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Chapter 6
Which Organizations Influence Urban Agriculture?

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Which Organizations Influence Urban Agriculture?

Urban agriculture is intricately tied to a variety of urban systems, including health and nutrition, the economy, land use, ecology, infrastructure, waste management, and transport. Thus it requires more interaction with, and is more sensitive to, the influence of civic, governmental, and private agencies than most other industries — a fact that may have played a role in hindering its full development.

The organizational constraints that face the industry — and the policies needed to overcome them — are discussed in Chapters 9 and 11, respectively. This chapter discusses the kinds of policies and actions now being pursued by various organizations. It is descriptive, not prescriptive.

Different Roles for Different Organizations

A great number of organizations influence urban farming. They can be categorized into six groups: (i) farmers' associations, (ii) non-governmental organizations (NGOs) and other support entities; (iii) local and national governments and other public authorities; (iv) institutions, including independent and university research centers; (v) private firms; and (vi) international development agencies.

These actors can be classified according to the four roles they fulfill — regulating, facilitating, providing, and partnering (Table 6.1). One organization can fulfill multiple roles simultaneously or through different components. Moreover, actors not only influence urban agricultural activities, but are also affected by them, either unfavorably (as when poor agriculture practices cause health problems that require government intervention) or favorably (as when farmers properly use the sludge from a wastewater treatment plant).

Regulating. Urban agriculture is regulated through a variety of laws, rules, regulations, and programs. Impacts of the regulatory framework range from a generally favorable or unfavorable climate resulting from policies that grant or deny a stamp of approval to agriculture, to concrete actions of evicting farmers, cutting down crops, or confiscating livestock. Legislation affecting urban agriculture includes land use, building, environment, and health codes, and enforcement is most often the responsibility of local governments. National governments have important roles in establishing and enforcing health and environment laws and regulations and in setting policy.

In addition to government laws and regulations, other less obvious regulating instruments include international codes, on which many national and local codes are

based; crop quality or purity standards established by farmers' associations for their members; and informal community controls on farming practices, often based on tribal, cultural, or religious views.

Facilitating. As used here, facilitation includes providing technical advice and training; brokering relationships with markets, government, bankers, and other groups; leading or supporting policy or regulatory changes; eliminating constraints; providing information; and assisting with organization. All actors described in this chapter can play facilitating (as well as constricting) roles.

Providing. Actors intensify their involvement in urban agriculture when they move from facilitating (which is equivalent to providing services) to providing resources and inputs. This assistance includes supplying seeds and tools, granting access to land and water, or providing a processing facility or insurance. It can also include providing financial resources, such as credit for purchasing inputs or land, funding for research, or seed money to initiate an endeavor. Efficient marketing requires market information, weekly radio programs as well as other private and public media; and information about the latest techniques, neglected crops, and the shifting pattern of the urban market.

Table 6.1 Roles played by various organizations influencing urban agriculture

Organization	Regulate	Facilitate	Provide	Partner
Farmers' association	—	♦♦	♦	—
NGO	—	♦♦	♦	♦
Local government	♦♦	♦	♦	♦
National government	♦♦	♦	♦♦	♦
Institution	—	—	♦♦	♦♦
Research institute	—	♦♦	—	♦
International agency	—	♦♦	♦	—
Other stakeholder	—	♦♦	♦♦	♦

♦♦ = primary role ♦ = substantial role — = insubstantial role

Source: Compiled by The Urban Agriculture Network from various sources

Partnering. In most countries, governments and institutions are large holders of certain urban resources, especially land. They thus have a bigger stake in urban agriculture than most other actors, which gives them a special role in the provision of these resources. When they act as a landlord or an active participant in, for example, sewage-based pisciculture, their role moves from that of an important outside actor (regulator, facilitator, provider) to that of a directly-involved party. This more intimate involvement is referred to as partnering. It occurs when there is a strong collaborative relationship — a university allows farmers to cultivate part of its vast land holdings in return for a share of the crop, a highway authority allows farmers to graze the verges in

return for maintenance, or a river port authority deposits dredge material on farmers' fields in agreement with a farmers association **(Photo 6.1).** Partnering can be the most fruitful of the four types of relationships for all parties involved. A number of potential partnerships are identified in Chapter 10.

Support Organizations

A variety of organizations support the activities of urban farmers (Table 6.2). It is useful to differentiate three types. *Farmers cooperatives* were discussed in Chapter 3, wherein agricultural producers organize themselves into collective units to take advantage of certain economies of scale in production, marketing, and other activities. Whereas cooperatives are production entities similar to an agribusiness but run by their members, *farmers' associations* bring together independent farmers or farming cooperatives that share certain interests or farming systems to help them gain access to possibilities (and overcome barriers) through lobbying, obtaining information, and reforming laws and regulations.. Finally, *non-governmental organizations* (NGOs) generally do not include farmers, but are independent organizations that want, in addition to other commitments, to help farmers.

Table 6.2 Examples of support organizations active in urban agriculture

Organization	Location	Project description
Urban Food Foundation	Philippines	Instrumental in forming a co-op of 500 small livestock producers
SODEM	Chile	Uses model gardens to train home gardeners; provides extension help
Undugu	Kenya	Supports urban farming for food security, enterprise and disaster management
CET	Chile	Training and extension to low-income women for intensive gardening
Peru Mujer	Peru	Training and organizing community gardens for low-income women
Grupo de Estudios Ambientales	Mexico	Provides technical advice to Chinampas farmers
Kinshasa farmers' cooperative	Zaire	Facilitates access to inputs, land, and markets
Indonesia national agronomists association	Indonesia	Provides information and lobbies the government
American Community Garden Association	USA	Provides an extension service 'From the Roots Up' and manuals
CityFarmer	Canada	For 20 years has provided advice and references for urban agriculturists in Vancouver and (through the Internet) globally
CGIAR	Global	Provides information to national research programs through several of its 16 research centers around the world

Source: Compiled by The Urban Agriculture Network from various sources

The line between these three types of organizations can be fuzzy. Their structure and purpose can evolve over time — a cooperative may grow into a city-wide farmers' association; a farmers' association in turn can become independent and acquire a variety of other roles such as education and health improvement, thereby becoming an NGO. Since cooperatives have already been discussed at length in Chapter 3, farmers' associations and NGOs are discussed in detail here.

While a number of international, regional, or national support organizations are involved in urban farming, the majority of concerned organizations are typically based locally. Many of the food system innovations mentioned in this book emerged from the energy of thousands of successful community organizations. Examples are sprinkled throughout the book. Some of these organizations were focused on overcoming hunger, others on community development, and many on survival of the poor in the city. Enhancement of the 'food system' was frequently not the objective, but rather a means to other objectives, or even an unanticipated discovery through other activities. In many places a supplementary locally-based food system has appeared unobtrusively as a result of the actions of community-based organizations. For instance, microcredit NGOs discover over time that most of their loans serve entrepreneurs in the food system.

Where food security is specifically targeted, community-based organizations can begin with food production (with community gardening perhaps the most common occurrence) or with food distribution, including community kitchens. Farmers' markets, which can be regarded as organized direct marketing, have been growing particularly rapidly in developing and developed countries alike, successfully competing with supermarkets. Central and Eastern Europe have experienced a particularly rapid growth of direct marketing as the free market system replaces the command economy system. Direct marketers sometimes organize themselves in order to market their products more efficiently. In some cities, local food policy councils are establishing food distribution systems.

A noteworthy type of support organization is the irrigation association. The core function is not food production per se, but distribution of the water on which it relies. These bodies not only serve to ensure efficient (and often ecologically sound) management of urban irrigation water, but can be central to the organization of a city's entire food system. This is particularly evident in the case of the two Syrian cities of Homs and Hama, where associations have long been essential to the maintenance of the city's agricultural canals (Case 6.1).

