

Integration of agriculture in urban land use planning¹

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Introduction

Urban agriculture is increasingly becoming an important activity in urban economies, both in the South and the North. It can contribute significantly to the well being of farmers and other citizens, if properly managed. The growth of human settlements creates a competition between the traditional urban land uses and urban agriculture. Whilst regional and urban planners have generally accepted the peri-urban zone as a mixed zone in terms of land use categories (including urban agriculture), the intra-urban zone in most cases remains a preserve for “traditional” urban uses.

As is argued in this book, urban agriculture, however, has the potential to prosper in modern cities because of its multiple functions and relations with city issues. Cities provide easy access to markets and a prevailing high demand for food. Other reasons for agriculture in the city are reduced transport costs for produce and an abundance of resources and opportunities (such as recycled waste, under-employment and the availability of urban labour). In fact urban agricultural practices have always been part of the city, but the integration into the urban economy is what is lacking in today's urban planning and policies.

Urban planning in most developing countries has tended to be characterised by long-range comprehensive planning, which adopt a blue-print approach. This type of planning is associated with rigidity and a lack of responsiveness to social issues, and has negatively affected the integration of urban agriculture. Planning departments are often ill-equipped, understaffed and the position of planners is not often at the level of real decision making. This means that their decisions are not always recognised and their plans are often shelved for lack of resources to implement them.

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Box 1 Land use planning in Zambia

Land use planning in Zambia provides for exclusive land uses and does not provide for mixed land use. This implies that designated land can only be for residential use. Under the Town and Country Planning Act Cap 283 of the Laws of Zambia, the use of residential land, road reserve or recreational land for urban agriculture (as the practice is in most Zambian towns and cities) therefore contradicts the provisions of the legislation that guides physical development in Zambia. The Public Health Act Cap 295 of the Laws of Zambia also excludes the use of residential areas for urban agricultural purposes for its perceived nature as a source of disease transmission to humans. To this effect the public Health Act has prescribed measures such as destruction of crops and livestock including prosecution of such “urban farmers”. In this regard, urban areas in general have adopted prohibitive by-laws, which bar cultivation within urban confines with, at times, the exception of vegetable gardens and growing flowers.

Source: Mposha, 2005

Most planners in developing countries have a view of the city which is based on old-fashioned European or American models and pertaining to countries in which most of them have been trained. In addition, land laws in their own countries are archaic, while laws on health and environment which are promulgated at the national level leave little room for urban councils to manoeuvre at the local level (Foeken, 2006).

Box 2 Urban agriculture in the future

‘Beyond promotional programmes and projects of the 1970s and 1980s, more national and local governments and specific public sectors will support UA in the South for food security, jobs and environmental benefits.... UA will be accepted and implemented more systematically as a major intervention in food security and social security programmes, and environmental agencies and programmes will also include more UA. Community and civic organisations will increasingly support UA and women will continue to dominate the industry. Public private partnerships are accelerating and national and local UA organisations appear destined to come together into regional networks. Food markets in many of the world's countries will carry an increasing share of products grown in the cities. Urban planning will more widely incorporate UA as another form of land use in urban space economies. In the South, and at least for some decades to come, the low-income type of UA will continue to expand, diversify supply and make fresh perishable food more affordable to larger sectors of city populations ’

Source: Mougeot, 1999.

The scenario described in Box 2 is not yet a reality, although promising examples are given in this book. Urban planners and other professionals often lack information and technical know-how to cope with urban agriculture and facilitate its integration into urban development. Despite the growing recognition of urban agriculture, there are still many city planners, local authorities, sectoral organisations and NGOs who associate agriculture with rural areas only and are unaware of its presence in the urban areas.

However, this situation is slowly changing with increasing recognition of the importance of urban agriculture in the overall functioning of the wider urban economy. Most governments and local authorities have now begun to support (peri-)urban agriculture and are seeking ways in which to facilitate sustainable, safe and profitable production. Latin American cities such as Rosario have adopted a facilitating environment for urban agriculture. New capital cities such as Dodoma in Tanzania have been designed to accommodate (peri-)urban agriculture, while agriculture has been incorporated into urban expansion plans for Dar-es-Salaam and Maputo (Mougeot, 2000).

Debates surrounding urban planning standards and the feasibility of implementing these in cities of the developing world have resulted in a change in approach by planners who have realised that long-range planning is often unable to respond to the fast-changing circumstances of rapidly urbanising areas. New planning tools and approaches that are more flexible, seek greater community participation, more responsive and move away from the blue-print approach are being experimented with. The role of an urban planner has changed from that of an expert, technical designer of the future urban form to a facilitator of community needs and aspirations, often pushed or pulled by policy makers through various declarations, for example the Quito Declaration and the Nyanga Declaration.

Planners are often accused of posing the greatest challenge to urban agriculture as they have not integrated it into urban areas as a land use nor designed residential estates to allow the activity to be carried out on-plot. The central question here is how planners, urban managers and policy makers can facilitate or support urban agriculture. There is a need to understand what planning is all about and the constraints that planners face in trying to integrate urban agriculture into development plans.

Urban Land Use Planning

Urban, city or town planning is the discipline of land use planning which deals with the physical, social, and economic development of metropolitan regions, municipalities and neighbourhoods. Land use planning is the term used for a branch of public policy which encompasses various disciplines which seek to order and regulate the use of land in an efficient way (Chapin and Kaiser, 1979). Urban planners shape patterns of land use and the built environment in and around cities to solve and prevent challenges of urbanisation, including providing shelter, food and other basic needs of life, protecting and conserving the natural environment and assuring equitable and efficient distribution of community resources, including land (Quon, 1999)

As a profession, urban planning lays claim to being comprehensive in scope, future oriented, public interest driven, and of wanting to enhance the liveability of human settlements. It is also distinguished by its focus on numerous functional systems that make up the community, including the study of their characteristics and interconnectedness (Faludi, 1973, Wikipedia).

Land use planning

An urban area is made up of complementing and conflicting uses and demands that have to be properly managed. This scenario is made worse by the fact that land is a finite resource and the demands on a particular piece of land are many and varied.

Land use planning is viewed as the process of organising the use of land and its resources to best meet the people's needs over time according to the land's capabilities (Chapin and Kaiser, 1997). According to this definition every piece of land within an urban environment should have an appropriate use. The definition further relates to the concepts of sustainable development and use of resources.

