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7-12

# Urban Agriculture in Dar es Salaam, Tanzania

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## Executive Summary

Rapid urbanization in Sub-Saharan Africa has led to serious concerns about household food security in urban areas. Urban agriculture, which includes both crop production and livestock raising, has been recognized as serving an important role in the economic, social, and dietary life of many cities in Sub-Saharan Africa. In addition to being an important source of fresh produce, meat, and dairy products for consumers, it plays a vital economic role as a source of income for producers and distributors and also serves a socializing function for farmers, communities, and neighborhoods. In addition, urban agriculture has a number of secondary impacts, including reducing food transportation costs and providing environmental benefits. Whether practiced at the subsistence level or undertaken as a way to supplement income by a professional, urban agriculture is a widely practiced, integral component of the urban environment.

Dar es Salaam, Tanzania, one of the fastest-growing cities in Sub-Saharan Africa, faces a number of problems associated with such growth, including food insecurity, poor access to clean water, inadequate housing, unemployment and lack of education, and difficulties providing basic services and infrastructure. Agriculture addresses some of these concerns by serving as an important source of locally available produce and employing a substantial number of people. Because of the absence of processing, storage, and distribution facilities in much of Tanzania, urban agriculture will continue to play a vital role in the social, economic, and nutritional life of the city of Dar es Salaam. However, although urban agriculture clearly plays an important role in providing food and income in Dar es Salaam, the practice is largely unregulated and unplanned and faces a myriad of institutional, organizational, economic, and environmental problems.

Your assignment is to advise national and city governments on how best to facilitate the sustainable development of urban agriculture as an integral part of the urban environment and the social fabric of the city. The policy options are organized into the following broadly construed categories according to the appropriate role and level of government in enhancing and protecting urban agricultural activities. First, promoting urban agriculture requires leadership from the national government,

in particular, the Ministry of Agriculture and Food Security and the Ministry of Livestock and Fisheries, in order to be successful and to address the myriad problems facing it, and to better facilitate, promote, and coordinate urban agricultural activities. Second, because land use planning is primarily a function of local government, the municipal councils could better incorporate urban agriculture activities into the planning process to ensure that agriculture is recognized as a major activity in urban and peri-urban areas. Third, both national and local governments could accept that urban agriculture is an established component of the informal economy. To this end, the role of both the national and local governments is primarily that of an enabler of agricultural operations and to ensure that adequate legal protection is provided to producers and sufficient health information is made available to the public.

## Background

Like much of Sub-Saharan Africa, Tanzania is rapidly urbanizing. In 1970 the share of urban residents in the total population was 7.9 percent; currently their share is 26.4 percent. Much of this growth occurred in Dar es Salaam, which contains nearly 30 percent of the total urban population (UN 2010). Moreover, Dar es Salaam is growing more quickly than the national average. Whereas the estimated annual population growth of Tanzania was 3 percent between 2005 and 2010, the city of Dar es Salaam, with an estimated 2010 population of more than 3.3 million, had an estimated annual growth rate of almost 5 percent during the same time period (UN 2010). Much of this growth has been along a number of major arterials, resulting in a radial spatial development pattern. The provision of infrastructure, services, and facilities is uneven and has not kept pace with the rate of development. Between the arterial roads, poorly serviced areas remain (Hoogland 2003).

Food security, particularly for the burgeoning urban population, has been an issue since the food crises of the 1970s and 1980s. A Tanzania Food and Nutrition Centre report (TFNC 2006) on food security status estimated that approximately 20

percent of the total population of Tanzania (35 million) faces chronic food insecurity, and a further 40 percent have experienced periodic food insecurity. Urban agriculture, including both plant and animal husbandry, is an integral part of the local food system in Dar es Salaam, providing fresh vegetables, including Chinese cabbage, tomatoes, spinach, amaranth and a variety of other greens, sweet potato, cassava, maize, pulses, and fruits such as cashew, coconut, banana, pineapple, and papaya. In addition, eggs, poultry, milk, and meat are also supplied locally. Moreover, farming is an integral component of economic life in the city. Incomes are sustainable and can rival those of government employees. The city of Dar es Salaam is composed of three municipal districts: Ilala, Kinondoni, and Temeke. Ilala has 12,000 farmers, Kinondoni has 15,000, and Temeke has 7,700 (Hoogland 2003). A significant proportion of these farmers work in farming full time and are able to adequately support themselves and their families. In Ilala, about 13 percent of the population is engaged in agriculture and more than 10,000 hectares are devoted to urban agriculture. In Temeke, about 60 percent of the available arable land is under cultivation and approximately 20–30 percent of the milk consumed is produced locally. In Kinondoni, approximately 60 percent of the available arable land is under cultivation. Locally grown urban agriculture provides approximately 7 percent of total food requirements, but 34 percent of livestock needs.

