>1995: 18 000 tonnes of crop production on 2 280 ha (=0.8 kg/m²).</p> <p>1995: 4 000 cattle, 3 250 goats, 135 000 chickens, 12 400 pigs. 70% of city's demand for fish is produced within the city.</p>	<p>22 000 ha allocated by the city for agriculture (45% of total city area).</p> <p>2 280 ha under crop production (4.7% of total city area).</p> <p>55 ha under vegetable production.</p>	<p>1.7 ha (average farm size) of which 0.5 ha are used for growing vegetables.</p> <p>500–1 000 m² in school gardens.</p>
<p>Hubli-Dharwad (India)</p> <p>Population: 0.8 million</p>		<p>16 500 cattle and buffalo, 3 700 pigs officially (estimated no. of pigs: 20 000), 5 700 sheep and goats.</p>		<p>0.6–0.8 ha.</p>
<p>Jakarta (Indonesia)</p> <p>Population: 9.5 million</p>	<p>100 000 urban farmers officially (1% of Jakarta's population).</p>	<p>27 000 tonnes of vegetables (9.5% of demand in Jakarta), 13 500 tonnes of rice (1.2% of demand), 44 500 tonnes of fruit (19.6% of demand).</p> <p>18% of food consumption of low-income households is produced within the city.</p>	<p>11 000 ha (including 5 500 ha home gardens).</p>	
<p>Singapore</p> <p>Population: 4.48 million</p>	<p>10 000 farmers have licences for raising livestock and horticulture.</p>	<p>100% of demand in meat, 25% of demand in vegetables.</p>	<p>7 000 ha.</p>	
<p>Shanghai (China) (Singapore)</p> <p>Population: 13.0 million</p>	<p>2.7 million farmers (urban, peri-urban and rural Shanghai).</p>	<p>2 400 000 tonnes of cereals, 1 300 000 tonnes of vegetables. 60% of vegetables, 100% of milk and 90% of eggs consumed in Shanghai are produced within the city limits.</p>	<p>553 000 ha, of which 66.2% (366 000 ha) are used for cereal production, 2.3% (12 700 ha) for vegetable production.</p> <p>10% (1 270 ha) of vegetable production in urban and peri-urban area, the rest is 30–60 km from the city centre.</p> <p>26.7% (3 400 ha) of vegetable production in greenhouses.</p>	

ANNEX 2

AN INVENTORY OF FAO PROJECTS ADDRESSING URBAN AND PERI-URBAN AGRICULTURE¹

PROJECT NUMBER AND TITLE	NATIONAL COUNTERPART INSTITUTION AND INTERNATIONAL PARTNERS	DONOR BUDGET	DATES	COUNTRY	CITIES
GCP/GBS/027/SPA Appui à la professionnalisation des jeunes et des femmes à travers la redynamisation des activités agricoles dans le milieu urbain et péri-urbain en Guinée-Bissau	Ministry of Agriculture and Municipality of Bissau, Spain	USD 1 559 130	Sept. 2008– Sept. 2010	Guinea-Bissau	Bissau, Bafata, Canchungo, Gabu, Catió, Buba
GCP/MAU/022/BEL Ceinture verte de Nouakchott	Ministère du Développement Rural et de l'Environnement, Gouvernement de la Région wallonne de Belgique, Belgium	USD 1 654 534	May 2000– Dec. 2009	Mauritania	Nouakchott
GCP/SEN/061/SPA Promotion de l'utilisation d'une eau de qualité en appui à l'agriculture urbaine et péri-urbaine	Ministry of Agriculture and Mairie de Dakar, Spain	USD 1 053 293	Mar. 2009– Feb. 2011	Senegal	Dakar
GCP/ANG/039/SPA Access to quality water for irrigated urban and peri-urban agriculture in Luanda	Provincial Government of Luanda, Department of Agriculture of Luanda and the Ministry of Agriculture and Rural Development, Spain	USD 999 930	June 2009– June 2011	Angola	Luanda
GDCP/BRA/001/ITA Support to Water Control Component of the Fome Zero Programme in the Area of Dois Irmaos, Brazil	Federal Government of Brazil, and Municipalities of Tuscany, Piedmont, Bahia and Piaui	USD 408 962	Mar. 2005– May 2010	Brazil	Dois Irmaos
GCP/IVC/026/BEL Appui au développement de l'horticulture urbaine et péri-urbaine (Phase I, Phase II, Phase III)	Ministère de l'Agriculture et du Développement Rural, Belgium	USD 625 090	July 2002– Dec. 2007	Côte d'Ivoire	Abidjan
GCP/BOL/035/BEL Proyecto de micro-jardines populares en El Alto La Paz	Ministère de l'Agriculture, Belgium	USD 655 504	Aug. 2003– Dec. 2008	Bolivia	La Paz El Alto