Land use planning can also be viewed as the development of a plan for the *future* use of land, for instance, through zoning. Land use planning is not a haphazard event but should be a well thought out process. Thus, if a certain use of land, for instance urban agriculture, is not considered during the planning process, it would then be very difficult to properly include it in the implementation of the plan, and to achieve the maximum benefit.

Urban Planning and the Urban Food System

Land use, housing, transportation, the environment, the urban economy and recreation, amongst others, are issues that planners are heavily involved in. The food system, however, is notable by its absence from the writing of planning scholars, from the plans prepared by planners and from the lecture rooms in which planning students are taught. As opposed to other commercial or private activities in cities, urban food production has never been addressed properly by legal regulation and planning (Dresher, 2000, Roberts, 2004).

The food system is defined as the chain of activities connecting food production, processing, distribution, consumption and waste management, as well as the associated regulatory institutions and activities. There are conceptual and practical reasons why planners should devote more attention to the food system, since it is paramount in the improvement of human settlements to better serve the needs of the people, and in incorporating linkages between various aspects such as physical, natural, housing, transportation, land use, and economic empowerment.

Approaches to urban planning

As mentioned, urban planning is continuing to develop and in many cities planners are experimenting with new approaches and tools, based on different views or paradigms. There is little information available on what these different visions imply for urban agriculture, although issues of importance are mentioned in various texts (Kaufmann, 2000, Quon, 1999, van den Berg, 2000). Participatory approaches are becoming more popular. Other approaches brought in by the donor community are also taking root. It is

against this background that urban agriculture can be made much more visible than it currently is.

Urban agriculture could play an important role in urban planning by linking to environmental, social and economic issues. All of the different approaches to urban planning provide specific opportunities and linkages to facilitate and catalyse the integration of urban agriculture into urban planning. The five models discussed below are based on descriptions from Chapin and Kaiser (1979).

The **Ecological Model** is most current among environmental health and transport planners. It applies a systems view, in which the city is seen as a system of inter-related parts akin to a biological system. Planning is used as an approach to make cities healthy and disease free. Open and green spaces are seen as lungs to purify pollutants from the environment. It is dominant in environmental planning and management approaches, as promoted by Local Agenda 21 (as developed after the Earth Summit in Rio de Janeiro, 1992). Dar es Salaam-Tanzania and Lusaka-Zambia are cities where this approach has been applied.

The implications of the Ecological Model for urban agriculture are that:

- urban agriculture is considered as a tool for environmental management through nutrient and waste recycling;
- nutritional and health conditions of residents can be improved through urban agriculture;
- urban agriculture may constitute a good use of derelict and open spaces;
- city gardens help to beautify the city;
- potential health risks for consumers – use of waste water, soil erosion – need to be considered.

New Urbanism (design, engineering, architecture) propagates the idea of a compact city. The key feature of this model of city development is to reverse the trend of the urban sprawl by learning from traditional urban development patterns. It promotes small plot sizes and building up open spaces within the city, but also uses of recreation. The model is applied in many new cities like Lilongwe, Dodoma, and Abuja.

The implications of the New Urbanism approach for urban agriculture are that:

- economic imperatives in the new urbanism militate against urban agriculture;
- it has been criticised by those that see home space as multi-functional production areas, and not just as a place to sleep;
- the model follows the recommendations of some aid agencies like the World Bank that have been advocating for the reduction of urban residential plots, leaving very little space for urban agriculture (see box 3.3);

The **Collaborative or Communicative Model** is a procedural theory of how planning should be done. It acknowledges the divergent social-political and at times ethnic groups in the city, and encourages a process of consensus building in addressing problems and developing a vision for the city. The assumption is that with negotiation, problems in the city can be resolved. The model emphasises the role of the planner and the leadership s/he provides. It promotes multi-stakeholder processes, in which the planner should bring

consensus among stakeholders and should not impose his own blue-print as in the new urbanism model. It assumes an even distribution of power among stakeholders. The implications of the Collaborative Model for urban agriculture are that:

- the mainstreaming of multi-stakeholder processes may give a voice to urban producers and place emphasis on urban agriculture being demand driven;
- there is a need to pay attention to issues of who has power and influence among stakeholders and on how a common position on urban agriculture can be negotiated;
- urban agriculture should emerge as a community need and be expressed as such; if it is a community need, it can find its place in urban development.

Box 3: The case for larger residential plots – Maseru

In Maseru, Swaziland, there has been economic pressure in support of urban agriculture. Up to the mid-1980's, it was doubtful that the planners could do much to stop urban agriculture even if they had wanted to. The main opponent to the growth of intensive horticulture in Maseru has in fact been the World Bank, whose emissaries have pressed for smaller plots for low-income households on the grounds of cost efficiency. This in turn is based on a zoning concept that treats land in residential areas as strictly non-productive sleeping quarters, rather than potentially productive land units.

Source: Greenhow, 2002

The contemporary **Just City Perspective** is characterised by democratic radicalism. It calls for a radical form of participation that goes beyond stakeholder involvement. It places emphasis on governance by the civil society, and making explicit the differences in power and the need for the “excluded” to fight for power and influence change. The implications of the Just City concept for urban agriculture are that:

- urban farmers need to organise themselves so that they can effectively lobby local authorities;
- the authorities need to be engaged in debates for the rights of urban farmers to earn a living out of a legitimate and honest means;
- negotiation is necessary for the use of any open land available for urban agriculture activities; this will also involve negotiating for the legalisation of informal settlements and informal sector activities.

The **New Life Model** argues that development institutions have realised that urban agriculture can facilitate the creation of new institutions. It links urban agriculture to different aspects of urban development such as poverty alleviation, urban nutrition and environmentalism, informal sector employment and gender, and argues for further enhancement of UA in these sectors. The implications of the New Life theory for urban agriculture are that:

- urban agriculture is a new field of development or perspective in sustainable city development and needs to be taken on board in the urban development discourse;
- emphasis is on the inter-linkages between urban agriculture and other urban development issues;

- urban agriculture may attract a lot of international development assistance if properly organised and well promoted;
- in city dynamics urban agriculture will adapt and develop itself to urban needs, until another main issue (new kid on the block) emerges and becomes in vogue.

The models discussed above have shaped the way different land uses and urban forms have emerged. These models are adhered to by urban authorities and NGOs and the visions espoused in the paradigms influence the way policies are developed. By clarifying the linkages and the potential role UA can and should have in urban development, it should be possible to integrate UA and articulate it clearly in urban development policies.

