The integration of Urban Agriculture into urban planning – An analysis of the current status and constraints

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1. Introduction

"The process of formulating and implementing land policies is not only politically and technically difficult, it can also be costly. However, the costs of not formulating and implementing them are much higher" (Dowall, David & Clark Giles, 1997). Cities do not develop according to planners' wishes – to the contrary, in the present and past, cities have always shown their own dynamic of development. In many cases this has led to crowded, ill-ventilated, unplanned, unwieldy, unhealthy cities – "ulcers on the very face of our beautiful island" as expressed by Howard (1902) for the situation in Britain (Howard Ebenezer, 1902). Howard's Garden City proposals addressed many aspects of the food system -production, distribution, collective preparation and consumption, and waste recycling- as integral to the city (Pothukuchi, Kameshwari & Jerome L. Kaufman 2000) an idea that only now is recovering again (Groppo, Paolo (ed.) 1997). In many reports on urban planning in developing countries the rapid urban development and population increase are highlighted which make the recent trend different from what happens in the western world. Harare's infrastructure, for example, has been unable to cope with this influx of people (Dengu, Ebbie & and Alex Mugova 1996). Rapid, largely unchecked, urbanisation like for example in Kumasi, Ghana, has called an end to its claim of being the 'Garden City of West Africa'. As a result, land use patterns have become very complicated and no good concepts are in sight (Pender, Judith 1998). Therefore, urban planning instruments need to be adapted to the relatively new situation instead of using out-dated, old-fashioned, post-colonial planning instruments, which are not even used anymore in the countries of origin (Dowall, David & Clark Giles 1997). Conflicts between customary and modern land tenure systems cannot be avoided. Most of the conflicts have to do with the transition from communal land to freehold land tenure. This leads to fundamental changes in land use. The role of Land Boards and traditional authorities in manipulating and interpreting local land rights is unclear, (Richard, Matthew J. 1991).

Key problems identified are for example:
• Urban poverty and food security
• The urban land market
• Issues related to sustainable urban development.
A basic question is: how to increase access to land for the poor or how to integrate the urban poor into the urban land market?
The dilemma is: Recognition of and interest in urban and periurban agricultural production (UPA) is generally low among planners and politicians. Thus, a consistent approach to UPA is rarely found, (FAO 2000). Little international co-operation in the field of land legislation is happening and innovative approaches from developing countries are missing. There is a lack of both international comparative studies on land legislation as well as internationally knowledgeable advisers (Österberg, Tommy 1998).
Although public awareness for farming activities in cities is slowly increasing, agriculture is still in many cases "by definition" not practised in cities, and is often seen as "economically unimportant" or "a temporary phenomenon". The terms "agriculture" and "urban planning" seem to be incompatible. Agricultural activities tend to be shifted to outskirts of cities, far away from markets and infrastructure without analysing economic, environmental and interrelation with other sectors. Urban agriculture is often informal. This refers to the land occupied, the labour market, and the sales of the produce. No official authority deals with informal activities. For one or another of these reasons, urban planners tend to exclude agriculture from their terms of reference. Nevertheless, leaving the urban farming sector out of planning activities creates many problems in the cities of the South. Urban agriculture is a reality and in many cases a response to crisis and a coping strategy of the urban poor, (Jacobi Petra, Axel Drescher & Jörg Amend 2000). In many countries best and highly productive soils are gradually becoming built-up areas, thereby losing the potential for food production forever, (Pujol, D. & M. Beguier 2000). Urban agriculture is often shifted to marginal soils and therefore can never meet the goal of high productivity.

However, high costs of green open space and solid waste management tend to modify thinking of planners and authorities: a more “agricultural” approach or an approach to public-private partnerships can help to reduce costs. Moreover, local authorities start to recognize the role of urban agriculture for poverty alleviation and local economic development, enhancing urban food security, offering recreational services to urban citizens, etcetera.