¹ Prepared by "Food for Cities" multi-disciplinary initiative, updated as of 27 May 2009 based on information extracted from FPIMS.

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GCP/BOL/035/BEL Proyecto de micro-jardines populares en El Alto La Paz	Ministerio de Agricultura, Ganadería y Desarrollo Rural, Ayuntamiento de El Alto Belgium	USD 655 504	May 2007– Jan. 2012	Bolivia	La Paz El Alto
GCP/INT/955/CAN Formulation Missions for projects to be financed by Spain under FAO/GCP modality	Ministries of Agriculture and municipalities of Luanda, Guatemala, Managua, Dakar Spain	USD 222 600	May 2007– Jan. 2012	Angola, Guatemala, Nicaragua, Senegal	Luanda, Dakar, Managua, Guatemala City
GCP/MOZ/027/BEL Improving household food security and nutrition in the Manica Province	Ministry of Agriculture, Canada	USD 222 600	May 2002– June 2008	Mozambique	Maputo, Chimoio
GCP/NAM/008/BEL Improving household food security and nutrition in the Manica Province	Ministry of Health, Ministry of Agriculture	USD 255 996	Oct. 2001– Dec. 2007	Namibia	Windhoek, Rundu
GCP/NAM/008/BEL Integrated initiative on urban and peri-urban horticulture development in Namibia	Ministry of Agriculture	USD 255 996	Oct. 2001– Dec. 2007	Namibia	Windhoek, Rundu
GCP/YEM/026/NET Watershed management and waste water re-use in peri-urban areas of Yemen	Ministry of Agriculture, Ministry of Planning	USD 4 758 772	Apr. 1998– July 2002	Yemen	Sana'a
GDGP/BRA/002/ITA Microgarden Technologies for improved food security in selected districts of the city of Teresina in the State of Piauí (Brazil)	Ministry of Agriculture	USD 158 291	June 2005– Mar. 2008	Brazil	Teresina
GDGP/HAI/001/FRA Projet de développement rural et renforcement des capacités locales dans la commune de Dessalines (Haiti)	Ministry of Agriculture	USD 446 000	Sept. 2005– Feb. 2009	Haiti	Dessalines
GDGP/RWA/014/MUL Projet d'agriculture urbaine et péri-urbaine de Kigali (PAPUK)	Ministry of Agriculture and Municipality of Kigali	USD 852 800	Jan. 2004– Dec. 2008	Rwanda	Kigali
GDGP/SEN/002/ITA Consolidation des micro-jardins pour l'amélioration de la sécurité alimentaire dans la Municipalité de Dakar	Ministère de l'Agriculture (Division de l'Horticulture), ville de Dakar,	USD 465 000	Jan. 2006– July 2008	Senegal	Dakar
OSRO/BDI/805/CHA Intervention d'urgence en appui des moyens de vie des ménages les plus vulnérables affectés par la crise alimentaire	Ministère de l'Agriculture et de l'Élevage	USD 996 998	Sept. 2008– Jan. 2009	Burundi	