Policy formulation and Urban Agriculture

Thus it is important to clarify potential roles and positive impacts of UA in the city and link these to current planning practices and perspectives. Urban planning is undertaken under existing national and municipal policies. Therefore analysing and influencing this process of policy formulation is paramount in seeking the integration of urban agriculture into sustainable urban development. The next sections highlight the status quo with regard to the integration of urban agriculture into urban development.

Municipalities in most countries are local planning authorities as promulgated by the various town and country planning acts. As local planning authorities, the municipalities have powers and functions to plan and implement local development plans, including enforcement of development control. Furthermore, municipalities have the power to specify or formulate development policies through by-laws. As policy-making bodies, municipalities therefore determine and shape the process of development at the local level. It is therefore within the ambit of municipalities to promote or prohibit urban agriculture.

A policy framework for urban agriculture would encompass planning policies, legislation and regulations that guide or regulate land use planning and management. However, in most cities, urban agriculture is ignored, not addressed in national and municipal policies or is not acknowledged as a valid urban land use. And when regulations or by-laws on, or related to, urban agriculture exist, this is often not under an overall and clear policy, and the law may be interpreted differently by different actors (Foeken, 2006).

One could however question the need for a specific policy on urban agriculture, and argue that urban agriculture rather should relate to existing agricultural, land use or environmental policies (Wolfgang, 2002). These policies however should then still set out objectives of equity entitlements to food and other urban area resources, principally land and water, so as to accommodate these for urban agriculture.

Whether urban agriculture is specific or not, in considering appropriate planning and policy measures, one needs to distinguish between profit-driven (and often capital-

intensive) urban agriculture on the one hand and more subsistence, for-food, and largely informal urban agriculture on the other. The for-food urban agriculture tends to address the household food security aspects largely with very little emphasis on the economic aspects. Policies on or related to urban agriculture should be aimed or related to the following issues:

- pro-poor poverty reduction;
- local economic development;
- environmental management;
- integration of disadvantaged groups;
- promotion of participatory governance and democratic cities.

The most relevant urban policy areas to urban agriculture are those on land use, public health, environment, social (& economic) development and food security.

Land Use

The key issues here, especially for informal urban agriculture, are the recognition of urban agriculture as an official urban land use, access to land and other resources, and security of tenure. Most municipalities either have city development structure plans, strategic plans or city development strategies, but most of these plans fail to take urban agriculture into account.

The policy instrument that can be used to achieve the objective of integrating urban agriculture into urban land use planning is urban land use zoning (see also the last section of this paper). Layout plans could indicate the areas within the city in which urban agriculture is allowed, including guidelines from planners on types of urban agriculture. In Botswana, the City of Gaborone has set up poultry zones on land considered of low potential for development of other land uses (Ministry of Agriculture, Botswana, 2006)

Other policy options include the temporary use of vacant public and private land for urban agriculture. Municipalities could, for example, allow undeveloped land to be used for urban agriculture, subject to negotiation between the owner and the user. Further, municipalities have the option of promoting multifunctional land use. This could be done through encouraging community participation in the management of open spaces, where food can be grown in combination with other urban functions such as recreation and city greening. The case of Rosario (Lattuca et al, 2005) highlights this approach.

Health

Most cities have used the potential health risks of urban agriculture as a justification for prohibiting it. And indeed, urban agriculture, like any other industry, has potential risks for human health. But most of these potential negative effects can be minimised when urban agriculture is acknowledged and subsequently properly managed. Municipalities should develop and implement policies that minimise health risks without compromising the food production needs of the urban poor. For instance, in Cuenca in Ecuador, the policy thrust has been to regulate use of chemical fertilisers and pesticides in urban areas, to promote training and exchange on ecological farming practices, to provide licenses and

incentives (e.g. tax reduction) to micro-enterprises that produce and supply ecologically-friendly inputs (compost, bio-pesticides, quality seeds etc.) and to promote secure hygienic conditions for crop handling, food processing and vending of food.

Environment

There are several positive effects of urban agriculture on the city environment, but as with health, proper management is necessary to mitigate potential risks. In this paper the example of linking to Environmental Management Plans (as in Dar Es Salaam) is given. Urban agriculture can also assist to reduce environmental pollution through the recycling of solid and liquid waste in the process of agricultural production. For example, the City of Harare irrigates pastures on three large-scale commercial farms, which support over 10,000 cows, using wastewater from its Crowborough and Firle sewer works. The water filters down and eventually finds its way back to the city reservoir after a natural purification process (Toriro, 2003).

Social Development

Urban agriculture is a sector that integrates the urban poor and unemployed into the urban economy. In so doing, it contributes immensely to feelings of higher self-esteem and safety among the urban poor. Urban agriculture has started receiving finances through regular municipal or state/national subsidies or financing mechanism. The mayor of Kampala has set aside a budget for urban agriculture, having realised its important social dimension (Makumbi, 2005)

Urban Food Security

As was stated in the introduction, most municipalities have no food policies, in spite of the increasing problem of urban food insecurity and growing urban poverty. Current trends regarding urban food insecurity in municipalities reveal that reliance on food produced in the rural areas is not sufficient, especially for the urban poor (FAO, 2001). Despite food being a basic human need (and right), urban food security issues are low or not on the agenda of municipal policy makers and planners. Putting urban agriculture on the agenda and integrating it into urban planning, should be done by giving attention to urban food systems (availability and origin of food and linking to the rural areas around cities). It is therefore recommended that municipalities should make urban food security a policy issue and develop plans to enhance food production in the urban and pen-urban zones. The Vancouver Food Policy Council is a good example.

International development programmes

Apart from issues at local or municipal level, further linkages should also be sought with international perspectives and programmes, which can stimulate or facilitate attention for and integration of urban agriculture in urban development. By flagging important international support and institutions that are supportive of urban agriculture, local policy makers are more likely to be responsive to set up local programmes. This responsiveness can be consolidated through exchange programmes, collaborative research as well as co-funding of research and pilot projects. Some contemporary programmes are mentioned below.

The *Habitat Agenda* was first drafted in 1996 in Istanbul, Turkey. It constitutes a new social contract towards improving human settlements in the world. It is a reaffirmation of the commitment to better standards of living and improvement of quality of life in human settlements. It highlights the role and importance of local authorities and of a wide range of other interested parties in the struggle to improve human settlements. The Agenda makes specific references to urban agriculture and has several issues it can relate to.