Case 6.1 Organizing the water supply in the urban gardens of Hama and Homs, Syria

The two largest cities of the valley of the Orontes River in central Syria, Homs (population 615,000) and Hama (370,000), have always contained intra-urban and peri-urban horticultural zones. Occupying the river banks, these areas ensured production of most fruits and vegetables for the urban population until the 1940s. The nature of these zones was very different — one homogeneous unit (1,000 hectares) located at the western edge of Homs, and a chain of small areas (encompassing 500 hectares) scattered along the river like beads on a string in Hama. These

zones belong to various townsmen — notables, merchants, and craftsmen. Their cultivation is assured by gardeners, farmers, or sharecroppers who live in town and constitute a specific professional class. The organization of this professional class largely evolved from an irrigation system that differed significantly between the two cities.

In Homs, 60 percent of the horticultural zone was irrigated by a principal canal supplied by an antique weir located about 15 kilometers to the south of the city. This canal, which was the exclusive property of Homs, fed a network of secondary and tertiary canals according to very precise water rights. The system was under the responsibility of a notable who held the title of 'Head of the Gardeners'. The lateral and tertiary canals were controlled by the most influential families of gardeners, and a council of these family members was the link between the Head and the other gardeners.

In Hama, lifting wheels (norias) provided irrigation water for the horticultural zone for a long time; indeed, the norias have become the best-known feature in the city. The gardeners were organized around the collective use of these norias, thus constituting a number of small autonomous communities, not requiring the installation of a central authority and a more general and coercive organization.

These two systems have evolved greatly since the 1940s. In Homs, the construction of a large new canal replacing the old one integrated the horticultural zone within a vast regional system of irrigation, shifting control of the large canal to a far-off state administration. Most of the gardeners dug artesian wells at the end of the 1980s, and now alternate use of groundwater and canal water. Individual irrigation management has thus replaced the larger administrative management, which itself replaced the traditional community system.

In Hama, the prime change was replacement of the norias by motor-driven pumps beginning in the 1950s, drawing water directly from the Orontes River. Initially, they were installed and run collectively, but quickly became individually owned and operated. Their multiplication hastened the demise of the small autonomous communities.

The access to water has become increasingly individualized in Homs and Hama. Traditional associations of irrigators are being replaced by other forms of collaboration, usually on the basis of family, friendship, solidarity, or common interest.

Contact: Thierry Boissière (see Appendix F for complete address).

Farmers' Associations

Farmers' associations can be organized either vertically or horizontally, or sometimes in both directions. They may seek to integrate the urban agriculture industry vertically by improving access to inputs, resources, and services, or to processing, distribution, and marketing information and facilities. In other cases, farmers' associations are organized horizontally within a farming system, cutting across urban and rural lines.

An example of the latter is the association of fishermen cooperatives in the West Bengal area of India. Fishermen in the sewage lagoons in Calcutta perceive themselves as a part of the larger community of fishermen in the state. The association is organized at the state level, with regional and local subdivisions in both urban and rural areas. The fishermen thus express their needs, first through small cooperatives, and then through the statewide association (see Case 3.5).

In Taiwan (province of China), urban farmers constitute the majority of farmers' association members. The associations also manage access to water. They decide each year how much water each farmer will receive and on what days, and crops are then planted accordingly. The Taiwan National Farmers Association is an excellent model as a

credit provider from within the farming community. All members in good standing have access to credit with streamlined procedures. The risk is reduced by the large membership and reinsurance by the national government.

In Jakarta, the urban members of the National Agronomists Society organized a two-day conference in 1992, with a focus on influencing national government policy. In Zambia, the National Farmers Association is reaching out to medium- and small-scale urban farmers. A farmers' association in Dakar, Senegal not only regulates the use of water to its members, but also leases the lagoon it controls to annual migrant farmers who raise rice. The very vocal and powerful association of 80,000 community gardeners in Berlin (Case 6.2) shows the potential influence that farmers can have when they consolidate their forces.

Case 6.2 Schrebergarten associations in Germany

Allotment gardens in Germany had modest beginnings in the mid-19th century as children's gardens. The first formal family allotment gardens, which came to be known as Schreber Gardens after the head of a local clinic, were organized in Leipzig in 1868. Originally they were also meant to better conditions for children, but parents quickly took over the garden. From the start, a gardeners' association was formed, naming itself Schreber Association, and an entire movement was born.

From a few hundred plots in the mid-19th century, the number of gardens rose to about 450,000 in the early 1930s. In 1949, post World War II food shortages had given the movement a boost, and the number had risen to about 800,000. Today, the federal union of allotment holders counts about 1 million members who have organized themselves into about 14,000 allotment garden associations all over the country, including about 650,000 households.

In 1919, strong political associations of community gardeners and state interest led to the first act targeting allotment gardens, the Allotment Garden and Small Land Lease law, and the implementation rules that followed. More than 100,000 people now serve in allotment-holders' associations in Germany in a wide variety of roles — officers, gardening consultants, certified experts in plant protection, volunteers on commissions to evaluate gardens and nurseries, and volunteers in other matters of community gardening self-administration.

Municipalities were involved from the early days in regulating and charging rent to use municipal land for allotments. Gardeners' associations commonly dealt with the parks department, planning department, real estate department, and other municipal authorities. Interests of the various parties interact with each other and ultimately shape the politics of community gardeners in Germany. Whether the interests of allotment gardeners are served or not depends upon their strength as an organization, which is what community gardeners in Germany have understood from the beginning.

A clear example of their influence on municipal policy came in 1993-94 in Berlin. Schreber associations confronted the city's minister of construction when he attempted to allocate some of the land where gardens were located (often prime locations) for development sites. They were able to secure the future of 85 percent of the allotment gardens in Berlin by lobbying the Berlin Senate to approve an allotment garden designation within the city's land use plan.

The pressures on the Schrebergarten today come from multiple sources. In addition to the expected real estate pressure on these largely unbuilt lands, some uses expose them to loss of their special status. In a number of cases, many users put these lots into more recreational and less productive uses, sometimes without any food production at all. If a garden area falls out of compliance with the food production requirements, it can lose its Schrebergarten status. With the loss of the special rates granted to Schreber associations, rents can then increase 10-fold. For this

reason, the self-policing role of an association is vital for the maintenance of its privileges and activities.

In Germany, the Schreber associations are not just about gardening. They believe that the more the associations shape themselves according to their particular needs and bring the individual gardeners together as a team, the more they will contribute to a civic education. Small-garden managers in local associations, as well as statewide and nationwide unions, enliven the democratic constitution of a country. Community gardens therefore provide a social framework for a number of garden-related activities that many perceive as a vital enhancement to their quality of life in an urban environment.

Contact: Gert Gröning (see Appendix F for complete address).

Vertically organized farmers' associations are perhaps more the rule in Europe than in developing countries. In Poland, for instance, small-scale farmers are organized on a local and a national basis. With notable exceptions, there has been little vertical organization focused exclusively on urban farming. In some of the examples given in this book, vertical organization has occurred spontaneously in response to a need. Thus community kitchens in Peru have moved backward into production to secure access to micronutrients from vegetables (see Case 7.2). A cooperative of women producers in Colombia became a marketing cooperative in order to assure a market (see Case 5.3). The Washington D.C.-Baltimore metropolitan area is served by the Tuscarora Organic Growers Marketing Cooperative. With growing recognition of the industry and some international support, national, and regional organizations are forming.