Land remains one of the controversial issues related to Urban Agriculture, (Webb, , N. 1998) but *access* to land is mostly more crucial than the *availability* of land, (Mougeot, Luc 1994). Urban land management (as any other land management) should aim to put urban land resources into efficient and sustainable use (FAO 2000). This requires, first of all, recognition of the prevailing problems and acceptance of urban livelihood strategies including urban farming, but also realization of benefits and opportunities created through productive use of green open spaces in cities.
The challenge for urban planners is to integrate coping strategies of the urban poor -- which are closely related to the informal land market in many countries-- into their planning strategies. This requires the definition of rules and standards but also ways to increase the supply of and access to land by the poor and implementation of land legislation to enable sustainable urban development. Recently, gender aspects have entered into the discussion of planning and agriculture in cities. Women, as major players on all levels of the urban food system, in production, marketing, processing and street food vending have a basic interest in being considered as an important interest group for urban planners, (Tinker, Irene 1997). Children as another important urban dweller group are hardly ever mentioned in the planning process. Urban farms could play an important role in community building and the education process (Ginsberg, Oliver 2000). In spite of little recognition of urban agriculture in literature on urban planning, urban planners are dealing with other issues closely related to urban agriculture, e.g. squatter settlement development and urban poverty alleviation. We can learn from the experience.

2. Understanding the importance of urban agriculture in the planning process

*“Urban agriculture is a practice widely used in the past, and is still in common use in many urban areas around the globe. Urban agriculture is one of the most exciting concepts of sustainable development since it addresses almost all areas of sustainability. It promotes self-reliance, community, and local economy while reducing many environmentally harmful practices from modern farming practices” (*Hsin, Robert 1996).
In view of the sustainability discussion, and recent serious, worldwide problems in agriculture, especially in animal farming, urban and periurban agriculture offer at least partly, a solution. Growing crops and breeding animals near the consumer avoids waste of energy and long transport distances.
Evidence suggests that UA complements rural agriculture and increases the efficiency of the national food supply in that it:

- Provides products that rural agriculture cannot supply as well, e.g. perishable products, export crops that require rapid delivery upon harvest;
- Can substitute for food imports intended for urban consumption and thus save on foreign exchange;
- Can release good rural agricultural land for export-oriented production;
- Can reduce pressure to cultivate new rural land, relieving stresses on marginal rural lands;
- Can contribute to the generation of income in the rural sector by various and multiple interactions between the areas and their inhabitants, (IDRC 1998).

UPA is a reality and has to be considered as an important activity near and inside cities. Cities obtain their food from a variety of sources, from rural, periurban and urban areas but also from imported food. Therefore urban and periurban food production is, in many cases, a response to various factors:
• inadequate access of the urban poor to rural food supplies;
• inadequate measures to support food production;
• problems of transport and distribution of food in both rural and urban sectors;
• insufficient purchasing power of the urban poor.
Taking the highly complex urban-rural linkages into consideration, it is important to direct future development efforts towards improved urban food security through strengthening the rural - periurban - urban network, (Drescher, A.W. & D. Iaquinta 1999). This principle is becoming more and more important in the ongoing Agenda 21 discussion.

3. Basic principles of and tools for urban planning

"Urban planners shape patterns of land use and the built environment in and around cities to solve and prevent challenges of urbanization, including providing shelter, food and other basic necessities of life, protecting and conserving the natural environment, and assuring equitable and efficient distribution of community resources, including land. Planners in less-developed countries experience the added challenges in practice of sometimes chaotic planning policy, an outdated planning legacy with European origins ill-suited to lessdeveloped country communities" (Quon, Soonya 1999).
The most commonly used planning tools include comprehensive general plans, master plans, strategic plans and structure plans (Dowall, David & Clark Giles,1997).
• Master plans
• Structure plans
• Land zoning
• Land subdivision regulations

Experience has shown that ***general and master plans*** tend to be static or assume slowgrowing cities. They also tend to ignore how households and the commercial sector alter their demand for land as prices change. Even when such master plans have taken substantial time and effort to make they could hardly be relevant to real developments on the ground if not at least the most powerful stakeholders are willing to adhere to them. In other words, the authority of a master plan can vary a great deal (Berg, Leo van de, 2000).

A more appropriate and dynamic planning tool for developing countries is ***structure planning*****.** It provides a broad framework for local decision-making and it involves public participation (Dowall, David & Clark Giles, 1997). The Structure Plan sets out a framework for development of a community. It requires projections of future demands and needs of the community such as housing, infrastructure, employment, transport, local markets etc., but also environmental aspects like waste management. As for master plans the long-term planning approach is a disadvantage in rapidly growing cities of developing countries.