The *Millennium Development Goals* inspire and motivate agencies and countries to work towards a common goal. They raise and maintain public awareness in rich countries, thus maintaining political pressure for aid spending and effectiveness. They can also enable citizens of partner countries to compare their progress with others. The MDGs provide an opportunity to link urban agriculture with world development goals (especially goal 1, 3 and 7 and 8).

The *Special Programme on Food Security (SPFS) of the United Nations Food and Agriculture Organisation (FAO)* is a multi-disciplinary programme aimed at promoting an integrated and participative approach to food security. In addition, the FAO committee on Agriculture recommended the development of an organisation-wide programme on urban agriculture, now one of the Priority Areas for Inter-disciplinary Action (PAIA), “Food for the Cities”. Under this programme, FAO has started urban garden allotments in several cities.

The *United Nations Habitat NEPAD Cities Initiative* captures a strategic operational approach in addressing the urban challenge in Africa, by emphasising development and the environment. It is based on a broad participation of public, private and community groups, and concerned with inter-sectoral and inter-organisational aspects. It relies on bottom-up and demand-led responses and on local capacity building. Urban agriculture is listed as a relevant and immediate livelihood strategy in times of conflict and disaster.

The *Environmental Planning and Management Process (EPM)* is based on the premise that achieving sustainable development requires all actors to recognise the interconnectedness of the environment and development activities. It has been popularised by the United Nations Environment program UNEP in partnership with UN Habitat, and applied in their Sustainable Cities Programme. It became a framework through which cities could implement the Local Agenda 21 and the Habitat Global Plan of Action. The Dar es Salaam Sustainable Cities programme has modelled its planning around the participatory approaches of the EPM process (see box 3.4). The *Local Agenda 21* promotes development of action plans for sustainable development by local authorities jointly with stakeholders and citizens. It provides planning guidelines, incentive grants, training workshops, seminars, and promotes exchange of experiences in drafting local policies and action plans

Poverty Reduction Strategy Papers (PSRPs) are prepared by member countries through a participatory process involving domestic stakeholders as well as external development partners, including the World Bank and the International Monetary Fund. A review of most of the PSRPs shows that they do not take into account urban agriculture as a strategy for poverty reduction (yet)!

Box 4 Integration of urban agriculture into urban planning- the case of Dar es Salaam

In 1992, the city of Dar Es Salaam adopted the Environmental Planning and Management (EPM) approach in its City Consultation. This new approach has been the engine of change in many aspects and also related to urban agriculture. Under this new approach the city held a mini-consultation in 1993 to deliberate on agriculture. In the consultation, stakeholders agreed that agriculture in the city contributed substantially (almost 30%) in household food supplies and that it had become an integral part of urban livelihood strategies. A Working Group was formed to work out strategies for putting urban agriculture on the city agenda. The Working Group used a participatory approach to come up with a strategic plan on urban agriculture for the city.

The results of this process are good: from action, plan preparation, implementation of demonstration projects and further integration of agriculture in the city's urban zonification. Findings of the working group included results of these projects and were a basis of deciding on where and to what extent agriculture can be practised in the city as reflected in the *Strategic Urban Development Plan (SUDP)*. In this plan, special land zones have been designated for agriculture. Ideas necessary for revising municipal by-laws and regulations were also worked out and a platform for coordination established and enhanced. The SUDP also has deliberately set apart several areas to be used for large- and medium-scale urban agriculture in the future and gives corresponding development conditions. This is contrary to the earlier "zonification" where an area could only be considered for agricultural activities while awaiting to be assigned other to uses such as residential or industrial areas. The major difference is that the Master Plan considered UA as a transitional land use whereas the SUDP considers it to be an important activity with a very important contribution to its citizens. Recognition is reflected in several laws and regulations, among them are the Agricultural and Livestock Policy (1997) and the National Human Settlements Development Policy (Jan 2000). There is no one single way of organising urban agriculture and success very much depends on adaptation to local conditions. In Dar Es Salaam, it is seen, that agriculture can be effectively integrated in urban land use plans.

(Adopted from Martin D. Kitilla and Anasteria Mlambo, 2003, Integration of Urban Agriculture in City Development in Dar es Salaam)

HIV/AIDS and urban agriculture

HIV/AIDS has emerged as one of the foremost challenges for development and poverty alleviation. Sub-Saharan Africa is home to nearly 30 million of the world's 42 million people living with HIV and AIDS. Local governments have been called upon to address the HIV and AIDS problem seriously. Urban agriculture might provide an opportunity to do something positive for people infected and affected by HIV/AIDS. Governments should provide land and waste water resources that can be used to boost the nutritional

status of sufferers and their dependants. Medicinal plants can be readily grown and harvested within the local environment. Self-employment in home and community gardens may strengthen self esteem (see also box 3.5).

Box 5 HIV/AIDS and urban agriculture in Botswana

The Ministry of Health in Botswana has a National Nutrition Plan of Action which uses urban agriculture and is designed to provide guidelines for the government, acting in partnership with NGOs, the private sector, local communities, and families. The ministry intends to use urban and peri-urban agriculture to improve nutrition, by provision of foods that are rich in essential nutrients to HIV/AIDS affected households. The promotion of urban agriculture is also more urgent especially considering the increasing number of orphans due to HIV/AIDS pandemic. It should be noted that urban poverty is worse than in the rural areas where in most cases the family support systems still exists. The ever-increasing cost of living also impacts heavily on the urban poor, especially the women who bear the heavy burden of providing care for the aged, disabled, orphaned, sick relatives and to a large extent to HIV/AIDS patients through the home-based care programmes.

Adopted from: Urban, Ministry of Agriculture, Botswana, 2006

Access to land

Urban farming requires some land space, whether the farming system is soil based or not. Land is one of the most controversial issues associated with urban agriculture, referring to the issues of secure tenure and conflicts over use of scarce urban land, water and other resources. Land for urban agriculture is either not available, or when available it may not be accessible, and when accessible it may not be usable for a particular form of agriculture (Mushamba et al. 2003).

Availability

In most cities and towns there is a high demand for land for residential, commercial and industrial development, among others. The productive or potentially productive areas of the city that have not been paved over are not limited to communal farms and private gardens. In many cities such as Accra, Ghana, Setif in Algeria, Divo in Ivory Coast (See for instance, the Urban Agriculture Magazine Number 11) a lease for agricultural use of the land is only given for one year, because of claims for other uses. This makes availability of land, and other resources associated with land such as water, a great concern for the urban farmer.