Urban farmers' associations are nonetheless more the exception than the rule. Many operate with only limited contact with their peers. Urban farmers are still less likely than rural farmers to see themselves as members of a common group or industry.[1]

Non-Governmental Organizations

Local NGOs are often the primary facilitators of urban agriculture. NGOs often perceive themselves as pioneers and are playing crucial roles in developing innovations. Along with community-based organizations, NGOs have the closest relationship with, and are most supportive of, urban farmers, especially the poorest and most disenfranchised.

NGOs can serve as links between farmers and the market, credit agencies, research institutions, and the government. They assist through a number of means — empowerment and general organization; technical assistance; extension and training; access to land, credit, insurance, and inputs; and organizing markets and market information. Similar to farmers' associations, NGOs can remove constraints that hamper small-scale farmers and push governments and other institutions for policy changes.

NGOs are becoming increasingly active in urban agriculture. Not surprisingly, the countries with the highest level of NGO development among those examined — including Chile and the Philippines — appear to have the highest level of NGO interest in feeding the cities through grass-roots efforts by the urban poor. In both countries, NGOs support production and processing with research and marketing programs.

After having been a key part of the so-called alternative movement in the 1970s and 1980s in Latin America, some NGOs that support urban farmers are now working in collaboration with new democratic governments. Most typically, they are involved in promoting community development and self-reliant technology. KAIROS, a small NGO working with the poorest of the poor, particularly recent arrivals in metropolitan Santiago, supports horticulture at a solid waste dump, among other efforts. NGOs are active in urban agriculture in Poland and Singapore, and in Africa in Zambia, Tanzania, Côte d'Ivoire, Senegal, Uganda, Mozambique, Democratic Republic of the Congo, Cameroon, South Africa, and Kenya (Case 6.3).

Case 6.3 Promotion of urban farming by the Undugu Society in Nairobi

The Undugu Society is a non-governmental organization in Kenya working to empower poor people engaged in handicrafts. The society noted that food is the major expense for the urban poor, and decided to promote farming as a strategy for food security, nutritional self-reliance, and well-being. Starting in 1988, access to land was negotiated and small plots of 165 square meters were allotted to 105 households along the Nairobi River. Extension advice and assistance were provided for two years, focusing on vegetable production.

Farmers grow several crops, including onions from waste bulbs collected in the market. Farmers are also helped with livestock — goats, ducks, rabbits, and chickens — at their homes. Fruit trees, including mango, paw paw, and avocado, are grown as companion crops to vegetables. In the slum of Kitui-Pumwani, Undugu has helped to establish a banana plantation to protect the slum from flash floods.

Undugu is promoting the use of organic pesticides from local material in place of imported chemicals. Composting of household waste (including waste paper and plastic and organic waste) is adopted for soil renewal and as a solution to the problem of waste disposal. The Nairobi City Council denied the farmers' request to collect garbage from nearby high-income residential areas by truck, although it is permitted by collection by hand cart.

Agriculture is integrated with handicraft activities (including soap and candle making) and with environmental improvement projects. In general, farmers faced better nutritional conditions than non-farmers. The mean monthly income of households participating in the Undugu project was 1.5 times that of other households in 1994. The effect of greater purchasing power is difficult to separate from the farming effect in the study because the urban agriculture program of Undugu was accompanied by other enterprise development efforts as well as with shelter improvement — all of which may have added to the welfare of participating households.

Contact: Paterson Kuria-Gathuru (see Appendix F for complete address).

Reports identify similar activity in South Africa, Democratic Republic of the Congo, Mozambique, Zimbabwe, and Ethiopia. Human Settlements of Zambia has worked for 20 years with international agencies — including UNICEF, the World Bank, and the American Friends Service Committee — managing urban agriculture projects in settings from kitchen gardens to rain-fed plots at the periphery of the city (see Case 9.1). The Pennsylvania Horticultural Society has provided services to small-scale growers in

Philadelphia for a similar period. Throughout Europe, from West to East, allotment gardens have long been supported by NGOs.

NGO involvement in urban agriculture is relatively limited in Asia except in the Philippines, where the Urban Food Foundation is providing active support to urban farmers (see Case 9.7). Another NGO in the Philippines, the International Institute for Rural Reconstruction, is helping intensive home and community horticulture and small-livestock farmers.

Urban agriculture often fits into a local organization's basic agenda of service to the poor, which includes alleviating poverty and overcoming hunger and malnutrition. For many NGOs, urban agriculture starts as a secondary activity, but when they recognize the benefits farming offers to the low-income residents whom they assist, they gradually add urban agriculture to their areas of support. In Peru, community kitchens began their own food production, in one case in cooperation with the national government and an international NGO. Self-help housing groups sometimes include urban agriculture as an informal activity.

In addition to their principal role as facilitators, NGOs are sometimes resource and input providers. For example, they may provide seeds, ease access to land, or contribute a water tank, perhaps as a 'funnel' for an international development agency or a charitable organization. Less frequently, NGOs actually go into partnership with the farming community by establishing and running a hawkers market or a hospital garden for producers within a community. Many of the small loans made through micro-lending funders are used by very small-scale urban food producers to purchase essential tools to expand. The Trickle-Up Program is a small American NGO that makes small grants to entrepreneurs on the basis of a completed business plan. This small-grant program is one example of a range of international NGOs that perform specific functions in support of urban farming globally, including The Urban Agriculture Network, which serves as a worldwide knowledge center.

Governments and Public Authorities

Of all the actors in urban agriculture, governments and public agencies assume the most complex and comprehensive functions. They play the same roles as NGOs in relation to urban agriculture — setting policy, regulating, and facilitating. In addition, they are major landowners and the managers of wastewater, solid waste, and water supply systems, a role that gives them the highest potential for partnership with urban farmers, as well as the potential to hinder their activities. Finally, they often hold the key to bringing the different stakeholders together, as we will see in the section on partnerships at the end of this chapter.

Most governments still perceive urban food and fuel production as a marginal and temporary activity. In general, the trend toward increased urban agriculture is being followed, not led, by organizational changes in government. Lack of communication with NGOs, farmers groups, researchers, and institutions within the urban region can result in missed opportunities.

On the other hand, governmental leadership in facilitating urban agriculture can attract other support and contribute to food security and other benefits (Table 6.3). This leadership has manifested itself in diverse ways. For example, land management to enable urban agriculture has been inventing or rediscovering powerful new tools. The types of intervention have varied enormously —the resurrection under President Gorbachev of the *dacha* system of family farms on the urban fringe in Russia, state-of-the-art 'agrotechnology' parks in Singapore, planned large-scale allotment gardens placed in strategic city-owned sites between white and black areas in South Africa, and planning farmland in the center and fringes of Bulawayo, Zimbabwe.

The efficient and ecological management of water, land, and other resources for urban agriculture needs to engage government at all levels. Health concerns require collaboration between different levels of government, which in turn must have the support of research and educational institutions at the national and international level. Within the government, advancing the potential for urban farming requires collaboration among city planners, environmental experts, food systems specialists, economic development specialists, land and legal experts, and those responsible for infrastructure, water, sanitation, and solid waste.