Because the practice of urban agriculture has traditionally been associated with recent rural migrants, it has been interpreted as a mechanism for survival and a means to reduce household vulnerability to economic fluctuations brought on by fiscal constraints, structural adjustment, and governmental policy (Briggs and Mwamfupe 1998). As such, urban agriculture was actively discouraged by the national government, which perceived it as economically inefficient and marginal in relationship to the overall economy. Over the years, however, government policies and attitudes toward urban agriculture have changed. Financial constraints during the 1970s and 1980s, an era marked by declining minimum wages and food price inflation (Binns and Lynch 1998), and Julius Nyerere's call for self-sufficiency raised the profile of urban agriculture in the eyes of policy makers, although translating this appreciation into policy has been more difficult.

In recent years wealthier households have increasingly undertaken urban agriculture, and the focus has shifted from household consumption to commercial sale. Government employees engage in farming, in particular the keeping of livestock, to augment their incomes, which have not kept up with inflation. Instead of merely a means for survival, urban agriculture has become an area of potential investment for some, particularly if they can afford to purchase and maintain livestock. Often in such cases, the reason for keeping livestock may not necessarily be to subsidize existing income, but rather a form of cultural status and a nod to their particular region or ethnicity of origin. As a result, urban agriculture has become increasingly fragmented according to socioeconomic status. Mlozi (1997) finds that wealthier farmers tend to have larger lots, keep more livestock, and be more knowledgeable, whereas the less well-off tend to keep gardens for vegetable production.

Moreover, it is no longer necessarily recently arrived rural migrants who are engaging in the practice. Stevenson, Kinabo, and Nyange (1994) show that urban farmers are rarely recent migrants and have generally lived in town for 10–15 years, suggesting that access to resources necessary for farming can be obtained only if a resident is well embedded in the social system. In addition to being fragmented by class, urban agricultural practices are also spatially fragmented and are dispersed across the city. Vegetables are produced in fenced-in backyards, on vacant lots, and in open spaces under generally insecure tenure arrangements scattered across the city. Moreover, spatial patterns of production change over time as landowners develop or sell their property and farmers are forced to relocate.

Policies affecting urban agricultural practice are formulated through the various national-level ministries and agencies affecting agricultural production, through the investments and activities of nongovernmental organizations (NGOs) and donor agencies, and through land-use decision making at the local level. The Dar es Salaam City Council (DCC) is responsible for administering the city, and urban agriculture has been included in city ordinances and by-laws. In 2000 the administration of Dar es Salaam was decentralized through the establishment of the three municipalities (referred to as districts in rural areas)—Ilala, Kinondoni, and Temeke—with the DCC responsible for those

interests that affect all three municipalities. The three municipalities are independent administrative units, each with a district commissioner, a municipal council, an independent revenue source, and an administrative staff. All three include a department of agriculture (headed by a municipal agriculture and livestock district officer) and extension services designed to promote urban agriculture by providing funds and training. The municipal councils are responsible for land-use decision making.

Nonetheless, although urban agriculture has been recognized as serving an important role in providing food and generating income in Dar es Salaam, the practice is largely unregulated and unplanned. Problems include (1) a general lack of awareness of the role urban agriculture plays in the dietary, economic, and social life of urban residents and consequent marginalization of agriculture by government officials and city planners; (2) an ambiguous and poorly enforced legal environment for urban farmers; (3) insecure tenure arrangements and fear of expropriation of farmers; (4) rapid urbanization and competition for space, particularly in the peri-urban areas, coupled with a lack of protected lands reserved for agriculture; (5) a national and local institutional environment generally biased against the practice of urban agriculture and a consequent lack of support for the specific needs of urban farming; and (6) public health concerns over the relative safety of urban agricultural products, particularly because irrigation is often intermittent and water sources are often dependent on polluted sources.