OSRO/BDI/809/EC Projet de sécurité alimentaire en appui aux populations rurales et péri-urbaines vulnérables ainsi qu'au système d'alerte précoce et de surveillance de la sécurité alimentaire au Burundi	Ministère de l'Agriculture et de l'Élevage	USD 1 231 737	Dec. 2008– Dec. 2010	Burundi	Ngozi, Kayanza, Gitega, Muramvya, Mwaro
OSRO/BDI/902/ITA Contribution à l'allègement de la flambée des prix des denrées alimentaires par l'amélioration des capacités de production des associations de ménages vulnérables	Ministère de l'Agriculture et de l'Élevage	USD 471 698	Apr. 2009– Apr. 2010	Burundi	Ngozi, Kayanza, Karuzi, Bujumbura
OSRO/DJI/802/CHA Appui d'urgence aux populations les plus vulnérables affectées par la crise alimentaire 2008 et la hausse des prix des denrées alimentaires	Ministère de l'Agriculture	USD 255 711	Sept. 2008– Apr. 2009	Djibouti	Djibouti
OSRO/DJI/901/CHA Augmentation de la production de lait de chèvres et de produits maraîchers de base pour les populations fragilisées par la crise nutritionnelle aigüe	Ministère de l'Agriculture	USD 537 214	May 2009– Dec. 2009	Djibouti	Djibouti
OSRO/DRC/207/ITA Appui à la réhabilitation des routes de dessertes agricoles dans les provinces du Bas Congo et du Bandundu et dans la périphérie de Kinshasa	Direction de Voies de Desserte Agricole	USD 420 000	Sept. 2002– Sept. 2003	Democratic Republic of the Congo	Kinshasa, Bandundu, Matadi
OSRO/DRC/402/SWE Fourniture d'intrants agricoles et de pêche à 31 000 familles déplacées ou retournées dans les provinces de l'Équateur, des deux Kasai et Kinshasa	Ministère de l'Agriculture et les Bureaux Provinciaux de l'Agriculture	USD 413 100	Mar. 2004– June 2005	Democratic Republic of the Congo	Mbandaka, Mbuji-Mayi, Kananga, Kinshasa
OSRO/GUI/701/CHA Support in agricultural inputs and tools to the households in neighbourhoods of Conakry and other cities of the country affected by the crisis	Ministère de l'Agriculture, de l'Élevage, de l'Environnement, des Eaux et Forêts et Ministère de l'Intérieur	USD 600 000	Apr. 2007– July 2007	Guinea	Conakry and other cities
OSRO/KEN/802/CHA Emergency agricultural support to alleviate the impact of soaring food prices on the most affected vulnerable rural, peri-urban and pastoralist populations of Kenya	Ministry of Agriculture	USD 3 185 925	Sept. 2008– Feb. 2009	Kenya	Nairobi

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OSRO/LIR/704/SWE Emergency assistance to war-affected farming families in urban and peri-urban areas in seven counties in Liberia	Capital city of Monrovia and Counties of Montserrado, Bomi, Bong, Grand Bassa and Margibi	USD 300 442	Sept. 2007– June 2008	Liberia	Monrovia
OSRO/LIR/903/SWE Emergency support to the food production and income generation for 5 000 urban and peri-urban inhabitants, vulnerable to soaring food prices in 5 counties	Capital city of Monrovia and Counties of Montserrado, Bomi, Bong, Grand Bassa and Margibi	USD 490 000	Jan. 2009– June 2010	Liberia	Monrovia, Montserrado, Bomi, Bong, Grand Bassa, Margibi
OSRO/RAF/401/SWE Improved food security for HIV/AIDS affected households	Ministry of Agriculture, National HIV/AIDS Council, national umbrella NGOs for HIV/AIDS, as well as the coordinating HIV/AIDS structure of the United Nations, such as UNAIDS, UNICEF and WFP	USD 269 321	Jan. 2004– Dec. 2004	Burundi, Democratic Republic of the Congo, Rwanda, United Republic of Tanzania, Uganda	Bujumbura, Kinshasa, Kigali, Dar es Salaam, Doddoma,
OSRO/RAF/502/SWE Regional approach to improved food security, nutrition and livelihoods of HIV/AIDS affected households and communities	Ministries of Agriculture and national stakeholders in HIV/AIDS	USD 291 039	Mar. 2005– Dec. 2005	Burundi, Democratic Republic of the Congo, Rwanda, Uganda, Tanzania	Goma
OSRO/COL/501/ITA Support to the implementation of the Humanitarian Plan of Action – coordination of agricultural emergency activities and promotion of urban vegetable production by internally displaced persons	Agencia Presidencial para la Acción Social Municipalidades de Bogotá y Medellín	USD 500 000	Jan. 2006– Sept. 2007	Colombia	Bogotá, Medellín
OSRO/COL/701/ITA Support to urban internally displaced persons, vulnerable communities in rural areas and communities at risk of displacement in the Departments of Sucre and Bolívar	Departments of Sucre and Bolívar	USD 1 312 850	Aug. 2007– June 2009	Colombia	Sucre, Bolívar
OSRO/COL/801/ITA Apoyo a desplazados internos urbanos y comunidades vulnerables rurales en alto riesgo de desplazamiento (Departamento de Chocó)	Departamento de Chocó	USD 1 423 016	Aug. 2008– Jan. 2010	Colombia	Quibdo, Istmina
OSRO/CUB/801/CHA Reactivation of the urban and peri-urban agricultural network damaged by Hurricane Gustav	Municipality of Isle of Youth and Province of Pinar del Rio	USD 439 770	Sept. 2008– Mar. 2009	Cuba	Pinar del Rio, Isle of Youth