Table 6.3 Examples of governmental organizations active in urban agriculture

Organizaton	Location	Involvement
Water authority	Mexico City	Provides irrigation and oversight of peri-urban farming
	Jakarta	Formed joint venture with fisherman to harvest reservoirs
Port authority	Calcutta	Leases land and lagoons to co-ops
Highway authority	Indonesia	Leases right-of-way land to urban farmers
Electricity authorities	Canada	Produces vegetables in greenhouses
Military authority	United States	Leases land on bases to farmers
Municipality	Munich	Produces fish in sewage lagoons
	Maputo	Acts as land-owning partner with women's food production cooperative
	Jakarta, Mexico City, Buenos Aires	Created urban agriculture agency
National government	Argentina, Peru	Has national agency for urban agriculture
	Panama, Romania, Russia, Tanzania, Zambia	Adopted policies that favor urban agriculture
	Italy, China, Japan, Singapore, Netherlands	Has long-standing urban agriculture policy and agencies
	Malawi, Tanzania	Plans for a new capital include urban agriculture

Source: Compiled by The Urban Agriculture Network from various sources

Local Governments

The most frequent reaction by local governments to urban agriculture is to limit it. Most municipal regulators are concerned first and foremost with health and aesthetics, and view agriculture as a rural activity that is inappropriate in the modern city. Local government limitations range from disallowing any form of urban agriculture to setting specific limits, such as four cows per household in Dar es Salaam.[2]

Yet some municipal and metropolitan governments are beginning to recognize urban agriculture's role and establish agricultural departments. Mexico City, Singapore, and Jakarta have such departments, including research and extension divisions. In many cities, the parks department is accountable for agriculture and often grows its own trees and shrubs.

In Dodoma, the new capital of Tanzania, the Capital Development Authority supports agriculture within neighborhoods, in green belts around neighborhoods, and in peri-urban zones.[3] The municipal government in Lilongwe, the new capital of Malawi, also officially recognizes urban agriculture as an activity, as does Brasilia.

The facilitator and provider roles of local government are thus very broad, particularly in relation to various issues of access. A few cities have also become partners in some urban farming practices, such as school gardens, primary agricultural education, street trees that bear fruit, and fish farming in municipal waters. In Maputo, Mozambique, the municipal government is a land-owning partner in the green belt farming cooperatives that are a major source of food and employment for residents.[4] In Shanghai and other Chinese cities, the government actively promotes urban farming (Case 6.4 and **Photo 6.3**).

Case 6.4 Government-planned farming in the Shanghai urban region

When the boundaries of Chinese municipalities were expanded in the 1960s and again in the early 1980s, one criterion defining each municipality was nutritional self-sufficiency. In most larger cities, vegetable corporations were created, which in turn established relationships with the authorities responsible for land, solid waste, sewage, industrial waste, and farmers' cooperatives. Production and processing were integrated within a single system. Each city established or renovated public and private markets, and individuals and cooperatives could choose their market.

During a period of very rapid urbanization from the 1960s onward, Chinese urban planners and managers supported urban agriculture. The urban regions (which are much larger than those in most other countries, although their size contracted somewhat in the 1990s) have become self-reliant in perishable foods. At least half the major cities export some products to surrounding areas. Fresh vegetables, fruit, and meat are available in all small and large cities. Vegetables picked in the morning are available at retail for dinner, and chicken, pork, and fish are also available fresh daily (see Case 4.7, wastewater fisheries).

A number of factors contribute to the successful promotion of nutritional self-sufficiency in China. First, the authorities were philosophically committed and sought less reliance by urban populations on rural ones. Second, the cooking customs created a demand for fresh ingredients, even though there was no dependable transport system to provide them from a distance. The great cost of food products relative to other household expenditures also gave great importance to

maximizing urban food supply. As recently as 1989, some urban residents spent 58 percent of their income on food, 74 times the amount spent on rent. Probably most important was the centuries-old tradition and technology of urban agriculture, based on recycling urban waste into food.

Shanghai is a standout among the country's many cities. Since the 1950s, the Shanghai municipal government has planned and managed food production in the municipal region to effectively satisfy the food demands of a population that now exceeds 14 million. The government's objectives were to create local food self-reliance within the urban region and to reduce transportation, storage, and fuel consumption.

The municipal government divided the urban region according to the type of agriculture for which it is best suited — farming, forestry, fisheries, or animal husbandry. An integrated urban food policy and technology research, assistance, and extension programs are geared to local needs. The economic and managerial aspects of farming are integrated, and the city supervises the collection and usage (for farming) of solid and liquid waste, including night soil.

Until recently, the system supplied all of Shanghai's fresh vegetables, as well as a significant percentage of the grain, pork, poultry, fish, and other food demands. Fresh vegetables can be bought in the market within 10-15 hours of harvesting. The government supply system has successfully combated food shortages since 1949. However, loss of agricultural land combined with changes in the links to waste management and population growth have gradually led Shanghai and other Chinese cities away from self-sufficiency, with an increasing reliance on imported agricultural products, from both rural areas and overseas.

Contact: See source listed in appendix C.

In municipalities, one key individual who becomes interested in urban agriculture can often act as a catalyst to gain acceptance and more active support for the industry. For example, in Bulawayo, the second-largest city in Zimbabwe, the town clerk has become a dynamic force in initiating a municipal program to support urban agriculture. The city's Department of Housing and Community Services now makes available both garden allotments (irrigated with reclaimed water) and rain-fed maize field allotments (larger but farther away). In parallel to these allocations, the city also grants permits for commercial cultivation in residentially zoned areas (which cover most of the city). The city thus plays the role of regulator, as well as facilitator and provider.[5]

Regulation and enforcement functions tend to operate at the city level. Even where the country's governmental controls are highly centralized, the oversight of many ministries tends to take place through some geographic divisions that provide a level of local control over the various aspects of urban agriculture.

Local agencies usually have the responsibility to ensure the hygiene of urban farming and the tasks of soil, water, and waste testing; food safety monitoring; zoning land for agricultural use; farmer education on health risks and management practices; and monitoring the collection, treatment, and reuse of waste. Few cities, however, are organized to perform this range of tasks adequately, particularly in poorer countries. Moreover, as is frequently the case, where cities do not recognize urban farming as a legal activity, they are not likely to enforce its hygiene.

In cases of intensive dairy or poultry farming, city authorities are responsible for monitoring and regulating the hygiene of the facilities and manure disposal or use. Food safety monitoring is undertaken by many cities, but the complexity of regular testing and

enforcement may exceed the capacity of certain municipalities. In some cities, urban authorities undertake soil and water testing in different areas of the city to determine the safety and adequacy of the area for farming. In Poland and the region around Jerusalem (Israel) and Virginia Beach (Virginia, USA), a zoning system was developed for farmland near industrial areas, with different crops allowed in each zone, based on sensitivity mapping.[6]

For crucial urban issues such as water supply and disposal, several departments of local government need to coordinate their programs and cooperate with others to best oversee and manage the resource for urban farming. This includes allocation by the water department for agricultural and other uses. The departments that manage liquid and solid wastes must collaborate with farmers to reduce pressure on their systems through reuse, but also to protect farm waste from contaminating the environment.

The challenge lies in the fact that waste management in most large cities has been organized around collection and disposal, rather than sustainable reuse in farming, although in some instances, local governments are moving in that direction. For this to function well, local waste collection agencies need to be organized to treat waste, monitor levels of heavy metals and pathogens, regulate reuse, and educate farmers on proper handling and management of the waste. At the community or neighborhood level, local governments have a vital role to play in the introduction and adoption of innovative approaches such as Ecological Sanitation, which is spreading with support of UNDP and others.

Planning and building departments may need to revise their codes to direct runoff to fields rather than to a river, and introduce alternative dual sewer systems. They must also be more concerned with the share of land covered by buildings and pavement, as well as preventing construction over aquifers. SUSTAIN in London and other organizations are promoting ‘edible buildings’ — a concept that will require changes in building and construction regulations to reach its full potential.

Lubbock, Texas uses all of its wastewater for agricultural irrigation.[7] The much larger municipality of Jakarta, Indonesia leases hectare-sized portions of its potable water reservoir to fish farmers. The metropolitan governments of Cairo and Mexico City pump wastewater uphill to green the desert and produce crops for the city, but most of the production in these two cities is not very efficient because the wastewater is used primarily for animal consumption and tree crops.