## Policy Issues

There are a number of policy-related issues concerning urban agriculture in Dar es Salaam.

### Legal Environment

Currently, Tanzania has no national policy for urban agriculture. As a result, the various ministries that deal in some way with agriculture do not have a common reference point from which to craft policies and regulations related to or affecting urban agriculture. The legal environment at the local level for urban agriculture is also somewhat ambiguous (Sawio 1998), partly because of inadequate knowledge and understanding among residents and decision makers of the role of urban agriculture. In 1982, responding to degradation of

the urban environment by livestock, local authorities reenacted the moribund by-laws of 1949 for controlling livestock (Animal By-laws of 1982 of the Local Government Act [no. 8, section 80 of CAP 378]). These by-laws, geared primarily toward the keeping of livestock, state in part as follows (from Sawio 1998):

1. no person shall keep any animal within the City Area unless he/she shall obtain a permit from the City Director,
2. no person shall keep more than four cattle in any City Area,
3. no person shall graze any animal within the City Area, only zero-grazing is advocated, and
4. subject to any permit issued under these by-laws allowing animals to be moved, all animals within the City Area shall be kept in a building, structure, or enclosure.

With regard to vegetable production, the by-laws state that fruits and vegetables should not obstruct the sight of roadways. Furthermore, growing crops is not permitted within 14 meters of roads, and in river valleys crop cultivation is not allowed within 15 meters of the riverbank (although farming is permissible, and even encouraged, within river valleys in general) (Mlozi 2003).

These by-laws, which have never been amended or updated to reflect current conditions or issues, such as water pollution, present a number of issues. First, they are ambiguous. It is unclear, for example, which animals are permissible. It is also unclear whether the by-laws refer only to the urbanized areas of the city or to peri-urban areas as well. In addition, the procedure for obtaining permits is not explained. Second, some of the by-laws fail to account for the specific needs of farming in urban areas. For example, the livestock limitation of four animals does not necessarily make sense, and it has been suggested that these regulations should vary according to species type and population density. Other issues simply go unmentioned by the by-laws (for example, the use of polluted river water for irrigation).

In addition to the legal ambiguity, there is a serious issue with the implementation and enforcement of the by-laws. For example, although prohibited,



open grazing continues unchecked, and the DCC has been lax in its enforcement. Although riparian corridors are meant to be reserved for agricultural production, encroachment by development (and subsequent erosion) remains a problem. In Temeke, sand mining has become lucrative, and mining companies are encroaching on publicly protected riparian corridors, competing with other uses including agriculture. In addition to limited resources, political corruption has been a factor in the inconsistent enforcement of by-laws; elites are often the ones violating the by-laws.

### Institutional Priorities

The practice of urban agriculture has also been hampered by an institutional and governmental structure that prioritizes rurally based agricultural practices. These priorities exist at the national, district, and local levels and even extend to the commercial sector. For example, fertilizer and seeds are packaged in large quantities intended for rural application, but such quantities may be inappropriate for smaller urban plots. At the national level, neither the Ministry of Agriculture and Food Security nor the Ministry of Livestock and Fisheries has a division or section devoted to promoting and regulating urban agriculture. This institutional gap affects investment and funding priorities. Much of the available funding for agriculture is intended for distribution to villages and districts. Urbanized areas, however, are organized according to municipalities (instead of districts) and *mitaas* (neighborhoods). Likewise, the Ministry of Land, Housing, and Urban Development (MLHUD), which works with the municipal councils on land planning, does not clearly recognize urban agriculture activities.

At the local level, there is a general lack of public awareness and overall antipathy toward the role and needs of urban agriculture. Municipal officials often fail to see the value in agriculture and believe that residential or industrial development would generate more revenue. They therefore have little interest in protecting agricultural land. Municipal officials and urban planners have continually failed to incorporate agriculture into the planning process, and agricultural extension workers have not been consulted about urban agricultural needs. The institutional arrangements and division of governmental powers have only exacerbated this problem. While local governments are responsible for implementing projects and making other local decisions, including

land-use planning, the ministries generally serve a supportive role. Thus the burden of initiating efforts to protect or promote agriculture lies with the local government, which tends to prioritize development over agriculture. Moreover, the ministries, even if asked to act in a supporting role, do not have a central policy upon which to base their decisions.