Land zoning dictates to the landowner for what purposes he or she can use the land and what can be built on that land. Zoning regulates the use of land in areas for residential, commercial, industrial, agricultural or other land use (Dowall, David & Clark Giles, 1997). Zoning is a means to control urban sprawl, population density, traffic, and other urban problems. The strict zoning as practised e.g. in European countries is not applicable to many developing countries. Land in Asian cities is frequently used for other or mixed purposes such as residential and commercial use. Especially with regard to the clustered type of development --whereby working sites and residential areas are planned to be near together-- mixed zoning has to be applied. In many developing countries the spontaneous setting of squatter settlement are mixed zoning models, where housing, small-scale industries ***and*** agriculture are located near to each other. Nevertheless, urban agriculture needs guided development through zoning measures with respect to plot sizes.

Land subdivision regulations define standards for plot sizes and layout, street improvement and procedures for assigning private land for public purposes. Subdivisions provide the essential characteristics of land uses, street patterns, and public utilities. Especially in the periurban and peri-rural areas of developing countries subdivision regulations do not work. Uncontrolled housing schemes and unclear roles and responsibilities of local authorities hamper proper planning and law enforcement (Dowall, David & Clark Giles, 1997).
In the light of sustainable city development urban agriculture best takes place near the people. In most developing countries, transport is a serous constraint and people tend to be immobile because transport costs are not affordable or no public transport system exists. The affected groups are for example located in squatter compounds with little or no access to infrastructure. Access to food is limited due to the non-availability of supermarkets or shops. Only one case from St. Petersburg is known, where public transport for urban farmers is subsidised by the city council, (Moldakov, Oleg, 2000).

Urban land markets
Urban and periurban land is always under the pressure of change. Fast growing economies, normally going hand in hand with urban growth, place demands for making land available for new purposes with a totally different structure (Österberg, Tommy, 1998). Balancing

environmental and economic objectives requires a land management strategy that facilitates the land market and protects sensitive land and cultural resources, (Dowall, David & Clark Giles, 1996).
The availability of land and access to land are crucial for agricultural activities. Even when land is available and production allowed, land tenure arrangements and culturally rooted inequalities may limit the effective acreage available. Thus, productivity can be restricted either by reducing the actual acreage available or reducing the effective acreage available due to land use limitations. Insecurity of tenure also influences crop and animal husbandry selection and soil conservation, discouraging investments and land improvements and leading to erosion and depletion of resources (Drescher, A.W. & D. Iaquinta,1999).

Land legislation is one tool to regulate rights of landowners and land users in the urban setting and comprises various sub-packages of legislation, among which the land registration legislation and the land management legislation. Threats to environmentally and socially sound land development are land speculation, high-speed, uncontrolled urbanisation, missing land legislation or centralized, top-down planning approaches. Urban land management legislation is a public tool to avoid uncontrolled and inappropriate land use in cities. Housekeeping with natural resources, protection of open spaces, efficient and appropriate land use, and protection of land for public purposes (parks and recreation) falls under these laws (Österberg, Tommy, 1998). The proper analysis of land markets is a key issue in understanding the problem of how to integrate urban agriculture into urban planning policies. This mainly refers to inefficiencies, distortions, and inequalities caused by the land market and the question of who suffers from it, which ultimately are political questions (Dowall, David & Clark Giles,1997). This is also a major reason to discuss the role of urban agriculture in the light of the political economy.

Different approaches to urban and periurban agriculture
In this context two different aspects need to be considered: the intra-urban and the periurban land-market. They are different in their actual settings, development perspectives, and regulation needs. While intra-urban land is often scarce due to extensive build up and other uses, in the periurban setting rapid structural changes take place, (Mbiba, Beacon, 2001).

Table 1: Differences between "urban" and "periurban" (Drescher and Iaquinta, 1999)

Characteristics of "urban" and "urban agriculture"	Characteristics of "periurban" and "periurban agriculture"
attitudes differ between urban and periurban dwellers	periurban production is economically dependent on the city
different kind of people	lower population density than urban
different activities	more land/space available
concept of "urban" varies a lot cross-nationally	PU area has more natural resources
UA is part time job	PUA is a full time job
UA technology is different from PUA	PUA technology is different from UA
knowledge of urban farmers is different	knowledge of PU farmers is different
UA approach is different	PUA approach is different
UA is less commercial than PUA	PUA is more commercial than UA
urbanised	land under threat of urbanisation
more infrastructure/construction	less infrastructure/construction
more services (banks, schools, medical centres etc.)	fewer services (banks, schools, medical centres, etc.)
different landuse than in periurban areas	different landuse than in urban areas
differences in natural resources availability	differences in natural resources availability
differences in policies/incentives/disincentives	differences in policies/incentives/disincentives
easy access to markets	less access to markets
poor air quality	better air quality
high cost of labour and land	lower cost of labour and land
primarily subsistence production	primarily market oriented production
management strategies different from PUA	management strategies different from UA
small-scale, scattered and low-value crops produced in cities	intensive, market-oriented, high value crops
practised by poor urban dwellers for survival purposes	practised by groups and individuals with ready access to capital markets