National Governments

National governments influence urban agriculture by setting policies, defining regulations, facilitating processes, providing resources, and sometimes by being a partner. Peri-urban areas are usually zoned for farming, so farmers in these areas may get assistance from agricultural extension agents, who are generally employed by the ministry of agriculture. In Peru and Argentina (Case 6.5), national government organizations provide seeds and seedlings, training, and information to hundreds of institutions and NGOs.

Case 6.5 Pro Huerta, a national agency supporting small-scale urban farmers in Argentina

In 1991, INTA (Instituto Nacional de Technologia Agropecuria), SAGP (Secretaria de Agricultura, Ganadaria y Pesca), PFS (Programa Federal de Solidaridad), and SDS (Secretaria de Desarrollo Social) formed Pro Huerta with aid from the Italian government.

Program objectives are to improve nutrition and food security, promote small-scale in-town production, and advance community participation in solving food-related problems. Its action programs include training trainers; enrolling institutions; providing inputs such as seeds, seedlings, and livestock; and technical assistance in sustainable methods, including organic production.

Pro Huerta listed over 500,000 beneficiaries in 1994 (up from 43,000 in 1991). By 1999, support was being provided to over 440,000 families, thus close to 3 million Argentinians are involved. Sixty-two thousand community, school, and institutional *huertas* (gardens) produce vegetables, fruit, and small livestock (particularly rabbits). Pro Huerta reaches these small-scale and home farmers through 1,100 cooperating institutions in 1,800 towns and cities and its 13 regional offices.

Unfortunately, Pro Huerta is currently threatened with cutbacks or elimination, despite its significant countrywide contributions.

Contacts: Daniel Norberto Diaz and Francisco D. Garra (see Appendix F for complete address).

A great deal of urban agriculture grows on national government land such as highways, railways, ports, and parks. Many branches of government can affect farming activities in urban areas, including some whose mandate is neither agriculture nor food supply. The Mexico City regional water authority, for example, provides irrigation from sewage as well as oversight for nearly 100,000 hectares of farm area that feed the city.[8] Indonesia's toll highway authority leases land within the rights-of-way to urban farmers. In the United States, some military bases lease surplus land to farmers.

Typically, national governments originate and then monitor regulations that are applied by local governments. National governments direct agricultural research and provide extension agents, and urban agriculture functions within national food, urban, and agricultural policies. Some countries (including China, Japan, the Netherlands, and Italy) have policies and agencies that have supported urban agriculture for decades, sometimes using tax codes to provide incentives for urban farming.

In other countries, policy shifts are more recent — and emphatic. Undoubtedly the most dramatic example by far is Cuba, where the national government played an essential role in this shift when it adopted urban agriculture as a national priority in the early 1990s. Within five years, it built the most comprehensive program in the world, integrating every municipality in the country, employee unions, emerging private firms, and other actors. Besides its integrative role, the national government also played a direct role through extension services, a weekly television program, transformation of markets, making public lands available, education and research, and more (see Case 7.6).

Recent efforts are focusing on more comprehensive strategies and programs, such as planning for agriculture throughout a watershed. In Brazil, there is a new effort to have

all governments and concerned civil organizations prepare plans and programs to use an entire watershed.[9] In the United States, the Departments of Interior and Agriculture and the Environmental Protection Agency established a new watershed planning process in 1997. It places all levels and sectors of resource planning, both urban and rural, on a single geographic database, managed by the Geological Survey (which is an agency of the Department of the Interior). The urban planning, infrastructure, waste management, and other city planning data will for the first time be integrated with natural resource data on a systematic basin-wide basis.[10]

Governments in arid and semi-arid climate zones have historically been more deeply engaged in water management for both agricultural and potable human consumption. Examples include the Indus (Pakistan and India) and the Euphrates (Turkey, Syria, and Iraq). Rapid urbanization and growth of urban agriculture in these countries are requiring more precise water management schemes. This increased complexity must be balanced with the ecological enhancement that is possible through good urban agriculture practices, as guided by wise public administration.

Public and Semi-Public Institutions

The role of institutions in relation to urban agriculture is focused in two main areas — providing resources (particularly surplus land) and conducting research. Many institutions can do the first, while the second is the realm of universities and public and private research centers, whether based inside or outside the country. The relationship between an institution and producers may take the form of a partnership that involves both resources and research.

Institutional Providers

Institutional support for urban agriculture from universities, utility authorities, hospitals, churches, and charities has a long history. In Haiti and Peru, hospitals lease land to NGOs for food production. In the Philippines, it is the national university, while in Canada, some electric utilities produce vegetables in greenhouses heated by the water used to cool their generators. In Brazil, utilities partner with farmers to maintain the land under power lines (see Case 4.9). Church-based community gardens are common in many countries, and some churches provide essential inputs.

In India, the Port Authority of Calcutta is a partner with fishermen cooperatives in the sewage lagoons, while the Bombay Port Authority enables its workers to raise vegetables for the market by providing land and technical assistance. In the same country, the Durgapur steel mill leased land and access to its cooling pond to its employees association/union. The workers hired local farmers and provided part-time volunteers to produce fresh food for members' families and the local market.

Research Institutes

Although there appear to be few formal programs labeled 'urban agriculture' at universities or research institutions, a great deal of expertise and information is being accumulated by individual researchers. A number of doctoral and master's degree

candidates in the United States, Canada, the United Kingdom, Germany, the Netherlands, South Africa and elsewhere are focusing on urban agriculture. Most of these students are from developing countries and survey their native country as part of their research.

No uniform, comparative, formal global survey of urban agriculture has been undertaken to date, however, a number of universities and research organizations have conducted city and national surveys, especially in Africa. A two-year survey by Sokoine University in Tanzania in the early 1990s provided a foundation for projects supported by the German and Dutch governments.[11] Similar surveys, although generally less comprehensive, have been conducted in Kenya, Uganda, Togo, Zambia, Argentina, China, Indonesia, Nepal, Papua New Guinea, and Poland. At the start of this new century, the Resource Center for Urban Agriculture and Forestry (RUAF) is currently overseeing surveys on urban agriculture needs being conducted in at least half a dozen countries in each of several regions — so far, Latin America, West Africa, East Africa, and the Middle East-North Africa.

Although not explicitly under the heading 'urban research', a large body of research has been conducted on techniques that are particularly relevant to farming in urban conditions, generally at institutions in developing countries. These techniques involve poultry, biointensive gardening, hydroponics, aquaculture, various greenhouse-based technologies, and most waste-processing farming methods.

The Consultative Group for International Agricultural Research (CGIAR), with 16 centers worldwide and nearly 100 regional offices, has recently instituted a global support program, the Strategic Initiative on Urban and Periurban Agriculture, that seeks to integrate some of the fragmented research under way on this subject at its member centers. It reaches out to national agricultural research centers.[12] The Asian Vegetable Research and Development Center (AVRDC) has a 40 year history of supporting urban vegetable production throughout Asia and also more recently in Africa and Latin America (Case 6.6).

Research is an essential catalyst for the development of urban agriculture, and provides a clearer understanding of the industry's contributions and limits. Without this knowledge, credit and investment will be difficult to attract. Universities and other institutes often play a central role not just in developing knowledge, but also in its dissemination, yet few of them explicitly recognize the specificity of urban extension. Their significant role in extension thus remains potential rather than actual. For all these reasons, research institutions are crucial actors in urban agriculture (Table 6.4).