### Health Hazards

A number of health and environmental issues are associated with urban agriculture (Mlozi 1997). A recent study by researchers at Ardhi University (entitled “Characterisation and assessment of heavy metals by accumulation in water, soil, and vegetable grown in the Msimbazi River”) exposed some of the health risks posed by the consumption of urban agricultural products (in particular spinach, pumpkin leaves, and Chinese cabbage amaranth, which are very desirable because they require only three weeks to harvest), due to the reliance on polluted water sources for irrigation, in particular the Msimbazi River. The discharging of chemical by-products into the city’s creeks and valley streams (Andrew 2008; Kalokola 2010) has resulted in levels of heavy metals, such as lead, cadmium, copper, and chromium, that exceed World Health Organization standards. Long-term effects include liver malfunction and damage to the heart, kidneys, liver, and nervous system. Children are particularly at risk.

In addition to direct effects, there are a number of secondary health impacts stemming from the proximity of agriculture and high-density residential development. These impacts include the transmission of animal diseases from the removal of livestock waste (animal dung can be a source of tetanus), improper disposal of animal corpses, and chemical contamination from the overuse of antibiotics and pesticides. Vegetables and field crops can harbor mosquitoes that carry malaria. Specific crops such as tomatoes require moist environments that can serve as mosquito breeding grounds.

### Urbanization Pressure

Rapid growth and the constant development pressure on land in peri-urban areas has forced agriculture to compete for land with other urban land uses. Dreschel and Dongus (2010) have documented the changing spatial patterns of urban agriculture

throughout the Dar es Salaam metropolitan area. They found that while the overall percentage of land devoted to urban agriculture remained approximately the same between 1992 and 2005, the spatial distribution of urban agriculture changed dramatically, as areas formerly devoted to agriculture were converted to residential or industrial uses, and new areas (particularly along rail lines and riparian corridors) were opened up. Urban agriculture has therefore increasingly been forced onto marginalized lands and hazardous areas. Agriculture has also encroached on open spaces and other public lands (such as cemeteries, playgrounds, and road and utility rights-of-way) because laws to protect these open areas are not strongly enforced.

Despite the recognition of urban agriculture's economic and nutritional contributions to the city, little attention has been given to allocating or retaining lands for urban agricultural uses as the city expands, despite relentless pressure and land speculation. The local government does not regulate open spaces and allocates no land specifically for agricultural uses. For example, the municipality of Kinondoni has only 15 hectares devoted to agriculture, primarily for demonstration plots. Land-use conflicts between farmers and residents of newly developed residential areas are on the rise, and there are no regulations or guidelines to govern such conflicts. Political corruption, administrative bureaucracy, and a lack of transparency in land transactions hamper the efficient and orderly development of peri-urban areas. The local government has also been slow in providing available plots for development. For example, annual demand for building plots is more than 20,000 units in Dar es Salaam, whereas the annual supply of plots has been less than 700, leaving nearly 97 percent of the recorded demand unallocated. The shortage of formalized plots has led households to acquire lands from the informal sector (Hoogland 2003). A recent study found that approximately 500,000 housing units were constructed under informal tenure conditions in 2005–2006, up from 50,000 in 1972–1973 (Lugoe 2008).

The competition over land has also spilled over into competition for other resources, especially water. A study by Dongus et al. (2009) of three wards within the city found that only 30 percent of the surveyed gardens were irrigated with tap water. Slightly more than half the surveyed gardens were not irrigated or relied on rainfall or open wells for

water, and these gardens tended to be located in informal settlements. The Dar es Salaam Water and Sewage Authority (DAWASA) has exacerbated this situation by charging high rates for water usage. DAWASA has threatened and even discontinued water pipes for urban farmers (Sawio 1998).

### Ambiguous and Insecure Tenure Arrangements

Tenure insecurity in rapidly urbanizing peri-urban areas is a persistent characteristic of cities in Sub-Saharan Africa. A lack of secure land rights has resulted in land grabs (some by foreigners), property disputes, uncontrolled urbanization, and disinvestments. In addition, legal disputes over property are common, increasing the costs of ownership and delaying potential improvements in the property. By some estimates, up to 70 percent of development in Tanzania occurs under informal tenure conditions.