OSRO/GLO/503/NOR Technical assistance coordination activities	Ministry of Agriculture	USD 133 622	Jan.–Feb. 2006	Sri Lanka	Kalpitya, Trincomalee
OSRO/HAI/703/CAN Appui à la horticulture dans les zones urbaines de Port-au-Prince et Jérémie	CARE, MARNDR	USD 847 190	Apr 2007–Sept. 2009	Haiti	Port-au-Prince, Jérémie
OSRO/IRQ/405/UDG Promotion of cottage industry in rural and urban areas	Governorates of Thi Qar, Missan, Muthanna and Basrah UNDG/ExecCom Secretariat (100.0%)	USD 2 283 388	July 2004–June 2007	Iraq	Governorates of Thi Qar, Missan, Muthanna, Basrah
OSRO/IRQ/602/UDG Community livelihoods and micro-industry support project in rural and urban areas of North Iraq	Government of Iraq and Kurdistan Regional Government	USD 2 696 127	July 2006–June 2009	Iraq	Governorates of Sulaimaniyah, Erbil, Kirkuk
OSRO/PER/701/CHA Emergency assistance to support the rapid availability of food and immediate recovery of the means of subsistence of earthquake-affected farmers and fishers	NGOs Desarrollo Rural Integral Sustentable and Recursos para el Desarrollo	USD 1 032 550	Oct. 2007–Mar. 2008	Peru	San Clemente Independencia Humay
SPFS/BEN/8901 Production alimentaire à l'appui de la securite alimentaire du Benin (2 out of 4 agro-ecological regions)	Ministry of Agriculture	USD 1 662 421	May 1999–Dec. 2007	Benin	Cotonou, Tori Bossi
SPFS/BKF/4501 Production alimentaire à l'appui de la securite alimentaire du Burkina Faso (7 out of 92 SPFS sites are UPA)	Ministry of Agriculture	USD 3 746 002	Jan. 1995–Dec. 2007	Burkina Faso	
SPFS/CMR/2201 Special Programme for Food Security in Cameroon (4 out of 10 SPFS sites are UPA)	Ministry of Agriculture	USD 421 796	Mar. 2002–Dec. 2007	Cameroon	
SPFS/IVC/8801 Appui à la production de l'horticulture urbaine et péri-urbaine dans les communes de Yamoussoukro et de Korhogo	Ministère de l'Agriculture et des Ressources Animales	USD 238 196	Nov. 1998–Aug. 2000	Côte d'Ivoire	Yamoussoukro, Korhogo
GTFS/RAF/387/ITA Acacia operation – Support to food security, poverty alleviation and soil degradation control in the gums and resins producer countries	Gum Producer Associations	USD 5 389 400	Nov. 2003–Dec. 2009	Burkina Faso, Chad, Kenya, Niger, Senegal, Sudan	Elobeid