Case 6.6 AVRDC's multi-pronged program

The Asian Vegetable Research and Development Center (AVRDC), in Taiwan (province of China), is dedicated to improving production techniques and the quality of vegetables in Asia, Africa, and Latin America. The center conducts technological research, carries out field research, and provides training and extension to farmers and promoters of farming. AVRDC also works to increase the research, training, and extension capacities of similar research organizations, and collaborates with other international agricultural research centers.

Although AVRDC is not primarily concerned with urban horticulture, its horticultural research is often relevant to urban farming. The center holds workshops on intensive vegetable production in

household gardens that provides increased vitamin A and essential minerals, produces improved varieties of vegetables and disseminates them to farmers through linked research and extension agencies, and works on improved crop and soil management practices.

As part of the group's Vitamin A Gardening Project in Africa, training in vegetable gardening and nutrition is provided to African agricultural institutions. AVRDC has worked on several urban or peri-urban horticulture projects, including one in Tanzania. In 1993, it began expanding its activities to Central America. Among others, it is looking at helping communities that have experienced devastating natural disasters.

Contact: Lowell Black (see Appendix F for complete address).

Private Sector Entities

The private sector provides urban farmers with credit, inputs, information, and an outlet for their goods, and of course farmers themselves operate largely within the private sector. The range of urban producers was discussed in Chapter 3; in this chapter we will only provide an overview of the range of private sector entities that support activities of urban farmers.

Urban agriculture requires not only participation by producers, but also by various others in pre-production and post-production processes. A number of private actors currently or potentially have a stake in the urban agriculture industry, including input providers (such as seed suppliers), banks and credit agencies, food processing companies, landlords, wholesalers, distributors and marketers, and recyclers and waste managers.

Urban farmers operate between two relatively well-organized economic subsectors, agricultural inputs and food marketing, while small-scale producers are often unorganized and disparate. In countries where urban agriculture functions as an integrated industry, as well as those in which it is a cottage industry, participation by miscellaneous 'other actors' (most of them based in the private sector) is vitally important in these non-production aspects of urban agriculture. They play an especially significant role in encouraging producers to move beyond growing for family and friends, as illustrated by some livestock producers in Manila (see Case 9.7).

Wherever small-scale producers dominate urban farming, they face high sales costs unless the market is organized to their requirements. Urbanized economies like Taiwan (province of China) and the Netherlands have efficient auctions run by farmers' associations. In most cities, however, wholesalers are not set up for small-scale urban producers. To counter this obstacle in the capital of Brazil, Brasilia, the local government instituted a successful program to help local farmers compete with the chain supermarkets. The program included finance, extension, retail sites, training and processing support.[13]

Table 6.4 Examples of universities and other institutions involved in research on urban agriculture

Organizaton	Location	Research involvement
Sokoine University	Morogoro, Tanzania	Two-year survey of six cities
Asian Institute of Technology	Bangkok, Thailand	Pilot projects on intensive agricultural techniques
University of the Philippines	Los Baños, Philippines	Research on small-scale farming
Centre pour le Développement de l'Horticulture	Dakar, Senegal	Research and extension on urban horticulture
Asian Vegetable Research and Development Center	Kaohsiung, Taiwan	Research and extension on urban horticulture and household gardens in East Asia, Africa, and Central America
CEPIS	Lima, Peru	Wastewater aquaculture and horticulture
Centro el Canelo de Nos	Santiago, Chile	Nine research projects in urban farming technologies
Mazingira Institute	Nairobi, Kenya	Survey of urban agriculture in six cities
University of Cairo	Giza, Egypt	Plastic tunnel horticulture
Centro Las Gaviotas	Bogotá, Colombia	Hydroponics for low-income, high-density communities
Makerere University	Kampala, Uganda	Research and surveys on urban agriculture
Botanical Garden	Jakarta, Indonesia	Research on composting with small-scale urban farmers
University of California	Davis, California, USA	Experiments, surveys, research
Agricultural University of Wageningen	Wageningen, the Netherlands	Manuals, periodicals, study tours

Source: Compiled by The Urban Agriculture Network from various sources

Credit providers, including banks, credit unions, and farmers associations, are essential because farmers must always invest before they harvest, and it often takes years before a farmer sees a return on investments in capital improvements. Farmers often find it difficult to obtain credit for a number of reasons (see Chapter 9). A few banks and other organizations have successful urban agriculture lending programs. An outstanding example is the Cooperative and Rural Development Bank of Tanzania, which in the past several years has made hundreds of loans, primarily to middle-income farmers.

There is a growing trend for large firms to contract production to small-scale urban producers, including mushrooms in Ireland, chicken in Thailand, and potatoes in Turkey. Case 3.4 reports on Del Monte's support to vegetable and fruit producers in metro

Manila. Large farms may also discover urban agriculture as a means to transform by-products from their operations. The global conglomerate Archer Daniels Midland has become a large provider of brewery waste for its own fish production in Illinois.[14]

Private corporations can play a role similar to that of 'institutional providers' discussed above. For example, a factory can allot space to its workers for small gardens, or a restaurant can give its organic waste to its workers for use as fertilizer.

Agents, such as shippers, food processors, street vendors, and sellers and buyers of compost, also play a role. Much is still to be learned and documented on the interaction between these actors and urban food and fuel producers. Only street food providers have been seriously studied so far.[15]

International Development Agencies

Until recently, international assistance had not followed the growth trend of urban agriculture. In the late 1980s and early 1990s, even as more developing countries requested urban assistance and donor countries shifted policies toward supporting urban development, international funding for urban agricultural programs still lagged behind. But interest is now increasing (Table 6.5). In 1991, UNDP began the survey of urban agriculture in Asia, Africa, and Latin America that culminated in the first edition of this book. Since then, UNICEF, the World Bank, FAO, CGIAR, and CARE International have renewed or initiated programs in urban agriculture. Within particular regions, WHO-Europe has supported urban farming, as has the Inter-American Foundation (IAF) in Latin America.

Some bilateral aid agencies have urban agriculture assistance programs. GTZ, the German bilateral aid agency, has a groundbreaking project in Tanzania, where a number of donors are active (Case 6.7). Italy has supported a large project in Argentina, and the British Department for International Development has been supporting peri-urban agriculture for several years. The International Development Research Centre (IDRC) of Canada is the most notable agency. It has supported dozens of urban agriculture studies and projects worldwide over the past decade or so, and helped fund several international workshops as early as 1993. [16] IDRC, with principal funding from the Dutch development agency DGIS, is assisting the RUAF global program mentioned above in setting up several regional focal points and regional exchanges on urban agriculture.

Table 6.5 Examples of international agencies supporting urban agriculture

Organization	Location	Support
FAO, IDRC	Latin America	Supports new regional network
FAO	Global	Supports street food upgrading projects
UNDP, FAO	Latin America	Supports shantytown hydroponics projects
UNDP/World Bank	Global	Support programs in wastewater-fed fish and irrigation. Supported urban agriculture initiative in 1991-1993, and two editions of this book
UNICEF	Global	Supports policy studies on household and community gardens
United Nations University	Global	Funded Food-Energy Nexus program in the 1980s
UN Center for Human Settlements	Tanzania	Supports urban agriculture as environmental intervention in open space
International Potato Center	Peru	Manages the worldwide CGIAR Strategic Initiative on Urban and Peri-Urban Agriculture
Urban Management Program	Latin America	Supports research and advocacy regionally
NRI/ODA	Tanzania	Supports city center and peri-urban vegetable production and training
IDRC	Global	Funds urban agriculture surveys and research projects
USAID	Philippines, Thailand	Supported urban agriculture in its Managing Energy and Resources Efficient Cities (MEREC) program (1980s)
GTZ	Mexico City, Tanzania	Supports sewage-fed fisheries, composting, and vegetable projects
Italian government	Argentina	Supports community gardens
SIDA	Mozambique, Ethiopia	Provided support for urban agriculture in the 1980s
JICA	Philippines and other countries	Supports urban agriculture and marketing
Taiwanese government	Panama	Supports urban agriculture and provides fellowships for study in Taiwan
Inter-American Foundation	Chile	Supported urban gardening programs
Ford Foundation	Kenya	Supports Undugu Society, an NGO
Oxfam	Peru	Supported Peru Mujer, an NGO
Save the Children Fund	Central America	Supported local gardening
CARE International	Haiti	Promoting entrepreneurship in urban agriculture

Source: Compiled by The Urban Agriculture Network from various sources

Case 6.7 International agencies promoting urban agriculture in Tanzania

Coinciding interests have attracted several international development agencies to urban agriculture activities in Tanzania. While the combination found there is probably unmatched in other countries, this case illustrates the range of interests and types of involvement possible elsewhere.