The differences between urban and periurban agriculture require different planning approaches, e.g. with regard to size of plots, access to inputs, provision of water, etc. This situation calls for different strategies to land development, legislation, and planning. While in the urban environment, land allocation or land adjudication is required, periurban land needs protection through fore-front appropriate zoning measures and land acquisition. Land allocation is a process where a land owner, the state or council, allocates land for long-term stable use to individuals or organisations, while land adjudication is the process of placing existing records on formal or customary land rights into a formal land registration system. Land acquisition is a means to protect periurban land from being unguidedly misused for urban functions. Governments buy land to create land banks for guided development, to avoid land speculation and, for example, to re-distribute it to the poor. All those measures are important in view of protecting marginalized groups from land grabbing (Österberg, Tommy,1998).

Conversion of agricultural land to urban uses is a particular concern, as rapid growth and

escalating land values threaten farming on prime soils. Existing farmland conversion patterns often discourage farmers from adopting sustainable practices and a long-term perspective on the value of land. At the same time, the close proximity of newly developed residential areas to farms increases public demand for environmentally safe farming practices. Comprehensive new policies to protect prime soils and regulate development are needed. By helping farmers to adopt practices that reduce use of chemicals and conserve scarce resources, sustainable agriculture research and education can play a key role in building public support for agricultural land preservation. Educating land use planners and decision-makers about sustainable agriculture is an important priority (University of California, 2000). The question of how to implement proper land market management is of particular interest for former socialist countries (Bertaud, Alain. 1994).

Leasehold versus land ownership

Land allocation seems a practicable strategy to protect open urban spaces for agriculture provided that this kind of land-use is on the agenda of planning policy. Land allocation requires fore-front land evaluation, zoning and a strategic development plan – otherwise it might end up with undesired results. Experiences in site-and-services schemes and upgraded squatter settlements show that the poor tend to gradually improve their housing, provided they have land security. Similar observations are true for urban agricultural activities, as shown in South African Townships, (Small, Rob 2001). On the other hand, the experience is made that the poor, because of high costs, often tend to sublet or sell the site and move back to the original squatter settlement (Dowall, David & Clark Giles, 1997). Also, secondary gradual densification of sites can be observed causing lack of agricultural land in such areas. Sometimes in-town or rural-urban chain migration is the cause of this, but often the owner of the plot sublets part of the plot to strangers to make money. With respect to the public interest in conservation of open spaces in cities, this is a strong argument not to give land ownership to urban agricultural land but rather leasehold. Leasehold is a limited right to use land for a specific time and a specific purpose often including protected tenure with the right for prolongation and the right of transfer (Österberg, Tommy, 1998). Contrary to land ownership, leasehold prevents land speculation, thus protecting public interest in open spaces. Proper leasehold is closely related to customary tenure, which, for example in Africa, often includes land use for specific purposes. Another model is the community leasehold whereby land is given to a community or association to use it for specific purposes. The European allotment systems work along this line. Nevertheless this requires the establishment of management associations, garden clubs or similar community based groups (Drescher, A.W. 2001).

Land markets and poverty alleviation

Land tenure and, even more so, security of land is a crucial point in the discussion, rather than the availability of land—as pointed out above. Nevertheless there are big regional differences.

The key question is how to bring the poor into the formal land market (Fernandes, Edésio & Ann Varley (eds) 1998). The past approaches of poverty alleviation did not aim to increase the flexibility of the poor but rather led to dependence on government and non-government organisations (Dowall, David & Clark Giles, 1997). Urban planners do tackle this question but rather in connection to housing schemes than to agricultural land use. We learn form this example that sometimes we need to take existing thought and strategies as a valuable starting point and try to incorporate agricultural land use into those. Site-and-services schemes and squatter settlement upgrading are common measures taken by councils to provide or improve housing for the poor.

Site-and-services schemes provide the target group with a plot and basic infrastructure like water, roads, and sanitary facilities. Upgrading of squatter settlements provides an opportunity to build on existing structures, already partly developed, and does not interfere with building communities and social structures.