Because of the many problems posed by insecure land tenure arrangements, the government has taken some measures to “formalize” customary land tenure. The Land Act of 1999 and the Village Land Act of May 2001 integrated customary law into the legal system. Accordingly, all land in Tanzania was classified as village land (roughly 70 percent of the country), reserve land (for example, national parks), and general land, which includes most of the urban areas (Mithoefer 2008). The Property and Business Formalization Program, based on the ideas of Peruvian economist Hernando De Soto, seeks to formalize informal tenure arrangements through surveying and assignment of renewable ownership titles. However, such attempts at “formalizing” customary land tenure are often problematic. The formal land tenure systems can be in direct conflict with existing local practices, and the formalization process itself ends up fueling conflicts between peoples by emphasizing differences (Benjaminsen and Lund 2002). In addition, administrative and institutional obstacles exist. Most formal processes involve expensive and complicated processes of arranging title deeds that are beyond the reach of the poor. Attempts at formalizing customary or insecure land tenure are often held up by red tape and fall short of meeting demand for such services because of the time and bureaucracy involved in preparing and approving plans and registering land. In fact, as formalization usurps customary arrangements, many people are likely to lose their land.



Technological and institutional constraints exist as well. In Tanzania, the land registry is not computerized and relies on outdated procedures for gathering information and registering rights. Land and title records are kept in paper files maintained by six independent regional divisions (Mithoefer 2008). Because of these obstacles, only 11 percent of the possible properties have been registered in Tanzania, and the existing cadastral map is sporadic and haphazard (de Soto 2006).

As such, urban farmers are largely dependent on holders of open space—schools, institutions, and private actors—for land. Much urban agriculture is produced in open spaces without secure land rights, increasing the perception of urban agriculture as a marginal or transitional activity. Farming occurs either without agreement through illegal encroachment on public lands including parks, nature reserves, and cemeteries or through informal tenure arrangements with private actors, which operate under unwritten norms and informal agreements (Magigi 2008). For example, the Tazara farmers in Ilala have had a verbal agreement with the Tazara Railroad Company since the 1980s and cultivate plots adjacent to the rail lines. In this case, the relationship is symbiotic: the farmers cleared an area of brush about which the railway had security concerns.

Tenants believe they will probably have to move within a couple of years when the owner decides to develop or sell the land and consequently do not pay rent. Producers are prohibited from making investments in the land (for example, trees) to prevent them from staying permanently. Unless a farmer owns the land, he or she is unlikely to dig new wells or make other improvements, such as irrigation, and this situation exacerbates some of the public health issues discussed earlier. Open spaces are not registered, and producers have no rights in case of expropriation. Although producers have formed cooperatives to help assert their rights and to organize, assisted to a certain extent by aid organizations and NGOs, these efforts have been only partially effective. The eviction of farmers is relatively common and often occurs without protest or mention in the press.

## Stakeholders

A number of stakeholder groups are involved in urban agricultural issues.

### Farmer/Producer Cooperatives

Local organizations are essential in mobilizing farmers, providing assistance, securing resources, providing inputs and local knowledge, and even participating in urban agriculture campaigns. Generally urban farmer groups and cooperatives are organized to secure common resources (such as power tillers), serve as savings and loan organizations, or assist in food processing. Forming and maintaining such groups in urbanized areas is difficult, however, because the nature of urban agriculture presents special challenges. First, urban farmers tend to be spatially fragmented because they work smaller, more isolated plots than their rural counterparts. Second, they tend not to own their plots, and their tenure is often temporary and dependent on the landowner. Third, the stratification of urban farmers according to income and socioeconomic status implies that needs vary greatly, making it difficult to organize around a common purpose. The difficulty in organizing urban farmers is exemplified by the legacy of the Urban Vegetable Promotion Project (UVPP), an initiative of the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) in the 1990s to support urban agriculture by using existing institutions. Local extension officers were trained in technical and organizational skills, and farmers were organized into groups. Once the project ended in 2001, however, many of the groups that had been started found it difficult to sustain themselves, and the local district councils were hard pressed to support ongoing extension activities.