In the mid-1980s, the Canadian International Development Research Centre (IDRC) supported a major study by Sokoine University on the status of urban agriculture in six small, medium, and large cities in Tanzania. The national census conducted during the same period found that one of every five employed adults in an urban census zone was working in agriculture. In the early 1990s, with this information and a new national policy favoring food production in towns and cities, two major international development agencies began urban agriculture projects.

GTZ, the German bilateral aid agency, started a three-city project in 1993 called the Urban Vegetable Promotion Project. The objective of the project is to increase the consumption of vegetables in urban Tanzania and later in southern Africa by increasing production in urban and peri-urban locations. The project is underway in Dodoma, the new capital (**photo 6.5**); Arusha, a medium-size city in the highlands; and Dar es Salaam, a coastal metropolis of 2 million people. The first 18 months were spent collecting data and establishing relationships, and the production phase began in 1995. Excellent relations have been established with the Capital Development Authority in Dodoma, which strongly favors urban food and fuel production. This project has continued to evolve (although it no longer seeks to become a region-wide project), but it is now well established as a successful, long-term activity that is still going strong almost a decade later, with many links to the other relevant programs in the country.

At the same time, the British Natural Resources Institute (NRI), with backing from the Overseas Development Agency, was establishing one peri-urban and one in-town pilot urban agriculture project in Dar es Salaam. NRI established a collaborative relationship with Plan International, a UK private voluntary agency operating in the city. Like the GTZ project, the two NRI projects work with the Ministry of Agriculture and Land.

Another important project is the Sustainable Dar es Salaam Project of Habitat, which has also been operational since 1993. It includes an open space sub-project that is studying urban agriculture as a tool to maintain open space, conserve the environment, and generate jobs. IDRC is supporting the project by funding an effort at Dar es Salaam University that provides information about urban agriculture. Another university team is collaborating with NRI and GTZ on related urban agriculture projects.

Other international agencies undertook initiatives in the 1990s. The Danish development agency (DANIDA) supported low-income women in small urban agriculture entrepreneurial efforts in Dar es Salaam. The LIFE (Local Initiatives for the Environment) project of UNDP offered support to an urban farming project on Zanzibar emphasizing youth participation. The Swedish aid agency (SIDA) studied cultivation in a small town in Tanzania. Others, such as the Dutch government, also expressed interest in supporting urban agriculture in Tanzania. From these seeds, an integrated national urban agriculture program may emerge.

Contact: Petra Jacobi and Rudy Schippers (see Appendix F for complete addresses).

Studies and workshops initiated by international agencies are helping to gain recognition of urban agriculture as an important and legitimate activity, as well as providing concrete information on which governments can base policies.

In some cases, international agencies provide financial resources. For instance, the African Development Bank contributed to a major urban fuelwood project in Ethiopia.

Others lend their assistance to specialty crops, for example, FAO has funded mushroom cultivation in Ghana. Over the past couple of decades, international agencies have supported important research in wastewater and solid waste management and established standards for use of urban waste as an input to food production.

As the aid community shifts its focus to sustainable development, sustainable agriculture, and sustainable human settlements, it is beginning to discover the synergistic role that agriculture plays in towns and cities. International development agencies can contribute most effectively in certain areas, in particular, model codes and regulations, introduction of new crops, and standards for use of chemicals and waste inputs.

Partnerships Among Organizations

A wide range of partnership models exist. Partnerships can be created between farmers and private business, farmers and NGOs or institutions, farmers and government, and governments and international interests.

Partnerships between farmers and private businesses are typically farmers' associations or cooperatives with production relationships between large firms and small-scale producers (for example, outgrowers). Farmers' partnerships with NGOs and institutions are commonly organized to ease access to markets, inputs, land, extension advice, etc. Partnerships between government and farmers vary widely and are formed mainly around common needs of access to land, water, markets, information, and extension. International partnerships at their simplest are with agribusiness for production or with aid groups for inputs, technology, and information.

Partnerships between agribusiness and small-scale farmers are usually outgrower relationships. These require government oversight to ensure the rights of farmers. These partnerships can be arranged and managed through NGOs and may have a public-private board of directors.

Farmers' associations sometimes represent only small-scale farmers and sometimes both large- and small-scale farmers. In other cases, they include manufacturers and marketing organizations. Community organizations, including women's and youth groups, are active in supporting urban farmers and frequently are linked to non-governmental organizations at a national or state level. Community organizations often work in partnership with local government as well as with the farmers and NGOs.

Research organizations, frequently related to a university or national department of agriculture, are normally found in partnership with farmers' associations and NGOs. Less commonly, they provide direct assistance to urban farmers.

Non-governmental organizations at the state or national level are the most ubiquitous members of partnerships. NGOs are in partnership with community organizations, local governments, national governments, international organizations, research organizations, and banks. NGOs may in fact be the most vital partner that urban farmers can have.

Government agencies also have a wide range of partnership roles to play. In the areas of policy, enabling legislation, technology, and credit, national governments hold great power over the viability of urban agriculture. Frequently, they are also important for

international links. Partnerships with banks and credit unions are also vital to the health of the industry.

Finally, regional and international networks and organizations will be important partners during the next few years as the industry matures. The right lessons can be learned expeditiously from other countries and regions through international partners. Rich sources for learning range from specialized regional or global gatherings such as those that took place in Havana in 1999 and Berlin in 2000, or through comparative publications such as the reader that was funded by DSE and launched following the Havana conference.[17]

Comprehensive worldwide networks and exchange forums (such as The Urban Agriculture Network and the CityFarmer web site), as well as more specialized global groups (such as one currently being formed that would focus on rooftop cultivation) are now emerging, providing a framework to trade ideas and techniques. Under the leadership of the Netherlands-based firm ETC, the recently established umbrella organization RUAF is setting up a global system of regional focal points, complemented by global support tools that include a magazine, a resource person list, and a list of publications on the web.[18]

The horse racing club in Jakarta described in Chapter 2 is an outstanding example of a multi-partner arrangement. Farmers are allowed to produce agreed-upon crops on the margins of the racetrack in return for collecting and processing the waste. The neighborhood has agreements with the same farmers to collect and compost their waste as well. The farmers trade access for services, land, organic waste, water, and a strong iron fence.

Marketing urban produce involves many actors. In some places, NGOs and governments help small-scale farmers by establishing markets. The Jerusalem producers' cooperative outside Bogotá has a joint marketing board that includes five cooperative members and four members from a supermarket chain.