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GCSF/GAM/021/ITA Special Programme for Food Security in the Gambia (2 out of 32 SPFS sites are UPA)	Department of State for Agriculture	USD 605 000	Mar. 2002– Mar. 2005	Gambia	
TCP/BDI/3201 Provision d'intrants aux populations vulnérables dans le cadre de ISFP	Ministere de l'Agriculture et de l'Elevage	USD 500 000	July 2008– June 2009	Burundi	Bujumbura
TCP/BUR/2902 Appui à la plantation urbaine et péri-urbaine et agroforestière pour la production de bois de feu et de service	Direction des forêts	USD 240 265	Sept. 2003– Apr. 2005	Burundi	Bujumbura, Mwaro, Kibumbu, Ngozi, Kayanza
TCP/CAF/3003 Appui à la formulation d'une stratégie nationale et d'un programme de foresterie urbaine à Bangui	Direction Nationale des Eaux et Forêts	USD 210 702	June 2006– Dec. 2007	Central African Republic	Bangui
TCP/CAF/3103 Appui à la formulation d'une stratégie nationale et d'un programme de foresterie urbaine et péri-urbaine à Bangui Phase II of TCP/CAF/3003	Municipalité de Bangui, et les services forestiers et environnementaux	USD 79 000	Apr. 2008– Mar. 2009	Central African Republic	Bangui
TCP/DJI/3201 Fourniture d'intrants aux populations vulnérables dans le cadre de ISFP	Ministere de l'Agriculture, de l'Elevage et de la Mer	USD 250 000	July 2008– June 2009	Djibouti	Djibouti
TCP/GBS/2902 Reorganisation du secteur de l'alimentation de rue dans la ville de Bissau	Ville de Bissau	USD 300 634	May 2003– Feb. 2005	Guinea-Bissau	Bissau
TCP/KEN/3201 Input supply to vulnerable populations under ISFP	Ministry of Agriculture	USD 500 000	July 2008– June 2009	Kenya	Nairobi
TCP/MLI/2906 Promotion de la foresterie urbaine et péri-urbaine (national strategy and urban land management plan)	Direction de la Conservation de la Nature, Mairies de Bamako, Ségou et Sikasso	USD 308 383	July 2003– May 2005	Mali	Bamako, Ségou, Sikasso
TCP/NIR/2901 Strengthening the horticultural, tree and cash crops sector for higher income generation	Federal Department of Agriculture, Federal Ministry of Agriculture and Rural Development	USD 304 245	July 2002– May 2004	Nigeria	Ibadan
TCP/SEN/8823 Introduction de nouvelles technologies pour micro jardins en milieux urbain et suburbain	Ministère de l'Agriculture, Division de l'Horticulture	USD 210 000	Mar. 1999– Dec. 2000	Senegal	Dakar

TCP/ANG/2802 Appui à la promotion de plantations pour la production de bois énergie dans les provinces de Luanda, Bengo et Huambo	Institut de Développement Forestier	USD 271 046	July 2002– Dec. 2003	Angola	Luanda, Bengo, Huambo
TCP/ARG/2905 Fortalecimiento de la agricultura urbana y peri-urbana y de la seguridad alimentaria en la Provincia de Buenos Aires	Ministerio de Asuntos Agrarios y Producción, Gobierno de la Provincia de Buenos Aires;	USD 321 967	Aug. 2003– Mar. 2005	Argentina	Buenos Aires
TCP/COL/3202 Estrategias de abastecimiento y distribución de alimentos a las Ciudades de Bogotá, Medellín y Manizales	Ciudades de Bogotá, Medellín y Manizales	279 000	Jan. 2009– Dec. 2009	Colombia	Bogotá, Medellín y Manizales
TCP/CUB/8925 (A) La dendroenergía, una alternativa para el desarrollo energético sostenible en Cuba	Dirección Forestal del Ministerio de la Agricultura	USD 278 200	May 1999– Mar. 2003	Cuba	Municipio de Cumanayagua
TCP/EGY/0166 Green food from green roofs in urban and peri-urban environments	Ministry of Agriculture and Land Reclamation	USD 228 980	Nov. 2001– Oct. 2003	Egypt	Cairo, Alexandria
TCP/EGY/7821 Preparation of a national tree planting and development of peri-urban forestry	Under-Secretariat for Afforestation, Ministry of Agriculture, Sericulture producers	USD 230 000	June 1998– Nov. 1998	Egypt	Cairo, Ismailia
TCP/MEX/8922 (A) Tratamiento de aguas residuales de agro-industrias	Secretaría de Medio Ambiente, Recursos Naturales y Pesca and CONAGUA	USD 301 000	Mar. 1999– Aug. 2000	Mexico	Guanajuato
TCP/VEN/2901 Formulacion y acompanamiento de la ampliacion del PESA a las zonas urbanas y peri-urbanas	Ministerio de Agricultura y Tierras, CIARA	USD 382 192	Feb. 2003– Feb. 2005	Bolivarian Republic of Venezuela	Caracas
TFD-01/DRC/001 Introduction des micro-jardins dans le quartier populaire de Ngaba, Kinshasa	Réseau d'Exploitations Horticoles et d'Embellissement Parcellaire	USD 6 880	Sept. 2002– Sept. 2003	Democratic Republic of the Congo	Kinshasa
TFD-02/MAU/001 Microjardin scolaire Arafat I	Ministère de l'Éducation Nationale	USD 5 000	Sept. 2003– June 2004	Mauritania	Nouakchott
TFD-03/DRC/004 Implémentation d'un centre communautaire de production de géniteurs des lapins en vue d'approvisionnement de petits éleveurs péri-urbains des communes de Mont-Ngafula, quartiers Manenga et Ndjili Brasserie à Kinshasa	Ministère de l'Agriculture	USD 9 260	Apr. 2005– Apr. 2006	Democratic Republic of the Congo	Communes of Mont-Ngafula, quartiers Manenga and Ndjili Brasserie à Kinshasa