Institutional land areas (belonging to hospitals, schools, and churches), riverbanks and roadsides, parks, lands under high-voltage electrical towers that cannot be used for buildings and those surrounding refuse dumps make up much of a municipality's territory. Planning the use and exploitation of these spaces requires mapping their location as a first step and then assessing their potential. It is important to assess the availability of land for urban agriculture in a given city in the short-, medium- or long-

term period. Land may not be available due to rapid development of the built-up environment.

Accessibility

Land may be available but not accessible because of social or political reasons. Accessibility relates to the opportunity for the actual utilisation of available land by needy households or groups, taking into account administrative procedures and conflicts that may arise. Access may refer to the land itself or the use of the land. Often the ownership and tenure patterns are not known because of lack of records or frequent change of hands. Traditional forms of ownership as under customary law also exist (see the case on Abidjan). Land may also be far from where farmers live and public transportation and roads could be inadequate or not available. Available land may be too costly for farmers to rent. Farmers may not have the social or political connections necessary to learn about or gain access to the plots that are available. The poor and recent migrants in cities often lack access to land for urban agriculture. Planning policies and legislation that deem urban agriculture as an illegal activity can prevent farmers from accessing land. Discrimination by gender may prevent equal access by men and women.

Box 6 Accessing Land for UA in Kampala

Since the early 1970's, the urban population of Kampala has grown considerably and an increasing number of vulnerable households have turned to urban cultivation as an alternative source of food, as a means of saving on food expenditure, and as a way of generating cash income. Of the city's population of nearly 1.5 million inhabitants, 40% consume either a crop or animal product produced in the city, while 70% of all poultry products consumed are produced within the city (Ssebaana 2002). Agriculture in Kampala is practised mainly in valley slums where the poor live in informal settlements. Although urban agriculture offers easy access to services and markets, gaining access to land to grow food and rear animals is a challenge for the urban poor.

The majority of the poor gain their access to land as customary tenants on privately owned land in periurban areas, a form of land tenure unique to Buganda known as *bibanja* (plots) on *mailoland*. Many poor people who lack land ownership rights gain access to land in poor areas like wetlands, road and railway reservations or waste disposal sites, and grow annual crops. Others utilise their backyards or encroach on undeveloped land left to fallow by landowners. Despite being squatters, the poor have usufruct on the plots they farm. Landlords and city authorities do not allow squatters to grow perennial crops, and the poor squatters stand to be evicted at any time if the occupied land is going to be "developed".

A research undertaken on how the poor access land for urban agriculture revealed different modes (Nuwagaba et al, 2003): squatting (46%), borrowing (34%), inheriting (11%), renting (5%), co-owning with spouses (4%). Currently in Uganda, the spouse co-ownership of land is a contentious issue particularly among gender activists who contend that women have for long been left out from the benefits of family resources. The majority of urban farmers in Kampala (60%) indicate that they are actively searching for land, and mention plans to borrow from the government or relatives, or seek funds to buy.

Adopted from: Kiguli et al, 2004

Usability

The usability of available and accessible land is determined by factors such as topography, size of plot, soil texture and quality, availability of water and security of tenure. Also, services such as water for irrigation and inputs or market facilities, transportation infrastructure are factors that determine a plot's usability. In Rosario (Dubbeling, 2003) the following variables are used to define the suitability of the land: environmental quality; potential agronomic use; actual use (and previous use if the area has been used as a dump or for other hazardous activities); current regulations for land use; urban and city projects planned; water supply; ownership; and population groups interested in agriculture.

Incentives for producers to invest are compromised by the lack of security concerning land tenure and the fear of eviction. Why erect terraces, improve and fertilise the soil, or build irrigation reservoirs if the government does not guarantee that benefits can be reaped from those investments? Taxation rules and legal frameworks are therefore necessary to provide security and incentives for producers.

Land tenure

Security of land tenure is very important, but hard to get for urban farmers, especially for those farming off-plot (on plots away from the homestead, like open areas in the city) or in peri-urban areas. Land tenure refers to the system of rights and institutions that governs access to and use of land and other resources on that land. It determines who can use what land and how. It derives from both statutory and customary law. Research on land tenure suggests that the most apparent qualitative linkage between tenure and food security is that increased security of tenure in productive resources enables more efficient and profitable production and hence greater access to food products.

Land tenure determines the level of investment that urban farmers themselves put into projects. The private sector is often not willing to advance loans to urban farmers as they lack legal rights to land and are therefore unable to use it as collateral. The tenure situation of women is even more precarious (MDP-FAO 2001). Administrative arrangements for secure tenure are cumbersome and proper registration of plots and users is often non-existent. However, (temporary) user permits have been successfully negotiated in some countries concerning leases for public and private land for specific periods of time with clear conditions as is highlighted in the cases.

Implications for urban planning and management

Improving the availability of suitable land for urban agriculture is important. Urban agriculture therefore should be included into official land use categories, statistics and surveys, so as to inform urban local authorities. Geographic Information Systems (GIS) could be used for registration purposes, for improving land use monitoring and evaluation activities, and as a basis for a transparent taxation system. The city of Rosario created a land bank, where land was categorised by type and those areas where UA could take place were identified. Governador Valadares included urban agriculture in their master plans and made sure that land was made available for the activity. In Gaborone in Botswana, special poultry zones were created around the city. Dar es Salaam also has

zones where livestock is raised. The case study of Beijing highlights the impact of zoning in making land available for urban agriculture. A study by SWEDEPLAN highlights that in Sweden many housing developers are now incorporating composting and kitchen gardening into designs and layouts for housing projects (Greenhow, 2002). Green houses are allowed on the walls of apartments facing the south. In housing schemes built in the 1960's where redevelopment is taking place, composting facilities and space for gardening are being provided. (ibid).

Municipal land use plans need to be studied to determine if spaces can be allocated for cultivation, aquaculture, animal husbandry and forestry, among other activities. Depending on the country, these municipal plans can be part of strategic plans, urban development plans, or land use plans.