Single actors can be partnered with a range of entities depending on the context. Tanzania's Urban Vegetable Promotion Project (Case 6.7), illustrates this complexity. It works through the government's entire hierarchical structure — ministry, region, municipality, ward, *mtaa* (neighborhood unit), and finally farmers' group. It also links with NGOs, community-based organizations, and private initiatives, and whenever possible, links with other international initiatives such as the Sustainable Dar es Salaam Programme. For its school education program in Dar es Salaam, the project works directly with individual headmasters, along with city-wide school health coordinators.[19] This is only a partial picture of the links the project established in order to successfully fulfill its mission.

It is also possible for many actors to coalesce around a certain issue. When these actors form a coalition, the sum of their influence can overcome the lack of recognition that individual organizations have suffered (Case 6.8).

Case 6.8 The Community Food Security Coalition in North America

Building on the older concept of food security, Community Food Security (CFS) is a concept that achieved recognition in North America starting in the mid-1990s, drawing together individuals and organizations from a number of fields related to food and agriculture. An initial target for the formation of the CFS Coalition in 1994 was to help shape the food policies contained in the 1995 U.S. farm legislation. While the impact on that legislation was limited, CFS objectives did manage to make it into the 1996 law. Its most noteworthy feature was a 6-year Community Food Projects Program that supports a wide range of activities to promote self-reliance while meeting the food needs of low-income populations. This success was followed by approval of a CFS initiative at the U.S. Department of Agriculture in 1999. This initiative now mobilizes resources within that department and coordinates programs that are relevant to CFS.

The Coalition has managed to combine several constituencies that had largely been separate — anti-hunger, local and smallholder agriculture, sustainable agriculture, community gardening, food system, open space conservation, environmental justice, community development, and others. These are reflected in the Coalition's board of directors, where these constituencies are or have been represented by such organizations as the Milwaukee Hunger Task Force, National Family Farm Coalition, California Sustainable Agriculture Working Group, San Francisco League of Urban Gardeners, Farmers' Market Trust, Urban Habitat Program, and Knoxville Community Action Corporation.

The Coalition was not only able to form a more powerful group by assembling numerous constituencies and organizations, but also broadened the horizons and agendas of these bodies. It made community the focus for action on food and agriculture, while simultaneously anchoring the community within a continuum of levels, from the household to the globe, all part of a complex system to deliver food to urban areas. Within the U.S. and Canada, the CFS Coalition has thus been an effective mechanism that can serve as a model for potential coalitions in other parts of the world on the issue of food security as well as urban farming. The Urban Agriculture Network is assisting the Coalition, particularly through the increasingly dynamic Urban Agriculture Committee.

Contact: Andy Fisher (see Appendix F for complete address).

Productive partnerships can do much to promote urban agriculture, as some examples illustrate:

- In Manila, the Urban Food Foundation persuaded Del Monte Corporation to buy from hundreds of small outgrowers rather than maintain its own plantations.
- In Calcutta, a cooperative working with the metropolitan sewer and water authority and the port authority doubled fish production and improved quality.
- In Peru, the ministries of health and agriculture work with community kitchens and CARE International to enable the members to produce their own vegetables to supplement the contributed rice and beans.
- In Bogotá, Colombia, a women's cooperative in the low-income area of Jerusalem has a partnership with a supermarket chain and the local municipality, a partnership that was facilitated by UNDP.
- In Baltimore, Maryland, two student researchers work on urban forestry issues through a program with the Yale University School of Forestry and Environmental Studies.[20]

Organizing for urban agriculture in the future may reasonably jump over municipal bounds and extend beyond the peri-urban area as well. In the case of small island nations, a national organization is logical — a step that Singapore and Cuba have already taken.[21] In larger nations, the province or state may be appropriate, as exemplified by New Jersey, USA, the Federal Capital District in Mexico, and Ile-de-France (the Parisian region).

The 'bio-region', most typically a watershed, is a logical planning and administrative unit to support a good split of rural and urban agricultural practices, although this is always challenging to implement whenever this unit cuts across several political boundaries (as is usually the case). By selecting an area that shares a common water source, climate, and market, participatory planning by both rural and urban stakeholders becomes desirable. Urban concerns for a clean water source can be addressed. Rural needs for information about urban markets can be made more efficient. Farmers' associations will be more likely to include city and country folk. Unfortunately at the time of writing, we were not able to find a good example of such an administrative setup, with the possible exception of Taiwan.

A step-by-step process to attain this future view will begin by encouraging and strengthening urban-rural links to benefit both urban and rural populations and ecologies. In such a setting that is administered at the level of the bio-region, we may anticipate, among others, rain-fed grain production in rural zones and wastewater-irrigated fish production in the urban zones. A key element of such a process will be to define appropriate indicators to steer such development.

The many government, institutional, and agency interventions in urban agriculture that are documented here are but a fraction of the global activity in this area. Happily, there is an increasing level of collaboration among organizations active in the field — a relatively recent phenomenon. Our hope is that in the not-too-distant future, there will be strong, mutually beneficial links among urban farmers in the south *and* north, and that all concerned institutions can help bring about new cooperation and sharing. The possibilities for such interactions are explored in Chapter 11.

Notes

1. Friedhelm Streiffeler. 1993. General Principles and Approaches for Sustainable Urban Greenbelts with Special Reference to Africa. Berlin: Technical University of Berlin, Department of Rural Sociology, p. 27.

2. Camillus J. Sawio. 1993. Feeding the Urban Masses: Towards an Understanding of the Dynamics of Urban Agriculture and Land-Use Change in Dar es Salaam, Tanzania. Ph.D. dissertation., Clark University, Worcester, Mass.

3. L. Keith Lilley. 1993. UVPP Project Report, Arusha, Tanzania. Unpublished manuscript, Kent, United Kingdom: GTZ.

4. J. Holmberg, International Institute for Environment and Development, personal communication, October 1992.

5. M.M. Ndubiwa, town clerk, City of Bulawayo, Zimbabwe, personal communication, 1994.

6. Kathleen Flynn. 1999. An Overview of Public Health and Urban Agriculture: Water, Soil and Crop Contamination and Emerging Urban Zoonoses. Cities Feeding People Program, Ottawa, Canada: International Development Research Center.

7. *Governing* Magazine, April 1998.

8. Carl Bartone. 1995. Report at a workshop on urban agriculture sponsored by the Inter-American Development Bank and the World Bank, Washington, D.C., June 26.

9. Mentioned at the International Workshop on Rural-Urban Linkages, Curitiba, Brazil, 1998.

10. USGS (United States Geological Survey). n.d. The Quality of Our Nation's Waters — Nutrients and Pesticides. Circular 1225. Washington, D.C.: USGS. http://water.usgs.gov/nawqa

11. Z.S.K. Mvena, I.J. Lupanga, and M.R.S. Mlozi. 1991. Urban Agriculture in Tanzania: A Study of Six Towns, draft. Morogoro, Tanzania: Sokoine University of Agriculture, Department of Agriculture, Education and Extension.

12. See www.siupa.org

13. Mentioned at the International Workshop on Rural-Urban Linkages in Curitiba, 1998.

14. Geoff Wilson, personal communication, 2000.

15. Irene Tinker. 1987. Street Foods: Testing Assumptions about Informal Sector Activity by Women and Men. *Current Sociology* 35(3).

16. See www.idrc.ca/cfp.

17. Nico Bakker et al. 2000. *Growing Cities, Growing Food — Urban Agriculture on the Policy Agenda: A Reader on Urban Agriculture*. Feldafing, Germany: DSE-ZEL

18. See www.ruaf.org

19. Petra Jacobi, personal communication, 2000.

20. W.R. Burch, Jr., and J.M. Grove. 1993. People, Trees and Participation on the Urban Frontier. *Unasylva* 173(2):20.

21. Case 9.5 (Singapore) and Case 7.6 (Cuba).