In Thailand and the Philippines, land sharing has also been implemented with respect to housing schemes. Land sharing is based on an agreement between the landowner (private or state) and the land occupants to develop the land according to their specific interest. Land sharing is a means to increase land tenure security and land value (Dowall, David & Clark Giles, 1997).

As we can see, existing tools can be modified to help incorporate urban agriculture into planning. In many cases it might even be easier to implement agricultural land-use than housing schemes. Land sharing could be a model for public-private partnerships as well. These can be partnerships between electricity companies, waste and health departments or

councils and community gardeners.
Power lines are non-housing areas in most countries and are known to be potential illegal waste disposal sites, similar to riverbanks. Community gardens can prevent such areas from pollution as examples form Tanzania prove.
Recycling of organic solid waste is an effective and sustainable way of improving soil fertility and minimising disposal space and costs as well as creating income and as such reducing poverty. Decentralised composting facilities may constitute another form of public private partnerships that would be most desirable (Drescher, A.W., 2001).

Participatory planning
"In order to understand the urban and periurban planning process one needs to know who the stakeholders are and how they manage to have their interests reflected in the plans that are implemented after all. Some stakeholders are always stronger than others and though one tends to think that big real estate development agencies, public or private, tend to be the strongest this is not necessarily the case. Individually weak stakeholders such as small-scale market gardeners have often proved to be able to get organised around a common interest. This enabled them to have plans revoked that ignored their interests and have these adjusted to their needs" (van den Berg, Leo, 2000).
It is proposed that the focus of planning for cities should shift from central government control and the international realm to local personnel and institutions concerned with urban issues who should be given a greater say in decision-making and policy implementation. Towards this end, a balance between public and private sector initiatives, along with local responsibility and central control should be forged. (United Nations Population Division, 1996).

Participatory urban planning is a new, most complex and difficult process. Many stakeholders have to be involved. Experience from many cities in Europe show the difficulties of this process, now embedded in the Local Agenda 21. Communities often organize themselves when they face a common threat or need. As soon as the threat is over the community organisation falls apart (Dowall, David & Clark Giles, 1997). Nevertheless community organization, capacity building, and access to finance remain the two key issues in participation. To provide means for land development, communities could be supported through the establishment of savings and credit schemes e.g. "mini banks for the poor" (Dowall, David & Clark Giles, 1997) or community based saving agreements•).
Participation requires extensive information and communication, as well as consultation and moderation. There is a need to develop platforms for all stakeholders, which should, at least initially, be of an informal nature. The primary goal should be to define their common problems and seek solutions that would bring about improvement to all (van den Berg, Leo, 2000). Often stakeholders have different priorities from urban planners••). With regard to urban agriculture, in most countries urban farmers are not at all organised and therefore do not have political power. Women farmers have other interests and approaches than male farmers. Agricultural production by women is often household-based and therefore less market oriented. Agriculture in cities is often scattered over small areas, which makes it even more complicated to get the farmers organised. Major activities should therefore be directed towards the empowerment of urban farmer groups. The international support group for urban agriculture (SGUA) and the national networks on urban agriculture (e.g. the Latin-American Network AGUILA) might play a key role in the formation of national urban farmer associations.

Technical tools for land use planning
In spite of all ongoing research on urban agriculture, little is known, in most of the world's cities, about the actual extent of urban agriculture in terms of inner city areas used for agricultural purposes. Also, little is known about the spatial distribution of urban agriculture in the cities. Many questions arise: Where do urban agricultural activities concentrate and why, who is involved, what kinds of crops are grown and by which groups of city dwellers, which kinds of soils are occupied, how is water availability and quality, what is the distance to markets?
Therefore we face a lack of data and knowledge concerning the extent, the importance, the development and the output of urban agriculture. Geographical Information Systems (GIS) have been widely used for urban planning purposes for decades.
Some limited experience with the application of GIS to urban food production activities is already existent, e.g. from Santiago de los Caballeros (Dominican Republic), Hubli-Dharwad (India), Kumasi (Ghana) and Dar es Salaam (Tanzania), (Del Rosario, P. J. , Y. Cornelio, L.Y. Polanco, A. Russell, H. López & P. Escarramán 1999). GIS are used for urban planning and open space mapping but also for monitoring loss of agricultural land within city boundaries or

measuring urban greening indicators, (Idbamerica ONLINE 1998). GIS will allow planners to monitor changing urban food production trends more easily as cities continue to undergo rapid changes, (Dongus, S. & A.W. Drescher, 2000).