Integrating Urban Agriculture into National and Municipal Policies

Policies related to urban agriculture can be categorised in the continuum from full endorsement and facilitation to regulation or outright prohibition. Under the more restrictive policies community concerns are ignored. Urban agriculture is not permitted, regardless of the desires of the community. These policies are characterised by restrictive legislation, lack of flexibility or room for innovation, resistance to change within the local authority and rigid adherence to rules. On the contrary, enabling or endorsing approaches are found when authority, statutory powers and other frameworks are used to assist, advise and guide communities on the way forward for urban agriculture; community concerns are given attention; and innovation and new ideas are encouraged.

Most current legislative frameworks do not facilitate urban agriculture, but leave room for flexible interpretation. In Nakuru, Kenya, Foeken (2006) shows that the laws, both national and local, tend to restrict urban agriculture, but that the practice is tolerated in the city. Most laws and by-laws are archaic and have been borrowed from the colonial days and are therefore not in keeping with the design and activities that take place now in cities of the developing countries. Legislation should therefore be crafted so that it supports promotion and regulation of urban agricultural activities.

Promoting urban agriculture at local and city level includes lobbying with different stakeholders at different levels, including the Municipality, NGOs, Departments of Lands, Agriculture, Food Security, Health and Local Governments and farmers, providing them with targeted information and best practices.

National government interventions

National policies determine activities or local policies promulgated by local governments. On the other hand, local authorities can lobby national governments to make policies which may then be adopted at national level. By-laws are made by local authorities and are only applicable within the jurisdiction of that particular local authority. (Makonese, 2005) Outsiders cannot be bound by these rules as long as they are outside the jurisdiction of that local authority. By-laws however should not be ultra vires national

law. If they are, they become illegal and are not enforceable to the extent of the inconsistency. A policy is a broad operational framework (a way of doing things) for an organisation, institution or a country. Policies are statements of good intentions and are not legally binding. They therefore cannot be enforced in a court of law but only have persuasive or normative value. However, policies can result in the enactment of legislation or by-laws if it is deemed necessary.

Box 7 Legislative Framework for Urban Agriculture in Zimbabwe

An audit of the policy and legislative framework for urban agriculture in Zimbabwe was undertaken by the Zimbabwe Environmental Law Association (ZELA) and the Municipal Development Partnership of Eastern and Southern Africa (MDP) from December 2003 to February 2004. The main objective of the audit was to identify relevant and current policies and legislation which impact on urban agriculture and to provide recommendations on how current legislation can be reviewed in order to develop an enabling legislative framework.

One of the key findings was that indeed there is not one but many pieces of legislation that impact on urban agriculture in Zimbabwe, both at the national and the municipal level. There have not been any recent regulations or by-laws gazetted to the effect of regulating urban agriculture in Harare, Zimbabwe. It was also found that legislation does not refer to urban agriculture per se, but to farming in urban environments. The different types of legislation and the absence of the term urban agriculture in such legislation, coupled with misinterpretation by those who enforce the law, leads to confusion on the legal standing of urban agriculture.

The research also established that in what is seemingly a very prohibitive environment, there are indeed many opportunities that exist in legislation for the practice of urban agriculture, contrary to popular belief that the law prohibits urban agriculture in Zimbabwe. Urban agriculture has grown in importance, but is still considered as a rural activity in the law. Existing law seeks to regulate the practice of urban agriculture so that the negative effects can be prevented, and when they do happen, that prompt relevant action can be taken.

Source: Mushamba and Makonese, 2004.

The process of enacting laws and by-laws is generally long whilst policy development is fairly easy. It is for this reason that most cities and countries have chosen for policies on urban agriculture. Several platforms are available for convincing policy makers to push for policies on urban agriculture. On the other hand, by using international development programmes, workshops and conferences it may be possible to lobby governments and local authorities, for example the Harare Declaration arising from a conference on urban agriculture and food security. It is also possible to target national agencies and players like local government associations and push through them the mandate for national policy change. Policy change follows practice.

National governments could possibly have a role to play in:

- The creation of an institutional home for urban agriculture by selecting a national lead agency on urban agriculture and the establishment of an inter-departmental committee on urban food production and consumption;
- The creation of an appropriate legal framework for urban agriculture;
- Stimulation of policy and action-oriented research on urban agriculture, including research on the functioning of informal networks in urban agriculture, technologies for safe re-use of urban wastes and waste water, space confined and water saving technologies, integrated pest management and other ecological farming practices, small scale food processing techniques etc;
- Facilitating awareness raising among city administrators, urban planners, technical departments and NGOs through seminars and workshops that provide them with reliable data and positive examples (“best practices”); and
- Co-financing of city urban agriculture programmes.

The Government of Tanzania for example has, since the 1970s, openly supported urban agriculture through clear policy statements, as a means of boosting a poorly performing economy and meeting the need for food self sufficiency. The government and political leaders have, time and time again, encouraged urban dwellers to grow crops and keep livestock in their backyards and in open spaces. Other countries are following Tanzania’s example as stated in the Harare Declaration on Urban and Peri-Urban Agriculture in Eastern and Southern Africa (see box 8).

Box 8 Harare Declaration on Urban and Peri-Urban Agriculture

Ministers from local governments from Kenya, Malawi, Swaziland, Tanzania and Zimbabwe met in Harare, Zimbabwe, on Urban and Peri-urban Agriculture (UPA) in Eastern and Southern Africa organised by the Ministry of Local Government, Public Works and National Housing of the Government of Zimbabwe and the Municipal Development Partnership for Eastern and Southern Africa, in collaboration with UNDP, UNICEF, FAO-SAFR, FANRPAN, RUAFS and IDRC, on 28 and 29 August, 2003. They acknowledged that UPA is a widely practiced activity in and around towns and cities within the region on parcels of land with alternative competing uses. Consequently, UPA has generally been practised informally without appropriate policy, legislative and institutional frameworks. Therefore, UPA plays, and will continue to play, a significant role in promoting food security, employment creation and income generation, health and nutrition and improving the economies of urban areas. Some governments in the region have made significant progress in incorporating UPA in their urban development plans, and others are now beginning to rise to the challenge. Furthermore, they recognised the existence and increasing practice of UPA and also noted the many challenges that it faces. They therefore called for the promotion of a shared vision of UPA that takes into account the specific needs and conditions in the region, and accordingly committed themselves to developing policies and appropriate instruments that will create an enabling environment for integrating UPA into urban economies.