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TFD-03/DRC/005 Elevage de volaille à petite échelle pour usage commercial – ville de Lukala	Association des Cultivateurs, Eleveurs et Maraîchers de Lukala	USD 7 156	Jan. 2005– Jan. 2006	Democratic Republic of the Congo	District des Cataractes, Province du Bas-Congo
TFD-97/MLI/004 Exploitation maraîchère par des femmes pauvres en milieu urbain	Coopérative Multifonctionnelle des Femmes e Diélibougou-Commune I Bamako	USD 3 015	1998–2000	Mali	Diélibougou – Commune I (Bamako)
TFD-98/CVI/005 Production de légumes à base de substrat dans les zones urbaines et péri-urbaines	Centre de Promotion et de Développement de l'Agriculture, la, Direction Générale de l'Animation Rurale et Promotion Coopérative, the municipalities	USD 5 400	May 1999– Mar. 2000	Cape Verde	Praia
TFD-97/CVI/001 Production de légumes à base de substrat dans les zones urbaines et péri-urbaines	Women in urban areas	USD 7 800	Jan. 1997– Jan. 1999	Cape Verde	
TFD-98/EQG/001 Avicultura periurbana en la ciudad de Añisok (West Nzás)	Ministerio de Agricultura, Pesca y Alimentación	USD 2 900	2000–2001	Equatorial Guinea	Añisok
TFD-98/SEN/015 Développement de technologies pour micro-jardins en milieu urbain	Commune d'arrondissement de Gorée avec l'appui technique de la Direction de l'Horticulture du Ministère de l'Agriculture et de l'Elevage.	USD 3 875	Oct. 2000– Oct. 2001	Senegal	Gorée
TFD-02/RWA/009 Introduction des micro-jardins dans les quartiers spontanés de la ville de Kigali	Associations Abishyizehamwe, Abihuje	USD 4 363	Aug. 2003– Aug. 2004	Rwanda	Kigali
TFD-00/PER/003 Producción sostenida en biohuertos urbanos Tipo INIA	Instituto Nacional de Investigación Agraria (INIA)	USD 9 998	Apr. 2001– Apr. 2002	Peru	Lima/Villa El Salvador
TFD-00/UGA/001 Poultry production in peri-urban centres	Ministry of Agriculture, Animal Industry and Fisheries and Rotary Club	USD 2 700	Apr. 2001– Oct. 2002	Uganda	Kyambogo, Bweyogerere-Namboole
TFD-01/ARG/001 Diversificación y Aumento de la Producción en Huertas de Autoconsumo Municipio Almirante Brown	Gobierno de la Provincia de Buenos Aires, Programa Huertas Bonaerenses	USD 10 000	2003–2004	Argentina	Buenos Aires
TFD-02/ARG/001 Diversificación y aumento de la producción en huertas de autoconsumo – Municipio de la Matanza	Municipio de la Matanza	USD 10 000	Aug. 2003 –Aug. 2004	Argentina	la Matanza