Nevertheless the institutional problem of planning becomes obvious when using GIS. Efficient planning requires the linkage of different data on space, infrastructure, markets, health, soils, water, waste, socio-economy, agriculture etc. that operate under the responsibilities of different, separate departments. Furthermore, the technical premises are often missing and users of the GIS lack know-how. Another interesting open question in this context is if the use of GIS can increase participation in the planning process, (Nedovic, Zorica . 1999).

4. Programmes and concepts which could facilitate the integration of urban agriculture into urban land use planning

"A fundamental step in order to set the right conditions for city farming is to develop an urban agriculture plan and policy, recognising the interrelated nature of food, agriculture, health and ecology by forming a municipal working group that can deal with food issues from a total system perspective. This could involve, among others: the health department, planning department, engineering, local economic development, water management and waste management. Following this, the urban agriculture plan should be incorporated into the landuse planning system. This implies that urban agricultural activities are recognised as major components of green zoning systems, for which a dedicated policy must be formulated, developed and implemented". (Deelstra, Tjeerd and Herbert Girardet .1999)

Sustainable urban development
The discussion on sustainable development is mainly based on the 1992 UN Rio Conference and includes urban areas. This has resulted in various programmes for sustainable urban development like HABITAT and the Urban Management Programme (UMP).
The international justification for the integration of agriculture into urban planning is laid down in the 1992 Rio Conference and the Local Agenda 21. Especially the land tenure aspects in poverty alleviation and the gender perspectives of sustainable development are developed in some detail.

Agenda 21: Human Settlement (1992)
- Strengthen community-based land-resource protection practices in existing urban and rural settlements;
- Establish appropriate forms of **land tenure which provide security of tenure** for all land-users, especially indigenous people, women, local communities, **the lowincome urban dwellers** and the rural poor;
- Accelerate efforts to promote **access to land by the urban and rural poor,** including credit schemes for the purchase of land and for building/acquiring or improving safe and healthy shelter and infrastructure services;
- Develop and support the implementation of improved land management practices which deal comprehensively with potentially competing **land requirements for agriculture**, industry, transport, **urban development**, green spaces, **preserves and other vital needs;**
- Promote understanding among the policy makers of the adverse **consequences of unplanned settlements** in environmentally vulnerable areas and of the appropriate national and local land use and settlements policies required for this purpose.
- "Support, inter alia, community projects, policies and programmes that aim to **remove all barriers to women's access** to affordable housing, land and property ownership, economic resources, infrastructure and social services, and ensure the full participation of women in all decision-making processes, with particular regard to women in poverty, especially female heads of households and women who are sole providers for their families."
- "Promote awareness campaigns, education and enabling practices regarding, in particular, **legal rights with respect to tenure, land ownership and inheritance for women,** so as to overcome existing barriers."
- Governments also committed themselves to the goal of gender equality in human settlements development, including "**integrating gender perspectives in human settlements related legislation, policies, programmes and projects** through the application of gender sensitive analysis".
- Urban agriculture could play a major role in sustainable city development by creating open green spaces, increasing the urban habitat diversity and thereby biodiversity in cities, reducing noise and

pollution, closing the energy loops and making cities more habitable. On the other hand, the negative impact of urban food production on the environment is seen as a major constraint to this type of activity. The impacts, negative or positive, are dependent on the type of production, the intensity and the degree of linkages between production types. Urban livestock production, if not integrated into urban horticulture or forestry, can harm the environment through the accumulation of animal wastes. Misuse of fertilisers and pesticides in intensive production systems are likely to pollute consumers, water and soil resources (Drescher, A.W. & D. Iaquinta,1999).