Adopted from MDP, 2003

Local government interventions

Local or municipal authorities can play a key role in enabling and regulating urban agriculture, amongst others by:

- Stimulating the dialogue and cooperation among the direct and indirect stakeholders in urban agriculture.
- Reviewing and revising existing municipal by-laws and regulations regarding urban agriculture.
- Integrating urban agriculture into sector policies.
- Securing access to land and enhancing the security of user rights of urban farmers, among others by urban land use planning and zonification, provision of land, and the promotion of multi-functional land use.
- Promoting safe re-use of urban organic wastes and wastewater in agriculture.
- Stimulating enhanced support to processes of technological innovation in urban agriculture and promoting ecological farming practices.
- Facilitating local marketing of fresh, urban-produced food.

Opportunities to integrate agriculture into urban planning

The most commonly used planning tools in shaping the urban environment include master plans, local plans, subject plans, site plans and neighbourhood improvement plans. When drafting these plans, planning policy is drafted simultaneously to accompany them. These plans guide the use of private and public land, community and individual health, public safety, circulation and transportation. The plan includes broad policy statements and detailed zoning of land uses, with associated by-laws or ordinances and regulations listed in supplementary documents. Urban agriculture needs to be recognised and included as part of a development strategy with subsequent allocation of land for it in municipal plans.

In most urban settlements, the **Master Plan** has become a statutory provision. The law stipulates that a master plan needs to be prepared to guide urban development in the medium term - often 10-15 years. The preparation process involves wide consultation and public display of the master plan report. The master plan makes land allocation on a broader scale with the typical generous provision for open space, green areas and recreational areas as a public good. But master plans are rather static and slow to assume change. Still, there is great potential in the master planning process for integrating urban agriculture into its goals and spatial development framework. The cases of Rosario and Cienfuegos in Latin America and Dar es Salaam in Tanzania highlight how urban agriculture can be incorporated into a city master plan.

Derived from the master plan, **Local Plans** are prepared for specific development zones. It is much more detailed and includes a layout of how the land will be allocated and demarcated. It provides the opportunity for integrating urban agriculture on-plot as well as off-plot, since issues of plot sizes, mix, densities, tenure etc. are dealt with in the local plan. The Human Settlements Policy of Tanzania has designated special areas, where people would be granted legal rights to engage in urban agricultural activities, at the level of the local plan.

In any spatial area, a **Subject Plan** may be prepared, to deal with specific subject matter, for example public transport, drainage etc. These plans are often prepared when there has been a major public problem. Opportunity exists for urban agriculture to be presented in specific areas through subject plans. Under the EPM approach adopted in Tanzania, a working group on urban agriculture in Dar es Salaam produced a subject plan on urban agriculture.

Site Plans are the lowest level of land use planning and concentrate on individual stands or plots. Site plans are used to position development activities within the stand. Site plans relate especially to on-site urban agricultural activities, where space should be left around the dwelling to allow farming.

Finally, one should also seek to integrate urban agriculture into for example **neighbourhood improvement plans** (informal housing areas/ squatter upgrading programmes), plot subdivision plans and urban regeneration/ renewal plans. In all these situations, scrutiny should be made of all land that can possibly be used for urban agriculture. This requires the involvement and lobbying of local urban agriculture interest groups (see for instance the case of Cagayan de Oro in the Phillipines in Box 9).

Box 9 Building food-secure neighbourhoods, the role of allotment gardens

Cagayan de Oro is one of the three model cities in the Philippines under the UN-Habitat Sustainable Cities Programme due to its efforts in addressing the challenges of urban environmental management and food security. This is particularly evident in its allotment garden programme, which enables multi-functional land uses such as food production and income generation, treatment and nutrient recycling of biodegradable household wastes and excreta, as well as open spaces for community and family activities.

The first allotment garden of Cagayan de Oro was established in 2003 (Holmer et al., 2003). Since then, the number has grown to five self-sustaining gardens located in different urban areas of the city, enabling a total of 50 urban poor families to get legal access to land for vegetable production. These allotment gardens are characterised by a concentration in one place of six to twenty small land parcels of about 300 m² each that are assigned to individual families, who are organised in an association. In the allotment gardens, the parcels are cultivated by individual families.

Aside from contributing to the food security of the community, the gardens are also essential for the successful implementation of the city's integrated solid waste management programme as mandated under Philippine law. In the city districts that have an allotment garden, the amount of residual wastes delivered to the landfill site has been reduced by more than one third since the segregated bio-degradable household wastes are converted into compost in the gardens. So-called ecological sanitation ('Ecosan') toilets have been recently established in four of the five areas. They serve as show cases for improved sanitation.

The city government of Cagayan de Oro is presently mainstreaming the allotment garden concept into its overall city planning and development, which will also use participatory GIS-based approaches to identify suitable areas for future garden sites. A city ordinance is presently being prepared to reduce taxes for landowners who make their land available for this purpose.

Adapted from: Robert J. Holmer and Axel Drescher, 2005

Table 1 shows how urban agriculture can be integrated at each level of the planning process.

Table 1 Integration of UA through various planning tools

Level of Planning	How To Integrate Urban Agriculture	Planning Authority
Master Plan	<ul style="list-style-type: none"> • State-wide policies and goals for the planning • Designation of areas for urban agriculture by the city, municipality, town or board 	Local Authority
Local Plan	<ul style="list-style-type: none"> • Create zones for urban agriculture within specific areas that are part of the master plan 	Local Authority
Subject Plan	<ul style="list-style-type: none"> • Address issues of urban agriculture on a thematic basis 	Local Authority
Local/Layout Plan	<ul style="list-style-type: none"> • Create a map indicating land for urban agriculture, among other uses • Show designated land in blocks and plots • Use by surveyors to peg urban agriculture plots 	Local authority
Site plan	<ul style="list-style-type: none"> • Indicate areas for urban agriculture within an individual plot or stand 	Individual developers

Zoning land for urban agriculture

Zoning refers to the designation of land in a municipality to different related land uses and the regulation of the use of the land in those areas. Residential, commercial, and industrial are typical urban zones. Under zoning, regulations of the spacing of buildings, size (in terms of floor area or bulk factor) are included with the aim of conserving or promoting human health, safety and convenience. It is argued that zoning encourages urban agricultural activities to be undertaken (Ministry of Agriculture, Botswana, 2006, and in Kathmandu (Weise and Boyd, 2001). Zoning of poultry zones has been successfully used in the case of Gaborone (Botswana) as a strategy to encourage poultry production. The case of Beijing in China in regards to zoning has already been mentioned.