### The Business Sector

Private companies, especially hotels, are potential large-scale institutional consumers of urban agricultural products and could increase the viability of urban agriculture. Marketing urban agriculture products to such institutions remains difficult, however, because of limited and variable supply, pricing difficulties, and ongoing public concerns over quality (Sawio 1998).

### The National Government

The national government is ultimately responsible for ensuring adequate food security for urban households. The government is able to influence and facilitate urban agriculture through the coordination of a number of ministries, including the Ministry of Agriculture and Livestock (recently reorganized as the Ministry of Agriculture and Food Security and the Ministry of Livestock and Fisheries). The national government sets policies to be followed at the local level, manages and supervises local authorities, and through the donor-funded Agriculture Sectoral Development Program (ASDP), makes funding available through the locally organized District Agriculture Development Project (DADP). DADP monies are the primary funding sources at the local level for supporting urban agricultural practices as well as for financing and staffing district offices. DADP funding consists of (1) funds for investment and project implementation (including pumps, irrigation pipes, and heavy machinery); (2) capacity-building funds to train staff and assist extension officers; and (3) extension funds to facilitate group trainings and workshops.

### City and Municipal Councils

The DCC and the municipal councils are responsible for preparing by-laws to guide urban agriculture. They also enforce urban development plans and laws that affect urban agriculture as well as issue licenses and permits. Both the city and the municipal councils are in a position to make decisions (particularly those involving land) that would directly affect urban agriculture. Unfortunately, many local officials and city planners have tended to focus on development and have not prioritized the needs of agriculture.

In addition, agricultural extension is organized at the municipal level (and further organized at the division, ward, and *mitaa* [neighborhood] level). In 2001 the three municipalities of Dar es Salaam counted about 200 extension workers, about half of them in urban wards. Extension agents address a number of aspects of agricultural practice including training and outreach (either on-site training or group workshops), organizing farmer/producer cooperatives, managing and distributing investment funds (for the purchase of tractors, fertilizer, seeds, animal breeds, roads), and organizing demonstration plots and model farms. However, both agricultural education and research in Tanzania have

traditionally focused on rural concerns and issues and have not yet fully incorporated urban issues in their agendas.

### Donor Organizations

Donor organizations, NGOs, and aid agencies offer assistance with urban agriculture research and information generation, help mobilize financial and technical resources, and advise on issues ranging from technical matters and water use to marketing and land rights. A number of international NGOs and organizations have been involved in promoting urban agriculture in Dar es Salaam since the 1990s, including the UVPP of the GTZ, which initiated pilot projects, demonstration plots, and organized cooperatives, and the World Bank-funded National Agricultural Extension Programme (NAEP), focused primarily on extension training. The long-term sustainability and viability of such efforts are in doubt, however, because of resource and organizational constraints on the part of the local governments. Efforts to introduce food processing failed because of the limited surplus of products available.

### Policy Options

The three policy approaches outlined below suggest separate ways of addressing the myriad issues facing urban agriculture in Dar es Salaam. The first acknowledges a leading role for the central government, the second places urban agriculture primarily under the responsibility of the local governments, and the third examines the place of civil society in urban agricultural promotion.

#### Central Government Leadership

Urban agriculture needs to be recognized as an integral part of the social, economic, and dietary life of urban residents. Leadership from the national government is required to address the myriad problems facing urban agriculture and help make it successful. This approach will require not only investment in infrastructure, but also institutional reforms to better facilitate, promote, and coordinate urban agricultural activities. Such an approach could include a number of policy options:

- A national policy concerning urban agriculture could be formulated to help the various ministries involved—land,



agriculture, livestock—better coordinate their activities and to give them a common reference point as they design relevant policies. These policies could then be translated into regulations and guidelines for both ministerial and local action.