Table 2: Dimensions of sustainability of Urban Agriculture (van den Berg, 2000)

	Environmental	Economic	Social
Synergy	- plant nutrients in urban waste & sewage; - health aspect in context of 'urban greening'	- access to inputs & markets - amenity - employment & poverty alleviation	- meeting human needs for green (recreational) urban space
Conflict	- urban pollutants in agricultural produce - agrochemicals in urban environment - urban greening & nature-borne diseases	- competition from urban land use systems - vandalism & theft	- negative perceptions of (peri-) urban farming

Negative effects of urbanisation on UPA are obvious: Pollution of production sites by solid and liquid waste, air pollution, occupation by buildings, deforestation, soil compaction and ground water depletion are major threats to urban food production. As opposed to other commercial or private activities in cities, urban food production has never been addressed properly by legal regulation and planning. One vision of a sustainable city results in the concept of the "Ecopolis" strategy which can be understood as an extension of the Garden City concept. In the Netherlands for example, the Ministry of Agriculture propagates "green strategies for the urban landscape", including the introduction of urban agriculture, (Trenaor, Paul. 1998). Positive experience has been made by the Latin American Urban Management Programme (UMP-LAC), which recently started municipal consultations on urban agriculture.

"New Urbanism" and the Urban Greening concept

The goal of "New Urbanism" is to reverse the trend of "urban sprawl" by learning from traditional urban development patterns and thereby preserving open spaces for natural habitats, active recreation, and productive agriculture, (Mclaughlin, Richard, 1997). While urban greening is often understood as the re-establishment of trees in cities e.g. to reduce heat island effects and to improve the urban microclimate, a more comprehensive understanding of the concept needs to incorporate urban agriculture. The Japanese government, for example, passed a law in 1991, recognising the advantages of open spaces, on the 're-establishment of green spaces'. Recently, more local government bodies and farmer associations have declared an interest in working together with city dwellers to reinvigorate urban agriculture (Akemine, Tetsuo, 1999).

Planners' support to urban food production

The little information available on the thinking of urban planners with respect to urban agriculture identifies at least some key issue felt to be important to them (Pothukuchi, Kameshwari & Jerome L. Kaufman 2000), (van den Berg, Leo 2000), (Quon, Soonya, 1999).

- The preservation of agricultural land,
- Changing land use and zoning related to food access,
- The integration of food issues into economic development activities and
- The mitigation of the environmental impacts of the food system.

The World Bank recently tackled the question of urban agriculture within the discussion on urban poverty. Urban agriculture can be supported with respect to planning by Baharoglu (Kessides, Deniz & Christine, 2000):

- Reviewing the land-use planning and zoning decisions and adopting more flexible regulations. Regulations may need to be reviewed to see the extent to which they are relevant to urban poor and the city's current economic and social context. In cities where urban agriculture is a common subsistence strategy, more flexible regulations could be adopted to help the poor develop urban agriculture rather than prohibiting it.
- Developing and disseminating information on land tenure and land capacity.
- Providing basic infrastructure, and developing and implementing environmental/public health measures against parasites and pests.
- Additionally the North can assist the South by mobilizing the well organized urban agricultural associations in Europe and North America to take a more active part in Third World development by:
  - Lobbying in their respective national donor agencies to become involved in this field; and
  - Building links with non-governmental organizations in developing countries and offering institutional advice and support (Greenhow, Timothy, 1994).

"Urban agriculturalists are a creative and ingenious group of people, with or without support of planners and other institutions, they will continue to garden, either out of necessity, or out of the sheet joy of it. It would be better to recognize, support, and direct their contributions to sustainable communities than to pretend they are not there, or worse, to deliberately undermine them" (Greenhow, Timothy, 1994)

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Some approaches have been made e.g. by the American Community Garden Association which has developed guidelines to implement allotment gardens (American Community Garden Association, 1998). Part of these guidelines might be useful for developing countries as well. The transferability of the European allotment systems is recently propagated at various conferences in developing countries and countries of transition (Drescher, A.W., 2001), (Chatwin, Mary Ellen, 1998).

To achieve better recognition and protection of allotments, local authorities need to keep better information about the demand for, and supply of, allotments. Planning departments and allotments management services need to work more closely together and planners need to prepare more proactive allotment strategies to demonstrate commitment to allotments. They also need to include indicators on allotment provision in state of the environment and other environmental audit reports (Local Government Association, 2001).

"Planning needs pressure". This is a major outcome of the planning workshop of FAO/ETC Electronic Conference on "Urban and periurban Agriculture on the Policy Agenda" (Drescher, Axel W., Rachel Nugent & Henk de Zeeuw, 2000). Experience shows that a strong interest group should be involved in the protection ***and*** retrieval of open urban space. Legal regulations are needed to achieve land-security for urban farmers. In many European Countries and North America this was achieved through the formation of urban farmer associations. Nevertheless the conservation of urban open space for cultivation and recreation involves a continuous battle with an expanding city and different interest groups.

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