Geographic Information Systems (GIS) can be used for mapping land for urban agriculture, for registration purposes and for improving land use monitoring and evaluation. A methodology for mapping vegetable production on open spaces has been successfully implemented in Dar es Salaam, Tanzania. The mapping procedure comprised an analysis of aerial imagery, mapping in the field, and integration of the results into a GIS. The basic functions of GIS proved to be a very useful. Integrated in local government and planning processes, the GIS database can contribute to raise public awareness on the situation of urban farmers, help to improve extension services, and can be used by town planners for further analysis and planning purposes. (Dongus and Dresher, 2001).

Plans and Standards

To stimulate UA, enhance its potential and facilitate its integration into urban development, municipal land use regulations that accompany the produced plans should clearly spell out urban agriculture as a legitimate land use. Standards for layout planning need to be developed on land size that considers agricultural production around the house. For example, standards already exist for the size of schools, open spaces, and roads per thousand inhabitants. Improved standards for community or neighbourhood gardens in dense areas and community or neighbourhood gardens together with private gardens in less dense gardens should be part of the plan formulation process. Further, specifications should be made for the types of activities that are permissible in given areas.

Housing standards have been a subject of long discussion and debate. Minimum plot sizes have been revised upwards and downwards over time. There is a need to understand housing as a multi-functional space for production, reproduction and socialising, and not just as a place to sleep (Jarlov, 2001). In those cases where the (high) price of serviced land is used as an argument against bigger plot sizes, un-serviced off-plot land for urban agriculture should be identified. The case of Mbabane in Swaziland (Greenhow, 2002) highlighted the negative effect of the continued reduction of residential plot sizes on urban agriculture activities. Plots should be large enough to allow on-plot urban agriculture to take place. This will be influenced by the set-back distances of dwellings from neighbouring boundaries. If the plot is too small or the dwelling is designed in such a manner as to cover the entire plot, then there will not be enough land for cultivation.

Indirect Planning tools

Indirect planning tools are used to regulate land use on land that is privately owned. This is done by permitting certain uses or by prohibiting other uses. These measures are often accompanied by stimulation in the form of information and incentives, including tax incentives or exemptions, environmental impact assessments and subdivision control. Subdivision control, particularly for peri-urban land, ensures that encroachment by land uses other than UA is controlled. Tax exemptions can be introduced for land that is made available for urban farming. Licences can be granted to the public at nominal rates for

land to be used for urban agriculture. In Rosario, Argentina, land under urban agriculture attracts a lower property tax whilst in Valdares, Brazil, community urban agricultural activities are exempt from water tariffs through an association of urban agriculture and community farming. (RUAF, 2005). In the latter, the exemption is for a given quantity of water in accordance with the profile of the activity. In case the user does not carry out UA according to standard practice, the penalty will be to return to the public treasury an amount of money equal to the reduction in tariffs.

Urban agriculture by its nature has more direct effects at the local than at the national level. Even at the local level, the extent to which the practice can influence issues will also differ among local authorities depending on the nature, size of the city and the standard of living of the people within the local authority. Local authorities will therefore respond to the issue of urban agriculture at various levels through the use of different instruments. The current situation in most countries is that there are more by-laws that deal with the issue of urban agriculture in a more meaningful way than laws that are made at the national level (e.g. Regulations or Acts of Parliament.) Even then, the by-laws that are in place do not deal directly and concisely with the issue but approach urban agriculture from a different perspective, regulating activities that have a bearing on urban agriculture rather than regulating the practice of urban agriculture itself. It is therefore important that national laws which recognise urban agriculture are promulgated at national level.

Conclusions

This paper argues that the multiple functions and relation to other urban issues offer sufficient reasons for the integration of urban agriculture into sustainable urban development. Urban planning and design regulations are needed to facilitate this integration. However, planners do not make decisions, they only recommend them. The urban planner operates in an institutional environment that is at the centre of diverse political interests. The fact that urban planning officials are accountable to politically-elected councillors, most of whom have no relevant urban planning and management expertise, restricts development of innovative ways for integrating agricultural activities into the urban land use system (Chaipa, 2001). In addition, there is often limited capacity to enforce planning regulations with many other actors involved in enforcement, e.g. municipal police, courts, politicians etc. Furthermore, most practising planners are content with observing the status quo by implementing development control according to laid-down procedures, standards and provisions for legislation such as the Urban Councils Act. A critical shortage of skilled planners also hampers innovative and responsive planning (Chaipa, 2001).

Cities require an enabling policy framework to guide the enhancement of urban agriculture. This framework should have adequate legislation to enable access to land and guarantee rights for farmers. Institutionally, the framework should acknowledge that urban agriculture falls under the jurisdiction of several different levels and types of authorities, e.g. agriculture, forestry, parks and gardens, public works and urban planning.

Coordination and information sharing are important, as is its integration into other municipal developmental projects. Integration of urban agriculture into programmes dealing with MDGs, HIV/AIDS and poverty alleviation is important. The draft policy paper on UA in Botswana highlights the linkage between UA and HIV/AIDS.

Some of the innovative techniques such as land banks, participatory planning and long-term leases for land used for UA activities are beginning to address concerns of ensuring adequate access to land and other resources for UA by the urban poor and should be encouraged. To the extent possible, GIS should be used for registration purposes, for improving land use monitoring and evaluation activities, and as a basis for a transparent taxation system. Incentives in the form of local tax reductions, tariffs and promotions for urban agriculture should be encouraged.

Urban planners have an active role to play in integrating urban agriculture into urban planning, especially in encouraging it as an urban land use, and in catalysing change in the public perception. The cases discussed in this paper demonstrate that it is possible to integrate UA into urban planning and come up with regulations that reinforce this. Such regulations have more chances to succeed, if they are permissive instead of prohibitive. The successful and sustainable integration of urban agriculture into urban land use systems is a complex task requiring a multi-stakeholder approach. The urban planner can and should take a leading role here by creating a conducive operational environment. Urban agriculture stakeholder forums, formed by stakeholders including planners, farmers, producers and representatives of various agencies, can be very useful for developing shared vision, resolving conflicts and developing joint action programmes. Urban planners are well positioned to change the views of politicians, other municipal staff and the public about what is appropriate urban form and function, and what activities are suited to the urban area. This requires intensive public and political awareness raising and good urban governance.

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