TFD-01/ARG/002 Diversificación y aumento de la producción en huertas de autoconsumo – Municipio de Florencio Varela	Municipio de Florencio Varela	USD 10 000	Aug. 2003 –Aug. 2004	Argentina	Florencio Varela
TFD-02/ARG/002 Diversificación y aumento de la producción en huertas de autoconsumo – Municipio de la Plata	Municipio de la Plata	USD 10 000	Aug. 2003 –Aug. 2004	Argentina	la Plata
TFD-01/ARG/003 Diversificación y aumento de la producción en huertas de autoconsumo – Municipio de Hurlingham	Municipio de Hurlingham	USD 10 000	Aug. 2003 –Aug. 2004	Argentina	Hurlingham
TFD-01/BRA/002 Urban Agriculture: An income-generating food security alternative	Local community organizations, with the support of research and extension groups operating in the Federal University of Viçosa, under the Zero Hunger Programme	USD 9 100	Nov. 2003 –Nov. 2004	Brazil	Vicosa (Minas Gerais)
TFD-02/HAI/003 Projet d'appui à la production d'œufs de table dans la région péri-urbaine de Port-au-Prince	L'Association pour le Développement de Latremblay	USD 10 000	Sept. 2003– Sept. 2004	Haiti	Port-au-Prince
TFD-02/KEN/001 Improving child nutrition and education through the promotion of school garden programmes	Bondo Municipality	USD 9 800	Mar. 2004– Mar. 2005	Kenya	Unknown
TFD-02/RWA/005 Elevage de poules pondeuses, de lapins et de chèvres pour les filles de la rue de Kigali	Ville de Kigali	USD 10 000	Sept. 2003– Sept. 2004	Rwanda	Kigali
TFD-02/RWA/008 Introduction des micro-jardins dans les quartiers de Gisozi-Kagugu (ville de Kigali)	Ville de Kigali	USD 7 680	Aug. 2003 –Aug. 2004	Rwanda	Kigali
TFD-99/PHI/003 Vegetable production systems in areas with high level urbanization	Central Luzon State University	USD 10 000	June 2000– June 2001	Philippines	Unknown
TFD-99/SRL/004 Vegetable substrate culture in urban and peri-urban areas	National Social Development Organization	USD 7 400	Jan. 2001– Oct. 2001	Sri Lanka	Colombo
BGD/98/006//01/99 Sustainable livelihood development of urban poor through improved management of urban and peri-urban agricultural micro-enterprises	Local Partnership for Urban Poverty Alleviation Project	USD 430 155	Mar. 2005– Oct. 2007	Bangladesh	Rajshahi, Bogra, Mymensingh

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MTF/INT/034/STB Set up of child centres "We are the Future" (WAF) to deliver an effective urban gardening and nutrition and health education programme for children and youth, especially of orphans and vulnerable children	Municipalities of Addis Ababa, Asmara, Freetown, Kabul, Kigali and Nablus, Starbucks (a major retailer) and Glocal Forum (WAF)	USD 350 000	Dec. 2006– June 2008	Afghanistan, Eritrea, Ethiopia, Democratic Republic of the Congo, Rwanda, Sierra Leone	Addis Ababa, Asmara, Freetown, Kabul, Kigali, Nablus
TUR/95/004//01/99 Assistance for urban-rural integration and community development programmes in Halfeti, Sanliurfa	Municipalities of Halfeti and Sanliurfa	USD 267 099	Jan. 1998– Dec. 2001	Turkey	Halfeti, Sanliurfa
TUR/97/008//01/12 Urban forestry in Karsiyaka, Izmir, Turkey (urban land planning)	Municipality of Karsiyaka	USD 72 549	Sept. 1998– Mar. 2000	Turkey	Karsiyaka

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