- Institutional reform is necessary to promote and advocate for urban agriculture. Currently, the Ministry of Agriculture is primarily concerned with rural agriculture needs and is unable (or unwilling) to focus on the special needs and circumstances of urban agriculture. The Ministry of Agriculture could be reorganized to include a department solely concerned with urban agricultural issues.
- Given that urban agriculture is likely to remain an integral component of urban life in Dar es Salaam, greater coordination is required among all agencies and ministries whose decisions affect urban agricultural production. These agencies could include the ministries of health, lands, housing, and urban planning, the DCC, and the National Environmental Management Council. This coordination would allow the central government to better assess short- and long-term effects of urban agriculture on the environment and public health and to make this information publicly available.
- Improvements in the production of urban agriculture will require investments by the central government and other stakeholders, including NGOs, donor organizations, and local governments, into infrastructure and inputs to support urban agricultural activities. Such investments could include warehouses, storage facilities, abattoirs, and fixed markets, as well as the inputs required for farming, such as seeds and pesticides, in quantities conducive to urban needs. In particular, to reduce post-harvest loss of perishable foods like tomatoes, facilities are needed for processing, storing, distributing, and marketing the products of urban agriculture.

### Local Government Leadership

Given that land-use decision making is primarily a function of local government, the municipal

councils could better incorporate urban agriculture activities into the planning process. They could take advantage of the opportunity presented by the planning process for the new master plan for the city of Dar es Salaam to ensure that agriculture is recognized as a major activity in urban and peri-urban areas. This approach could involve a number of policy options:

- Addressing the needs of farmers requires an understanding of the role of agriculture in the functioning of the city. As such, city planners and municipal officials (for example, water utilities) could be sensitized to both the importance and needs of urban agriculture.
- Existing by-laws regulating agricultural activities must be reformed to better reflect actual farming practices. Those that allow or prohibit any urban agriculture activity must be clearly written and explained. Changes to the by-laws could include limits on livestock based on density and species type as well elaboration of by-laws addressing public health concerns. Furthermore, by-laws must be uniformly enforced if they are to be effective and should be adequately explained to farmers.
- Urban agriculture should be fully incorporated into the planning process, and it should be integrated with other urban activities and processes—in particular, solid waste and wastewater management.
- As the city expands, public lands could be set aside for use in urban agriculture. This process will allow for public ownership of land dedicated to agriculture and offer the opportunity to more easily address public health concerns and quality control of production—for example, through the establishment of a secure water source.
- Land tenure is a primary detriment to a better-functioning urban agricultural market. As such, municipal governments could coordinate efforts to ensure adequate property rights and ownership of land by formalizing informal tenure arrangements and reducing the bureaucracy to create land titles.

- Short of this, local government should acknowledge that much urban agriculture occurs under transitional conditions (before urban development) through informal arrangements. These arrangements could be supported through incentives provided by local governments (for example, by decreasing taxes on owners who allow farming). Furthermore, the rights of producers and protection from expropriation could be integrated into the system of by-laws that regulate agricultural activity.
- To better integrate, manage, and formalize agricultural activities into the normal economic life of the city, agricultural activities could be taxed to legitimize the activity and raise its profile (and overcome biases) by city managers and public officials.
- The government could emphasize and develop extension knowledge and training specific to the needs of urban agriculture. For example, certain breeds and species are more effective given the limited space available in urban environments. Additional areas of research to be considered include a market analysis of urban agricultural products, as well as the extent, scale, nutritional, economic, and environmental impacts of urban agriculture.
- The government could support research on health issues involved with urban agriculture and make this information publicly available. The government could also advocate the use of appropriate technology in dealing with these issues, whether water distribution systems or better seed varieties.

### Civil Society Leadership

The government could accept that urban agriculture is an established component of the informal economy and is primarily dependent on bottom-up participant organization and civil society. The government would primarily enable agricultural operations and ensure that adequate information was made available to the public. This approach could involve a number of policy options:

- The national government, in conjunction with agricultural extension officers, could raise the awareness of ministries and government officials about the benefits and importance of urban agriculture through workshops and seminars. Special attention could be focused on urban agriculture's impact on income generation and urban household food security and nutrition.
- Local governments could encourage and support the formation of farmers' groups and cooperatives organized around common needs. Local governments could provide legal assistance and protection; training on specific topics of interest (such as pesticide application); meeting spaces and supplies; and low-interest loans to cooperative groups for purchasing the necessary equipment.

### **Assignment**

Your assignment is to advise national and city governments on how best to facilitate the sustainable development of urban agriculture as an integral part of the urban environment and the social fabric of the city. Your policy approach should involve some of the main stakeholder groups and address some of the issues raised.

### **Additional Readings**

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